EPISODE 566

[INTRODUCTION]

[0:00:00.3] JM: Bitcoin and Bitcoin Cash are two cryptocurrencies with similar properties, but the supporters of each of these Bitcoin versions have strongly divergent opinions on the direction of the Bitcoin project. At the center of this debate is the subject of block size. Bitcoin's block size determines how many transactions fit into each block that is mined. A larger block size leads to faster transactions and lower fees, but it creates higher demands on mining hardware. A smaller block size leads to a slower on-chain network and higher fees, but it allows the full nodes on the network to be run on low-performance hardware, like Raspberry Pi.

Bitcoin Cash has a large block size. Bitcoin Core has a smaller block size. Proponents of the smaller block size argue that Bitcoin scaling can be achieved by the off-chain lightning network solution.

Roger Ver is a Bitcoin entrepreneur and investor. Since he discovered the currency, he has been buying it and evangelizing it. More recently, Roger has become an ardent supporter of Bitcoin Cash, emphasizing that Bitcoin Cash is Bitcoin. In this episode, Roger describes his economic ideology and he explains why Bitcoin is so important to him. We explore how vested interests can shape the narrative and the direction of Bitcoin, and we talk about the future of how corporations, governments and individuals might be using cryptocurrencies.

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community. If you're looking for an open-source project to be a part of, go to github.com/softwareengineeringdaily and check it out.

With that, let's get to this episode with Roger Ver.

[SPONSOR MESSAGE]

[0:02:42.5] JM: Users have come to expect real-time. They crave alerts that their payment is received. They crave little cars zooming around on the map. They crave locking their doors at home when they're not at home. There is no need to reinvent the wheel when it comes to making your app real-time.

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[INTERVIEW]

[0:04:25.7] JM: Roger Ver is a Bitcoin investor and entrepreneur. Roger, welcome to Software Engineering Daily.

[0:04:30.3] RV: Thanks for having me on.

[0:04:31.5] JM: There was a set of key events that shaped your convictions about Bitcoin. You started reading about economics when you were very young, you were put in a United States Jail for some actions that maybe you didn't deserve to be jailed for, and in prison you saw firsthand fundamental displays of economics. You saw how currency systems could emerge. You left prison and eventually stumbled across Bitcoin. Can you give a synopsis of the important events that shaped who Roger Ver is today?

[0:05:03.9] RV: Sure. Just by good luck, I suppose, I think it was probably the summer between sixth and seventh grade, or maybe seventh and eighth grade, and my mother told me no more video games for the day. I had to go and read a book or do something else. I was looking around on the bookshelf and I stumbled across a book called *Socialism* by Ludwig von Mises.

For any of your listeners who already know who Mises is, they'll realize that this wasn't a pro-socialism book, but at the time I picked it up I thought it probably was a pro-socialism book and I didn't really know what socialism was. I knew that Americans were supposed to be capitalists, but I didn't really know what that was either, but I figured I should at least hear the other side of the argument.

I picked up this book and started reading it. It turns out I think it was The Wall Street Journal, or New York Times, or somebody, like they termed it, Ludwig von Mises's devastating critique of socialism. Basically, he points out how incredibly important prices are and how the prices of everything transmit information all over the globe as to what raw resources should be used to produce what consumer goods. If it wasn't for this pricing mechanism, we would have no idea if chairs should be made out of leather and metal and plastic, or made out of gold, or you know. We would have no idea what materials we should use to build the things that we actually want.

After reading that book, I realized, "Wow, prices are so incredibly important and economics is so incredibly interesting, because it's what makes the world go around." One of the other theories that I started reading about was with the origin of money. How does something come to be used as money?

The theories in these books basically explain that it comes from something that has to have certain characteristics. It's easily recognizable, easily portable, durable hard to counterfeit, it has to have a limited supply. I read about the theories and the books is the origin of money and I was pretty convinced that those theories made sense and sounded accurate.

Then through a whole another story, I wound up in federal prison in the United States for selling firecrackers without a license on eBay, back when eBay had a guns and ammo section and there were dozens of other resellers there. I'm happy to tell that whole story at some point as well, but I got to see firsthand in prison there is this entire micro-prison economy in which the prisoners were buying and selling and trading things with each other and services. Naturally, the goods that were the most useful as money just became money in the prison.

The things that were used the most as money we're top ramen soups, postage stamps, tobacco and cans of mackerel as well. They each have an exchange rate from one to another, but I got to watch that how this entire economy operated with people smuggling things and giving each other tattoos and just all sorts of crazy things that you wouldn't really expect to be going on, but it was really, real interesting.

I got to see firsthand with actual empirical evidence right in front of my eyes that the theories that I had read about in the books were true in practice. That made me even more convinced that the things that I read about in the books were true. Then fast forward almost a decade, I heard about Bitcoin. I knew there was absolutely no doubt in my mind, I knew both from the theories that I had read about in the books and from the empirical evidence I saw right before my eyes, I knew people were going to start using Bitcoin as money. There was absolutely no doubt in my mind.

My first step was to go out and buy a bunch of Bitcoin and my next step was to help build the software tools to make Bitcoin even easier for people to start using it as money. Here we are almost a decade after that now. Sure enough, people around the world are starting to use it as money and we're seeing great big giant businesses being formed around it and big giant businesses using it, people using it to send or receive money with each other all over the world, which is a I guess definitely show that I was on the right track there back when I decided to get involved.

[0:08:45.5] JM: Indeed. The way that Bitcoin is used is somewhat different. Well the way that it's used and created is somewhat different than the way that fiat currency is created, so just talking about the US government, because I think you have strong critiques of the US government. In your ideal world, what would be the interaction between the US government and the global financial system?

[0:09:12.6] RV: In my ideal world, all human interactions will be on a voluntary basis, or not at all. If you look around the world, the difference between something being voluntary and involuntary is incredibly important. It's the difference between working for a living and being a slave. It's the difference between making love and being raped.

