3D Printers

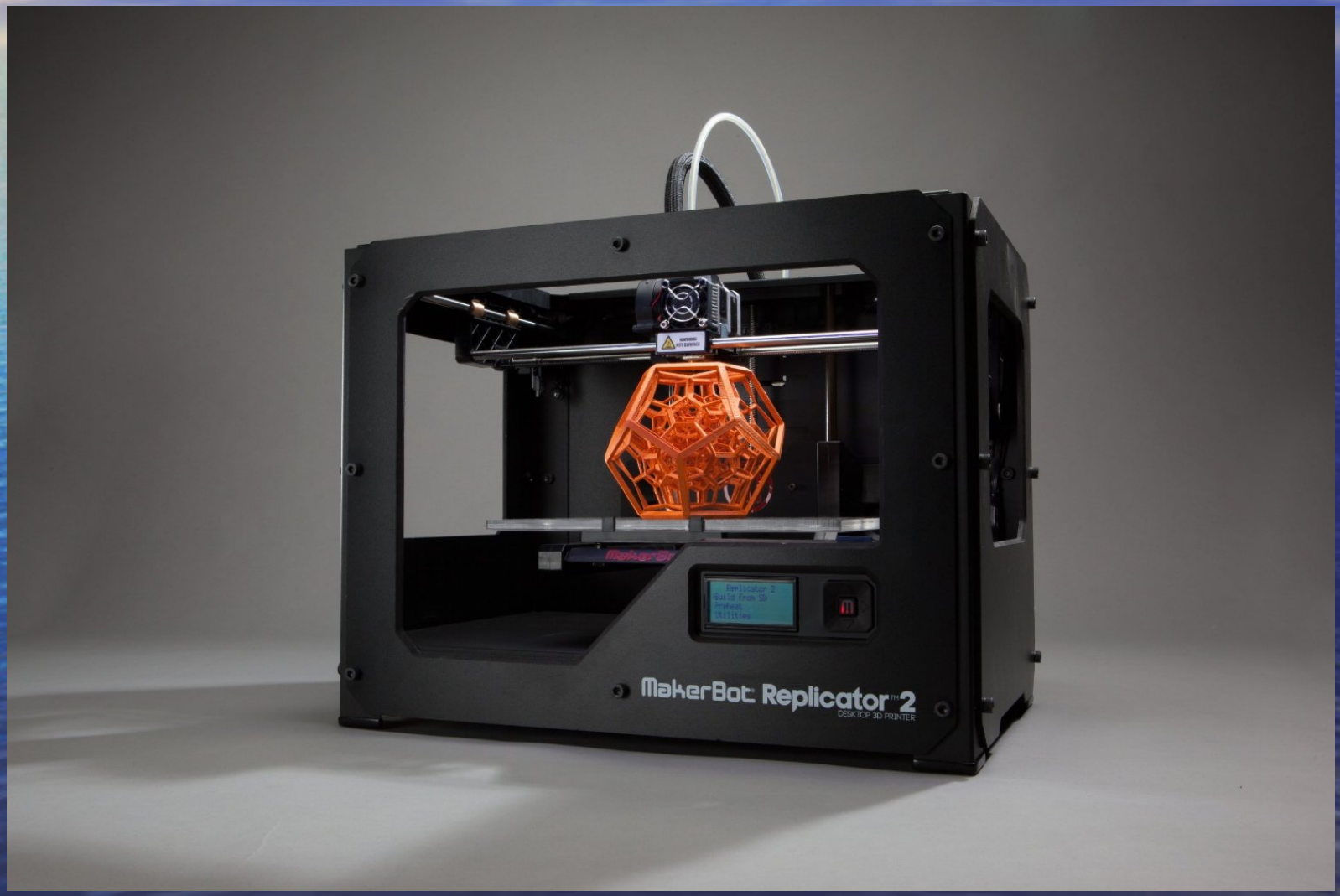
What are they and what are they good for?

