MARC FORNES

CREATES SPACES HE HAS NEVER SEEN BEFORE

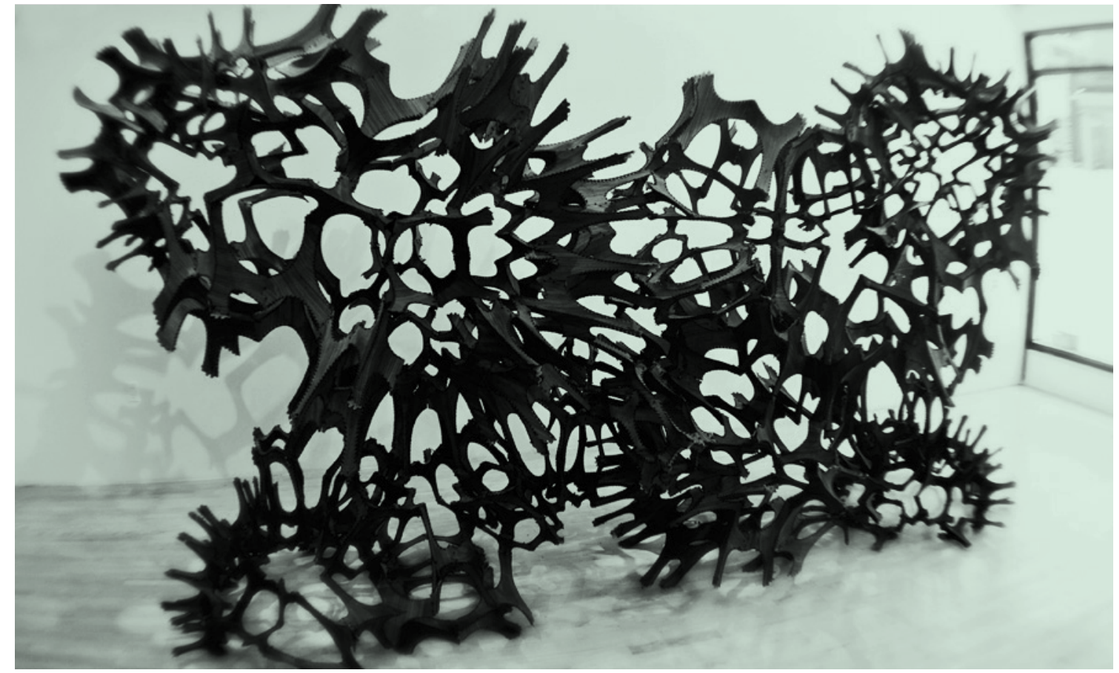
Text **Terri Peters**
Photos **THEVERYMANY**

Echinoids
Bridge Gallery
New York, USA
2009

Study of aperiodic tiling in which a finite set of elements is used over and over again, without repeating the pattern. Composed of 530 laser-cut walnut-veneer panels.

'I am fully surrounded by my own "monsters", all finishing their lives in this space'

— Marc Fornes —



'I think of it as a guerrilla-style approach to architecture. I like taking risks, making a mess, breaking things,' says French architect Marc Fornes as we carefully weave through the creative disorder at his Brooklyn studio. Fornes shares a floor in this bright, open-plan warehouse with a web TV station, a collective of musical composers and a writer, but it is easy to see where his space begins and ends, so decidedly different is it from the others. 'It is some sort of grotto,' he says. 'I am fully surrounded by my own "monsters", all finishing their lives in this space.' A landscape of leftover aluminium prototypes are arranged in tangled heaps at times almost 2 m high, next to precarious stacks of digitally fabricated mathematical forms, buckets of rubber and foam mixtures, shelves of melting coloured experiments and rolls of sharp-looking materials. While his final installations are pristine, minimal and clean, it is clear that his do-it-yourself approach to computation and architecture has grown from his love for material experimentation, formal exploration and the pleasure he takes in solving a puzzle and making a mess.

After five years in high-profile offices in London (Zaha Hadid) and New York (SOM), he is inspired by the freedom that comes with having no one to report to but himself. 'I realized nobody is ever going to commission me to do what I want to do, so I thought, what can I commission myself to do?'

Since he founded THEVERYMANY in 2005, Fornes's work has been concerned with designing and manufacturing algorithmically – that is, using a series of instructions or commands rather than a traditional design approach – in order to experiment with form, material and colour, to create 'spaces I have never seen before'. No matter how well he understands and codes the 'rules' of his design, he likes the unpredictability of the overall form and the way in which spatial relationships develop in a built prototype.