All around the world, we have all these businesses that are asking customers to buy their products, right? Apple, or Starbucks, or take your pick, they ask customers to buy their products. It's only governments that force people to buy their product, and if you don't buy their product, you go to jail. For me the whole thing just seems completely crazy that people would put up with that thing at all.

If Starbucks started forcing people to buy their coffee, people would be calling Starbucks a horrible institution and be boycotting them and protesting in the streets over it. Yet, when the United States government forces people to participate in their retirement scheme called social security, everyone just shrugs their shoulders and say, “Oh, okay. Whatever.”

In my ideal world, the United States government wouldn't have anything to do with anything. Just like most people today realize that it's great to have a separation of church and state. I would to see a separation of money and state. I think we're headed in that direction with the invention of cryptocurrencies and just like the separation of church and state has been wonderful for the whole world, the separation of money and state is going to be wonderful for the whole world as well.

[0:10:33.7] JM: Do you have any predictions for how that might play out? Let's say a new president gets elected and they make you the secretary of crypto-economic policy. They vaguely agree with what you're saying and they want you to help them implement policies that take them in that utopian direction, what actions would you take? What policies would you implement?

[0:10:56.5] RV: I suppose the policy that I'm advocating for, the position I'm advocating for is a not one-size-fits-all policy. It's just let people do absolutely anything that's peaceful, and as long as you're not using force or fraud against anybody else, you should be able to do it just fine. I suppose, I would just tell them just get out of the way and let peaceful people engage in peaceful activities. That would be the end of it.
Free trade isn't a thousand-page agreement between the US, Canada, Mexico for NAFTA. That's not a free trade agreement. That's a bunch of regulated trade. The short answer is just get out of the way and let people interact with everybody else on the long-term basis.

[0:11:36.9] JM: That would be great. Do you have any more – do you have any other predictions for the roadmap that it might take to get to something like Bitcoin being used as a rival, or a alternative to fiat currencies?

[0:11:54.0] RV: Another thinker that I'm a big fan of is Ray Kurzweil, who's currently in charge of all of AI over at Google. In some of his books, he pointed out that the pace of change that we expect to see, it's always less than we expect to see in the short term, but it happens much faster than we expected in the long term. I think that'll be the case with Bitcoin. We always want everything to happen overnight, or within the next month or two.

It doesn't happen that fast. When you step back and look just how far Bitcoin's come in the last decade, it's absolutely incredible. It hasn't even been around a decade yet and it's already made this much stride. In the next decade it's going to be even bigger leaps and bounds of adoption around the world. The next couple of months it might not look it's made much progress at all.

How is it going to happen? It's going to happen by people using it as money in commerce to buy and sell things and pay people on the payroll of their companies and pay people across the world, just through mass adoption around the world, one step at a time and one person in business at a time.

[0:12:54.3] JM: Speaking of Google, how do you think the role of large corporations like Google will change as cryptocurrency adoption increases?

[0:13:04.1] RV: One of the real interesting websites that I just saw came online yesterday, or the day before. I'm not sure if they're going to be a competitor directly with something either Twitter or Facebook, but they had it's a social media website where you can post whatever social media content you want, but it's instantly recorded right there into a blockchain, so there's no way that anybody could censor what's being posted on social media. Whereas, we know Twitter and Facebook have all sorts of algorithms as to which posts get seen by more people and get displayed by more people, and these companies wind up in control of all of it and sell the data to who knows what, to do what with.

Maybe we'll see more and more systems in which there isn't one gatekeeper to the whole platform that decides what topics are going to be discussed, or which things are going to be on there. This whole new world is open to all of us and the software developers are the ones that really get to build these new things for the world to use. What an exciting platform. We have this uncensorable platform now that the whole world can start building upon. That's really, really exciting for everybody. I'm looking forward to seeing what amazing ideas people around the world come up with to do with this.

[0:14:14.1] JM: I feel the same sense of excitement as you do. Although, I wonder what these corporations themselves will build. I heard an interview with Vitalik, where he expressed – he's very optimistic about the space, but he expressed his biggest concern as being the US government teaming up with Google and making a cryptocurrency, or something that is like a cryptocurrency that would achieve mass adoption before something like Bitcoin has a chance to achieve mass adoption. Do you worry about this thing?

[0:14:47.6] RV: Yeah, that's been my exact concern from day one. That's why from the moment I got involved in Bitcoin, my goal was to promote its adoption and use around the world as quickly as possible, so it would get as much traction around the world as possible. It would be too late for some government spy coin, in which they can control and monitor every single person's transaction.

It would be too late for something that to surpass Bitcoins market share and market adoption and usage around the world. Not to dive too terribly deep into internal Bitcoin politics, but that's what's been so frustrating for me about this internal Bitcoin scaling war, where there's a faction

of people that don't feel any urgency whatsoever to gain adoption or gaining usage for a Bitcoin around the world, and don't seem concerned one bit at all about governments going in and then co-opting this platform and getting everybody to use some cryptocurrency in which they have complete control.

Meaning, they meaning the government people, in which they can spy on everybody and monitor everything that everybody's doing and potentially freeze people's accounts. I do think that moving quickly to get the world adopting the currency that can't be controlled by governments and people actually do have control over their own money. I think we should move as quickly as we possibly can on that front.

[0:15:57.4] JM: I do want to get to those scaling discussions a little bit further into the conversation, but talking more about your perspective on the space from a higher level, I had a conversation with Erik Voorhees a few weeks ago, and we talked about inflationary and deflationary currencies. Do you have opinion as to whether a currency needs to be inflationary, or deflationary, or neither?

[0:16:27.6] RV: If you look at the actual definition of deflation, meaning that there's less and less currency over time, so some people love to say that Bitcoin is a deflationary currency, but it actually isn't. There's actually new Bitcoins being released every 10 minutes on average and that will go on for more than a 100 years into the future. It's just inflating in a much, much, much slower pace than the US dollar, or the Euro, or the Yen, or these other currencies.

