

MX3D is to 3D-print a steel bridge over water in Amsterdam

June 14 2015, by Nancy Owano



MX3D is an R&D startup focused on 3D-printing metals and resin in mid-air, without the need for support structures. They pride themselves in "robotic technology with which we can 3D print beautiful, functional objects in almost any form." Now they say "We are going to print a steel bridge in Amsterdam." The robots will be printing in steel and the robots will print that bridge over water in Amsterdam. The project team sees

the metal bridge as serving as a showcase for present-day capabilities in software, engineering and design.

Key to their progress has been robotic 3D printing technology that makes it possible to draw in mid-air. They will use what they describe as "multi-axis" industrial robots.

They said that now, together with an advanced welding machine, they can print with metals such as [steel](#), stainless steel, aluminium, bronze or copper without the need for support-structures. Adding small amounts of molten metal at a time, they print lines in mid-air.

Fast Company reported that "MX3D's [bridge](#) will be made of a new steel composite that the University of Delft created. As strong as regular steel, it can be dolloped out by a 3D printer, drop by drop."

The plan: "It is hoped that the robots used will print their own supports and gradually move across the water, creating the bridge as they go. The robots will begin printing the bridge on one side of the canal and will create rail-supports as they go," according to video notes published on Friday. They will be able to gradually slide forward on supports, literally creating the bridge upon which they are crossing the canal.

"What distinguishes our technology from traditional 3D printing methods is that we [work](#) according to the 'printing outside the box' principle," said the CTO of MX3D, Tim Geurtjens, "By printing with 6-axis industrial robots, we are no longer limited to a square box in which everything happens."

The Joris Laarman Lab site commented: "3D printing like this is still unexplored territory and leads to a new [form](#) language that is not bound by additive layers. Lines can be printed in that intersect in order to create a self-supporting structure. This method makes it possible to create 3D

objects on any given working surface independently of its inclination and smoothness in almost any size and shape."

A number of groups are collaborating with MX3D on this project, including, among others, construction company Heijmans, the Joris Laarman Lab, software company Autodesk, ABB Robotics, and the Amsterdam City Council.

Laarman, when asked how the idea for the bridge came about, said this, on the Heijmans site: "We were at the airport in San Francisco, on our way to a presentation about MX3D, and were brainstorming about what the ultimate poster project would be for showcasing all facets of our technology. We came to the conclusion that a bridge over the old canals of Amsterdam would be a fantastic metaphor for connecting the technology of the [future](#) with the city's historic past."

Beyond metaphors and vision, though, John Brownlee, senior writer, *Fast Company*, captured the special nature of the effort in a visually interesting way:

"In 2017, Dutch designer Joris Laarman will wheel a robot to the brink of a canal in Amsterdam. He'll hit an 'on' button. He'll walk away. And when he comes back two months later, the Netherlands will have a new, one-of-a-kind bridge, 3-D printed in a steel arc over the waters. This isn't some proof-of-concept, either: when it's done, it will be as [strong](#) and as any other bridge. People will be able to walk back and forth over it for decades." Brownlee added, "That's the plan, anyway."

In September, there will be a visitor center where people can follow the progress of the project, and the City of Amsterdam will announce the exact location of the bridge.



More information: mx3d.com/projects/bridge/

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Citation: MX3D is to 3D-print a steel bridge over water in Amsterdam (2015, June 14) retrieved 18 April 2024 from

<https://techxplore.com/news/2015-06-mx3d-3d-print-steel-bridge-amsterdam.html>

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