Once he writes his own custom computer code, which gives him control over the digital information in his designs, he is able to control the manufacturing by sending this information directly to a laser cutter, milling machine or 3D printer. Many architects at the moment are fascinated by the possibilities of taking a design from concept and visualization to fabrication and assembly, but few are actually building prototypes in an unbroken chain of digital design. Often components of a building are digitally fabricated, or the design is digitally generated, but the information is rebuilt by the fabricator. Here Fornes is building at a scale small enough – usually that of a room – to obviate the need for focusing on mundane aspects such as structure or wall sections.

Designers are talking about these ideas in architecture. Certainly 'parametric design' and 'digital manufacturing' are buzz words in most design offices, but Fornes is one of a small group of designers actually going beyond visualization and closing the loop on digital design. His peers include designtoproduction, Aranda Lasch and Andrew Kudless, among others. Interestingly, such experimental studios tend to be known for their small-scale and not particularly commercial installations, as well as their parallel careers in academia.

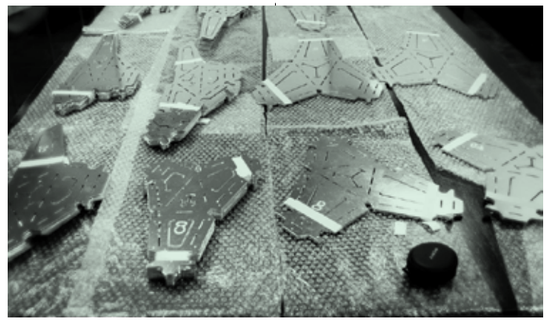
Fornes's latest works show his interest in new material techniques, in sewing, casting and other ways of digitally controlling manufacturing. He's not afraid to fail – in fact, most of his stories about the prototypes lying around his office end with him picking up the battered prototype, sighing, and saying, 'This one was also a complete failure.' Mistakes, however, are part of the process. His work transcends 2D drawings; he cannot always predict material performance or ease of assembly.

Some of the most beautiful objects in his studio are studies for Echinoids (2009), the fourth in his series of prototypes relating to the idea of aperiodic tiling. Aperiodic tiling is a strategy that uses a finite set of elements over and over again (here six spheroid volumes) without repeating the pattern. It can be used as a way of creating a unique composition from a small set of components, which has obvious implications for architecture. 'These projects were based on the Danzer tiling,' Fornes explains, referring to mathematician Ludwig Danzer. 'Of course, I am not the only one interested in this idea.' As Fornes points out repeatedly as we talk about his experience building these prototypes, the tricky part is figuring out how to teach groups of students how to assemble thousands of unique components to form a physical installation. This is in a sense what makes Fornes's work architectural – the challenge of building rather than just designing or making hand-held »

Anoblums

University of Valparaiso
Valparaiso, Chile
2009

Thin sheets of brushed anodized aluminium arranged in modules to form a spheroid 2 m in diameter.



prototypes. Sure, it might sound cool to design and fabricate 5000 laser-cut panels, every one unique, but how on earth can they be assembled in four days for a gallery show?

'This is the challenge, the communication between the assembler and the person looking at the screen. You think, each piece looks so similar, is this going in the right spot, and where does this connect?' He shakes his head. 'Never show a rendering to a gallery ahead of time would be my advice.' He refers to an early aperiodic-tiling prototype in Berlin, which ended up looking nothing like the visualization. 'One guy just could not put it together, not even in a week. I had to learn to like this project for what it was and not for what it was meant to be.'

‘I like taking risks, making a mess, breaking things’

— Marc Fornes —

Echinoids was exhibited at the Bridge Gallery in NYC in July 2009. It was designed in collaboration with frequent collaborators Skylar Tibbits and Mathew Staudt as an experiment in 'rustic computation'. But as an installation, even normal gallery visitors who do not know their complex geometry find this work remarkable beyond its value as a proof of concept or prototype. Composed of 530 walnut-veneer panels – laser cut, laced together into larger components and connected with 4500 black screws – it has a beautiful, handcrafted aesthetic, casting shadows on the gallery floor. To the untrained eye it looks like an organic arrangement of cells, perhaps, or a microscopic view of a flowering plant – something that could be extended and could continue growing. 'It took about half an hour for each part, and there were over 500 parts. We kept running out of elastic material for lacing them together. We had scoured the garment district for cheap elastic and found this bra-strap material; we ran out of brown, then black, then navy blue . . .'

‘Never show a rendering to a gallery ahead of time’

— Marc Fornes —

The next month he flew to Chile and installed Anoblums (2009) in Valparaiso. It is a smaller, sculptural installation of very thin sheets of brushed anodized aluminium arranged in modules to form a shiny, spiky dome. The connections of the jewel-like panels are pre-cut tabs, folded and slotted together in tight-fitting laser-cut slits. Another project created together with Tibbits and Staudt, Anoblums relates to aperiodic tiling that, in comparison with Echinoids, has been explored using a completely different material and a more formal method. 'I know exactly what Anoblums weighs – it was the maximum weight allowed by the airline for a checked suitcase. This installation weighs exactly 46 kg. I had to put all of my clothes, toothbrush, everything, into a small carry-on bag.'