From a purely economics standpoint, don't need any currency that's inflationary. I don't think it does much of anything. The monetarist would argue that you should have a inflation at the rate that keeps up with the rate of economic growth, but then you have the big question, “Well, who gets to create the inflation?” Looks like they get to benefit from it directly, because they're the first ones they get to go and spend that money out in the economy and that doesn't seem very fair to the world either.

I'm a big fan of Bitcoin, because it's some of the hardest money around. Before Bitcoin, I was a big fan of precious metals as money. I was one of the first users of a company called Eagle, which was a fantastic idea that allowed people to use gold as money on the internet. The gold

would physically stay put in some vaults around the world and you would just transfer the ownership of that gold around electronically.

It was really starting to get traction. I was accepting this payment for my computer part sales, and then once it started to get popular enough, the US government came in and literally stole all the gold out of the vaults and shut the whole business down, which was a real shame. That's why I got so excited about Bitcoin when it came along, because I realized that, "Well, there's no central place that the government could go to to steal everybody's Bitcoins. Here we are today, and sure enough, people are using Bitcoin around the world. Just when I got involved in Eagle, that it was a good idea, people did start using it around the world, but unfortunately was a centralized, so the government came and shut it down.

[0:18:09.4] JM: Speaking of Erik, he's got his own opinions, but I know you share a lot of the fundamental economic values with him. Is there anything notable that you disagree with Erik Voorhees about?

[0:18:23.0] RV: I didn't get to hear his most recent interview with you yet, but Erik and I seem to see eye-to-eye on all sorts of issues, but were two different people with I'm sure different views on lots of areas as well, so to each their own. That's the other thing that's so neat about cryptocurrencies is if you don't like them, don't use them. Or if you like them, you're free to use them because nobody can actually stop you. For me that's very, very exciting and liberating.

Erik seems to be of the mindset, if I had to guess his opinion, is that there's going to be a world with all sorts of different competing currencies all over the world. He's building a platform that allows people to trade back and forth between them. I think to some extent that's right, but I also think that there's going to be one, or two, or maybe three winners that wind up having a huge share of the market, just like it's convenient in all of Europe for people to be using the same money, or all of the United States for people to be using the same money.

Once something gets enough traction, it'll be convenient for people all over the world to be using the same money. I think, in the end we'll see a cryptocurrency, or maybe two, or even three, but I think we'll see one that has the lion's share of a usage taking place upon it.

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[INTERVIEW CONTINUED]

[0:20:41.0] JM: You're an outspoken fan of Bitcoin Cash. For those who don't know, explain what Bitcoin Cash is.

[0:20:46.9] RV: Bitcoin Cash is the same version of Bitcoin that I got involved with in 2011. People can argue a little bit about that, but I think the best demonstration of that is that the pitch that I've been giving about Bitcoins since 2011 is that it allows you to send and receive any amount of money with anyone, anywhere in the world instantly, basically for free and there's nothing anybody can do to stop it.

I've been giving that pitch for almost eight years now. That pitch is still completely true of Bitcoin Cash. That pitch is no longer even remotely true of Bitcoin Core. If you look at just strictly from a user experience perspective, Bitcoin Cash clearly is the original Bitcoin. Bitcoin Core is now some science project. Maybe it'll be incredibly successful, but I don't think so if you have two versions of Bitcoin, the Bitcoin Cash version that's cheap, fast and reliable. The Bitcoin Core version, that's slow, expensive to use and unreliable.

You don't have to be a rocket scientist, or you don't have to be an economics professor to figure out which one of these two versions of money is going to be more useful to the world. I think there's been a lot of people out there that have been tricked by a lot of censorship and propaganda going on from supporters of Bitcoin Core into trying to trick them into thinking that Bitcoin Cash isn't Bitcoin, whereas from a user experience perspective, it's exactly the same as the Bitcoin that started from day one. It's on the same exact economic roadmap to worldwide adoption that Bitcoin was from day one.

Yet somehow, there's other project that deviates completely from the original Bitcoin, both in terms of underlying technology and the user experience managed to bring along the BTC ticker symbol with it. A lot of people are confused into thinking that Bitcoin Core is the original Bitcoin, when it's not. I'm sure when this goes live, lots of people want to argue about it. But just look at the facts, Bitcoin Cash allows you to send and receive any amount of money instantly, basically for free, just like Bitcoin did in 2009, 10, 11, 12, 13, 14, 15, 16, all the way up until 2017-ish. Bitcoin Core no longer allows that to be possible. Bitcoin Cash does, so it's clear which one of those versions Bitcoin is most aligned with the original version of Bitcoin.

[0:22:53.5] JM: This show is mostly targeted at software engineers and we like to go fairly technically deep if possible. I do want to have a discussion about the evolution of Bitcoin Cash and your perspective on that story. How would you say, or who would you say started Bitcoin Cash? Who started it?

[0:23:14.8] RV: I would say Satoshi Nakamoto started Bitcoin Cash. We can read everything he wrote, both his writings on forum posts and his actual software code itself. It was clear, and a direct quote from Satoshi was that the ultimate solution is to just allow the blocks to get as big as they need to be. For those that aren't super familiar with what the blocks in a blockchain are, it's basically just the recording of these transactions into blocks of data that have been attached to each other cryptographically in a chain.

The Bitcoin Core blockchain has been limited to 1 megabyte worth of data every 10 minutes. Luckily from some perspective, the amount of people using Bitcoin around the world – Bitcoin has become so popular that now more than 1 megabyte worth of people are wanting to make

transactions every 10 minutes, which is about 2,000 transactions can fit in a 1megabyte worth of data with the current data architecture.

Bitcoin Core are trying to do all sorts of things to try and fit more transactions in each block, whereas Bitcoin Cash supporters are saying, “Well, let's just increase the block size and make the way in which the transactions are included in each block more efficient, so we can do both.” I forget to who said it, but I'm sure your listeners will know, but somebody out there said that the premature optimization is the evil of all software development, or something to that effect.

I think that's exactly what we've seen happen on Bitcoin Core is they've been prematurely trying to optimize the software and it's been the result of them causing a horrible end-user experience, which has driven people to start using things like Ethereum and Dash and all sorts of other coins out there.

