Fulcrum
THE AA'S WEEKLY FREE SHEET

ISSUE THIRTY-NINE: MARCH 21, 2012. TOPIC: DIGITAL CRAFT.

32 BEDFORD SQUARE, FIRST FLOOR FRONT.

manual parametrics.

interview: n.tehrani.

Fulcrum: Could you explain how you approach computational design? I'm thinking particularly of the high level of detail you achieve in your projects, and the translation that occurs from virtual space to built object?

Nader Tehrani: I'm assuming you're about 20 years younger than me. So it's reasonable to say that you guys *are* experimenting with computation. In my generation, experiments with computation were trivial at best.

F: Really? Is that wholly fair?

NT: Let me explain. At my core my interests are architectural, and at the instance that the computer began to be introduced as a mainstay there emerged essentially two dominant schools of thought. One (seen at Columbia) was invested in the formal and generative possibilities of architecture and its visualisation. In the other, our camp let's say, computation was an unmediated attack on fabrication, seen in our MOMA fabrications project [Office dA, 1998].

In a way, for me computation was not interesting as a mechanism for visualisation, it went straight to the heart of the detail. In traditional studios we're taught parti, and then from that we evolve space, and form, and programme, and all of those things that come with "architecture". In many instances we develop a material branch of research, an aggregative branch of research, a mode of assembly and an insinuated experience or phenomena that is associated with that.

The computer, or generative processes that are invested in the computer, are directly applied to this kind of dance between the figurative and the configurative possibilities of architecture.

In terms of computation: simply put, in 1992 I was trying to wrap my arms around CAD; after that it was trying to understand Form-Z or the beginnings of Rhino; five years later I was working on exactly how this translates into large-scale fabrication; five years after this it was all about scripting... and coming to terms with the fact that what we had been doing in 1992 was parametrics, but we didn't have the tools with which to do it reasonably. If you look at Casa La Roca and Western House, both of those were "parametrically" conceived, but wholly manually.

F: We're very interested by the origins of parametricism (see #11, #38). It's become such a loaded term, but we mean "parametricism with a small p".

NT: I must stress the degree to which the parametrics of Casa La Roca are related to the performance of structure, of the environmental conditioning of the house, and the optics of the house. The motivations for all of those geometries were lateral bracing, opacity and transparency, and essentially a shaping of space that permits for the passage of air. They were totally scripted forms, if you like, but done in our minds.

I can't speak here about "fundamentals", because I don't believe in them, but if you were to discuss what is irreducibly architectural about those operations it is that they're not invested in parametricism per se but in those things architectural that can evolve, not out of typological differences, but out of differences through the continuous membrane of a certain medium. And there's a huge difference in that. In the late 80s there was postmodernism (if you want to speak in these sorts of terms) and deconstruction. Both of those movements advanced premises which still reinforced some notion about a typological firmness, whether that was a relation between programme and function, or function and form. Even when the figures of architecture are beginning to get dismantled and deconstructed and somehow violated, in the memory of the form the typology is intact, it lives in the legacy. We were reacting to that, and asking how is it that difference emerges through sameness? So if you look at all the first projects we did, they were stubbornly mono-media orientated. It was either all wood, all block, all glass, or... trying to yield the maximum architectural and figurative potential out of that. And that remains with me to today, not because I believe that architecture should be like that, but I believe that the discipline it instils radicalises and ups the ante.

F: Tell us about your work in China.

NT: Imagine something is almost fully designed for you before you start to design... scandalously so. Imagine a client giving you a floorplate for an office building, giving you heights, either five or four storeys, and two different volumes. In other words, they've designed modules and all you're allowed to do is arrange them on site, or imagine relationships between them.

In those situations you really have a polarisation of where you operate, either to the thin membrane of the skin, or the large urban gestures which change the way in which pedestrian and vehicular movement are integrated.

F: Is this work in Ordos? How did you formulate an urban response? I visited two years ago and the city was desert.

NT: There is no urban condition there. We were given our street plans, our relationships with other projects' plots, so the only thing we could do was imagine an essential symmetry between the car and the person, that is, that there will be an on-street life. Solar orientation determined where the blocks sat, and we also tilted the ground plane, tucking the parking partially underneath, so the urban agenda in that case was how do you produce a plaza, how do you activate it, and how do you integrate the vehicular traffic with the pedestrian? And, of course, then creating programmatic variations at the base, since it cannot be a further extension of all those modules. It needs to be spatially open so that you can have a programmatic flexibility.

F: Did this complement your expression, or articulation, of the façade?

