The New York Times

Furniture Design's Brave New Present

December 5, 2017 I JOSEPH GIOVANNINI

An installation view of "Joris Laarman Lab: Design in the Digital Age," at the Cooper Hewitt, Smithsonian Design Museum. Chairs rely on different digital fabrication techniques, including 3-D-printed resin, and are then assembled by hand. Matt Flynn/Smithsonian Institution

If nature needed to grow a chair from the ground up, Joris Laarman thinks he knows how it would look. This 38-year-old Dutch designersnatched an algorithm about bone growth and fed it into a computer that digitally printed a ceramic mold for a chair that is now sitting innocently — as though it were no big deal — in "Joris Laarman Lab: Design in the Digital Age" at the Cooper Hewitt, Smithsonian Design Museum. The designer didn't sculpt its forms to look organic. Generated with nature's own codes for growth, it *is* organic. Mr. Laarman, actually, was only the midwife.

The Aluminum Bone Chair, 2006. Joris Laarman Lab

But the cast-aluminum Bone Chair is a big deal. Remember when Dolly the sheep was cloned in Scotland back in 1996?

With a seat and backrest supported by what looks like antlers morphing into chewing gum, the chair is the Dolly of furniture design: a breakthrough generated by new technology, in this case the marriage of biological algorithms and smart software. Skeletal, almost pigeon-toed in its awkwardness, it looks unassuming, but in 2006 its introduction was a design achievement.

Such technological breakthroughs have occurred before: In the 1940s, Charles and Ray Eames's experiments in molded plywood made possible their "potato chip" chair (the DCM), which defined midcentury Modernism and endures today as a classic.

Joris Laarman Lab's Bone Chair is molded from marble and porcelain mixed with resin, and composed using an algorithm that mimics the structure of bird bones. Matt Flynn/Smithsonian Institution

What distinguishes Mr. Laarman and his curious, provocative chairs and tables from the Eameses and other Modernists is that he is operating in the paradigm shift from industrial to digital design, from the mass production of standardized parts and objects to their mass individuation. Computers armed with smart software can manufacture unique pieces instead of churning them out by the thousands. The computer has made individuality and complexity feasible.

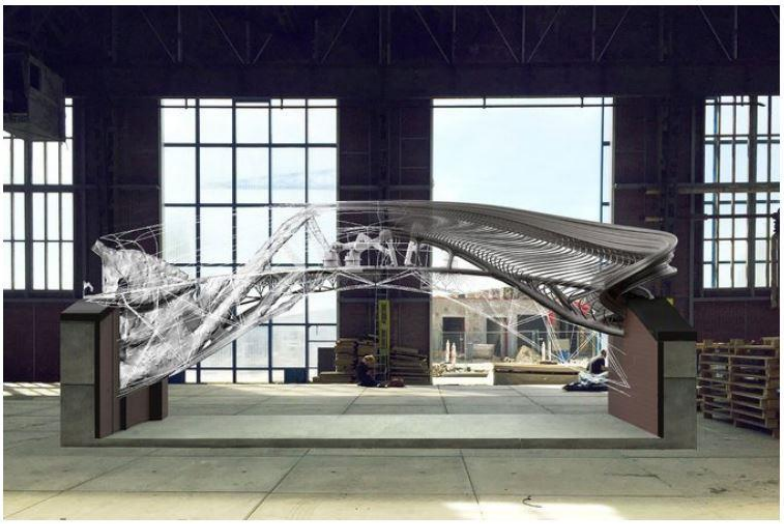
The aluminum chair is part of Mr. Laarman's series of Bone Furniture, which includes a long table and an inviting chaise longue, all with branching legs strengthened where support is needed. Another series was based on a completely different technological premise: A robot assembled three Rococo tables out of tiny cubes, called voxels, that add up to curving shapes, like the dots in a Chuck Close painting but in three dimensions. In a third series, Makerchairs, Mr. Laarman riffed on that Danish icon of fluidity, the famous polyurethane Panton chair, and staged a lineup of a dozen knockoffs built from parts stamped out in different patterns, like a 3-D puzzle. Pick a pattern on the internet and it will be flat-packed and sent to your home for do-it-yourself assembly.

Bone Rocker by Joris Laarman Lab.
Matt Flynn/Smithsonian Institution

Surprisingly, for a show brimming with fresh and intriguing pieces, furniture is not the main point. Like Philip Johnson and Alfred Barr's famous "Machine Art" show of 1934 at MoMA, Mr. Laarman's exhibition highlights the machine. Today, the machine is the computer, endowed by software with transformative technology Mr. Laarman has pushed to extremes. Andrea Lipps, an organizer of the show, explains that the Joris Laarman Lab took digital printing "out of the box" by attaching a nozzle to walking robots. Resin ejected from the nozzle prints up an object in layers. The robots move about freely on a production floor and can produce large-scale objects anywhere, even outdoors.