Bitcoin before it split used to have 90 something percent market share. Then people became more and more concerned about the horrible user experience that was going to be created if the blocks were ever allowed to become full. Then we've seen that horrible user experience come into existence and we’ve watched Bitcoin’s market share go from 95% down to 48% today. That drop happened in just a year. That's a real empirical evidence of Bitcoin losing market share in the overall crypto-coin ecosystem.

The world at large, we're seeing merchants that used to accept Bitcoin BTC, Bitcoin Core stopping accepting Bitcoin. We’ve seen companies like Reddit and we've seen companies Microsoft stop accepting Bitcoin Core, and we've seen these same businesses start to accept Bitcoin Cash. It's very clear, because Bitcoin Cash works as money, Bitcoin Core no longer does. That's why I’m a Bitcoin Cash supporter today, because it actually works and Bitcoin Core doesn't.

[0:25:45.6] JM: What are the downsides of increasing the block size?

[0:25:49.9] RV: The argument that's made, which I think is exactly wrong, but the argument being made by the Bitcoin Core people is that if you increase the block size, it will require a more expensive machine to run a full node that has a copy of the entire blockchain on it.

Because right now, today on the Bitcoin Core network, you can run a full node on a $25 Raspberry Pi.

Whereas on the Bitcoin, and to be fair on the Bitcoin Cash network today, you can still run a full note on a $25 Raspberry Pi. In the future if Bitcoin Cash becomes more popular, maybe it'll take a more expensive computer than a Raspberry Pi to run a full node. At the end of the day, I don't think it running a full node on a Raspberry Pi is very important. If you look at the people that are doing Bitcoin mining, one single mine machine costs over a $1,000 and these companies are buying either thousands or tens of thousands of machines at a time. They're spending millions and millions and sometimes tens of millions of dollars at a time buying mining hardware, which are basically just fancy computers that are designed specifically to do Bitcoin mining.

If they're willing to spend millions of dollars on mining equipment, they can easily spend a few thousand dollars or even potentially $10,000 plus to buy a real beefy computer that can run a full node on it, because it's less than 0.001% of the money that they're spending on all these mining hardware. It's not even a big deal for them at all.

A lot of people get confused into thinking that these full nodes are so important that aren't mining, but if you look at it, the only person that's ever going to include your Bitcoin transaction in a block is somebody that's mining. It's the miners that include the transactions in the block, it's the miners that validate them, it's the miners that are so important to securing the network. If the miners are spending millions of dollars by mining hardware, they can afford to buy a computer that's more expensive than a Raspberry Pi to include all – to manage the blockchain.

Then another really interesting point that the other side keeps making is that we need to have the size of a computer to run a full node be very cheap and expensive, otherwise the network it's going to be centralized. Well, we saw exactly what happened when the blocks became full, it made it so the fees to withdraw Bitcoins that were mined by miners became very high, so it made small miners by themselves impractical and it basically centralized mining into big giant mining companies, because of the fee to withdraw your Bitcoin that you've mined for the day for a pool is $50 in fees.

If you're only mining $5 a day in Bitcoin and it takes $50 in fees, it makes it so you're mining is not really even worthwhile, because you're going to have to wait months to withdraw your funds until the $50 withdrawal fee is a small enough percentage of the money that you mined to make it worthwhile.

Whereas, if you're a big giant industrial miner and you're mining thousands of dollars a day worth of Bitcoins, then the $50 fee is much more tolerable. The actual effect of limiting the block size and causing the fees to be high on the network causes minor centralization. For those that are just on the periphery of this whole Bitcoin scaling debate, the part that's the most shocking for where I think it should be the most shocking for the public is that these Bitcoin Core supporters, the actual people that are involved really deeply in this, they openly say that they want Bitcoin transactions to be slow, expensive and unreliable.

They openly brag about how they look forward to the day in which a single Bitcoin transaction, the fees to make that transaction, or a $100, or even a $1,000 for a single transaction. As somebody who's been running businesses from my whole life and serving customers all around the world, I realize that if customers, if they have an option where one version of Bitcoin cost them even $10 in fees to use and another version of Bitcoin cost them a tenth of a cent, like Bitcoin Cash to use, they're going to switch to Bitcoin Cash. That's what we're seeing happen.

In economics, it's called substitute goods. If you have Coca-cola and Pepsi, but Coca-cola costs 10 times as much as Pepsi, a lot more people are going to start drinking Pepsi than Coca-cola, and we're seeing that happen with cryptocurrencies. Bitcoin became incredibly expensive to use of a Bitcoin Core, so more and more people started using Bitcoin Cash and other cryptocurrencies, because just about all of them were less expensive to use than Bitcoin Core.

As the first investor in the entire world and in Bitcoin startups and as big holder of Bitcoin, it was very frustrating for me to see that happen to Bitcoin, where these people managed to intentionally on purpose create a bad user experience for Bitcoin users. Sure enough, people have started using other currencies at this point.

[0:30:15.7] JM: The counter-argument to what you just said would be something involving lightning networks. I think if we had a Bitcoin Core contributor sitting here with us right now, they

would give us some strong argument in favor of Bitcoin Core that would involve a defense of lightning networks. Can you maybe articulate the strongest argument that you can imagine in favor of Bitcoin Core? What arguments would they make?

[0:30:45.3] RV: Their strongest argument is that they want to have all the scaling happen on top, on protocols sitting on top of the 1 megabyte Bitcoin protocol. That way, all these transactions don't need to be recorded directly to the blockchain. You can think of this as like write caching. For the Bitcoin blockchain, you can have a whole bunch of economic activity happening and then only every once in a while do you sync back up and record those transactions, or the final state of those transactions back onto the blockchain.

That'll allow the Bitcoin network as a whole to continue to be run by Raspberry Pis and people on dial-up modems in third-world countries around the world. That's what they're advocating for. If I can give the reason why I think that that's flawed, the Lightning Network isn't ready today. If Lightning Network was ready and worked and gave people a good user experience, I would be just fine with that.