NT: I think there's a connection between urban strategy and the detailing of the façade. It's largely a rhetorical bridge, but I'm dissatisfied with architecture being cornered into the surface. There are spatial and aggregate strategies at the scale of the building that are the preconditions for the skin.

F: Ordos as a city project is a particularly interesting example of a way of thinking about architecture that maybe culminated just before the crash, as the design of isolated sculpture-objects, and also of asset creation. How has your work been censored by the financial and political arena it operates within?

NT: What are you suggesting?

F: Architecture is like directing a film: you have to produce a particular project on time and budget, and like a film, there are both implicit and explicit forms of censorship. Whether that's building codes, or unspoken things that you can or can't do in certain contexts.

NT: Ordos is a perfect example of that. What I came to discover was that all the architects that radically violated the rules almost immediately got disqualified, postponed or edited. So vastly, the projects were unrecognisable. We didn't, we got approved immediately, and the alterations were microscopic and menial. This was partly due to do a pre-emptive strike we made on ourselves. We said, what is the motivation behind the movement of capital and the mobilisation of real-estate at play here? In a strange way, in order to do architecture in these contexts it has to be smuggled – it's not what you talk to them about, it's just for you and me. The degree to which you can internalise constraints, and imagine or invent new ones to the developers' benefit, is like operating as a wolf in sheep's clothing. You are fulfilling a dual agenda. If you're smart about the speed of construction, the reduction of trades on site, the way that you procure materials, these may advance *them* because they get a more economical building, but it's really advancing *us*. Understanding the means and methods of delivery as much as the object of design is really the central area that architects abandoned some 30 years ago, and in doing so they essentially sold their souls to project managers. But the question of censorship has a shade of... if it's about selling-out or corroborating a dominant ideology of a certain power group, I would be more careful than that. Whether you're doing the school pavilion or the big bad office building in China, there are strange and alluring parallels. Because in all cases you're trying to decode the limitations, how do you extract the relevant factors? How will you work with them? And how are you going to mobilise architecture?

Nader Tehrani is an architect (Office dA / NADAAA) and educator. He is currently head of the MIT Department of Architecture.

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NEW HAVEN, CONNECTICUT (USA).

imagining architecture.

interview with a.zaera-polo.

Fulcrum: In Sniper's Log you've tried to capture a particular time. Have you always been sensitive to the zeitgeist?

AZP: No. I started perhaps because of a certain predisposition, a personal condition that then led me to write. At that time there weren't a lot of people in Spain interested in writing on architecture, so it was easy for me to connect to people that actually needed writers. I think for anybody who tries today to access those channels it is much more difficult. Obviously I was not aware of what would happen, I didn't know if I would continue. For me, writing has always been a sort of side-show, not the main concern of my practise.

But you asked about whether I was always interested in time... People have been telling me for a while I should try and put my texts together. So I said OK. But the question was: why is this book interesting? Or, what makes these texts consistent or relevant beyond the fact I wrote them? (which I don't think is a very good argument for putting a book together). That's when the question of time, and the generational reading, became an important argument in the book.

F: You are particular amongst the writers I read because you are primarily an architect, rather than a theorist. It is the crossover that is so interesting.

AZP: I don't think I am a great writer, I write on subjects where there are not so many others writing. But the kind of theory I am interested in is always operative, I don't want to look at the world from the ivory tower of academia. For me, theory is something deeply embedded in practise. Almost to the point where it's inseparable. I'm not interested in making a whole theorisation of the world, or a new kind of world view. We as architects write a lot: reports, texts for projects; you have to make presentations (which is also a sort of narrative, or textual argument) and sometimes these things are incredibly loaded. We don't think about it, but writing text for a competition entry is full of interesting processes, where writing is not simply an act of sitting back and trying to think coherently about the world, but trying to produce an effect: to frame the project, to construct the way in which the project relates to a certain reality.

F: Nader Tehrani spoke [#39, col.1] about the beginning of computational design and said two schools emerged: one concerned with detailing and fabrication, another with visualisation and form-finding. How did you start working with computers in architecture?

