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The Blockchain Will Do to the Financial System What the Internet Did to Media

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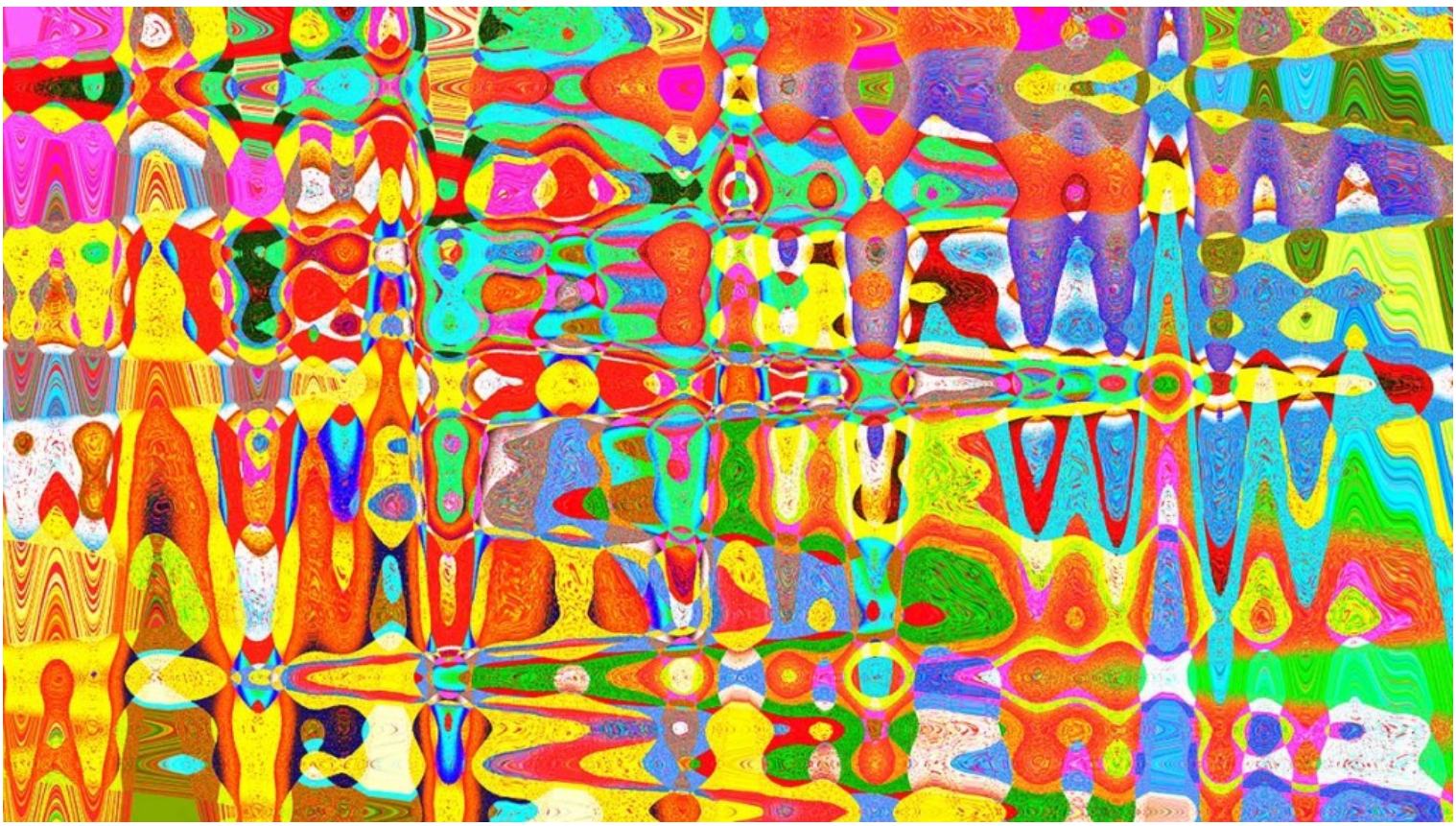

Even years into the deployment of the internet, many believed that it was still a fad. Of course, the internet has since become a major influence on our lives, from how we buy goods and services, to the ways we socialize with friends, to the Arab Spring, to the 2016 U.S. presidential election. Yet, in the 1990s, the mainstream press scoffed when Nicholas Negroponte predicted that most of us would soon be reading our news online rather than from a newspaper.

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Fast forward two decades: Will we soon be seeing a similar impact from cryptocurrencies and blockchains? There are certainly many parallels. Like the internet, cryptocurrencies such as Bitcoin are driven by advances in core technologies along with a new, open architecture — the Bitcoin blockchain. Like the internet, this technology is designed to be decentralized, with "layers," where each layer is defined by an interoperable open protocol on top of which companies, as well as individuals, can build products and services. Like the internet, in the early stages of development there are many competing technologies, so it's important to specify *which* blockchain you're talking about. And, like the internet, blockchain technology is strongest when everyone is using the same network, so in the future we might all be talking about "the" blockchain.

The internet and its layers took decades to develop, with each technical layer unlocking an explosion of creative and entrepreneurial activity. Early on, Ethernet standardized the way in which computers transmitted bits over wires, and companies such as 3Com were able to build empires on their network switching products. The TCP/IP protocol was used to address and control how

packets of data were routed between computers. Cisco built products like network routers, capitalizing on that protocol, and by March 2000 Cisco was the most valuable company in the world. In 1989 Tim Berners-Lee developed HTTP, another open, permissionless protocol, and the web enabled businesses such as eBay, Google, and Amazon.

