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Disruptions: On the Fast Track to Routine 3-D Printing

By NICK BILTON

Will the future be printed in 3-D?

At first glance, looking at past predictions about the future of technology, prognosticators got a whole lot wrong. The Web is a garbage dump of inaccurate guesses about the year 2000, 2010 and beyond. Flying cars, robotic maids and jet packs still are nowhere near a reality.

Yet the prediction that 3-D printers will become a part of our daily lives is happening much sooner than anyone anticipated. These printers can produce objects, even rather intricate ones, by printing thin layer after layer of plastic, metal, ceramics or other materials. And the products they make can be highly customized.
Last week, President Obama cited this nascent technology during his State of the Union address — as if everyone already knew what the technology was.

He expressed hope that it was a way to rejuvenate American manufacturing. “A once-shuttered warehouse is now a state-of-the art lab where new workers are mastering the 3-D printing that has the potential to revolutionize the way we make almost everything,” Mr. Obama said. He has pushed new technologies before, like solar and wind power, as remedies for our nation’s problems, and those attempts have only revived the debate about the limitations of government industrial policy.

But this one shows more promise. The question is, can the United States get a foothold in manufacturing one 3-D printer at a time?

Hod Lipson, an associate professor and the director of the Creative Machines Lab at Cornell, said “3-D printing is worming its way into almost every industry, from entertainment, to food, to bio- and medical-applications.”

It won’t necessarily directly create manufacturing jobs, except perhaps for the printers themselves. Dr. Lipson, the co-author of “Fabricated: The New World of 3D Printing,” said that the technology “is not going to simply replace existing manufacturing anytime soon.” But he said he believed that it would give rise to new businesses. “The bigger opportunity in the U.S. is that it opens and creates new business models that are based on this idea of customization.”

In addition to the lab that the president mentioned, a federally financed manufacturing innovation institute in Youngstown, Ohio, schools are embracing the technology. The University of Virginia has been working to introduce 3-D printers into some programs from kindergarten through 12th grade in Charlottesville to prepare students for a new future in manufacturing.

“We have 3-D printers in classrooms, and in one example, we’re teaching kids how to design and print catapults that they then analyze for efficiency,” said Glen L. Bull, professor and co-director of the Center for Technology and Teacher Education. “We believe that every school in America could have a 3-D printer in the classroom in the next few years.”

The education system may want to speed things up. The time between predictions for 3-D printers and the reality of what they can accomplish is compressing rapidly.

For example, in 2010, researchers at the University of Southern California said that another decade would pass before we could build a home using a 3-D printer. Yet last week, Softkill Design, a London architecture collective, announced that it planned to make the first such home — which it will assemble in a single day — later this year. The home isn’t that pretty, and will look more like a calcified spider web than a cozy house, but it will
show it can be done. The price of 3-D printers has also dropped sharply over the last two years, with machines that once cost $20,000, now at $1,000 or less. That’s partly because Chinese companies are driving down prices. Yes, China sees the opportunity in these things, even though the technology may undermine some of its manufacturing advantages.

“When it costs you the same amount of manufacturing effort to make advanced robotic parts as it does to manufacture a paperweight, that really changes things in a profound way,” Dr. Lipson said.

This leaves us with one more question about the future: When will these 3-D printers be able to make us flying cars, robotic maids and jet packs?

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