

In today's Do-It-Yourself world, there are millions more "yourselves" than there used to be. DIY used to mean saving a few bucks by replacing your own brakes or fixing the toilet; now it can mean 3D printing the backer awards for the mobile app you crowdfunded on Kickstarter. What can the "new" DIY do for you, and why is Columbus at the epicenter of it all?

DR. ALEX BANDAR is the founder and director of the Columbus Idea Foundry. A computational metallurgist by training, he was inspired by the Maker Movement after learning that his sculptor sister was a much better welder, machinist, blacksmith, and fabricator than he was. He's proud that the Columbus Idea Foundry will soon be purchasing and relocating to its own 60,000-square-foot building in East Franklinton, making it the largest grassroots makerspace in the world. New members, instructors, and prospective tenants are encouraged to reach out to info@columbusideafoundry.com

Recently, an earthquake occurred when four tectonic plates collided - free online education, free open source software, affordable digital prototyping machines, and crowdfunding. The result is that it has never been easier to realize an idea - whether it's a mobile app or a custom piece of jewelry. And we're only just starting to feel the shockwaves.

At the eTech Ohio conference in Columbus this past February, two remarkable speakers discussed the future of education and why it impacts all of us. Sebastian Thrun (inventor of Google Glass and the self-driving car) launched Udacity.com. Andrew Ng (director of the Stanford Artificial Intelligence Lab) cofounded Coursera.org. Both of these provide free online video classes - everything from art history to artificial intelligence. And MILLIONS of people are taking them. Go sign up yourself! They're engaging, stimulating, and free.

But knowledge alone isn't enough to make something. You need to draft a design. Thanks to "open source software," powerful programs are available to everyone. Love Photoshop but can't afford it? Download Gimpshop. Like Illustrator? Try Inkscape. Same with Processing (electronics), Sketchup (CAD) and even Sculpttris (3D artistic design). Again, all for free.

Okay - so now you've designed your idea. But you're not an artisan, a woodworker, or a machinist (trades no longer taught in most high schools). How do you make your first prototype? You may not have the budget for a design firm. But you could use a 3D printer, laser cutter, or computer-controlled milling-machine to make it automatically, yourself, directly from that design you created for free. (See how this is coming together?)

But digital prototyping tools are expensive and complicated. That's where "Makerspaces" come in. These are brick-and-mortars where you'll find friendly and talented tinkerers and tools. They're a global phenomenon, and Columbus is leading the way. But don't take my word for it - take MAKE's.

MAKE Magazine is the champion of modern DIY. Their website, Makezine.com, has thousands of step-by-step guides to make nearly anything - from cupcakes to cars. And every few months, they challenge the globe to see who can assemble the best and brightest to demonstrate the latest technologies. For example - last November, MAKE held a 3D printing contest. Three hundred cities competed, and guess who came in No. 1? Good ol' C-bus. How

about three months later, when MAKE challenged the world again to a "Raspberry Pi" competition? (That's a \$35 computer that fits in the palm of your hand). Again, Columbus scored highest. And when they tossed down the gauntlet for robotics?

Well, we came in second that time; however - the high school robotics team we sponsor at the Columbus Idea Foundry came in first internationally in their own competition. Go Cougars!

Let's review... If you have access to the Internet, you have access to free education, free design software, and websites to crowdfund your project. All you need to build your idea is access to tools and someone to show you how. That's what Makerspaces do.

Why is all of this important? Take a step back and look at how most things in this world are designed (and note that just because things are the way they are doesn't mean they're the best they can be). Almost all our inventions, retail products and software apps currently originate from a tiny pie slice of our total global talent (the engineers, designers, developers, etc). But what if everyone on earth had an Internet connection and access to a workshop? Then we'd potentially have seven billion educated and empowered innovators - an inspiringly exciting prospect.

How can everyone in the world have access to tools and the web? Well, new makerspaces are cropping up every week in communities around the globe. There are even proposals to turn libraries and high schools into public access community workshops. And for folks who don't have local access, makerspaces can produce designs from digital files emailed from afar, and snailmail the parts back (check out at Shapeways.com).

But how do you bring the web, and consequently education, design, and crowdfunding resources, to everyone? Although it sounds sci-fi, Google has a goal to offer Internet access to each person on earth by 2020. Sounds impossible until you hear their plan - they're launching a fleet of weather balloons that will beam wi-fi around the planet. It's called Project Loon, and it's already in testing in New Zealand.

Thus, we may soon evolve from a culture where a few designers are currently mass-producing for the needs of the many, to a movement where the entire planet is peopled by empowered innovators. And that's a bright future I truly look forward to...

But first, let's explore some DIY creations right here in Columbus.

METHODS*

- | | |
|---------------------------------|--------------------------------|
| Patio Bench 60 | Urban Zen Garden 69 |
| Teardrop Trailer 64 | Kusudama Ball 70 |
| Pallet & Window Table 66 | Mobile Flower Cart 72 |
| Custom Wood Wine Rack 68 | Garage Climbing Wall 74 |

* Due to space constraints, instructions may be less detailed than ideal. For further information, contact the project author through their website.

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