

MAKING 造浪 WAVES

Artist-architect-digital fabricator Mario Romano applies cutting-edge technology to the homes he builds, which are inspired by the natural world. LP takes a look at how the visionary is refining the way we live and experience home as we step inside his latest residence, the Wave House.

作为艺术家、建筑师和数码制作者，马里奥·罗马诺 (Mario Romano) 在他受自然启发而建的楼宇中应用了尖端科技。让我们步入他最新的住宅项目波楼 (the Wave House)，来看看这位梦想家是如何改善我们的居住方式和对于家的体验。

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“ I want to evoke wonderment and awe, and create experiential architecture that references nature. Nothing is more timeless than nature,” Mario Romano tells me. An affinity and desire to capture our natural environment underlies his work, which focuses on architecture, design, and digital fabrication. He is committed to advancing the language of taking complex geometries and making them manifest in the physical world. “That’s architecture,” he says, “from poetry to reality.”

Romano has pioneered his own design-build systems incorporating customised digital tools, CNC machining technology, and hassle-free construction techniques. Having designed and built over 50 million dollars’ worth of high-end residential projects from the ground up, Romano’s vision and expertise are pushing the envelope in the design-build environment. With building façades that undulate like ocean waves, and interior carved walls that blur into floors, he is manifesting what he calls, “a second nature”.

He is fascinated by the power of computer processing and scripting, and aims to interject it into architecture. “You don’t really see this

in residential architecture. The technology is more often used in films – CGI, special effects. When it’s used in architecture, it’s widely unattainable. You have the likes of Gehry and Hadid using it, but this is architecture for civic spaces, museums, or heads of state. You don’t see it used in private homes. I am changing that.”

Defining a new realm of the urban landscape, Romano literally sculpts his homes, sometimes standing across the street directing the building process like a jamming band of musicians, very often articulating and expressing architecture in real time. In one instance, he composed a facade to emulate the intricate weave of bird feathers. “Feathers aren’t just for flying; they keep the bird dry,” says Romano. In another building envelope, he wrapped a home with monolithic white-metal ribbons. In one way, he is rocketing into the future; in another, he is returning to the organic.

“There is something authoritarian about a box-like structure. I’m driven to create a structure that is sensitive to the neighbourhood, as if it were a form you would discover in nature. It’s one thing to design this way, and another thing to actually build it.”



Will Meyer, photo by Michel Arnaud

Enter the Wave House.

Comprising hundreds of unique pieces assembled into a self-organising form, the Wave House is constructed similarly to the way a tailor crafts a suit of clothing. The aluminium skin was digitally rolled and unrolled, then cut by a CNC machine and finally attached to a complex metal substructure made of straight lines, leaving a space between the white aluminium panels of exactly one and three-quarter inches. The shadow lines flow continuously for 18 metres, starting from the top of the parapet, down the roof, and finally cascading to the bottom of the front wall.

The home’s aluminium skin is skilfully orchestrated, emulating the beauty of nature’s own eloquent geometry. Appearing as one massive, undulating façade, the painted aluminium flows from over two stories high until arriving at the ground in a single flow.

“I wanted to unite the sky and the earth in a single move – an architectural element that no one has ever achieved.”



There are over 300 unique and custom cut aluminium pieces within this skin, organised to form a huge architectural movement. Unable to use traditional architectural jargon like “roofs”, “walls”, and “eaves”, Romano and his design team created new words to describe what they were creating, often embodying the forms one finds in nature — fins, icing, river lines, and feathers.

“I built the house for myself. I am like an artist who sells their creations but creates them out of passion, vision, and a need for expression. I want to elevate the language and art of this type of architecture. It usually takes about seven years for these things to materialise,” he says. “To realise something in the built world... I’m proud of this. There are construction risks, and complex geometrics. This was a massive research and development project that needed extensive testing and experimentation. Unlike art it has to be functional and endure and serve a purpose. At one point you make it big, and you just go big. You go for it.”

Big ideas required building – and educating – a team to make it happen.

“Our team had to be made in itself. No one has experience with this,”

admits Romano. It required 3D renderings and diagrams to educate his team. Romano had to identify and code every part in order to understand how to go about building this home. He notes that the key was to discourage the team from outthinking and convince them to trust him. “It’s calculus and curves.”

Romano admits the process was hard: “People thought I was crazy – even my wife. It made people nervous. But it’s not whimsical; its fantasy made real. You have to go with science. I want to elevate the language and art of this type of architecture.”

“CNC scripting is truncating the design-filled cycle. Now there is a disconnect and it’s unfortunate. By bringing it closer, if you’re astute and alert, you can expedite feedback. Just like jamming musicians. We are at the age of scripting tools that are in the hands of artists.”

Why it is called the Wave House? Literally because of the undulating wavelike forms, but also figuratively: “It is making waves in the architectural world,” says Romano. “It’s the first of its kind.”



