Marc Fornes creates spaces he has never seen before

I think of it as a guerrilla-style approach to architecture. I live 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, creative disorder at his Brooklyn studio.

Echinooids
Bridge Gallery
Brooklyn, NY, 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.

Marc Fornes

When Fornes entered architecture school, he was interested in computational design. “I realized nobody was 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”, he says, “I am fully surrounded by my own ‘monsters’, all finishing their lives in this space.”

“Echinooids”, 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, bundles 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?”

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 the information directly to a laser cutter, milling machine or 3D printer. Many components, which has obvious implications for architecture. “These projects were based on the Danzer tiling,” Fornes explains, referring to mathematician László Darvay’s “3D, of course, I am not the only one interested in this idea.”

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, typifying his approach to experimentation, are about failure. “Mistakes, however, are part of the process. His work transcends 2D and 3D drawings; he cannot always predict material performance or ease of assembly.

Some of the most beautiful objects in his studio are studies for Echinooids. “These projects, the fourth in his series of prototypes relating to the idea of aperiodic tiling, are based on the Danzer tiling, and 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 spherical 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’s work is architectural— the challenge of building rather than just designing or making handmade...
Thin sheets of brushed anodized aluminium arranged in modules to form a spheroid 2 m in diameters.

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

— Marc Fornes —

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.’

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 . . .’

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.

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

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Installed at Galerie Roger Tallon 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 rests
from the ground and hangs from the ceiling, appears to be a flowing, billow-
ing surface, and he divides it into 2796 individual surfaces and punctures it with 5375 holes, creating different geometries as the solid shapes con-
nect to the voids. It took ten days and four people to assemble the piece. ‘The idea was to create an environ-
ment, 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 inter-
act 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 experi-
menting with mould-making and alter-
native 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 simple elements to
produce many. During the design
process, Fornes found it frustrat-
ing that his production techniques
consistently failed whenever he tried
to increase the size of the modules
he intended to use 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 some-
thing 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
gambled that he would accom-
plish something amazing when out of
his comfort zone.
The result is PolyPop(s), a 4-m-high
foam installation made from eight cus-
tom 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. ‘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.’