I was just having this debate with a big time core contributor and Bitcoin Core and lightning network supporter in Hong Kong maybe five days ago, or a week ago now. I told them, I said, “Well, show me. Can I set up lightning wallet on my phone?” He said, “Oh, no. You can't do that.” I said, “Well, can you show me buying something on the internet?” I told him, “Let's go to the Blockstream store,” and Blockstream is the main proponent of this layer 2 scaling with lightning network stuff.

We went there. I think it's one of only three stores on the entire Internet where you can buy things with Lightning Network payments. I said, “Let's buy something.” He tried to buy $9 worth of stickers. I told him if he succeeds in buying them, I'll wear a Blockstream shirt and he can take some photos with me to use his promotion.

He tried to make a $9 purchase with his Lighting Network and it took maybe four or took around four minutes for him to try to make this purchase. After four minutes of fiddling around with his phone and his computer and everything else, the transaction failed. It didn't go through. He

literally wasn't even able to make a $9 purchase with the Lightning Network. It took him four entire minutes to fail.

Well, if I'm going to design a layer 2 system that fails when people try to use it, I'm sure I can make a system that fails in half the time. At the end of the day, Lightning Network doesn't work. Maybe someday it will, but it's not ready yet today. What these people have done is they have intentionally broken a Bitcoin that was working and working incredibly well for payments by people all over the world. They've broken that in the attempt to force people onto something called a Lightning Network that doesn't even work.

If they ever do manage to get the Lightning Network to work, it will work faster, better, cheaper and more reliably on top of Bitcoin Cash, than well on top of Bitcoin Core. The whole point in my book is just vote anyway. From a business perspective, it's absolute madness to destroy your current product and make it unusable in the hopes that someday you'll have a new product that'll work even better, but that new product is nowhere even remotely close to being ready.

It might not ever be ready, because routing is a really, really, really hard problem that, I sold routers for more than a decade before I got involved in in Bitcoin. The routing problem on the Lightning Network might not ever be solvable, because every single time anybody makes a single payment on the Lightning Network, the status of the entire network changes, so the routes that the payments are going to have to take changes after it needs to be updated after every single payment. I hate to say anything is impossible, but that sounds like a really, really, really difficult problem to solve, that I'm skeptical is ever going to be solvable.

[0:34:15.0] JM: Is the moonshot that they're aiming for not that you would have a Bitcoin full node running on a Raspberry Pi, but that you could have a Bitcoin full node running on your phone and then have the Lightning Network taking care of a lot of off-chain transactions? As long as we keep the 1 megabyte block size, then we can move towards that bright future where we all have full nodes running across all of our smaller devices so that we optimize the decentralization? Would that be a strong argument they might make?

[0:34:52.2] RV: I wouldn't call it a strong argument. Some of them make that argument, or some of them seem to be of that opinion. Gregory Maxwell, the CTO of Blockstream up until recently,

previously made a bet with the CEO of blockchain.info, the world's most popular cryptocurrency wallet. Greg Maxwell said that, and this was maybe two or three years ago they made the bet, he said that he thought that within another year or two Bitcoin Core, the full node desktop wallet would be the most popular Bitcoin wallet being used by users around the world.

Peter Smith said, “Absolutely not. It's going to be something like blockchain.info in which the users have a light client.” Here we are a couple years later, it's incredibly clear which one of those two people were correct. It was Peter Smith, blockchain.info has 20-something million wallets, but those people they control the wrong private keys, which is what the important part is, but they're not running a full node to do it.

We're seeing the same thing with Coinbase. I think they have somewhere in the ballpark of 12 or 13 million users at this point and none of those users are running a full node themselves. An important characteristic there that was – that they're not running full – they don't have the private keys themselves either. You can think of Coinbase as a Bitcoin bank, whereas blockchain.info is a Bitcoin wallet where the users have the money themselves.

There's room for both in the ecosystem, but the person who we certainly was wrong was this Greg Maxwell, the CTO of Blockstream, one of the biggest proponents of the Lightning Network. He couldn't have possibly been more wrong about what wallets people were going to use. Even today, nobody's running a full note on their phone. Probably less than 0.01% of people around the world are running full loads.

Almost everybody is using a service like blockchain.info, or Coinbase, or of course the Bitcoin.com wallet. We launched less than a year ago and we have more than 2.2 million wallets created at this point. I guess, another example of how Bitcoin cash is the original Bitcoin is I received my very first Bitcoin ever from a Bitcoin faucet put up by Gavin Andresen, where it would send anybody anywhere in the world 10 cents worth of Bitcoin for free, and he would just paste in your Bitcoin address and boom, it would send it to you.

At the time, there was absolutely no fee for the faucet to do that at all. Faucets still exists on Bitcoin Cash, where they'll send anybody 10 cents worth of Bitcoin cash for free. You can go over to free.bitcoin.com right now and try that. Those faucets on Bitcoin Core, BTC are all long

gone, because the fee to send that Bitcoin would be more than the amount that they could even send.

Then if you were even to give someone 10 cents, it would cost them more than 10 cents in network fees to then re-spend that Bitcoin. Even if you sent them the 10 cents, it wouldn't be re-spendable by then. There's another example of how Bitcoin Cash is the original in the actual practice and the user experience. Bitcoin Cash is the original version of Bitcoin. Bitcoin Core is something completely different at this point, even though it managed to bring along the BTC ticker symbol with it, which is what's causing a lot of confusion.

People go out there and see, “Oh, this is BTC. This must be the one that I've heard about for years and years and years.” They buy that not realizing that it has a totally different user experience than the user experience to let it to become the worldwide phenomenon.

[SPONSOR MESSAGE]

[0:38:13.2] JM: We are running an experiment to find out if Software Engineering Daily listeners are above average engineers. At triplebyte.com/sedaily you can take a quiz to help us gather data. I took the quiz and it covered a wide range of topics, general programming ability, a little security, a little system design. It was a nice short test to measure how my practical engineering skills have changed since I started this podcast.