这层表皮由300多块独特的定制切割的铝块组成了一个整体的建筑结构。没法用诸如屋顶、墙、屋檐这种传统的建筑术语来形容，罗马诺和他的设计团队便创造了新的词汇来描述他们的创作，这些词汇常具体地从自然界中发现——鳍、结冰、水岸线和羽毛。

“我为自己建造房屋。我像一个艺术家一样售卖自己的作品，但是是用激情、愿景和表达的需要来创作。我想提升这种建筑形式的语言和艺术性。实现这些事物通常需要花上大约七年的时间。”罗马诺预测说。“我很自豪能在建筑世界里实现一些想法。这要面对建造风险和复杂的几何图形。这是一个大规模的研究和建造项目，需要大量的测试和实验。和艺术不同，它必须具有功能性和持久性，服务于某个用途。在某一时刻你成功了，那就放手一搏，大胆试一试。”

大胆的点需要建设和培训出一个团队去实现它

“我们的团队只能靠自己建设。没有人曾经做过这个。”罗马诺坦言道。在培训团队时需要用到3D透视图和图解。罗马诺必须辨别每一部分并编号，以便于理解如何建造这栋住宅。他指出关键在于要让团队不要过度思考，并且要信任他。“这都是微积分和曲线。”

罗马诺承认过程是艰难的：“人们觉得我发疯了，甚至我妻子也那么想。这让人们神经紧张，但并不是异想天开，想象是能够实现的。你必须应用科学。我期望提升这种建筑类型的语言和艺术。”

“计算机显示影像语言正在缩短设计周期。现在存在着一种脱节，这令人遗憾。如果你机敏而警觉，那么缩小这种脱节会让你加速得到反馈。就像即兴演奏的音乐家。我们正处于一个艺术家掌握脚本语言工具的时代中。”

为什么要取名为波楼？因为它有着起伏如波浪的形状，但这里面也有隐喻的成分。“在建筑世界里造浪。”罗马诺说。“这史无前例。”

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“我想引发惊叹和敬畏感，不是借鉴自然，而是创造出富于体验感的建筑。再没有什么能与自然相比更为永恒了。”马里奥·罗马诺 (Mario Romano) 告诉我说。罗马诺善于通过建筑、设计和数码制作进行艺术创作，他的作品体现了对自然环境亲近和留存的渴望。他致力于用复杂的几何图形作为语言来表达，将它们在物质世界中显化。“从诗歌到现实，那就是建筑。”他说。

借助轻松简单的建造技巧，罗马诺整合了定制的数字工具和数控加工技术，开创了属于自己的设计体系。由他设计并从头到尾参与建造的高端住宅项目总价超过5000万美元，而他的愿景和专业技能正在突破设计制造业的常规。如同起伏的海浪般的楼宇外立面和室内模糊了地板与墙面界限的浮雕，展现了他所说的“第二自然”。

他认识到计算机处理的力量和计算机语言的迷人之处，打算将其应用到建筑学上。“你在住宅建筑中并不太看见这些技术，它们更多地是在电影、计算机显示影像和特殊效果中运用。在建筑学中运用这些技术非常难。像盖里和哈迪德这样的建筑师们会用到它们，但那些建筑是为公民提供的公共空间、博物馆或者为国家元首而建。你不会看见私人住宅用到这些技术。不过我正在改变这个局面。”

从罗马诺打造自己家的过程中，或是从有时他站在街对面像指挥着乐队组合一样指导楼宇建造过程中，都可见他对城市景观新领域的定义，而他对建筑

的实时地构思和表达更是时常体现了这一定义。例如他模仿鸟类复杂的羽毛结构设计出的外立面。“羽毛不只是用来飞翔。它们也让鸟保持身体的干燥。”罗马诺说。在一处房屋围护结构中，他用庞大的白色金属带包裹住整栋住宅。一方面来说，罗马诺直冲未来，而另一方面，他又回归根本。

“是有一些关于建造四方盒子般结构的权威性的东西。而驱动我的则是创造出对于社区来说合理而又感性的结构来，就仿佛是在自然界中发现的某种形式。设计是一回事，而实际建造时又是另一回事。”

进入波楼

波楼由数以百计的独特的组件组合成一个自组织形式，建造的方式类似于裁缝剪裁一套服装，铝皮外皮用数字化的方式卷起展开，然后用影像数控机剪切，最后附加到一个复杂的由直线构成的金属底座，白色铝面板之间精确地留有一又四分之三英寸的空间。阴面粗线从栏杆顶部开始连续延伸近18米，经过屋顶，最后瀑布般落下至前墙的底部。

住宅的铝皮表面经由精心的编制，模仿出大自然里逼真的几何结构的美。铝涂层的外观仿佛巨型的起伏波浪，从两层楼高的位置流下，最后汇聚成一股流至地面。

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