

Review of [*The Age of Cryptocurrency*](#) by Paul Vigna and Michael J. Casey

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I've been writing about cryptocurrency for over a year now (not a long time, but a significant fraction of the total lifetime of the technology), and have toyed with the idea of putting together a book myself. For this reason, I was excited to see this book by Paul Vigna and Michael J. Casey ("V&C" hereafter).

Bottom line: While this isn't precisely the book I would write, it is a very, very good book. This will be an essential reading for anyone wanting to actually understand the first few years of cryptocurrency.

My own writing projects both easier and harder. I no longer have to explain all the basics, because V&C already have. But the bar for commentary is much higher now, because whatever I write has to add or at least fix what V&C have done.

Overall, V&C have a rather positive view of cryptocurrency and bitcoin. In part, this reflects the fact that these Wall Street Journal writers have definite views on political economics, which plays out in numerous ways. The whole book should be read against the background of their statement of faith: "All else being equal, technological disruption makes an economy more efficient and creates more wealth overall." (p.5)

Inside, there are very good sections that explain the technical basics, and quite a bit of solid history of the people and organizations who have contributed to the "age of cryptocurrency". They also give useful foundations for the major policy and legal issues which will play out in the next few years.

One thing is very clear: they totally get the cultural aspect of cryptocurrencies which I have discussed frequently. In fact, much of what they discuss in the book is dead on. For example, they correctly cite Dogecoin as an important phenomenon, and for the right reasons—it created a specific community committed to a unique, participatory culture. (If they had cited me [1] and/or Birdie [2] about this, I'd give them ten out of ten.)

They also are well informed about many of the problems, disputes, and logical contradictions that abound in the crypto world. Readers will get a good sense of the schisms between radical libertarians, Wall Street types, authentic "empower the poor" folks, gormless speculators, and others. These confused and conflicting ideological projects all cohabit within "the bitcoin community", sometimes within single individuals!

Let's look at some of the details inside this important book.

Introduction

So what is this all about, in their opinion? It's about "trust".

"At its core cryptocurrency ... is about freeing people from the tyranny of centralized trust." (p. 8) Transferring power from "banks, governments, lawyers, and tribal leaders" to "the periphery to We the People." (p. 8) Cryptocurrency is, indeed, a very much a political project, with a populist libertarian theme.

Chapter 1. History

V&C give a short, readable history of ideas about currency, sketching the two main philosophical camps, "metallists" and "chartists". They also note the long historical (two way) link between currency and political power. They are not gold bugs (thank goodness!) and take the position that cryptocurrencies are fundamentally not "metallic" (despite the apparent intentions of "Nakamoto", who envisioned a digital gold standard).

They point out the deep, long running cultural themes about "trust", played out in politics, culture, and "money". These themes all appear in the cultural theater surrounding cryptocurrencies, though often naively and in strange new combinations. For example, many "hard money" ideology attached to this, the ultimate intangible, cryptocurrency. Or, for another example, the fundamental assertion that cryptocurrency is a "trustless" system, and therefore more "trustworthy" than "fiat" currency.

Chapter 2. Technical Genesis

Chapter 2 gives a brief history of the bitcoin technology, from circa 2008 up to now. This chapter is a pretty good coverage, if necessarily shallow. I was pleased that they give important perspectives to help understand that bitcoin did not emerge from a vacuum, either technically or ideologically. They also cover some relatively unknown precursors of bitcoin, which I did not know about (and I'm pretty well informed).

While their sympathies are not difficult to see, V&C give a balanced description of the competing ideas and motives, and do a good job to clearly separating the purely technical from the political economics.

Chapter 3. Community

V&C get their priorities right by starting off with a strong look at "the bitcoin community", which they correctly view this as at least as important as the technology. They also recognize the "cultural" aspect of this phenomenon, as I have discussed over this last year (e.g., see [1]).

