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3-D Printers Create Low-cost Prostheses

News Brief

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News Brief

3-D Printers Create Low-cost Prostheses

The war in Sudan has led to around 50,000 amputees, including Daniel Omar, the subject of a *Time* magazine article that attracted the attention of Not Impossible Labs co-founder Mark Ebeling.¹ Omar was 14 when he lost both hands to a bomb dropped by the Sudanese government. He was rushed to the Mother of Mercy Hospital in the Nuba mountains of South Sudan where Dr. Tom Catena, an American doctor, cared for Omar.¹ After reading Omar's story, Ebeling assembled a team of medical and engineering experts, including Robohand inventor Richard Van As, to build prosthetic limbs for Omar.²

Not Impossible Labs works on delivering low-cost and simple solutions to healthcare problems. The lab's work is not limited to prostheses but includes the BrainWriter—a device that reads basic brain waves to engage and disengage a computer mouse, giving users the ability to draw with their brain only.³ With the help of Intel Corporation, a semiconductor chip manufacturer, and Precipart, a company that designs and manufactures precision parts, Not Impossible Labs developed a functional 3-D-printed prosthetic limb for Omar with production costs of US\$100.¹ The lab also established the first 3-D-printed prosthetic lab and school to continue creating prostheses for children of war in South Sudan. On average, one prosthesis was printed each week after the design team left South Sudan.

This prosthetic device is particularly remarkable because of its low cost and printability with a 3-D-printing facility in under six hours. Most prostheses developed for patients in the U.S. can take weeks to fit and design, and can cost between \$3,000 to \$30,000.^{4,5} The lower cost and added convenience of the 3-D design have a significant impact in South Sudan's Nuba mountain region, where prosthetic limbs are 3-D-printed every week despite escalating violence in the region.⁶ Patients are able to obtain new prostheses without the expense travel-



Mick Ebeling (right), CEO and Founder of Not Impossible Labs, with Daniel Omar (left) wearing a prosthetic arm created with Not Impossible Labs 3-D printing technology. Photo courtesy of Not Impossible Labs.

ing to a city for multiple days; they can be fitted for and receive a new limb in less than one day.

Hoping the technology will improve the lives of many other amputees, Not Impossible Labs made the design open source (available for public use free of charge), which allows health professionals and amputees worldwide to modify, improve and print the design.⁷ This technology has potential to make a significant difference in other areas of the world, particularly Southeast Asia and South America, where developed sectors have the proper infrastructure and expertise, but the rural population most affected by explosive remnants of war and mines is unable to afford professionally made prostheses. ©

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~ Patrick Shea, CISR Staff



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