CORE77

Joris Laarman's Latest 'Anti-Gravity' 3D Printer Basically Conjures Metal Out of Thin Air

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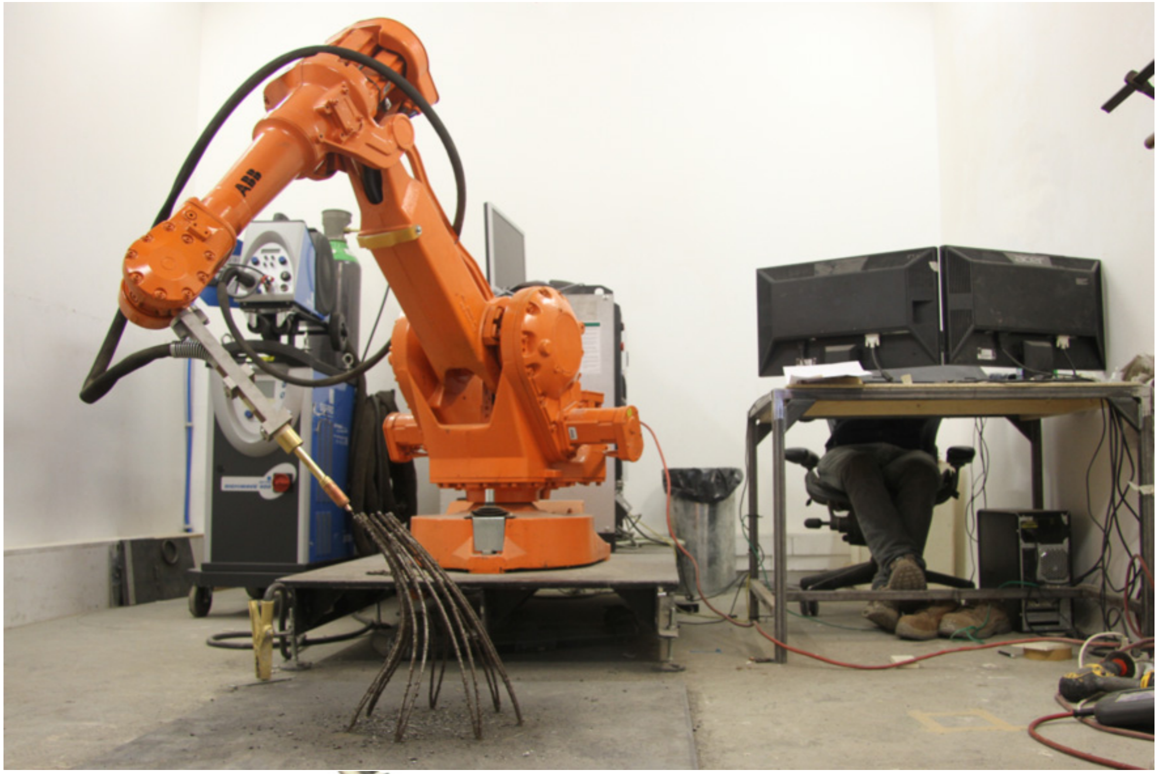
About nine months ago, we got a first look at a freely articulating 3D printer, developed by Joris Laarman Lab in collaboration with the Institute for Advanced Architecture of Catalonia (IAAC). By extruding a special fast-curing resin with a multi-jointed robotic arm, MATAERIAL proposed a "radically new 3D printing method," suitable for "irregular or non-horizontal surfaces." Now, the Dutch designer has unveiled his latest breakthrough in liberating digital fabrication from a build platform: As its name suggests, MX3D-Metal can print lines of steel, stainless steel, aluminum, bronze or copper "in mid-air."

Hu, Ray. "Joris Laarman's Latest 'Anti-Gravity' 3D Printer Basically Conjures Metal Out of Thin Air," *Core 77*. February 20, 2014.

The MX3D-Metal reportedly debuted at last week's Fabricate2014 conference and will make its way to New York City's Friedman Benda gallery come May. Laarman shared some more information on his approach and what's next for the team.