In this chapter V&C discuss the mystery of Satoshi Nakamoto, the founding myth of the Bitcoin religion, who sits at the exquisitely opaque center of a movement espousing decentralized transparency.

Bitcoin's aspiration to "replace money" requires that everyone agrees that it is really money, and also that it be possible to buy and sell things—real, physical things. From inception, the bitcoin community has tackled this problem, trying to come up ways to bootstrap a bitcoin economy.

One aspect of this has been the development of exchanges, which have a very rocky history of poor service, crashes, bankruptcy, and fraud. V&C echo my own comments, to point out the irony of the "decentralized" currency depending on a relative handful of central servers, including the notorious Silk Road.

Another community theme has been basic boosterism, promoting positive stories. They recount the iconic story of the first recorded pizza purchased with Bitcoin. This trope has been repeated many times in the ensuing years as different commodities and transactions demonstrated that Bitcoin can be used instead of conventional currency. These stories are important culturally, but scarcely meaningful either technically or economically.

Chapter 4. Revolutionizing Electronic Payments

This chapter has one of the most useful explanations of the argument for cryptocurrency from the point of view of electronic payments—a topic which is often mistakenly taken as self-evident. In fact, the current system through which credit cards work is mostly invisible to ordinary customers except for the fees and interest rates. But, behind the scenes there is plenty of room to think of improvements, including the use of cryptocurrencies. Of course, "revolutionizing retail merchant payments" is neither an exciting slogan nor a gigantic user base.

The revolution was considerably slowed by the extreme volatility in exchange rates and serious theft, fraud, and shifting legal standing. V&C give a fairly level headed summary of these gyrations, recognizing that the viability of cryptocurrency is very much an unsettled question.

Chapter 5. The Blockchain

This chapter is a very good walkthrough of the blockchain and basic technology, avoiding the math but accurately describing the way it works. The second part of the chapter gives an accessible introduction to cryptocurrency "mining", a topic shrouded in misunderstanding.

Chapter 6. Arms Race

This chapter recounts the technological “arms race” that has occurred as miners deploy the tools developed for high performance computing to bitcoin “mining”. Technological development has been driven by the rise in exchange rates for bitcoin, which has drawn investment in expensive hardware. By now, the technical escalation has pushed the game far beyond an individual system, so that the only way to really participate in mining is via pools or “cloud mining” (renting capacity from a large farm). Both of these businesses are suffering badly from massive dips in bitcoin against the dollar, which pull the rug out from under the costly investments in equipment and facilities.

Chapter 7. Enterprise

V&C give an enthusiastic but still Earth-bound story of bitcoin start ups and start up culture. They actually underplay the religious enthusiasm of bitcoiners, who stand out even in Silicon Valley’s boosteristic society. A bunch of kids with preposterous amounts of money to play with, aiming to “disrupt” money, economics, politics, and everything. What could possibly go wrong?

V&C are quite star struck by the famous names of the valley, who must be geniuses because they have so much money, right? I’m not as impressed as they are by the brilliance of college drop outs.

Given the fast changing landscape, this chapter is unfortunately out of date.

Chapter 8. The Unbanked

Given my own interests, I was particularly interested to read V&C on the topic of cryptocurrency solutions for “the unbanked” and “the remittance problem”.

There is some interesting rhetoric here, recounting the highly efficient milking of the poor as “our inefficient international financial system”! It’s not inefficient for the people who own it, it’s just that the 99.9999% don’t have much to say about how things work.

Their analysis of why people are unbanked (do they believe that being “banked” is the default, normal state?) includes lot’s of points that have little to do with cryptocurrency, but focus on how the “banking system makes demands that poor people simply can’t meet.” (p. 192)

Fortunately, V&C dig into the topic, and end up stating the case fairly well: vast areas of the world have adequate technical infrastructure and enterprising people, but for many reasons, do not have good or even any banking services. And many millions face an array of costs, barriers, and corruption that drag the whole system to a halt.

