The IRS issued a telling statement of metaphysics in March. A few weeks before tax day, it ruled that Bitcoin, the first and best-known Internet-based cryptocurrency, is not to be considered a currency at all but an investment, subject to capital-gains tax. While this is a rather clumsy adaptation of antiquated regulations to a field they were never designed to encompass, there is also a basic truth in it. The IRS decision hints at why cryptocurrencies are about to get a whole lot more disruptive, as well as a great deal harder to ignore: They can be used for much more than just payments.

Bitcoin appeared in early 2009 as a new kind of money that, thanks to sophisticated mathematics, guarantees the security of transactions within a decentralized, peer-to-peer network. This being just a few months into a catastrophic financial crisis, the pseudonymous inventor, Satoshi Nakamoto, presented Bitcoin as an insurgency against the mismanaged big banks and state monetary regimes. The prototype network would make possible, for the first time, a trustworthy currency native to the Internet — not dependent on any single authority or regulator but on a symphony of the combined computing power of its users.

The code underlying Bitcoin was open source, and soon a flurry of cryptocurrencies derived from it came into being — one with a cartoon dog as its mascot, one adopted as an official tender by the traditional Lakota Nation and hundreds more. But
people soon realized that the kind of system underlying Bitcoin could have other uses, too. It could be the basis of a new way of registering domain names on the Web or of a replacement for conventional email. Prototypes started to show how the building blocks of finance could be reinvented on decentralized networks — escrow transactions, commodity exchanges, derivatives, “smart contracts” that can enforce themselves without needing an offline legal system. Venture capitalists rushed to fund these projects. The new wave even has its own buzzword: cryptocurrency 2.0.

By age 19, a lanky, Russian-born Canadian named Vitalik Buterin was a founding editor of “Bitcoin Magazine” and had helped develop applications and code libraries for the cryptocurrency community. The more he learned about the “2.0” prototypes underway, though, the more they struck him as wasteful. Each was being built in isolation from the others, with its own platform and framework.

“The approach that people were taking was sort of like having a computer with a separate hardware module for Solitaire, a separate hardware module for Internet Explorer, a separate hardwired module for World of Warcraft,” he says. “It’s obviously a very inefficient way to do things.”

Last November Buterin started to circulate a white paper (https://github.com/ethereum/wiki/wiki/%5BEnglish%5D-White-Paper) describing a platform on which the whole breadth of new cryptocurrency applications could be built. He called it Ethereum. Rather than being a Swiss Army knife of separate tools, Ethereum would be simple: It would combine a Bitcoin-like network with a universal programming language that would allow users to invent whatever tools they want. These tools would be able to interact with each other and conduct transactions with a common currency called ether. In the white paper, he described Ethereum as a “Lego of crypto-finance.” With it, all the imagined potential of Bitcoin could be put to use in one place — plus a lot of the not-yet-imagined potential, too.

Buterin expected that he’d get some useful feedback on the proposal, maybe spend a few weeks coding a prototype and then move on to something else. But now, at 20, he is seeing his idea catch on among fellow hackers around the world, and arrangements are being made to incorporate a nonprofit for Ethereum in the legal free-for-all of Switzerland. The project’s team, which is almost entirely male, includes experts in finance, mathematics, software development and product design. Among them are two former Goldman Sachs employees — which has been a matter of some dismay in the heavily libertarian, anti-establishment cryptocurrency community. But it’s also an indication of the level at which Ethereum may soon be competing.

“ The world’s next social contracts, the successors to the Declaration of the Rights of Man and the U.S. Constitution, could be written in Ethereum’s programming language.”

What Bitcoin is for money, Ethereum is for contracts, and contracts are part of what undergirds any relationship or organization or political order. As enthusiasts attach their own ambitions to the Ethereum concept, Buterin has found that his “Lego of crypto-finance” could have an impact far beyond finance. “When other people came along and started bringing their ideas in,” he says, “I realized having a more efficient and powerful form of money is almost the least interesting part.” A group called BitCongress, for instance, is already using Ethereum as the basis for “a cryptography created legislation toolbox” that would make polls easy and verifiable without the need for a trusted authority to count the votes.