Our Amsterdam-based lab is an experimental playground that tinkers with engineers and craftsmen on the many new possibilities of emerging technology in the field of art and design. We usually start working on projects based on the concept "what if...?" after which we start figuring out how we could hack or combine certain technologies to make something new. Usually, this results in a new series of design pieces with a form language; and this arises out of the new possibilities of the new technology. We believe we tackle technological challenges very differently than others by using a hands-on approach to create such design objects.

Over the years, our lab has worked this way together with many inspiring people in the field of digital fabrication and computational design. We've worked with professionals and students from institutes like MIT, IAAC, ETH and the Architectural Association to develop new concepts for the digital fabrication revolution. For some time now, we've held two research positions at our lab. The purpose of this role is pure experimentation with digital fabrication under our supervision—and with the help of craftsmen and software and robotic engineers. Recently, the technical side of our work at the lab is supported by Autodesk. The reason for this is so we don't just end up with a new series of design objects; it's so we can bring technology to a higher level.



We are developing different kinds of innovative print heads for different kinds of metals. Right now we can, for instance, vary from 5mm to about 10mm lines in steel and stainless steel. All materials need a different approach. Aluminum, for instance, melts very different from stainless steel.

Yet the basic idea is, in fact, very simple: An advanced welding torch on a robot arm that communicates and is controlled by smart software. The research has basically been to collect a massive amount of data and experience by testing and testing for months and months. It's figuring out the right parameters until

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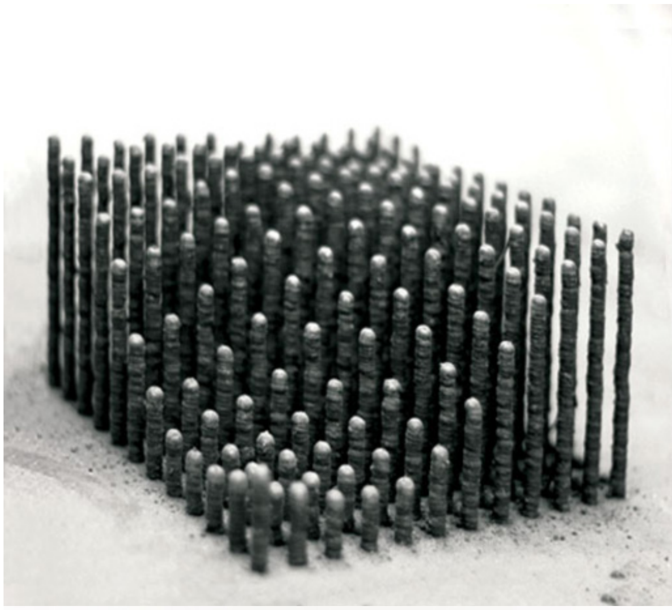
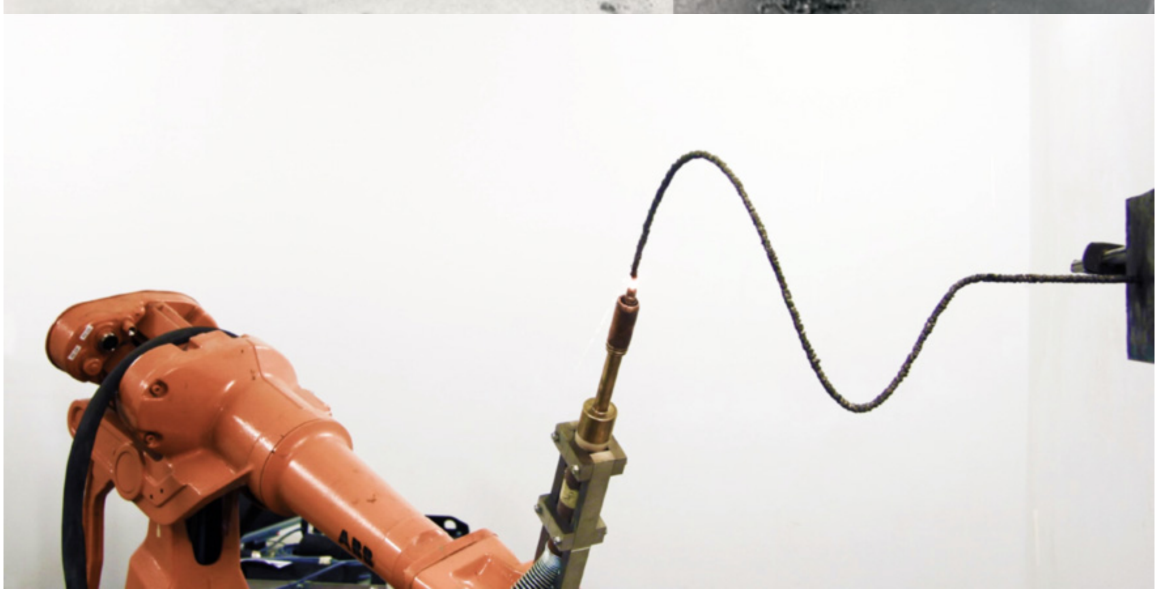
stuff actually works. The combination robot/welding is driven by different types of software that work closely together. This will eventually end up in a user-friendly interface that allows the user to print directly from CAD.