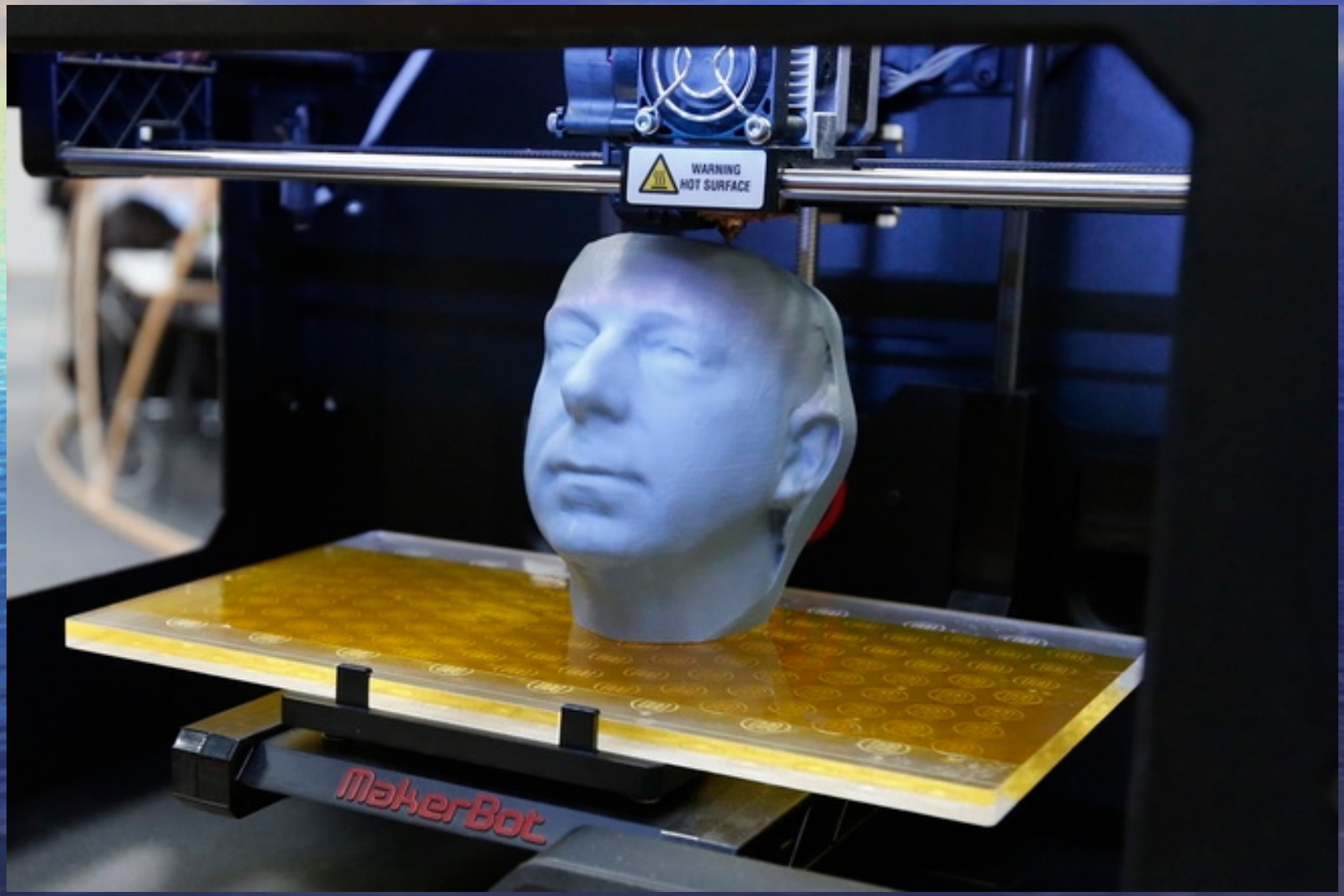
Presented to Enlighten – Kitsap Community Forum
By Stan Stumbo
May 12, 2017

3D Printers are part of Additive Manufacturing

- Conventional manufacturing takes a piece of material and carves away stock to fashion the part desired.
- Additive Manufacturing is any of various processes for making a three-dimensional object of almost any shape from a 3D model or other electronic data source primarily through additive processes in which successive layers of material are laid down under computer control.