AZP: I certainly started before Nader. [laughs] Nader was actually my classmate at Harvard. I should say that I am from the very first generation that worked with computers as design tools. Before my time if you got into computers you were swallowed by them, because of the difficult interface. I didn't see any computers during my degree in Spain at all, it was only when I went to the States that I decided to take courses in them, which were very unpopular in the school. When I started trying to design something within a studio [with Diller+Scofidio] they were not interested in computers. But they allowed me to do it. I was probably one of the few, if not maybe the only, person in the whole school that was trying to do this. There were some people who were specialists in computation and they were starting to get into something... but none of them were designers, so the crossover between design and computers was at almost that exact moment. That was 1990. I remember I was working on a 486. You probably don't know what it is. It ran AutoCAD R10 [1988 for MS-DOS]. The possibilities were very limited and the interface was terrible, there wasn't Windows. I had to type commands directly in C. It was a very primitive situation. But the next year after that there were already 10 or 15 people doing computer designs. And the following year the school wired the whole place so people could draw with computers. So in a matter of two years, the thing flipped over completely.

F: Brett Steele [#11] spoke about the speed at which this occurred, and spoke in terms of the formal language that developed. What were you thinking about formally when you started to work with computers.

AZP: Maybe Nader's question of the two schools of computing is relevant. I would definitely say I belong to those interested in construction rather than images, although it's very difficult to not be seduced by images, and the formal possibilities of computers. But I have never learnt Form-Z, or Maya... I basically still do AutoCAD and Rhino.

F: Did you use a computer to execute designs that could be done by hand?

AZP: No, I was always interested in the computer as a tool to allow you to think and design things you couldn't have done without it. I'm talking at a very theoretical level: when you are in practise you also use the computer as a drafting tool, and 95% of the work is about producing, and delivering, and engaging with conventional processes. But there is some space where you can play with algorithms. Probably I'm more interested in that side of the computer world than with the production of images, and at the time when I started using computers the tools we were exploring were conventional. There were not a lot of curvy surfaces.

The most interesting thing about the computer is that you were thinking about the project in 3D. This is probably a given for your generation, but you have to think that my generation started learning architecture in plans and sections. Imagining a building was done by planar sections of an object. When we started working with the computer after having been educated in that paradigm it was obviously a huge jump. The possibility of building something directly in 3D was completely new.

I often talk about the relationship between ideas and images: the Greeks used to equate the two, meaning that if you are not able to see something, you cannot "imagine" it. So one of the things the computer does is allow you to see things that you couldn't otherwise. The whole thing about simulations is precisely that: producing images that without the computer are invisible.

Today we all have an intuitive notion of, say, the distribution of temperatures within a room, because we've seen simulations of colours used for different temperatures and we have developed a certain sensibility. In a way, that's what I think Patrik is addressing when he talks about the parametric. We've developed a sensibility that gives us a different image of the world, and therefore permits the imagination of new things.

F: Should architects write?

AZP: Architecture as a discipline depends on writing. Mark [Cousins] said the other day that whoever is not reading or writing is an asshole. Maybe that's a radical way of putting it, but writing is the vehicle that gives distance from the real and makes decisions democratic. I also think writing is in the very beginning of the discipline. The first architects, as we would understand them, were people writing and drawing. They were not builders. In the moment that architecture starts, writing starts: Vitruvius, Vignola, they called themselves architects because they were able to write, not just draw. In my case, I started writing, then realised there were people like Rem Koolhaas or Peter Eisenman. I was particularly interested in Rem because of that capacity to write.

F: Is that why you went to OMA? Did they have computers?

AZP: Back then, OMA had two 486 computers, and there were some specialist guys who were able to operate them, but no architect was able to work on a computer. I was the only one. I bought a computer in the US, and took it to the Netherlands. It was incredibly expensive, I spent all my savings on it.

At some point I told Rem, and some people heard about it, and my project leader told me to bring my computer to the office. Which I did. But they had me working on it like a draftsman, and then I told them – either I am allowed to remain a designer, even on a computer, or I am taking my computer home. And my project leader couldn't understand that, so I basically said "well, fuck you, I'm taking my computer home". I had that moment of confrontation, in a situation in which the computer was seen simply as a production tool, not a thinking tool.

This is why in some ways I feel like a pioneer of computer design, even if by comparison with younger people today I am incredibly clumsy.

Alejandro Zaera-Polo is an architect (FOA / AZPA) and theorist. His forthcoming book, The Sniper's Log, *is published by Actar.*

The subject, suddenly transformed, becomes a computer at the wheel. The vehicle now becomes a kind of capsule, its dashboard the brain, the surrounding landscape unfolding like a televised screen. Each person sees himself at the controls of a hypothetical machine, isolated in a position of perfect and remote sovereignty, at an infinite distance from his universe of origin. Which is to say, in the exact position of an astronaut in his capsule, in a state of weightlessness that necessitates a perpetual orbital flight and a speed sufficient to keep him from crashing back to his planet of origin.