

Why 3d printing is more than just a new way to make toys

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When the process of 3D printing became known to the majority of the public in the past year or so, many people saw it as simply a new way to create colorful toys and decorations. Images of 3D printed geometric shapes flooded the media, leading readers to surmise that 3D printing, however cool it was, could really only be used to create petty playthings.

3D printing has actually been around since 1983, when Charles Hall discovered that he could turn his computer designs of table coverings into fully-functioning prototypes by shining UV rays onto fluids made of photopolymers. Since then, 3D printing has been refined constantly by scientists and manufacturers across the world, and people in many different fields are considering using 3D printing in the future. Not only have artists and fashion designers been able to create more intricate and eye-catching items with 3D printing due to its availability and easiness to use, but also medical researchers claim that 3D printing can truly save people's lives one day. Currently, many patients in need of organ transplants must wait on long lists to find a suitable donor, and oftentimes the transplants are unsuccessful due to incompatible tissue. In addition, people in need of casts to protect and heal fractured bones usually have to spend hundreds of dollars and the cast material is both uncomfortable and inconvenient.

The high costs of such casts, boots, and other medical protection apparatuses discourage poorer patients from getting professional help and instead they resort to dangerous home methods or illegitimate businesses. 3D printing has the power to eradicate this problem; not only is 3D printing customized for each patient's medical needs, but its materials are also cheaper, lighter, and more comfortable than traditional casts. As of now, not <https://assignbuster.com/why-3d-printing-is-more-than-just-a-new-way-to-make-toys/>

many people have access to 3D printers because scientists are still testing their medical capacities and safety; however, people who do have their own 3D printers will soon be able to carry them around wherever they go for ultimate convenience. Besides being able to print casts and boots whose healing rates are significantly faster than traditional ones, 3D printing has also been used for creating prosthetic limbs. Similar to 3D printed casts, they're much more economical, light, and fitting than usual prosthetic limbs, since they are made of cheap lightweight nylon or titanium mesh instead of heavy plastic. And because they are customized for each patient's needs, they are very comfortable and can be tailored to meet fashion demands as well.

In addition, many scientists and medical researchers also speculate that 3D printing could one day produce human organs, tissue, or bones to be used for amputees. The 3D printing of artificial human cells and epidermis has already been tested by numerous scientists and recent advancements in these studies show that these cells will soon be able to withstand transplant into humans and function normally with their original cells. In the RIKEN Center for Developmental Biology in Japan, scientists have been able to print skin cells that replicate the abilities of normal skin cells. Similarly, researchers at Cornell University have used cow cells to grow cartilage that can be molded into a human ear for those who have lost their ears in cancer or accidents, though the ears do not have full hearing capabilities. While these 3D printing creations all sound very complicated, 3D printers can also create basic medical equipment that is just as vital. For instance, in the iLab Haiti project, 3D printers have been brought to local hospitals in Haiti, where

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they are used to print umbilical cord clamps and other simple but necessary medical equipment.

Childbirth surgeries are very dangerous processes for both the mother and the infant in countries such as Haiti due to the absence of proper tools as well as inaccuracy. Now, however, doctors are able to construct real-life models of their patients or their patients' fetuses in order to ensure safer deliveries. Of course, with the power of 3D printers to help humans with everything from childbirth to prosthetic limbs, the debate over whether or not 3D printers should be used to enhance human abilities on an ethical scale arises. One benefit of 3D printing is its personalization; its users can customize whatever they want printed (a cast, prosthetic limb, and other medical paraphernalia) for their own bodies, guaranteeing improved safety, comfort, and efficacy. However, this level of customization also means that humans could eventually print "superhuman" body parts and transplant them onto themselves. For instance, the addition of a light or heat sensor in a prosthetic arm would allow the user to sense light or heat more acutely.

Scientists even propose the insertion of electronic devices into 3D printed body parts. Also, all of these advancements in 3D printing to benefit humans' health are coming at a cost to animals, which are often used to test 3D printed cells and such. Many people wonder: are these 3D printing practices necessary or beneficial as a whole, after considering the economic, medical, and ethical aspects of it? Professor Lee Cronin, Regius Chair of Chemistry at the University of Glasgow and TED Talk speaker, says that "the bottom line

is that more and more people will be saved, which is what's really important-provided the technology keeps advancing."