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7 Things about 3D Printing and the MakerBot Replicator 2

1 - What is it?

The MakerBot Replicator 2 is a desktop 3D printer that turns 2 dimensional computer designs into 3 dimensional models. With this printer digitally constructed ideas can be built, layer by layer, in plastic.

2 - How does it Work?

The MakerBot 3D printer uses information from design software in a 2 dimensional medium (Computer Screen) to build 3 dimensional models. Layer by layer the printer places renewable bioplastic (PLA)[1] to construct the object.

3 - Who's Doing it?

The MakerBot 3D printer was invented by MakerBot industries in Brooklyn, New York and makes up a small piece of a worldwide 3D printing trend.[2] The 3D printing market is rapidly growing as more uses for the technology are being discovered and implemented. Between 2011 and 2012 the

[1] https://www.makerbot.com/retail-store/filament/
[2] https://www.makerbot.com/support/

market had grown by 29% and was worth $2.2 billion dollars.[3] This new technology is hybridising with old design and manufacturing techniques in nearly every field.[4]

4 - Why is it Significant?

3D printing is emerging as a highly adaptable technology across many fields spanning from fashion[5] to aerospace[6] and biomedical.[7] The ability to print complex objects quickly allows for efficient creativity and rapid prototyping. The possibilities increase as new 3D printers are capable of building in a wide variety of materials from metal jet components[8] to biological frameworks.[9]

5 - What are the downsides?

3D printing is currently limited by price, size, and ease of use. The least expensive Makerbot 3D printer cost around $2000[10] and increases from there. Parts built by the machine can be assembled into a large variety of structures but the individual parts are limited in scale by the size of machine printing them. The actual use of the 3D printer is relatively straight forward but creating the parts requires knowledge of certain design software like Rhinoceros.[11]

6 - Where is this technology going?

The price of 3D printers has been dropping over the years making it more accessible to consumers.[12] With online sources of pre-made models from sites like Thingiverse[13] the ability to create custom 3D plastic objects is being placed in the hands of individuals. On a larger scale

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[3] http://www.economist.com/news/technology-quarterly/21584447-digital-manufacturing-there-lot-hype-around-3d-printing-it-fast
[4] http://www.economist.com/news/technology-quarterly/21584447-digital-manufacturing-there-lot-hype-around-3d-printing-it-fast
[5] http://www.resins-online.com/blog/3d-printed-clothing/
[6] http://www.economist.com/news/technology-quarterly/21584447-digital-manufacturing-there-lot-hype-around-3d-printing-it-fast
[7] http://www.theengineer.co.uk/in-depth/analysis/building-body-parts-with-3d-printing/1002542.article
[8] http://www.economist.com/news/technology-quarterly/21584447-digital-manufacturing-there-lot-hype-around-3d-printing-it-fast
[9] http://www.bbc.com/news/technology-18677627
[10] http://store.makerbot.com/replicator
[11] http://www.rhino3d.com/
[12] http://www.economist.com/news/technology-quarterly/21584447-digital-manufacturing-there-lot-hype-around-3d-printing-it-fast
[13] http://www.thingiverse.com/

advances in precision and complexity are leading to the formation of many new technologies like synthetic organ construction[14] and nanoprinting.[15]

7 - What are the implications for higher education?

3D printers like the MakerBot 3D found in the Technology Showcase allow students and teachers to prototype and create their own inventions as well as have access to innumerable pre made online models. Whether its a piece for an engineering project, a detailed chromosome for biology class, a fossil replica for geology/paleontology[16], or a copy of an artist's sculpture 3D printing technology is an incredible educational tool.

[14] http://3dprinthq.com/bioprinting-creating-human-organs-using-3d-printing/
[15] http://3dprinthq.com/3d-micro-and-nano-structure-printing/
[16] http://www.livescience.com/40994-3d-printing-fossils-geology.html