We are developing printing strategies for the different kinds of 3D printable 'lines.' For instance, vertical, horizontal or spiraling lines require different settings, such as pulse time, pause-time, layer height or tool orientation. All of this information will ultimately be incorporated in the software.





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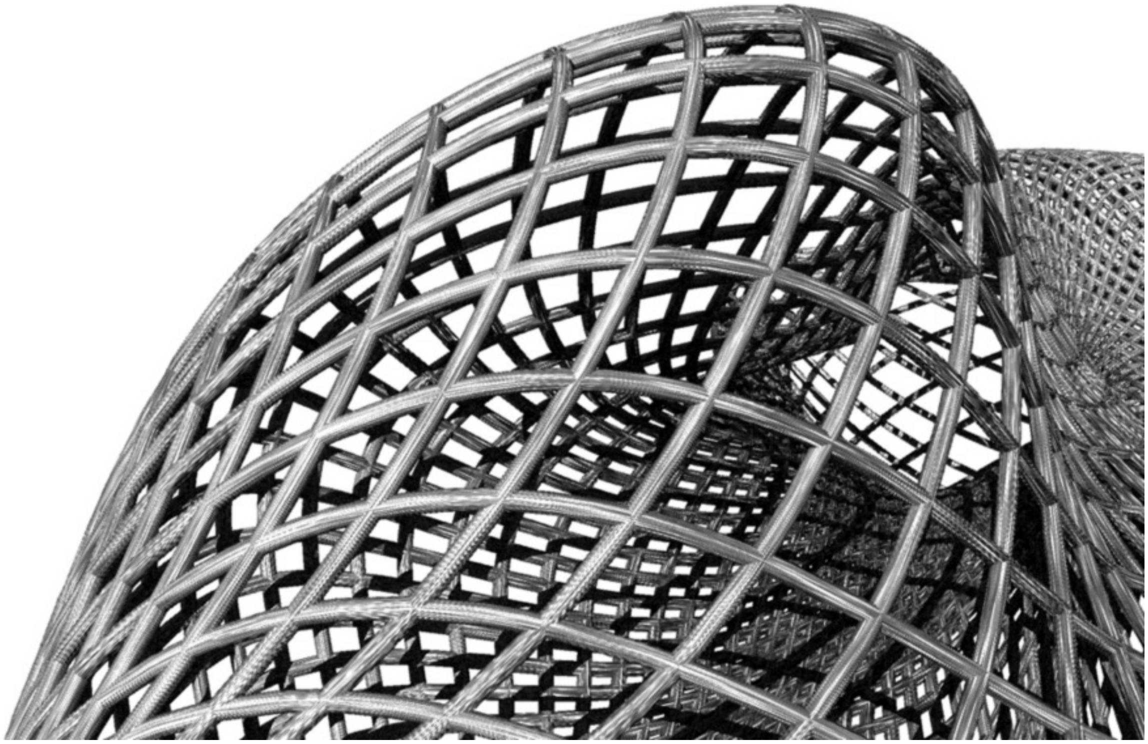

This time around, Laarman is working with ACOTECH, with the support of Autodesk, to "create an affordable multiple-axis 3D printing tool for consumers and professional workshops." We look forward to hearing more about the promising work-in-progress as the team continues to refine both the hardware and the software.

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