RepRap: The 3D printer that prints itself

Completely open-source

RepRap Version 1.0 “Darwin” to be released in 2008

Cost of materials: about US$400

Specification:

Working volume: adjustable, but nominally a 300 mm cube
Working materials: polycaprolactone and a filler/support
Configuration: 3-axis Cartesian drive using stepper motors
Line and space: 0.5mm and about 0.2mm
Feature size: about 2mm
Positioning accuracy: 0.1 mm
Layer thickness: adjustable, but nominally 0.5mm
Computer interface: RS232 (or USB -> RS232) at 19200 baud
Material handling: Two fixed material deposition extruders, user exchangeable
Power supply needed: 8A max, 3A continuous at 12V DC
Driving computer and operating system needed: Microsoft Windows, Linux, Unix, or Mac.

http://reprap.org

The Replicating Rapid Prototyper

Look at your PC setup. Imagine that you could hook up a 3D printer to it. Instead of just printing out bits of paper this 3D printer makes real physical objects, given a description of what the objects are shaped like. You could make lots of useful stuff, but interestingly you could also make most of the parts to make another 3D printer. You would have a machine that could copy itself.

One of the first RepRap Machines. The rule at the front for scale is 300mm long. All the white parts are rapid prototyped.

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Does it work? Left is a RepRap polymer extruder (the bit that prints the plastic) made in a commercial rapid prototyping machine. Right is an extruder made by the one on the left. It's starting to extrude for itself.