I will admit that, though I’ve gotten better at talking about software engineering, I have definitely gotten worse at actually writing code and doing software engineering myself. If you want to check out that quiz yourself, you can help us gather data and take that quiz at triplybyte.com/sedaily.

We have been running this experiment for a few weeks and I’m happy to report that Software Engineering Daily listeners are absolutely crushing it so far. Triplebyte has told me that everyone who has taken the test on average is three times more likely to be in their top bracket of quiz scores.

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time, which is what I try to do with Software Engineering Daily myself. I recommend checking out at triplebyte.com/sedaily. That's T-R-I-P-L-E-B-Y-T-E.com/sedaily. Triplebyte, byte as in 8-bytes.

Thanks to Triplebyte for being a sponsor of Software Engineering Daily. We appreciate it.

[INTERVIEW CONTINUED]

[0:40:12.5] JM: In a model where, like let's imagine that Lighting Network did work and it was also a world where we could deploy full nodes to our cell phones and everybody could be running a full node on their cell phone, would that be better than people running light clients on their on their cellphones?

[0:40:35.0] RV: I don't think it makes much difference at all, to be honest. At the end of the day, it's not going to be a full load running on someone's cellphone that includes the next transactions in the next block in the blockchain. It's going to be the miner's side like to see as much mining decentralization around the world. There's many people mining Bitcoins spread out in different geographical jurisdictions, rather than a bunch of people running full nodes on their phone. It's the miners that include the transactions in the blocks.

[0:41:02.5] JM: Indeed. Do you think that – Yeah, I mean, I guess can we say anything conclusively about whether a 1 megabyte block size is easier to mine, than – a 1 megabyte block size with in a world where we had Lightning Network, versus a larger block size, can we say anything conclusively about which of those chains would be easier to mine, which one would lead to more mining decentralization?

[0:41:33.3] RV: I think the chain with bigger blocks, because more transactions can happen within those blocks would lead to more mining decentralization, which might initially be counterintuitive. The reason I say that is because if you have a billion people around the world using Bitcoin, you're going to have way more businesses that they have a reason to get involved, and that at least run full nodes, if not actually run miners as well.

Whereas, if today maybe there is 20 million people around the world using Bitcoin, so you have 20 million people's worth of businesses and miners and support around the world, you're going to have a much smaller number of people involved. I don't think it's the percentage of people that are running full nodes, or the percentage of people that are running miners that's important, I think it's the absolute number of miners and full nodes around the world that's it's important.

If you have, even if it's a smaller percentage out of a billion people, it's going to be a much larger number than a bigger percentage of a couple million people. That's why I think that bigger blocks will lead to more adoption, which will lead to more decentralization, not less. We've seen that happen in the earliest days of Bitcoin, when there were far fewer people using Bitcoin in 2011, when I got involved the only option was to run a full node and you can still do mining on your home computers, but there weren't that many people around the world using it.

It would have been much easier for governments to shut them down and to stop it and control it. Whereas, now today a much smaller percentage of people are mining Bitcoin, a much smaller percentage of people are running full nodes, but because it's a much larger absolute number, it would be far, far, far more difficult for governments to shut it down, or control it, or block it at this point. Once again, I think it's the absolute number of people involved in Bitcoin in doing these things, rather than the percentage of people that are running full nodes that's important.

[0:43:15.8] JM: Are you are you opposed to the whole idea of side chains and Lightning Networks, or are you just opposed to the idea of vaporware and people making large bets on technology that's unproven?

[0:43:26.1] RV: Yeah, I'm not opposed to Lightning Network, or side chains, or anything at all, but I'm incredibly opposed to destroying the version of Bitcoin that worked and worked incredibly well and led to this adoption around the world that we have. Sadly, that version of Bitcoin has been intentionally destroyed in the hopes of what – you're exactly right to call it vaporware.

Lightning Network is vaporware today, all these things are vaporware. I hope that vaporware comes into reality and works amazingly well and everybody gets to use it, but at the end of the day, it's not here yet. To destroy your existing product today that was working incredibly well for

everybody, because you want to promote some vaporware, what an incredibly stupid thing to do? Yeah that's exactly what the Bitcoin Core supporters and Blockstream people have done. They've destroyed a working product in the hopes of creating something that might work tomorrow, but they've been saying it's 18 months out now for years at this point and they're still saying it's 18 months away.

[0:44:19.7] JM: Now, one thing I don't understand is if Lightning Network will work one way or another, why would they feel a need to shape the direction of Bitcoin in order to promote Lightning Network? It seems like it would be useful, whether you're talking about Bitcoin Cash, or you're talking about Bitcoin as it is today, how would you characterize the strategy –

If Blockstream, for example, Blockstream is a company that makes – that is building technology around Lightning Networks, what is their motivation for the one, like promoting that 1megabyte block size? Because it seems like Lightning Network would be useful with or without the 1 megabyte block size?

[0:45:02.2] RV: To be honest, I don't think it is that useful without the 1 megabyte block size limit, because Bitcoin Cash transactions are already lightning fast and are basically free. That's what the whole promise of the Lightning Network is is the fast transactions basically for free. Well, Bitcoin had that for the first seven years of its existence, eight years of existence, until it hit the 1 megabyte block size limit, because so many people were trying to use its fast basically free transactions.

If they hadn't limited the block size to 1 megabyte, nobody would even have a need for the Lightning Network today, because it was already working actually better than Lightning Network. One of the big things that people don't seem to realize in regards to Lightning Networker is you have to have your node online all the time to even receive a payment. Whereas, with Bitcoin on chain transactions, you don't have to connect your computer to the network if you didn't connect your computer network for years and somebody had sent you money, when you turn on your computer, boom the money will be there.

Whereas, with Lightning Network that's not possible. That's a really, really big step down in the user experience, or the usability. You have to have your computer on all the time in order to

receive a Lightning Network transaction. If your computer is not online, people can't send you a Lightning Network transaction. That's a big problem.

