⬤RepRap

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.**
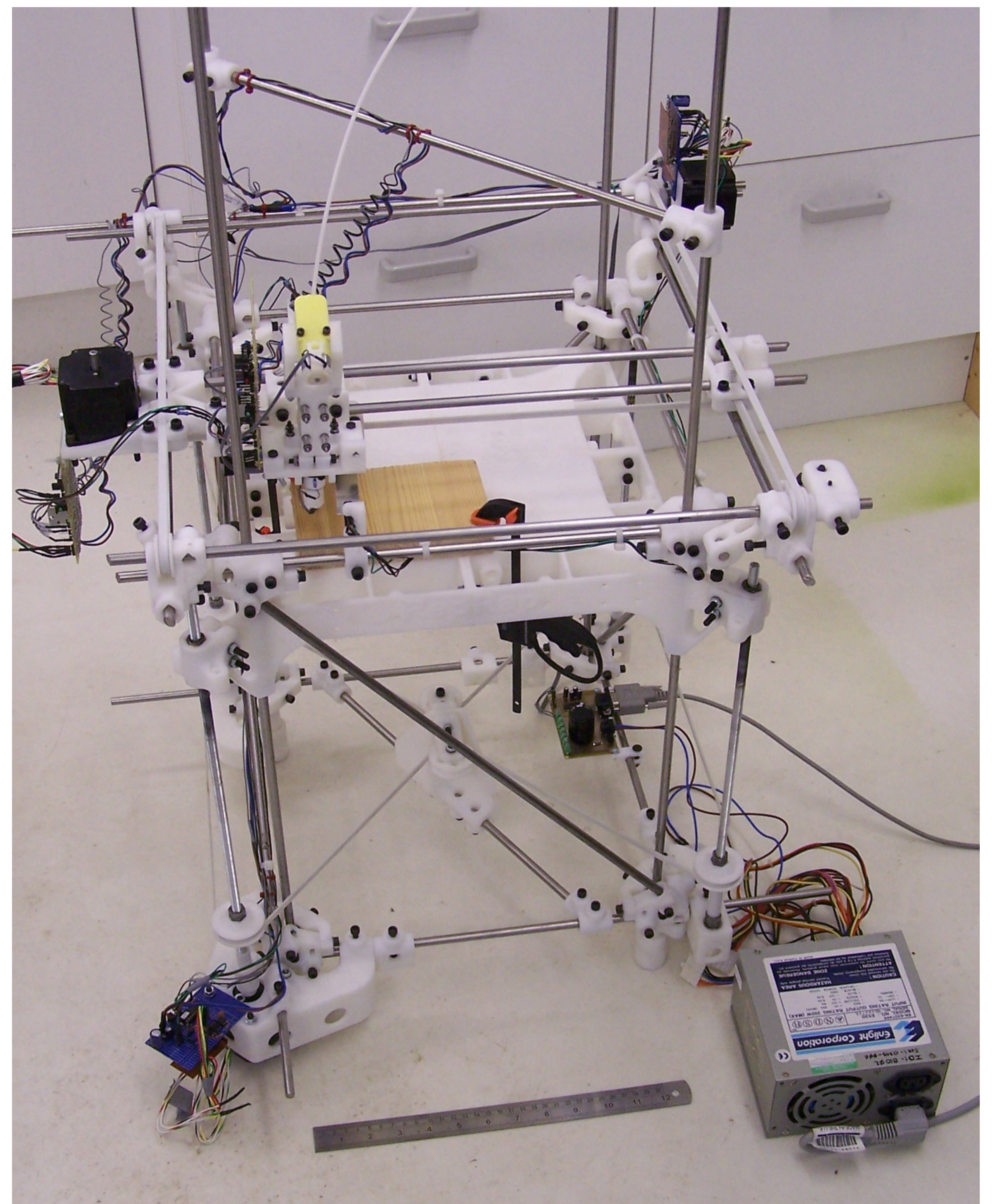
One of the first RepRap Machines. The rule at the front for scale is 300mm long. All the white parts are rapid prototyped.