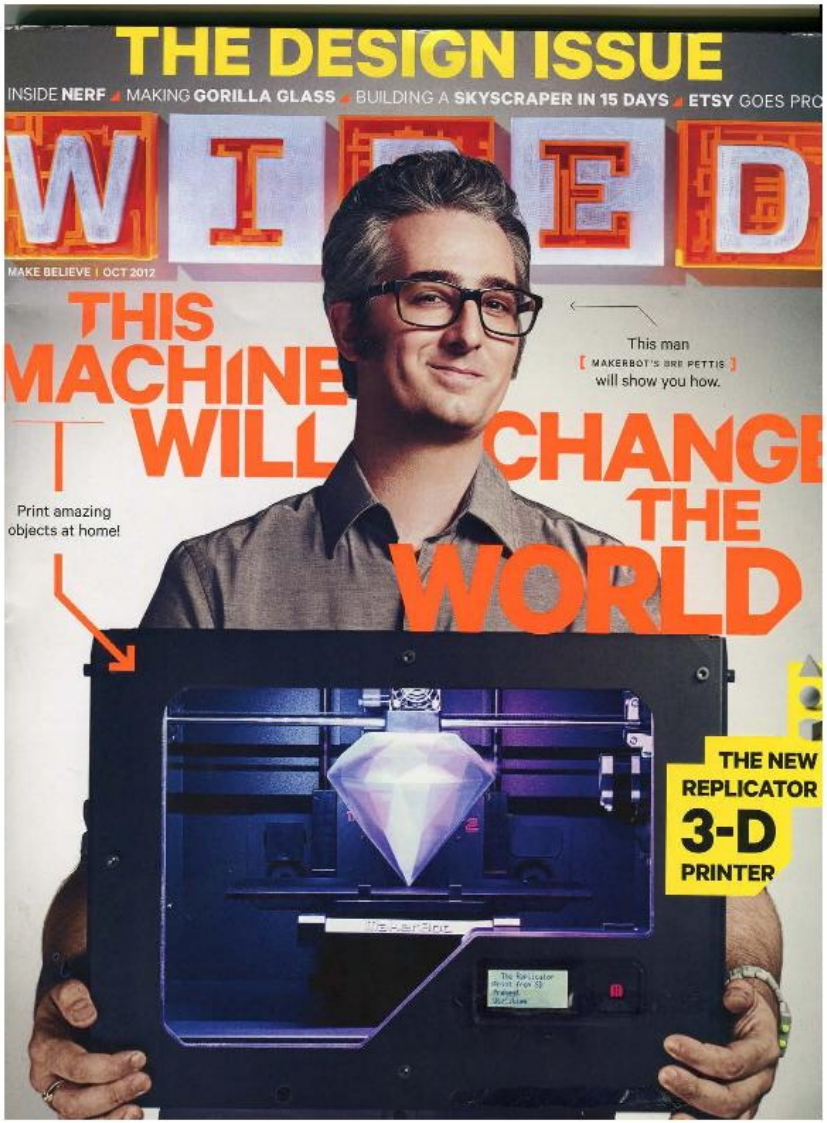
Makerbot 2 3D Printer




WARNING
HOT SURFACE
MakerBot

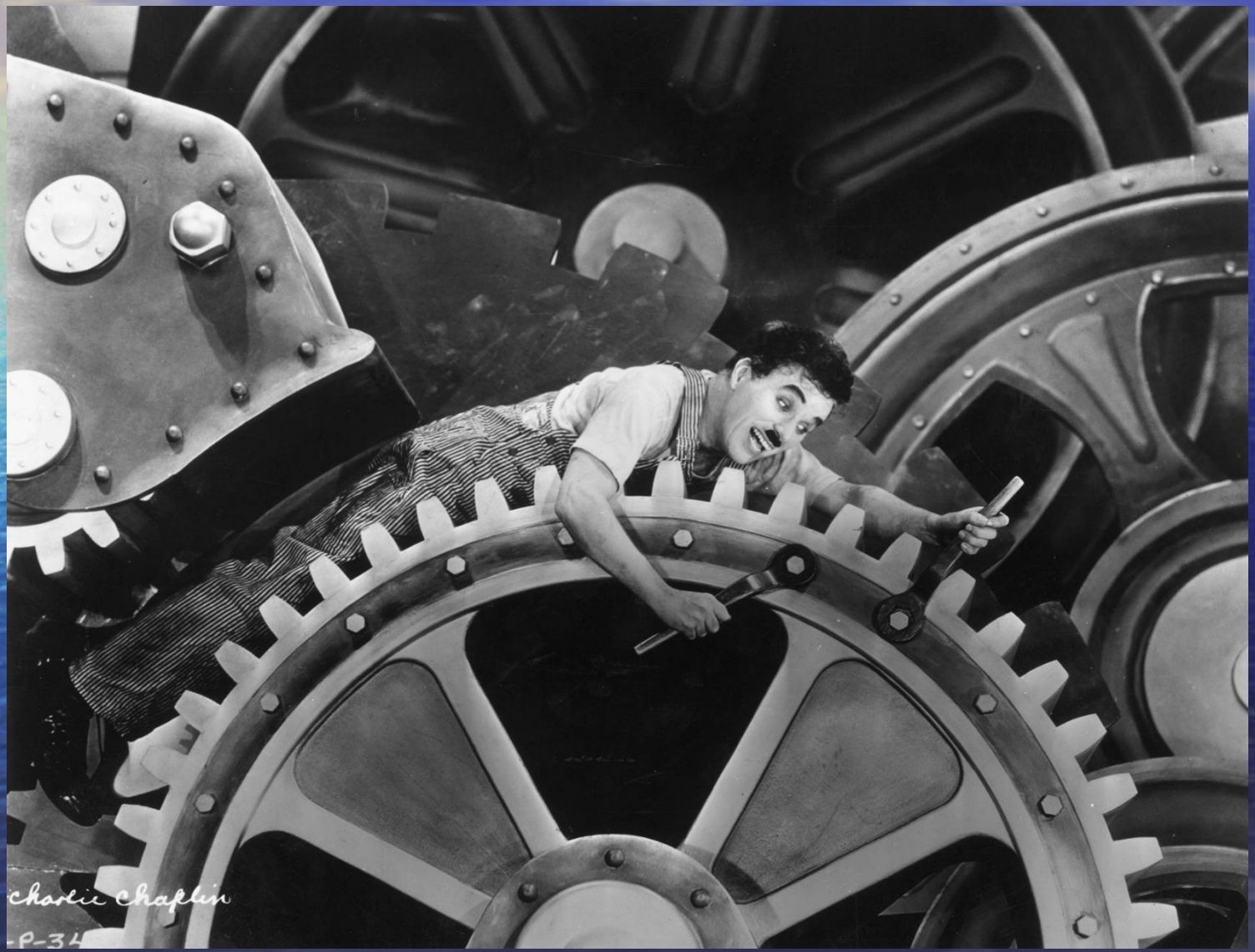
How did I get started with this stuff?

