Disrupting Barriers: Printing in Three Dimensions

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What is 3D Printing?
Nearly unlimited geometry
Various processes and levels of fidelity
Some approach existing methods
Hype vs. Reality
3-D Printing Will Be a Manufacturing Engine for the Economy

Dan Hamermesh prof of Economics U of Texas

No rival for mass production

Nick Allen, Founder 3-D printing

With 3-D Printers Comes the Possibility of Medical Miracles

Mick Ebeling is the founder of Not Impossible Labs.

Space Travel Will Be Easier and Less Costly With 3-D Printers

Alison Nordt, an engineer at Lockheed Martin’s Space Technology Advanced R&D
Hype vs. Reality
3D Printing will impact the “tinkerer”

• Complex shape creation in your own home

• Building with materials that would otherwise be difficult to work with

• Customization to specific needs
Community resources can further expand what a person can create.
What can you replace at your home?

• How many parts in your home are a single material?

• How much does it cost?

• How easy can you run out to the store and buy a new one?
In product development...

- Immediate production (2 months to 2 days)
- Lower materials and labor cost for prototyping
- Overall reduction in product development cycle time.
Could this completely replace full production?
Scale
Low volume – direct replacement

• Mass customization of products
• Processes which rely on unique tooling are most susceptible

+ Offsite / remote fabrication

+ Storage & transport is reduced – components can be made on site
Scale
High Volume – Some* replacement

• Replacement & repair components

• Simple consumables

• Upgrades and new features
Buying replacement parts could be replaced by:

• Finding a model of your part on a computer:
  • Either make your own, or download one (IP!)
• Upload to your 3D printer
• Print your part
• Install or replace your part

• This assumes that:
  • Your 3D printer works, your material can be a good substitute, and you have the time to wait for your part to build vs. ordering/buying.
Recurring revenue

- Replacement repair parts
- Simple consumables
- Upgrades and new features
Reality of design & engineering
3D Printing can:

• Encourage young people to enter the fields of manufacturing & engineering
• Drive innovation & lower prototyping costs
• Shorten lead times in the product development process
• Replace certain low-volume production methods