

# The Age of DIY

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**R**ecently, a friend asked me to write about Bitcoin. This has always been an interesting topic. I wrote about electronic cash in 1997,<sup>1</sup> when the November/December issue of this magazine ran a theme on the topic. My advice then, as now, was “Hold on to your wallet.”

After looking into Bitcoin, I realized I couldn’t add much to what you can get on this interesting topic yourself, starting with an excellent Wikipedia article (<http://en.wikipedia.org/wiki/Bitcoin>). Bitcoin isn’t a Ponzi scheme. Mining bitcoins might seem a bit like a Ponzi scheme because early and informed adaptors have an advantage, but no promise of large returns is made for late adaptors.<sup>2</sup> The system is designed to even out. Someone has been indicted for a Bitcoin-based Ponzi scheme, but the case could have been based on any currency ([www.sec.gov/News/PressRelease/Detail/PressRelease/1370539730583](http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370539730583)). And Bitcoin is just a currency ([http://blogs.wsj.com/moneybeat/2013/08/07/bitcoin-money-says-judge/?mod=trending\\_now\\_5](http://blogs.wsj.com/moneybeat/2013/08/07/bitcoin-money-says-judge/?mod=trending_now_5)). It’s no more an artificial fiat currency than is the dollar. In fact, it’s better in this respect.

The basic value of bitcoins is based on the cost of computing power to mint them, and the shared protocol for doing so ensures that – unlike the dollar – only so many will ever be minted or mined. Bitcoins’ current dollar value fluctuates wildly now, but that’s just currency speculation consistent with a relatively small number of bitcoins in circulation and use. If I could afford to speculate, I’d be mining them now. But there is a substantial cost to buying the equipment and running it continuously to have a chance of earning some bitcoin. So on one hand, you’re speculating with this investment in equipment, and on the other, this is the intrinsic value of the currency. Bitcoins are almost as anonymous as cash and almost as

easy to transfer digitally as any other currency. They are somewhat more subject to hacking, and you can’t insure them. Lose your hard drive, lose your stash. I don’t see a big problem with bitcoins, and the fact that some governments don’t like them is in their favor. But you can figure all this out for yourself with a little reading. (If you come to different conclusions, please write a letter to the editor.)

What did catch my attention is that Bitcoin is do-it-yourself (DIY) money enabled by novel uses of the Internet – that is, you can now use the Internet to turn data into money. There are other uses.

## From Data to Tools

We all know that you can find any information you need on the Web. You want to learn how to tie a bowtie, wire your house, or improve your makeup skills? It’s all there. You don’t have to ask anyone anymore. But what’s happening is more than just being able to access tutorial YouTube videos. It’s even more revolutionary than massive open online courses ([www.mooc-list.com](http://www.mooc-list.com)), which are another kind of DIY. We’ve gone beyond information.

First, tools are available for building things on the Internet that you couldn’t do yourself previously. Once, you could create your own websites with WordPress and other software. Now, you can do Web *design* as well (<http://readwrite.com/2013/07/31/pagelines-design-management-system-website-design-review#awesm=~odl26VyyY2YeA0>). You don’t have to simply take the templates that website creation tools give you.

Then there are sites with kits that let you build actual things at home. Consider *Make* magazine and the Maker Faire (<http://makezine.com>). Consider inexpensive, home-built airplanes from open source designs ([www.wired.com/](http://www.wired.com/)

autopia/2013/07/open-source-airplane-design). People might be able to build a personal plane for as little as US\$15,000. On the other end of the cost scale, my favorite is a small \$15 solar controller kit that I've built several times for different uses ([www.ghurd.info](http://www.ghurd.info)). All of these Web sources let people build what they need easily and much more cheaply than they could obtain the products from commercial vendors. Given that this is probably only the beginning of this trend, a new economy will likely emerge. But there's more than just know-how and kits on the Web already. The Internet of Things is about to take on a whole new meaning.

## Print It Yourself

Consider home 3D printers. They're pretty much here (<http://detroit.cbslocal.com/2013/07/29/mtu-study-3d-printing-will-reach-the-home-soon/>). And an increasing number of open source designs are available on the Web. Search, download, and print what you need. The Web is no longer just for information. Data can be more than useful design information or even money: now data can be actual objects. You could even print your bitcoins so that data becomes physical currency. Not only that, but you can generate your own designs with a point-and-shoot 3D camera (<http://hothardware.com/News/Fuel3D-Affordable-PointandShoot-3D-Scanner-To-Complement-Your-3D-Printer-Now-on-Kickstarter/>). Talk about changing everything. You want cheap household goods ([www.thingiverse.com/thingiverse/collections/household](http://www.thingiverse.com/thingiverse/collections/household))? Spend the cash for this equipment and start saving within the year – especially if you share the cost with neighbors. There goes Walmart.

This is all about novel uses of the Internet (mostly the Web) enabling people to do things for themselves instead of depending on others'

products and services. It's a continuation of the trend that started when we fired our secretaries and wrote our own letters with word processing software on our computers. But the Internet is dramatically increasing our capabilities every few years.

Upon request, I wrote a "vision" piece in this space in 2010<sup>3</sup> predicting that most people would be self-employed by 2015 and would be empowered by new Internet applications that let them not only better connect but be better coordinated for complex but perhaps short-lived tasks. I still believe that self-employment is the trend, and the only reason most still have salaries is because of the strange system of healthcare insurance we have in the US. This is but one trend where the Internet empowers people to do for themselves.

Yes, there are disadvantages, as we've learned from the NSA spying stories. However, these technologies can be defeated by others. I immodestly draw your attention to a piece I recently published in *The Economist* that shows how whistleblowers can escape detection when furnishing newspapers with sensitive documents.<sup>4</sup>

**O**ur vision of America is frequently one of a consumer-driven economy based on malls and goods with short lifespans. The Internet has been heavily used by this economy. It supports Google, which in turn is supporting DIY. This is the "old economy" supporting the new. There might always be malls, as long as energy is cheap, but for some substantial segment of the population, things are changing.


Want to build a solar photovoltaic system, a garden, a house, an airplane, or an electric car? The plans are out there, as is the advice from user forums. If you're not that ambitious,

maybe you'll just want to print your kitchenware on your home 3D printer. And this is an accelerating trend. When we look back in, say, 20 years, we'll see that this was the beginning of the Do It Yourself Age. □

## References

1. C. Petrie, "The Edge of E-Cash," *IEEE Internet Computing*, vol. 1, no. 6, 1997, pp. 4–5.
2. *Virtual Currency Schemes*, European Central Bank, Oct. 2012; [www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf](http://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf).
3. C. Petrie, "Plenty of Room Outside the Firm," *IEEE Internet Computing*, vol. 14, no. 1, 2010, pp. 92–96; <http://www-cdr.stanford.edu/~petrie/online/peer2peer/vision2010.pdf>.
4. C. Petrie, "How to Blow Whistles Securely: Just AdLeaks," *The Economist*, 23 July 2013; [www.economist.com/node/21580377](http://www.economist.com/node/21580377).

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