1200
E.X.SCHMID PUZZLE
PUZZLE
FINISH


THE DESIGN ISSUE
INSIDE NERF ◢ MAKING GORILLA GLASS ◢ BUILDING A SKYSCRAPER IN 15 DAYS ◢ ETSY GOES PRO
WIRED
MAKE BELIEVE | OCT 2012
THIS MACHINE WILL CHANGE THE WORLD
This man [MAKERBOT'S BRE PETTIS] will show you how.
Print amazing objects at home!
THE NEW REPLICATOR 3-D PRINTER

Extruder Assembly

Charlie Chaplin in the Factory



OK, what can you do with a 3D Printer?

- Doodads & Geegaws
- Useful stuff
- Online databases of design files

Orchid scanned by Smithsonian

3D Laser Scanner

- Combined with a 3D Printer, creates a “3D Xerox Machine”

Makerbot Scanner

And what can you use that for?

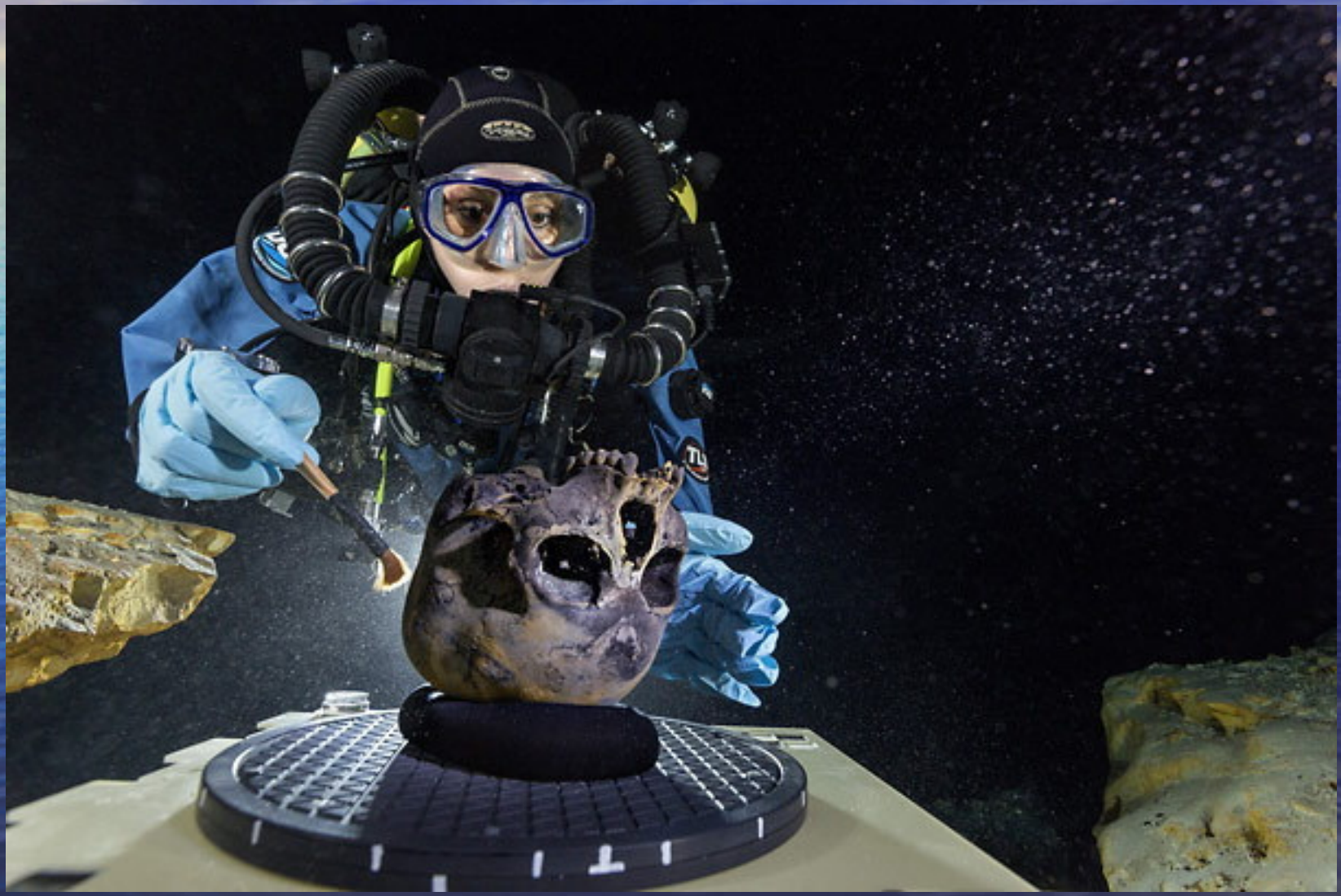
Fixing the picnic table

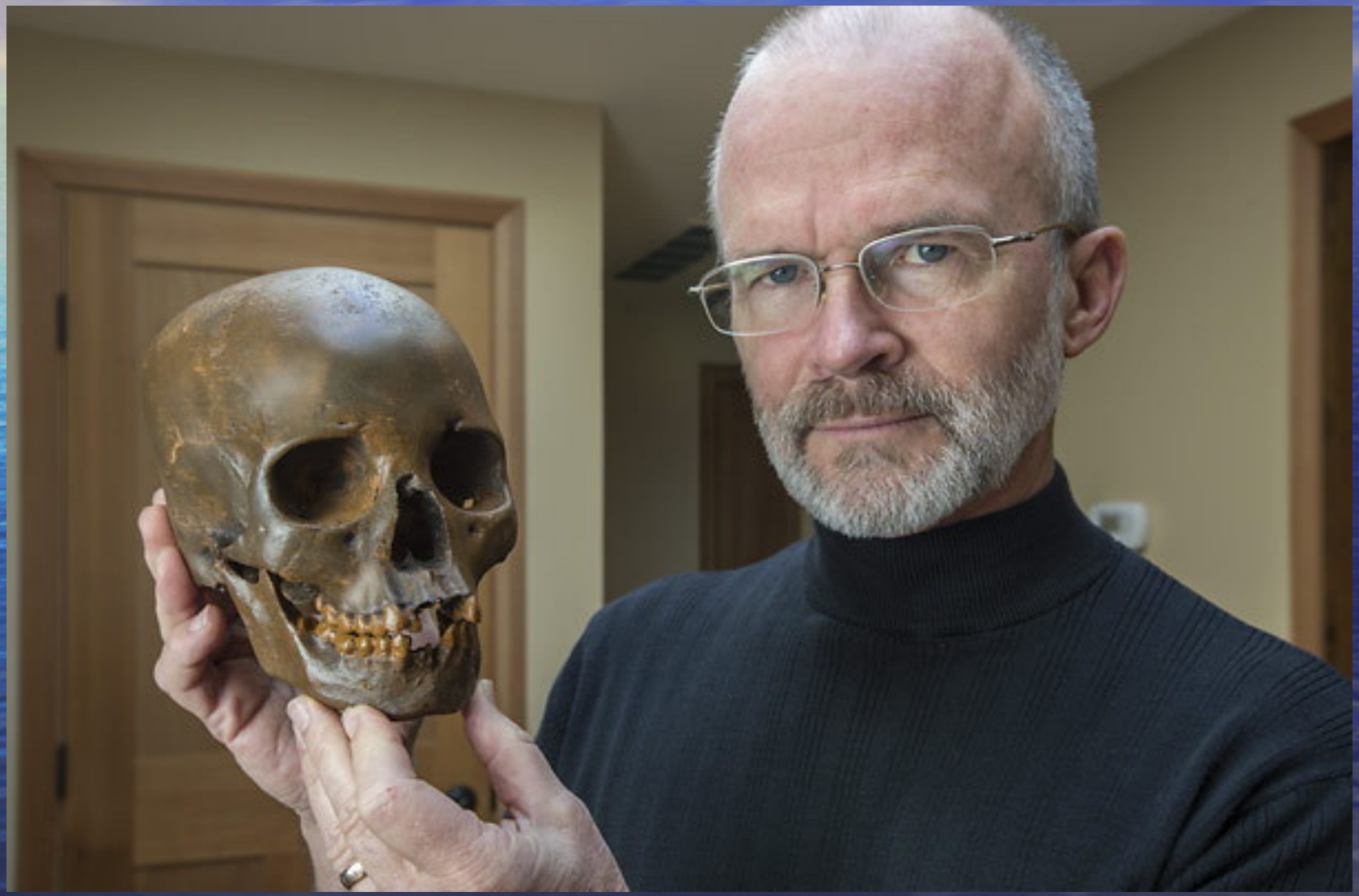
New Table Bracket!!

Holster for the Hair Dryer

How about SERIOUS work with 3D scanners and printers?