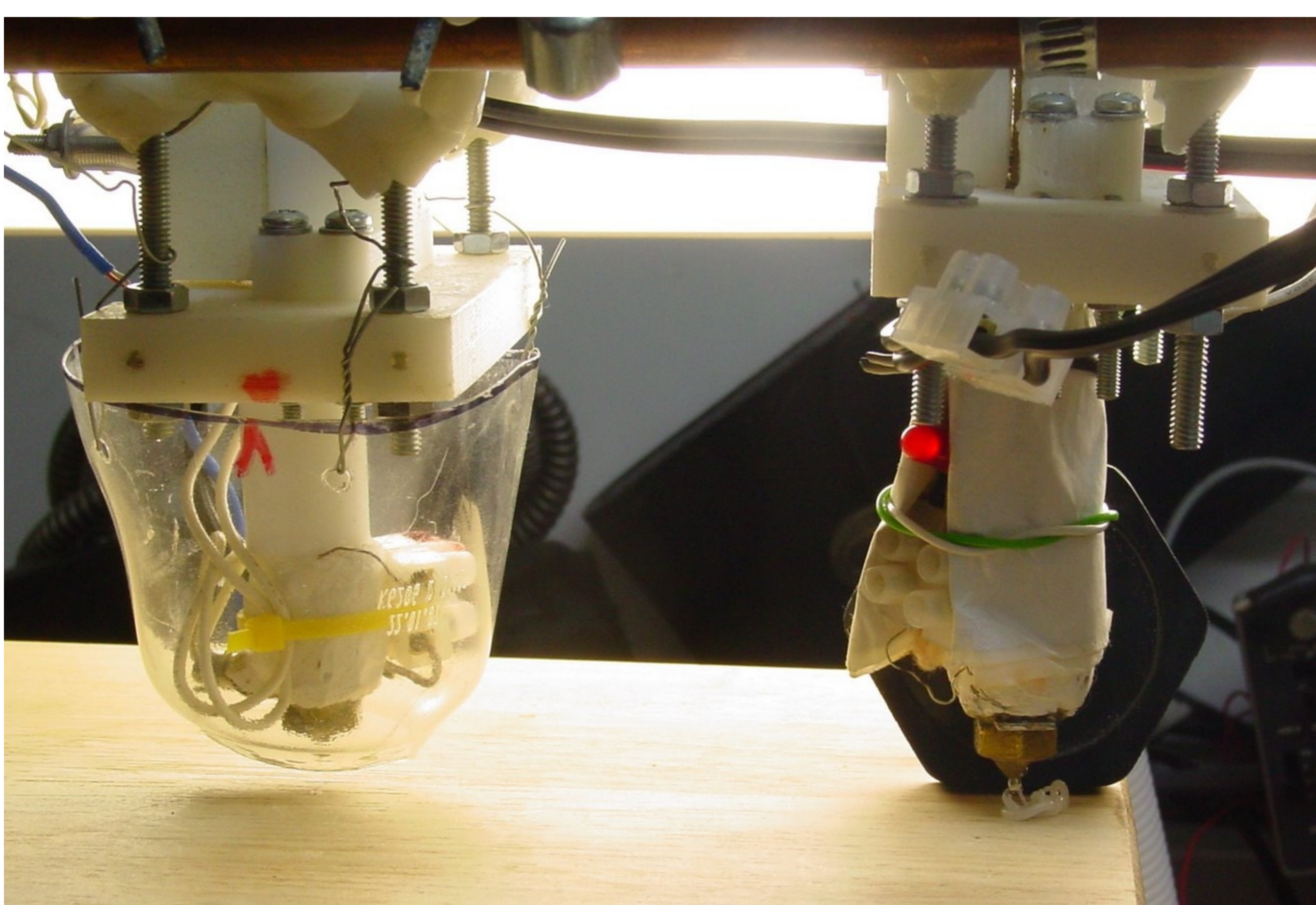
Does it work? Left is a RepRap polymer extruder (the bit that prints the plastic) made in a commercial rapid prototyping machine. Right is an extruder made by the one on the left. It's starting to extrude for itself.

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.