Fledgling 3-D printing industry finds home in NYC

August 7 2013, by Peter Svensson

In this Wednesday, June 19, 2013 photo, an engineer at Shapeways removes finished products from a 3D Printer at the company's factory in the Queens borough of New York. Shapeways' production process is fairly simple. Anyone can upload a 3-D design to Shapeways website and submit an order to have it "printed" in plastic at the factory. The company charges based on the amount of material a design uses and then ships the final product to the customer. (AP Photo/Mary Altaffer)

It looks like a bakery. A warm glow emanates from the windows of big,

oven-like machines, and a dusting of white powder covers everything.

This space in an anonymous building in New York's Long Island City neighborhood, just across the river from Manhattan, isn't cooking up breads and pastries, however. It's a factory, filled with 3-D printers "baking" items by blasting a fine plastic dust with lasers.

When a production run is done, a cubic foot (0.0283 cubic meters) of white dust comes out of each machine. Packed inside the loose powder like dinosaur bones in sand are hundreds of unique products, from custom iPhone cases to action figures to egg cups.

Manufacturing is coming back to New York, but not in a shape anyone's seen before. The movement to take 3-D printing into the mainstream has found a home in one of the most expensive cities in the U.S.

New York's factories used to build battleships, stitch clothing and refine sugar, but those industries have largely departed. In recent years, manufacturing has been leaving the U.S. altogether. But 3-D printing is a different kind of industry, one that doesn't require large machinery or smokestacks.

"Now technology has caught up, and we're capable of doing manufacturing locally again," says Peter Weijmarshausen, CEO of Shapeways, the company that runs the factory in Long Island City.

Weijmarshausen moved the company here from The Netherlands. Another company that makes 3-D printers, MakerBot, just opened a factory in Brooklyn. And in Brooklyn's Navy Yard, where warships were once built to supply the Arsenal of Democracy, there's a "New Lab," which serves as a collaborative workspace for designers, engineers and 3-D printers.

3-D printers have been around for decades, used by industrial engineers to produce prototypes. In the last few years, the technology has broken out of its old niche to reach tinkerers and early technology adopters. It's the consumerization of 3-D printing that's found a hub in New York. The technology brings manufacturing closer to designers, which New York has in droves.

Shapeways' production process is fairly simple. Anyone can upload a 3-D design to Shapeways' website and submit an order to have it "printed" in plastic at the factory. The company charges based on the amount of material a design uses and then ships the final product to the customer. IPhone cases are popular, but many items are so unique they can only be identified by their designer, such as the replacement dispenser latch for a Panasonic bread maker. There's an active group of designers who are "Bronies"—adult fans of the show "My Little Pony: Friendship is Magic"—who print their own ponies. The company prints in a wider range of materials, including sandstone and ceramic, at its original factory in Eindhoven, the Netherlands.

If that was all Shapeways did, the company would be little more than an outsourced machine shop. But with the help of the Internet, it's taking the business model one step further. Anyone can set up a "shop" on the Shapeways site and let people order prints from their designs. Want a replica skeleton of a Death's-head Hawkmoth? That's $15. How about a full-color sandstone sculpture of actor Keanu Reeves? He's $45.

In this Wednesday, June 19, 2013 photo, an employee of Shapeways works in the shipping area of the company's factory in the Queens borough of New York. Shapeways' production process is fairly simple. Anyone can upload a 3-D design to Shapeways website and submit an order to have it "printed" in plastic at the factory. The company charges based on the amount of material a design uses and then ships the final product to the customer.(AP Photo/Mary Altaffer)

Under the old mass production model, Weijmarshausen says, designers first need to figure out if there's a market for their product, then raise money for production, and then find a manufacturer, who usually has to custom-make dies for molding plastic. The cost can run to tens of thousands of dollars. After that, the designer must get the product distributed and find out how customers react to it.

"With the Shapeways shop, that process is completely condensed," Weijmarshausen says. "If there is no market for your product, then the only thing you lose is some time."

For its part, MakerBot is spearheading another side of the 3-D printing boom by making affordable desktop 3-D printers. About the size of a microwave oven, the printers feed melted plastic out of "print heads" that move in three dimensions, gradually building objects as the plastic cools. Instead of sending a 3-D design to Shapeways, a MakerBot owner can print an object in plastic at home, as long as it's smaller than a loaf of bread. MakerBot's printers range in price from $2,200 to $2,800.

MakerBot's factory is in an old industrial building on Brooklyn's waterfront, across the street from a Costco and a strip club. Only assembly, testing and repair is done here, so the interior looks more like a workshop than a manufacturing plant. Subcontractors elsewhere do the dirty and noisy jobs like machining of components.

The privately held company agreed in June to sell itself to Stratasys Ltd., a maker of professional 3-D printers, for $403 million in stock. Stratasys is based in Minneapolis and Rehovot, Israel, but Bre Pettis, the CEO of MakerBot, says the factory will stay in Brooklyn.

Pettis looks like a Brooklyn hipster, with his thick-rimmed glasses and upswept hairdo. The company got its start in the borough, and he says keeping the factory here is a rational economic decision. Having the engineers nearby means the company can work fast and introduce more than one new model a year, a crucial advantage in the fast-moving 3-D printing space. Pettis also notes that labor costs are going up in Asia's manufacturing hubs. "Brooklyn Pride" is also a factor.

"You can't underestimate the power of people who take pride in their work," he says.