Archeologists in underwater sinkhole cave, Guatemala





“Lucy” Discovered in 1974 in Etheopia

40 % of Lucy's Skeleton

Printed Turbine Blades

- Sonic speeds at blade tips
- 1400 deg. F

3D Printed House – 400 sq. ft.

apis cor

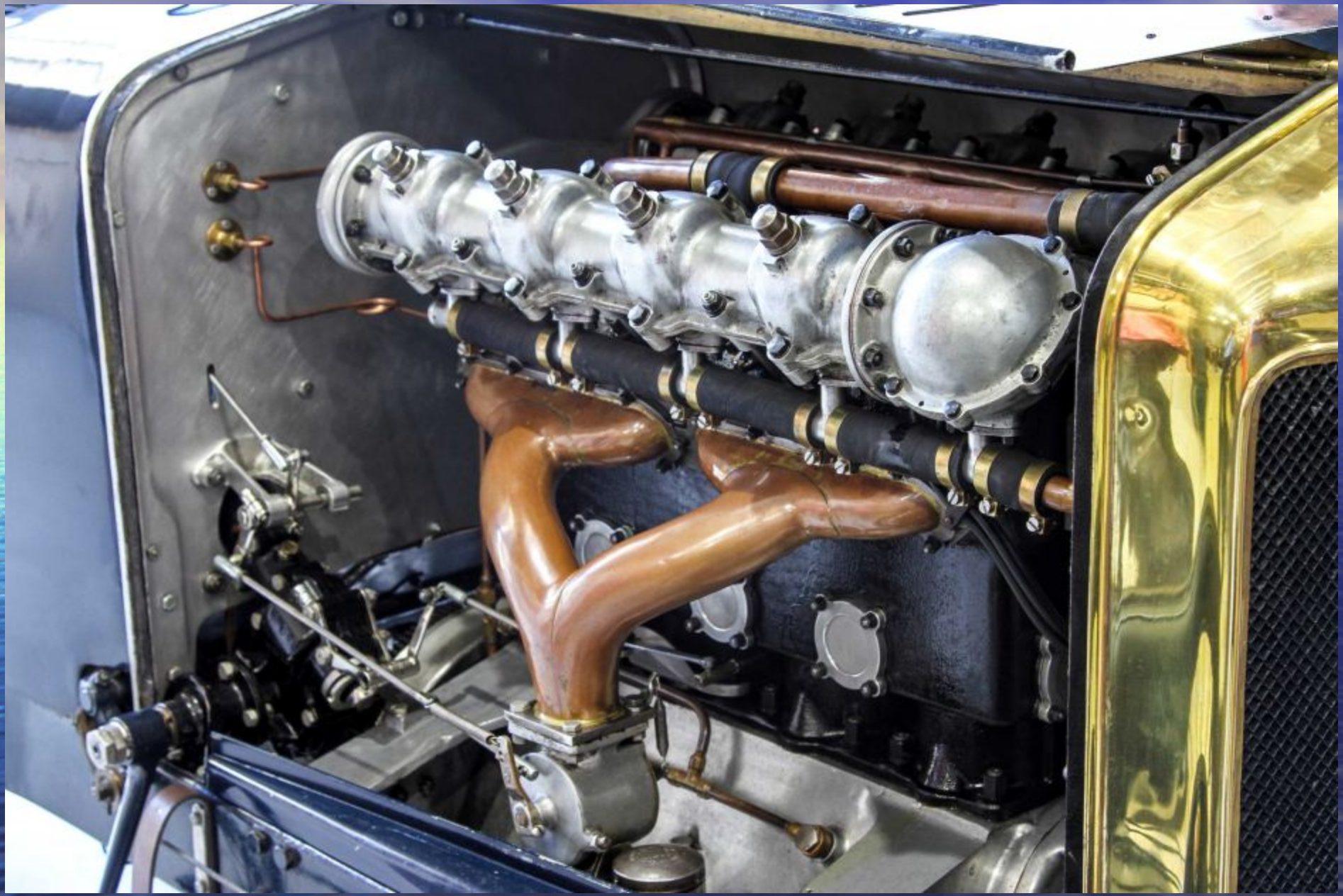
Better Visualization
Fossil Dolphin Skull, Panama