They also know, as I have said myself, that “all remittance is local”. There is a nice analysis a number of specific cases: China (thriving e-commerce, strict restrictions, and a thriving black market), the Caribbean (poor support for local merchants, multiple small currency zones, cultural resistance to impersonal electronic commerce), Afghanistan

(cultural traditions, corruption, foreign occupation, war, war, and war), Argentina (generations of misgovernment, financial crises, corruption and inflation), Kenya (thriving mobile electronic payments linked to expensive conventional services, “last mile” challenges).

In all these cases, cryptocurrency’s main advantage is to undermine existing systems and to provide low-cost (if low-frill) equivalents to conventional banking and finance. But each case is different, and cryptocurrency is a different “solution” in each instance—it is undermining a different thing in a different way. In other words, the case for cryptocurrency is actually the collection of many specific cases.

Because of this, I found this chapter confusing and unconvincing. It is not only all over the map geographically, it mixes in billionaire enthusiasts (whose motives are not obviously altruistic) with stories about “empowering the poor”. And, in general, the chapter lacks critical analysis of these arguments, taking too much on the word of the enthusiasts.

I particularly dislike the rah-rah misleading use of statistics. I mean “hundreds of merchants” is, well, nothing, really. Millions of dollars is a tiny amount of the world economy. And citing growth rates (and price changes) over a few years (1000% increase!) is meaningless when the starting point is “no users, valuation zero”. And, for goodness sakes, “the infallibility of the blockchain” (p. 217)? Please.

Overall, this is a good source for the “pro” case, but a poor source for a critique of this case or realistic understanding of the risks in such enterprises.

Chapter 9. The Everything Blockchain

I have already written about the blockchain myself, so I was eager to read what V&C have to say in this chapter.

Appropriately, they open with online gambling, using the bitcoin blockchain.

The world is already awash with gambling, which does not benefit the poor or any of the players. So we are not faced with millions of “the ungamed”. The only “problems” the blockchain solve are transparency (which I grant you is lacking, especially on-line) and evasion of laws and taxes. Hurrah! We can fill the Internet with unlicensed (and therefore, illegal in many jurisdictions) gambling, and also avoid taxation. “Disruptive”, but not especially “Innovative”.

This is, in my view, a 180-degree reversal from the moral case in Chapter 8.

This chapter also looks at so-called “smart contracts” (actually, executable contracts), which “can replace the legal system, the ultimate trusted third party.” (p. 224). This is combined with “smart property” (basically, digital documentation), enabling fully automated property transfers.

The “problem” the blockchain solves here is to remove humans and institutions—including democratically elected governments—from the record keeping and decision-making surrounding contracts. This leads to all sorts of “innovations”, such as completely automated asset seizure, which V&C say “could drive down the cost of financing”—or at least increase the profits of the finance industry.

In this area, cryptocurrencies mesh very nicely with “the sharing economy” and “decentralized autonomous companies” (DAC). The latter are creatures that have no real world address or officers, and do business strictly on the blockchain, for the benefit of the unidentifiable holders of the cryptocurrency (shares). These DACs take the concept of the limited liability corporation to its logical extreme, a company with no liability at all. All profit, with no responsibility. Swell.

This chapter also covers prominent systems, such as Ethereum, with a bit of cheerleading and only a little of the soap opera. Their coverage of Ripple is one of the best I’ve read to date, including the split off of Stellar.

V&C sketch some of the major technical and legal questions that must be solved to realize the radical dreams of the Blockchain enthusiasts. These include plausible regulatory approaches (totally unregulated and unaccountable companies and securities are known to lead swiftly to catastrophe and crime), augmentations to the bitcoin blockchain concept to accommodate huge amounts and varieties kinds of data and transactions, and the general friction offered by real life.

Chapter 10. Governance

This chapter digs more deeply into the implications of the “decentralized governance” of bitcoin. The bitcoin software is “open source”, maintained by volunteers and a handful of paid staff. But no one owns it, and engineering decisions are made by discussions and pseudo consensus (the paid staff has veto power). Who is in charge, and how trustworthy is the code and protocol?