Weijmarshausen moved Shapeways to the U.S. to get closer to its customers. He picked New York over cities such as San Francisco and Boston because of its design and fashion industry, which meshes well

with 3-D printing.

In this Wednesday, June 19, 2013 photo, dice printed from a 3D Printer are seen at the Shapeways factory in the Queens borough of New York. 3-D printers have been around for decades, used by industrial engineers to produce prototypes. In the last few years, the technology has broken out of its old niche to reach tinkerers and early technology adopters. (AP Photo/Mary Altaffer)

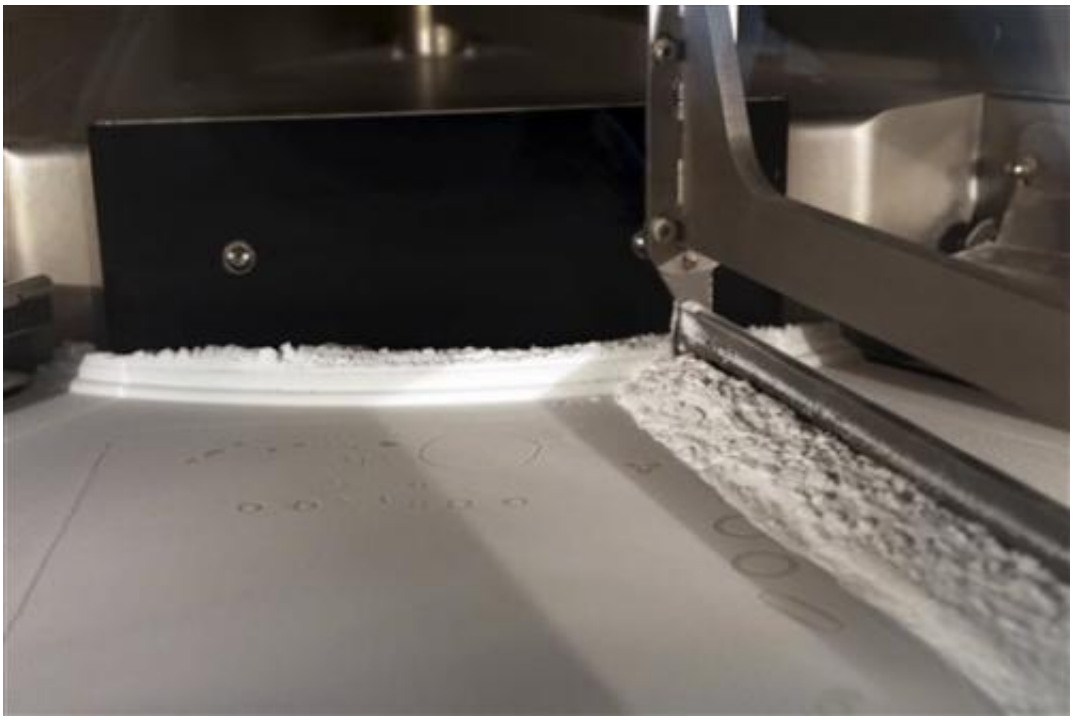
Alas for New York, the consumer 3-D printing industry is still a tiny one, and there's no indication that it could singlehandedly reverse the long, slow flight of manufacturing jobs. Of the 1 million manufacturing jobs the city had at its peak during World War II, 93 percent are now gone, according to the U.S. Bureau of Labor Statistics. The Shapeways factory has 22 employees and plans to ramp up to at least 50, while MakerBot employs 274 people. And the jobs aren't necessarily well paid; Pettis says the MakerBot factory workers make "more than minimum

wage."

But Weijmarshausen points out that Shapeways has the potential to provide a livelihood for many more people—successful designers. There are already hundreds of them making "substantial" money from their online Shapeways stores, but he won't reveal specific figures.

In a larger sense, 3-D printing opens up the possibility of a new type of manufacturing economy, one that aligns more closely with the strengths of American creative meccas like New York than with the strengths of China.

David Belt, a real estate developer whose company is refurbishing the New Lab space in the Brooklyn Navy Yard, says there's a demand for products that are made in runs of less than 10,000 units. That's too few to be economical using conventional injection-molding of plastic, but viable with 3-D printing.



In this Wednesday, June 19, 2013 photo, a Formiga P 110 3D Printer molds objects at the Shapeways factory in the Queens borough of New York. 3-D printers have been around for decades, used by industrial engineers to produce prototypes. In the last few years, the technology has broken out of its old niche to reach tinkerers and early technology adopters. (AP Photo/Mary Altaffer)

One example of the combined power of 3-D printing and direct-to-consumer sales is the Spuni, a new type of spoon for babies. Boston couple Isabel and Trevor Hardy noticed that a baby taking a bite from a regular baby spoon leaves a lot of food on the utensil. Together with their friend Marcel Botha, an entrepreneur who makes medical devices, they sketched up a new spoon that "front-loads" the food, leaving less uneaten. Thanks to a 3-D printer, they had a prototype utensil eight days later, ready to test with a live baby.

"We were able to reproduce what the final spoon would look like physically at a very low cost," Botha says.

With the prototype, Botha and his partners were able to demonstrate the Spuni to buyers through a video on crowdfunding website Indiegogo. Their campaign for donations raised $37,235—enough to start a mass production run. The spoons are being made in a traditional factory in Germany, but Botha is running the Spuni project from the New Lab in Brooklyn.