Jay Leno, the early 3D printing pioneer

Rolls Royce Hood Ornament

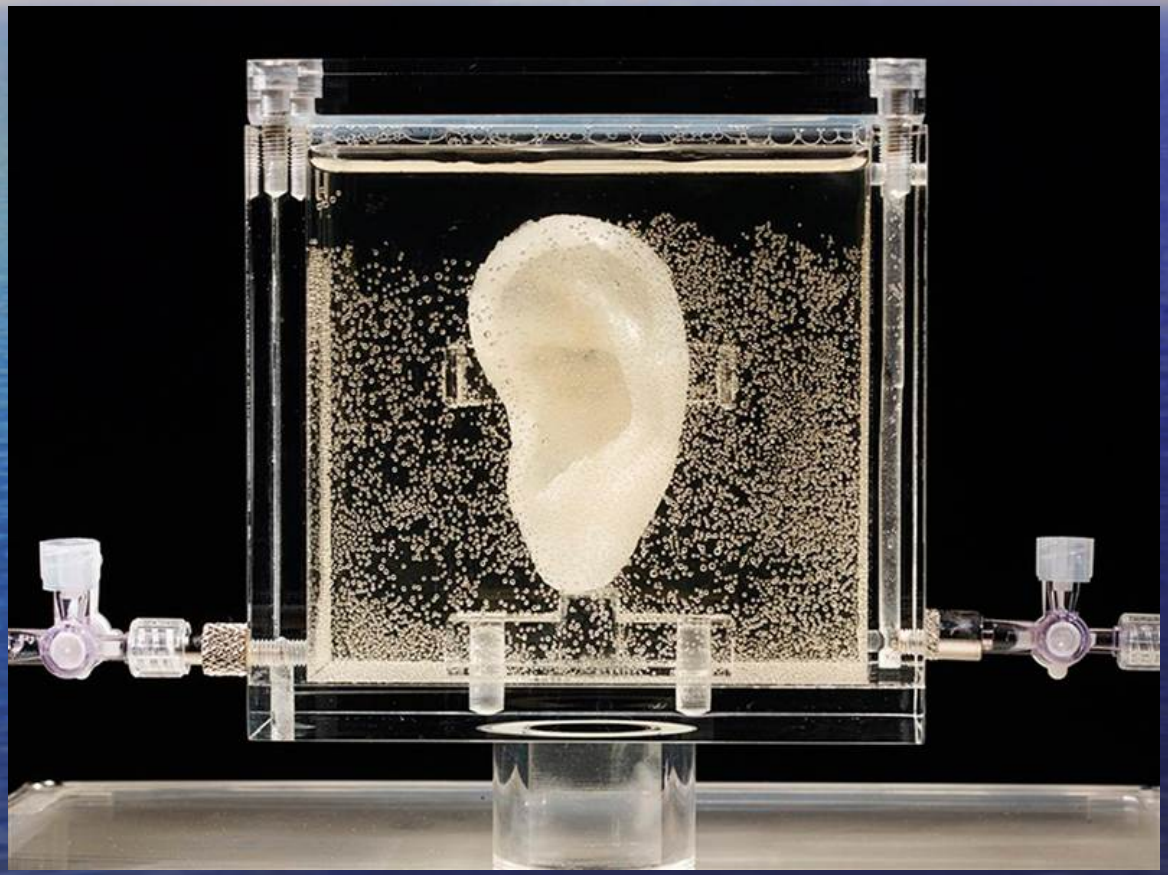
LIMONADE ROBERT

vaxeljet VCL 1400
vaxeljet VUP 1000



Prosthetics

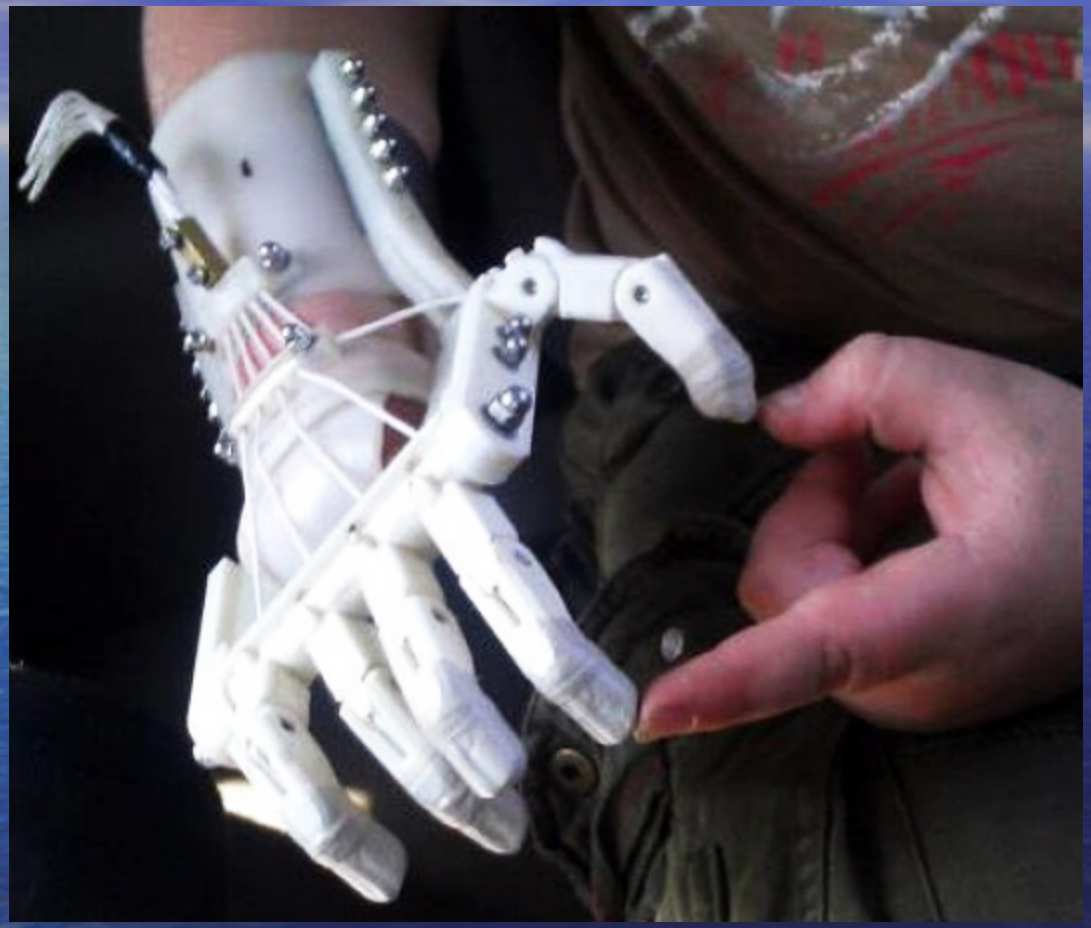
Printed Ear Matrix



Conventional Prosthetic Limbs

- Very expensive - $30,000 and up
- Extensive fitting required
- New prosthetic required for growth or physical changes – another $30K.

$50 Prosthetic Hand



Prothsetic Fingers

Guitar picks built into the fingers

VISITOR PASS

limbU
65%
25°
21°
TODAY
1093
1.84 km
limbU

Where is all this going?

SpaceX's 3D Printer for the International Space Station

Sending a 3D printer to the ISS

Don’t carry spare parts, print them as needed:

- Hawthorne-based SpaceX carried the first 3-D printer into space, where NASA hopes astronauts will one day be able to print replacement parts on long-distance missions.
- “[W]e could go from having a part designed on the ground to printed in orbit within an hour to two from start to finish,” NASA’s 3-D printing project manager Niki Werkheiser said in a statement. “The on-demand capability can revolutionize the constrained supply chain model we are limited to today and will be critical for exploration missions.”