The Maze Makerchair, constructed from CNC-milled walnut and maple that is then hand-finished. The milling machine is controlled by a computer program that follows a digital blueprint.
Matt Flynn/Smithsonian Institution

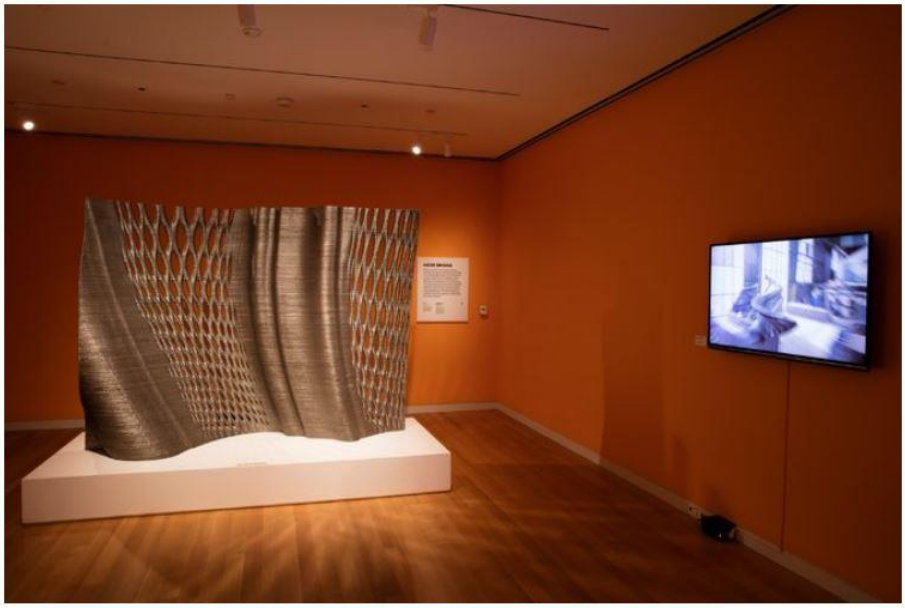
Mr. Laarman's lab started working with robots in 2010 and spun off an associated robotics company, MX3D. His long-armed droid used a fast-curing resin that resists gravity, which allowed the robot to print doubly curved lines in midair, as though drawing lines freehand in space. MX3D's acrobatic handiwork can be seen downstairs at the foot of the dark, oak-paneled staircase in the Carnegie Mansion, where a large, sweeping piece, called Dragon Bench, serves as a teaser for the show. The pillowy, wire-frame structure turns in space like a dragon — created to appear like a topological diagram of continuous curves from a math book. The grace and beauty of the piece masks the advanced technology that enabled it.



A rendering of the MX3D Bridge in the workshop. The bridge is being executed by robotic 3-D printers and will be completed in 2018. It will span an old canal in Amsterdam, connecting the technology of the future with the city's past. Joris Laarman Lab

Designers have predicted that houses one day, perhaps soon, will be digitally printed on-site. In fact, the MX3D robot, having recently graduated from resin to molten metal, is already printing a pedestrian bridge for a canal in Amsterdam, which is projected for completion in 2018. The robotic printer is laying up the welded stainless steel surfaces of the bridge, with the support of an integrated branching truss, in a factory. Had the old, historical embankments been a sturdier construction site, the robot could have welded the bridge over the canal as visualized in the show.

The curving, fluid forms of the bridge suggest a tentative new aesthetic resulting from the marriage of the walking robot to the digital printer. But Mr. Laarman has mainly applied the new technology to reinterpret classics like the Eames chair, vintage Louis-something tables and contemporary pieces like the luxurious Marc Newson chaise longue. Recycling the classics dodges the enticing issue of how extreme technology could generate extreme design. Mr. Laarman's work might eventually lead to a vision if he develops a language from the technology he is courting, but the bridge is the only glimmer of an attempt.
"Joris Laarman Lab: Design in the Digital Age" is not just a show for nerds or design groupies. It is, in its high-tech way, a crafts show. Ironically, the nimble nozzle of the MX3D robot represents a return to the hand and its ability to create detailed, unique objects with worked surfaces. You marvel at the lacy handiwork of the Dragon Bench in the same way you appreciate the Carnegie Mansion's paneled staircase: Each is crafted.



Gradient Screen, 2017, an experimental sculptural work, produced by MX3D and designed by Joris Laarman. The screen was created for the exhibition from the same algorithm used to make the MX3D Bridge. Matt Flynn/Smithsonian Institution

Surprisingly there have been remarkably few exhibitions in New York devoted to the intersection of design and the transformative technology introduced over two decades ago in the 3-D software developed for filmmaking and automotive design. Mr. Laarman, a prominent and inventive member of the expanding digital design tribe, is not alone. The show would seem to welcome visitors to a brave new world.

But it not only represents the world of the future; it is announcing the brave new present.