[0:46:17.8] JM: Well, you could you could set up a scheme where you have somebody that guarantees you a service where they're always online and you can be offline for any duration. The next time you get online, that person will reconnect to the main chain, put their transaction back on the main chain and then you can take your money off of it, but I guess then you would have some centralization in that kind of service.

[0:46:43.9] RV: I sounds an awful lot like a bank, financial systems, where the whole point of Bitcoin is you can interact directly from person to person and you don't need some monitoring service to hold your transactions for you until you log on for the next time. Because those services, that's the point of attack, where governments and regulators can go to and say, “Oh, we don't like what this person is doing with their money. Why don't you give us his money instead?” They would have to comply.

Whereas, with Bitcoin all your Bitcoin address is basically a secret number. As long as you keep your secret number that's used to derive your public number, as long as you keep that secret, there's nobody in the entire world that can stop you from receiving payments. Whereas, with Lightning Network that's not the case any longer.

[0:47:27.8] JM: I'm sure we won't be able to litigate all the sides of this debate, but it is a debate and there are intelligent people on both sides of it. I think it's important for people who are watching the space to understand how news and narratives form around different areas of cryptocurrencies. As you said, the ticker symbol of BTC ended up getting handed off to Bitcoin Core. A quote from you is that Bitcoin was working great, until Blockstream used censorship and lies to hijack the network in order to intentionally break BTC's functionality. They're now trying to sell us a solution to a problem they intentionally created in the first place.

[0:48:14.0] RV: That's a great quote by the way and it’s true.

[0:48:17.1] JM: Right, and you you've given some other criticisms of Blockstream. I'd love to know, whether you're talking about block stream or a larger narrative formation, how are the

opinions shaped in the Bitcoin community and more specifically, how was that ticker symbol, how did it get decided? Who got to – from the fork, who got to take the ticker symbol?

[0:48:44.7] RV: There were a lot of moving pieces in there. I guess one good starting point and another great example of the crazy censorship that's going on, so maybe three weeks ago, four weeks ago I made a video that's currently back up on YouTube now. If you go and search for Roger Ver on censorship or something like that, it'll definitely come up on YouTube.

I pointed out of all the censorship that's been going on and how it affects people, and gave a really, really powerful demonstration and actual real-world examples of this happening in the Bitcoin ecosystem. It's a video of me talking into the video camera on my laptop. What happened when I put this video up on YouTube, a whole bunch of either brainwashed people, or one person controlling a bunch of bots from different IP addresses went and flagged my video as spam to YouTube and gotten YouTube to take my video off the internet so less people would be able to see it.

That's another example of the censorship going on. I made a video explaining why the censorship is bad and a bunch of these core supporters literally had my video taken down from YouTube by falsely reporting it as spam, which is just absolutely mind-boggling to me. If someone's saying something that you disagree with, the solution is to have more free speech and explain why they're wrong and where they went off the rails in their line of thinking. The solution isn't to falsely report their video as spam and have it taken offline.

In regards to the other question, how did Bitcoin Core wind up with the BTC ticker symbol? That goes back to the difference between the hard forks and soft forks in order to keep Bitcoin the same, which is the blocks were never full and the transactions are fast, cheap and reliable. We needed to raise what was the maximum block size from 1 megabyte to something bigger, which required a hard fork. Whereas, the changes that the Bitcoin Core supporters and Lightning Network supporters were trying to make we're a soft fork.

There's a fantastic article by Vitalik Buterin, the creator of Ethereum talking about how soft works are coercive, because it forces everybody on the network to come along. Whereas hard forks are voluntary, because you have to choose to actively upgrade your software to come

along with it. I thought that that was a really great definition, or laying out of how these things work.

Just because of that, the way it worked is that the Bitcoin Core supporters wound up with the BTC ticker symbol and a user experience that was completely different from the original Bitcoin. Whereas, the Bitcoin Cash supporters wound up with the BCH ticker symbol, but with a Bitcoin that worked basically the same as Bitcoin had always worked the entire time since the beginning of Bitcoin.

It's worth pointing out that the 1 megabyte limit, it wasn't in Bitcoin from the beginning, it wasn't added much later by people other than the original creator of Bitcoin. They convinced Satoshi to add it later as an anti-spam measure. Then suddenly when so many people were trying to use Bitcoin as an actual economic payment tool, which that means the transaction certainly weren't spam transactions, yet sending all these people want to put that limit on there.

As someone running a business on Bitcoin, in December of last year, I was very regularly paying more than $1,000 per transaction in fees for a single Bitcoin transaction to move Bitcoins. Well, of course I want to use something else. Nobody likes paying a $1,000 in fees per transaction. Luckily we had Bitcoin Cash now that has the exact same economic formula that Bitcoin did from day one.
That economic formula leads to success, so Bitcoin Core has a bigger network effect at this point. I don't think that that network effect is going to be insurmountable when the user experience is as horrible as the Bitcoin Core people have intentionally made it. They oftentimes mock the idea of people using Bitcoin for payments. Well, the entire reason Bitcoin became usable as a store of value at all is because people were using it for payments. Bitcoin Cash will have both of those applications. I think Bitcoin Core is going to wind up in either.

[0:52:36.6] JM: You mentioned Ethereum. Ethereum's model for scalability, at least what they are aiming for right now is proof of stake, and I find it interesting that both Ethereum and Bitcoin have different sets of scalability intentions. It seems like the scalability bottlenecks are similar, although both of the scalability solutions are somewhat vaporware-ish at this point. Why is Ethereum taking a different route to scalability than Bitcoin? Why haven't I heard any conversation around Bitcoin thinking about proof of stake?

[0:53:20.6] RV: I'm not very deeply involved in Ethereum. I definitely hold some. I used to not hold any old coins really at all, until I became very worried about the scaling issues with Bitcoin. I think it's worth pointing out that the scaling issues that Ethereum is bumping into at the moment are actual technical issues. Whereas, the scaling issues that Bitcoin core is having at the moment are just social issues.