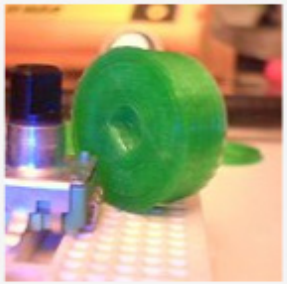
3D Printed Cast

Online Designs to Download: Thingiverse

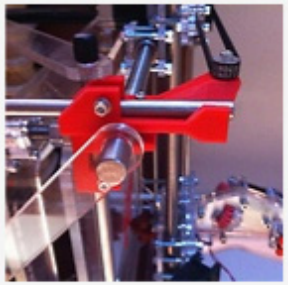
Who's Making What?

View More Made Things

Golf ball
Made by Tertzoid
18 minutes ago



knob for rotary encoder
Made by meirm
23 minutes ago



RapMan 3.x Corner Set
Made by Peerlinck
1 hour ago

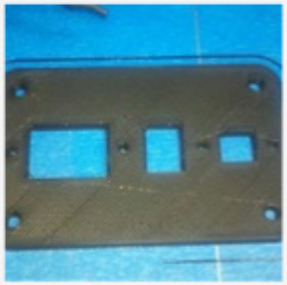
Grubbed Z gear for Rapman
Made by Peerlinck
1 hour ago

Ball of Stars - Math Art by Dizingof
Made by Raygduncan
3 hours ago

Newest Derivatives

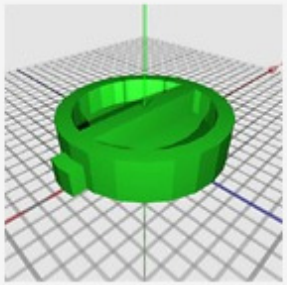
View More Derivatives

MendelMax Power Panel for a Smaller Switch
Created by BenitoSanduchi
1 hour ago

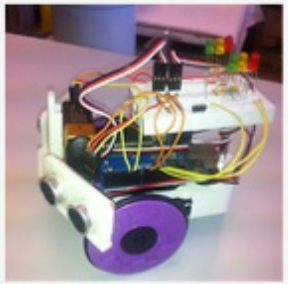


Mendelmax Power and USB Panel
Created by DarkStar2k
3 hours ago

Bottle Name Tag with Logo
Created by daniel
8 hours ago



Pig for coins - Plug
Created by jspauld
22 hours ago



RPMBot
Created by ra_ules
1 day ago

Early predictions are often very shortsighted --

"I think there is a world market for maybe five computers."

Thomas Watson, Chairman of IBM, 1943

Thank you.

- Questions?