Installed at Galerie Roger Tator in Lyon, France, nEdg (2009) explores another computational idea: surface relaxation, the challenge of developing a form-found structure. Here the form itself emerges from an algorithm inspired by Antoni Gaudí's hanging-chain models. Fornes uses similar but unique parts to produce a form that hangs or 'relaxes' into a natural curvature that, he explains, 'despite generating apparent complexity also provides natural structural stiffness'. The whole 'hanging' shape, which » actually rises

nEdg

Galerie Roger Tator
Lyon, France
2009

Study of surface relaxation resulting in a form-found structure. An algorithm inspired by Antoni Gaudí's hanging-chain models creates a form that 'relaxes' into a natural curvature.

from the ground and hangs from the ceiling, appears to be a flowing, billowing surface, and he divides it into 2796 individual surfaces and punctures it with 5375 holes, creating different geometries as the solid shapes connect to the voids. It took ten days and four people to assemble the pieces. 'The idea was to create an environment, not just an object or a sculpture,' says Fornes of an installation designed specifically to fit tightly into this tiny gallery space in Lyon. Spatially, the idea was to encourage people to interact with and move through the surface. 'I wanted people to start high and go under a series of arches,' he says. 'Actually, one gallery employee had to do this every day to get to her office at the back of the room; maybe she got a few scratches here and there . . .'

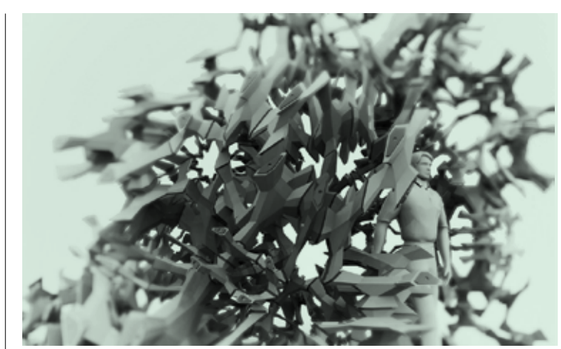
Most recently, Fornes is experimenting with mould-making and alternative ways of fabricating. In a series of experiments, he developed the idea of simple yet extreme do-it-yourself modes of production. In terms of both form and material, the challenge here is how to create single elements to produce many. During the design process, Fornes found it frustrating that his production techniques consistently failed whenever he tried to increase the size of the modules to use them for his April 2010 show at Chicago's Extension Gallery. Each plastic piece took too long to make, and sanding to get a perfect surface took more than half an hour per piece. 'You know when all your red alerts are telling you to stop and just get something done? When the deadline is now and you have to have something? Anything? I was at the point where I needed to stop and produce, and I just didn't.' His show in Chicago was a bit delayed, but the gallery took a chance and gambled that he would accomplish something amazing when out of his comfort zone.

After a month of constant material and mould-making tests, trials and failures, he learned how to improve the moulding techniques but moved back to using foam rather than plastic. The result is PolyPop(s), a 4-m-high

PolyPop(s)

Extension Gallery
Chicago, USA
2010

Study of the material possibilities of self-fabricating high-density foam components using rubber moulds. The final tricolour installation has 530 smoothly finished elements, each of which took about 30 minutes to produce.



PLASTIC TEST MODEL.

foam installation made from eight custom moulds. The goal was to take less than 30 minutes to produce a single finished element – a challenge, given the geometric complexity. PolyPop(s) features 530 elements (three colours, two tones each) made from expanded high-density foam formed in rubber moulds. Fornes's experimentation with plastic and foam seems to be his favourite, yet most stressful, project to date. He points to a bright-yellow test piece shaped like a loaf of bread. 'See that. That's happiness.' He holds up the lightweight component proudly. 'It means you have the right pressure with the foam when it bubbles like that.' The final installation of green, yellow, white and black pieces looks almost skeletal. Here Fornes opted for a series of moulds that produce many pieces of the same shape, rather than using a process like laser cutting, which could have made each one unique. Colour and position, however, yield the desired variation.

Fornes is designing through making, developing his own process of learning from the failures of the previous piece ('There is always a way to push it to be better, more efficient, faster') and trying to find a solution, or part of a solution. 'I'm looking for a kind of coherent uniqueness to the next piece,' he explains. 'To my way of thinking, it's an accumulation of little steps that builds up something which theory will later identify and eventually recognize under a specific name.' «

http://theverymany.com