A related question is, who is responsible for the behavior of the people using bitcoin? What sort of rules can or should apply, and how can they be enforced? The system is designed to be untaxable and beyond any law. But, as V&C show, the people, systems, and organizations that use cryptocurrency certainly are not beyond the reach of laws, so the question is what the laws should be.

Chapter 11. Yet Another New Economy

This chapter considers V&C’s notions of what “decentralized” means, as in “the sharing economy”. Here they enter the realm of political speculation about how “old world” institutions might respond to the “crowd”.

Their analysis is rather shallow, based on a limited understanding of human motivation and behavior, and perhaps misreading the history of nation states. For one thing, they persist in imagining that “trust” is a bad thing: in interpersonal relations, trust is the most valuable thing there is. Switching to impersonal, supposedly “trustless”, systems corrodes the very core of human relations.

However, V&C do give at least limited endorsement to the notion that society requires government, and that government has a useful role to play. When the government is weak, gangs and companies step in. Don’t imagine otherwise.

Chapter 12. Conclusion

In the conclusion, V&C step back to look at the bigger picture. I heartily recommend this chapter to any serious student of cryptocurrency.

Today, bitcoin is tiny compared to the world economy. (I like to point out that bitcoin’s “market cap”, in the billions of dollars, is about the size of the annual budget for the government of a small city.) It is also deeply connected with antisocial activities, drugs, porn, guns, extortion, and fraud; stuff that most people do not want to be associated with.

Second, bitcoin’s economic model is bad macroeconomics, and undermines good economics. There is a very good reason we left behind the gold standard, and only the ignorant seriously want its return. (I’m talking to you Paul Ryan and Rand Paul.)

Third: Apple Pay. With well designed systems such as Apple Pay, ordinary people can get most of the benefits of cryptocurrencies without using cryptocurrencies. Plus, they can get it from people they trust (rightly or wrongly). People like working with people they trust, and don’t mind paying extra for it. (This is the Disney company’s strategy.)

V&C consider scenarios that might significantly boost bitcoin, such as adoption by a giant firm or by a large government. These actors would be motivated to save money on supply chain operations, but such deployment would have a serious knock on effect. Alternatively, conventional financial systems could crash (while somehow leaving digital networks operational), leaving cryptocurrency as the last man standing.

Finally, V&C pull up their trousers and have the courage to think seriously about alternative scenarios. They sketch six possible futures, each believable in ten or twenty years.

I will list them here, and urge you to read the chapter to get the details.

- The “No” Case
- The “Yes” Case
- A Vital, if Unseen Cog
- The Multicoins World

- The Digital Dollar
- Bretton Woods II

My Own Conclusion

As I already said, this is a very good book. An essential book. The best work so far on cryptocurrencies.

Chapter 12 alone should be read by everyone who wants to talk about cryptocurrencies.

I'm not as sold on bitcoin, the blockchain, or the alleged merits of decentralization as V&C. I found myself disagreeing and arguing with many of the points in this book.

But this is the most comprehensive review of these issues I've seen, and avoids the crazy rhetoric of the most enthusiastic boosters and detractors.

Most important of all, V&C are deeply aware that this is a cultural story, built on, but not driven by, technology.

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1. Robert McGrath, *You Shall Not Crucify The Internet On This Cross of Bitcoin*, in *Very Much Wow*. 2014: Albuquerque. p. 34-37.
<http://issuu.com/verymuchwow/docs/vmw3/35?e=11558635/8421855>
 2. Very Much Wow. *Very Much Wow: The Dogecoin Magazine*. 2014,
<http://www.verymuchwow.com/>.
 3. Paul Vigna and Michael J. Casey, *The Age of Cryptocurrency: How Bitcoin and Digital Money Are Challenging the Global Economic Order*, New York, St Martin's Press, 2015. <http://theageofcryptocurrency.com/>