Professor Lipson talks 3DP analogies, cookies

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We spoke with Professor Hod Lipson of Cornell University, co-author of “Fabricated: The New World of 3D Printing,” regarding his favorite current and potential uses of 3D printing. The conversation evolved to determine that we are in 1981. Before you turn on your radio in hopes of hearing “Morning Train (9 to 5),” many have compared 3D printing to have the potential to proliferate like computers have. There have been interesting similarities and Professor Lipson gave a fun prediction as to where we will be 10 years from now:

**Lipson:** The more I get into this technology, the more difficult it becomes to predict, mainly because there are so many possibilities. I think it is a little bit like doing this interview in the 70s, trying to predict how computers are going to change our lives. Of course, in the 70s we could have predicted that computers would be used for payroll and military calculations, but nobody could predict the wave of social networking and so-forth. It is really difficult to predict new business models, opportunities and things that we can’t imagine today.

Believable and fantastically well done visual illustration that 3D Printing might follow the same path of computing.

**Y-Axis:** What application of 3DP have you seen so far that has excited you the most?
Lipson: At the consumer level, there are a lot of new applications. I see new ones every day. The number of start-ups is just staggering. From 3D Printing to customized fashion, the applications are just too numerous to list. If I had to choose one, I am excited about the ‘scale up from one.’ People are working and have a day job, and the ability to start a business making and producing a physical project, without leaving their job... They may sell one a week, two a week, and gradually build up production, until the business takes off. That was never possible before. Before if you wanted to make something, you would have to make a huge investment, and it would take a lot of time before you saw your first production run, and that is changing.

Y-Axis: What potential applications are you most excited about?

Lipson: We keep stumbling on new applications. There are three we have come across in the lab. One of them is bio-printing, which is still not something people can do at home, but it takes the idea of printing with life cells. That has applications from surgical training and planning to making a real-life implant. I think it will be an important part of any medical achievement in the future. You could imagine yourself scanned in an MRI scan of all of your data while you are healthy, so that when you need a replacement bone or cartilage, they could replicate it for you. I think that will be increasingly possible.

One of the biggest applications people, especially kids, get immediately attracted to is food printing. Printing with chocolate, peanut butter, cookie dough, frosting, pesto, cheese, etc. If I had to place a bet as to what kind of printers people would have in their home; not everyone wants a printer for printing plastic at their home, but I think there would be a huge market for printing food.
**Y-Axis**: It would make me better in the kitchen, that’s for sure.

**Lipson**: It connects programming and cooking for the first time. Up until now these two areas were pretty much independent. I am very excited about printing not just passive parts, but electronics, motors, batteries, and active parts. The technology up until now has focused mostly on printing passive parts. When you print with multiple materials, the things you can make rise exponentially.

**Y-Axis**: What mile marker would you use to know when 3D Printers have invaded every part of our lives?

**Lipson**: Using computers as an analogy—today’s 3D printer kits, the equivalent back in 1975 was when the first computer kits were around. Makerbot, the first commercial consumer level printers, were equivalent to the early commercial computers in 1982, more or less. We haven’t yet seen the IBM PC equivalent, which is the consumer 3D printing platform that has become a standard platform. Right now, all of the printers are different. They have their own operating systems, own software. That’s where we are.

Now, early 1990s, let’s say 1995. So that’s 10 years from now. So I think many businesses 10 years from now will have a 3D printer, and more than half the homes will have a 3D printer 20 years from now.
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