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The Killer App for Blockchains

But here's one major difference: The early internet was noncommercial, developed initially through defense funding and used primarily to connect research institutions and universities. It wasn't designed to make money, but rather to develop the most robust and effective way to build a network. This initial lack of commercial players and interests was critical — it allowed the formation of a network architecture that shared resources in a way that would not have occurred in a market-driven system.

The "killer app" for the early internet was email; it's what drove adoption and strengthened the network. Bitcoin is the killer app for the blockchain. Bitcoin drives adoption of its underlying blockchain, and its strong technical community and robust code review process make it the most secure and reliable of the various blockchains. Like email, it's likely that some form of Bitcoin will persist. But the blockchain will also support a variety of other applications, including smart contracts, asset registries, and many new types of transactions that will go beyond financial and legal uses.

INSIGHT CENTER

Business in the Era of Blockchain

We might best understand Bitcoin as a microcosm of how a new, decentralized, and automated financial system could work. While its current capabilities are still limited (for example, there's a low transaction volume when compared to conventional payment systems), it offers a compelling vision of a possible future because the code describes both a regulatory and an economic system. For example, transactions must satisfy certain rules before they can be accepted into the Bitcoin blockchain. Instead of writing rules and appointing a regulator to monitor for breaches, which is how the current financial system works, Bitcoin's code sets the rules and the network checks for compliance. If a transaction breaks the rules (for example, if the digital signatures don't tally), it is rejected by the network. Even Bitcoin's "monetary policy" is written into its code: New money is issued every 10 minutes, and the supply is limited so there will only ever be 21 million Bitcoins, a hard money rule similar to the gold standard (i.e., a system in which the money supply is fixed to a commodity and not determined by government).

This is not to say the choices Bitcoin currently offers are perfect. In fact, many economists disagree with Bitcoin's hard money rule, and lawyers argue that regulation through code alone is inflexible and doesn't permit any role for useful discretion. What cannot be disputed, however, is that Bitcoin is real, and it works. People ascribe real economic value to Bitcoins. "Miners," who maintain the Bitcoin blockchain, and "wallet providers," who write the software people use to transact in Bitcoin, follow the rules without exception.

Its blockchain has remained resilient to attack, and it supports a robust, if basic, payment system. This opportunity to extend the use of the blockchain to remake the financial system unnerves and enthralls in equal measure.

Too Much Too Soon?

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Unfortunately, the exuberance of fintech investors is way ahead of the development of the technology. We're often seeing so-called blockchains that are not really innovative, but instead are merely databases, which have existed for decades, calling themselves blockchains to jump on the buzzword bandwagon.

There were many "pre-internet" players, for example telecom operators and cable companies trying to provide interactive multimedia over their networks, but none could generate enough traction to create names that you would remember. We may be seeing a similar trend for blockchain technology. Currently, the landscape is a combination of incumbent financial institutions making incremental improvements and new startups building on top of rapidly changing infrastructure, hoping that the quicksand will harden before they run out of runway.

In the case of cryptocurrencies, we're seeing far more aggressive investments of venture capital than we did for the internet during similar early stages of development. This excessive interest by investors and businesses makes cryptocurrencies fundamentally different from the internet because they haven't had several decades of relative obscurity where noncommercial researchers could fiddle, experiment, iterate on, and rethink the architecture.

This is one reason why the work that we're doing at the Digital Currency Initiative at the MIT Media Lab is so important: It is one of the few places a substantial effort is being made to work on the technology and infrastructure clear of financial interests and motivations. This is critical.

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The existing financial system is very complex at the moment, and that complexity creates risk. A new decentralized financial system made possible with cryptocurrencies could be much simpler by removing layers of intermediation. It could help insure against risk, and by moving money in different ways could open up the possibility for different types of financial products. Cryptocurrencies could open up the financial system to people who are currently excluded, lower barriers to entry, and enable greater competition. Regulators could remake the financial system by rethinking the best way to achieve policy goals, without diluting standards. We could also have an opportunity to reduce systemic risk: Like users, regulators suffer from opacity. Research shows that making the system more transparent reduces intermediation chains and costs to users of the financial system.

The Takeaway

The primary use and even the values of the people using new technologies and infrastructure tend to change drastically as these technologies mature. This will certainly be true for blockchain technology.

Bitcoin was first created as a response to the 2008 financial crisis. The originating community had a strong libertarian and antiestablishment spin that, in many ways, was similar to the free-software culture, with its strong

anticommercial values. However, it is likely that, just as Linux is now embedded in almost every kind of commercial application or service, many of the ultimate use cases of the blockchain could become standard fare for established players like large companies, governments, and central banks.

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Similarly, many view blockchain technology and fintech as merely a new technology for delivery – maybe something akin to CD-ROMs. In fact, it is more likely to do to the financial system and regulation what the internet has done to media companies and advertising firms. Such a fundamental restructuring of a core part of the economy is a big challenge to incumbent firms that make their living from it. Preparing for these changes means investing in research and experimentation. Those who do so will be well placed to thrive in the new, emerging financial system.

Editor's Note: The headline on this article has been updated from its original version.

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