I would have d to have thought that the social issues were less likely to become a problem, or would be easier to solve. It seems to be at this point that the social issues are hard to solve than the technical ones. I think the fact that the Ethereum teams are actually trying to scale Ethereum says a lot. Whereas the Bitcoin Core teams are basically openly hostile to scaling the network on chain.

Now that's going to if you intentionally create a bad user experience for users, you're going to have less users. It's just that simple. Bitcoin Cash is doing everything they can to give the users a good user experience, and that's why we're seeing businesses like bitcoin.com and blockchain.info and Coinbase and Bitpay and the list goes on and on and on integrating Bitcoin Cash onto their platform, because it provides the same fantastic great user experience that Bitcoin did from day one.

[0:54:34.2] JM: Ethereum is led by Vitalik. At this point, do you do you see any advantages that appeal to you after seeing the health of the Ethereum community socially, at least. Do you see the pros of having a cleared leader in front of a currency, or are you still mostly just a fan of the model of not having a clear centralized leader?

[0:55:01.7] RV: I'm a fan of anything that works. I think the experiment is still ongoing. Ethereum didn't really have much traction at all, and told the Bitcoin network was intentionally throttled and held back from scaling. Then suddenly, Ethereum and old coins in general just exploded in popularity. At the end of the day, I'm a fan of whatever works, and we'll have to watch and see what works. Maybe having a figure head like Vitalik is a great thing. Maybe it'll wind up being a – if there was downfall, I think the jury's still out, but at the moment I'm very cautiously optimistic about that sort of thing. At the end of the day, we have to use whatever works and we're still learning as we go, but let's learn from our past mistakes and apply those lessons to the future.

[0:55:47.4] JM: Definitely. Just a few more questions, what's the state of cryptocurrency regulation as you see it? I know that's an open-ended question, but how do you – what's your sense of how governments are reacting to cryptocurrencies today?

[0:56:04.2] RV: Now that the market caps of Bitcoin and cryptocurrencies are so high and that they're getting so much attention and use around the world, governments are moving quickly to try and rein them in and control them and keep an eye on what's going on. For me, that's I guess, really frustrating, because that I think this whole scaling civil war setback adoption worldwide by several years and we could have had far more merchant adoption and far more people using it around the world than we do currently if we hadn't ran into this Bitcoin civil war of a bunch of people who are openly hostile to using Bitcoin in commerce.

We can't change the past. We can only work to build a better future. I think the strategy is still get as much adoption around the world as fast as we possibly can, because governments and regulators move slowly. Let's move much faster, so that we had the entire world using a cryptocurrency that's not controllable before the government regulators even know what happened. That's my goal and I'm going to continue to work towards that goal.

[0:56:57.1] JM: Are there any businesses that you would like to see started in the cryptocurrency space that you haven't seen yet?

[0:57:02.4] RV: There's just so much happening. I think I would just like to see more polished products at this point. There's a bunch of wallets, there's a bunch of exchanges, there's a bunch of stores, but I would like to see the user experience for all those become much more polished, so that people that aren't crypto nerds are able to use them easily. I want to see my sister and mother and great-grandfather being able to use these things safely and easily. I think there's still a lot of work to be done on the user experience side of things to give people a good user experience.

[0:57:33.8] JM: As a final question, are there any resources that you would recommend people checking out for learning more and been getting your perspective on? Or maybe just a more balanced perspective on the Bitcoin Cash versus Bitcoin Core debate? Because I think there

are people out there who are curious about hearing both sides of this debate. I mean, it's clear from – I've been reporting on this space for a little while and it's clear that the dialogue at least has gotten swayed towards the Bitcoin Core side of things. You make a lot of compelling arguments, so I'd love it if you have some resources that people can access?

[0:58:18.2] RV: I'm obviously very, very biased in my opinion on the scaling debate. I think the best unbiased advice I can give to people is to go and read the original Bitcoin white paper that was written by Satoshi Nakamoto, and then go and make a Bitcoin Core transaction or two, back and forth from you and a friend and make a Bitcoin Cash transaction back and forth from you and a friend.

If you want to really try, you can try to make a Lightning Network transaction back and forth from you and a friend. The Lightning Network transaction if you manage to get it set up at all at the moment, probably will fail and won't go through. Just for the on-chain transactions, make both a Bitcoin Core and a Bitcoin Cash transaction and it'll be abundantly clear which version of Bitcoin is the one that's most aligned with the version of Bitcoin that people were using in 2009, 10, 11 12 all the way up until very recently.

It'll be very, very clear to anybody that's looking at this objectively that Bitcoin cash provides that same wonderful, fast, cheap, reliable user experience and Bitcoin Core doesn't. Or another example is if you go to free.bitcoin.com, we will send you 10 cents worth of Bitcoin Cash for free, the fee to do that will be about a tenth of a penny for us to send that to you. Then if you want to go and send it to somebody else, you'll be able to send that 10 cents to somebody else. I'm not aware of any faucets on Bitcoin Core anymore that can do that sort of thing. I suspect there aren't any, but feel free to Google around and try and find some that will send you 10 cents worth of Bitcoin Core on-chain. Whereas, myself and just about anybody else that got involved in Bitcoin in 2010, 2011, 2012, 13 maybe even into 2014, they got their first Bitcoins from an equivalent faucet.

I guess, the proof is in the pudding. Just go try and use both of these networks and read the original white paper. It will be clear which version of Bitcoin is most similar to the original version of Bitcoin, that is what a lot of Bitcoin to become this worldwide thing that's being talked about on podcast and new shows around the world today.

[1:00:18.7] JM: Roger Ver, thanks for coming on Software Engineering Daily. Really enjoyed talking to you.

[1:00:21.9] RV: My pleasure. Thank you so much for the opportunity.

[END OF INTERVIEW]

[1:00:27.4] JM: GoCD is a continuous delivery tool created by ThoughtWorks. It's open source and free to use and GoCD has all the features you need for continuous delivery. Model your deployment pipelines without installing any plugins. Use the value stream map to visualize your end-to-end workflow. If you use Kubernetes, GoCD is a natural fit to add continuous delivery to your project.

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