With Ethereum, one could code a constitution for a nongeographic country that people can choose to join, pay taxes to, receive benefits from and cast votes in — and whose rules they’d then have to obey. One could design a transnational microlending program or a scheme for universal basic income or a new kind of credit score. In one online video (https://www.youtube.com/watch?v=zRpziAtk61g), a pair of Ethereum pioneers demonstrate how to code a simple marriage contract. The world’s next social contracts, the successors to the Declaration of the Rights of Man and the U.S. Constitution, could be written in Ethereum’s programming language.

What makes much of this possible is also perhaps the creepiest outgrowth of cryptocurrency 2.0: distributed autonomous organizations, or DAOs. Based on charters taking the form of code on a peer-to-peer network, these are entities that can automate many of the tasks of a conventional organization with varying levels of human input. For instance, a DAO could act democratically, based on the consensus of its members, or it could conduct activities on the network without consulting
human users at all in his talks (http://youtu.be/l9dpjN3Mwps?t=24m45s). Buterin sometimes makes a passing reference to Skynet, the software in the “Terminator” movies that mobilizes robots in a war of extermination against human beings. “Nothing is stopping you with Ethereum at your fingertips,” he claimed in the original white paper. Buterin has felt the need to produce a series of posts (http://blog.ethereum.org/author/vbuterin) on the Ethereum blog about why “DAOs are not scary,” which are only marginally reassuring.

Primavera De Filippi, a researcher at Harvard’s Berkman Center for Internet & Society who studies the legal implications of decentralized networks, takes such dystopic possibilities seriously. In Ethereum, “everything is dictated by the code,” she says. “Anything that is completely computer-operated is a potentially oppressive system.”

Before the code takes charge, however, its inventors carry the responsibility for making Ethereum useful, fair, and secure. “Ultimately it depends on Vitalik being a benevolent philosopher-king,” says Joel Dietz, a cryptocurrency entrepreneur in Silicon Valley. But the Ethereum community expresses little hesitation in vesting so much responsibility in someone who was, until a few weeks ago, still a teenager, albeit a supersmart one. Quite the opposite, in fact. Ethereum has released a video, modeled on Apple’s famous “The Crazy Ones” commercial, that places Buterin at the end of a sequence of computer innovators, including Alan Turing and Steve Jobs.

Hype comes easily to those in the tech community, but De Filippi believes Ethereum is poised to have real-world impact. “Bitcoin has created precedents that have shown this is not so crazy,” she says of the project’s transformative potential. De Filippi has made Ethereum a major focus of her research, and she says that cryptocurrency investors are starting to do the same. “They are really, really excited, and they will invest a lot of money in Ethereum, which didn’t happen at the beginning of Bitcoin.” A pre-sale of ether is slated to begin within a few weeks, although the Ethereum network itself won’t be operational until later this year, at the earliest.

In the meantime, Ethereum’s developers say they are trying to keep the platform as open and flexible as possible, rather than dictating what can or can’t be done with it. “The people behind this project want to make it a very pure tool,” says Anthony D’Onofrio, a Bay Area web developer who is part of Ethereum’s creative team. But those taking part also have their own ideas about how they’d like to see it change the world. “Put me in any environment and I’m going to be a revolutionary,” he adds.

Even the most flexible platform comes with certain built-in tendencies. Ethereum, for example, makes it easier to build organizations that are less centralized and less dependent on geography than traditional ones and certainly more automated. But it also creates a means for corporate ownership and abuse to creep ever deeper into people’s lives through new and more invasive kinds of contracts. To perceive the world through a filter like Ethereum is to think of society as primarily contractual and algorithmic, rather than ethical, ambiguous and made up of flesh-and-blood human beings.

How this new ecosystem will take shape depends disproportionately on its early adopters and on those with the savvy to write its code — who may also make a lot of money from it. But tools like Ethereum are not just a business opportunity. They’re a testing ground for whatever virtual utopias people are able to translate into code, and the tests will have non-virtual effects. Idealists have as much to gain as entrepreneurs. As for any utopia, though, the power struggles of the real world are sure to find their way in as well.
Tar Creek in Oklahoma is polluted with millions of tons of toxic dust (/watch/shows/live-news/2014/4/toxic-waste-dumpednearnativeamericanland.html)

Hundreds gather along both sides of steel fence that divides border town (/watch/shows/live-news/2014/4/arizona-border-masshighlightsneedforimmigrationreform.html)

Students participating in Best Buddies program strive to build confidence and become more social (/watch/shows/live-news/2014/4/students-with-autismstrugglewithhighschoolsocialscene.html)