

A Bitcoin Governance Network: The Multi-stakeholder Solution to the Challenges of Cryptocurrency*

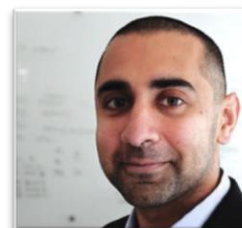
Transcript of Interview with Balaji Srinivasan

Board Partner, Andreessen Horowitz

Introduction:

Digital currencies, such as Bitcoin, are products of the digital revolution and the networked age. As their usage and value have grown, government policymakers have struggled to play catch-up, finding it difficult to comprehend this phenomenon, let alone regulate and govern digital currencies effectively. Incumbent interests, such as large financial institutions, have been similarly caught off guard. Meanwhile, digital currencies march forward. The Bitcoin economy has grown to over \$8 billion in value and the Bitcoin ecosystem, once composed exclusively of a few hobbyists and technologists, now includes merchants, financial services firms, start-ups, foundations, advocacy groups, investment companies, venture capitalists, government regulators, law enforcement agencies and NGOs. Thought leaders and business innovators, such as Balaji Srinivasan, Board Partner at venture capital firm Andreessen Horowitz, are now pushing forward with bold new applications for the Bitcoin protocol. We were fortunate enough to sit down with Mr. Srinivasan for a candid and in-depth interview.

We would like to thank Mr. Srinivasan for his time and for his thoughts on this disruptive and fast-changing technology.



Balaji Srinivasan

Participants:

Guest: Balaji Srinivasan, Board Partner, Andreessen Horowitz

Interviewers: Alex Tapscott, Author, "[A Bitcoin Governance Network](#)"

Don Tapscott, Executive Director, [Global Solution Networks](#)

The Interview:

A. Tapscott: Thank you for taking the time to join us. Let's start with a high-level question. You and Andreessen Horowitz are big supporters of digital currency technology. When did you realize the potentially transformative or disruptive nature of Bitcoin? How have you gotten involved since then?

Srinivasan: Good question. If you look at Bitcoin in mid-2011, there was a moment where the price spiked and then it crashed down to about \$2, but it then came back up in the fall and winter. I found this interesting because it was almost exactly like a Gartner hype cycle in miniature. In a Gartner hype cycle, there's a trigger and then there's a burst of enthusiasm and then there's a crash and then it kind of rises in a plateau. Few things have had the same resilience as Bitcoin. So that piqued my interest. So I got into reading about Bitcoin and looked at the code and so on and followed it over the course of 2012. For most of the first three years of Bitcoin, you could only really get the coin either by mining it or by buying it through an exchange like Mt. Gox. And if you looked at the Mt. Gox website at that time, it didn't have the graphic design or polish that made me comfortable using it for large wire transfers, and it seemed like that estimate on the basis of fonts was later validated.

In late 2012 Coinbase got set up and they actually had a fairly clean UI. So now I started working with it a lot more and messing around with the code. I got very heavily involved towards the beginning of 2013. This was partly a function of Coinbase entering the market and partly as a function of Bitcoin's "halving day" in early 2013. Every four years or so Bitcoin's reward for mining a block of transactions drops in half. So, the first four years it was 50BTC per mined block and then in early 2013 it dropped to 25BTC per mined block. It will do this again in four years to 12.5 and so on until it reaches a terminal point. So, this combination of availability via being able to buy on Coinbase and coupled with scarcity which came from the fact that fewer things were being mined – I think – led to a price spike. I had been following Bitcoin for a while, saw that it had resilience in 2011, and then got more involved towards late 2012 and early 2013.

A. Tapscott: That's great and actually the subject of the halving day and the fact that the supply of new Bitcoin is declining is something I'd love to talk about a bit later when we're discussing liquidity, but first let's take step back. Marc Andreessen and you have talked about ways in which the Bitcoin protocol can be applied to solve a variety of problems. It seems this is about a lot more than money and it could even be about a lot more than e-commerce; that there are other disruptive ways in which this technology can be applied. What are the biggest or most disruptive opportunities for the Bitcoin protocol? What do you see happening over the next decade?

Srinivasan: The Bitcoin protocol itself is based on the innovation of the blockchain and distributed consensus. This fundamental innovation makes it possible to decentralize a whole host of things that we previously couldn't necessarily decentralize. So, for example, DNS and public key infrastructure and Tor. All these kinds of things can now be decentralized. So there are many possibilities.

But let's just talk about Bitcoin as a paying mechanism for a second. There are things that you can do with Bitcoin that you couldn't do with any other payment mechanism before. For example, you can send an international B-to-B wire of an arbitrary amount in ten minutes from Japan to Nigeria. That was simply not possible before if you needed the money to get there in minutes rather than days. That was infeasible. Not only can you send very large payments, you can also send very small payments. So, you can send micro-fractions of Bitcoin all the way

down to one Satoshi, which you simply couldn't do via PayPal. Very small amounts of Bitcoin can be used for example as heartbeats for lots of different applications, such as content monetization or compensation for open sourced software development. So Bitcoin payments can be very large, very small, cross national borders and happen very quickly. There are whole new areas of payments that are now being opened up and new businesses that are now possible.

A second aspect of Bitcoin's revolutionary nature is its low or zero fees. So, as an analogy, in 1987 we would send information by affixing a stamp to a piece of mail. That is to say, we paid a fee to send information. When that fee went to zero, we first got email and then we got social networks and chat rooms and forums and P-to-P and so on. If you think about it, while email can be thought of as sort of physical mail without a stamp, when we start talking about a social network or an online forum, nobody is really going to send a postcard to all of their friends with a photo of their kid, get back comments from all of them, write responses to the comments, and then send those out again. When you think about how many physical letters would be involved to do this and the overhead in terms of stamps and logistical arrangements, it would be just infeasible. It could be millions of dollars for one page of a Facebook thread. What's interesting is what might happen when you set every fee in finance to zero. So, setting every fee in information to zero meant we got email, social networks, P-to-P, and more. So, what happens when we set every fee in finance to zero? So, not just ATM fees but wire transfer fees and even things like an IPO roadshow can be viewed as a fee without which you can't get investment in your company. You have to go through the process. So, every fee in finance is vulnerable over the next 10 to 20 years and I think we're going to see some really interesting things that come out of that.

A. Tapscott: Very interesting. One of the things that we've tried to do is provide a taxonomy for the existing financial system and to understand its limitations and what problems could be solved by Bitcoin. As we see it, the first limitation is financial intermediaries- you mentioned PayPal. Financial intermediaries are a burden on consumers and merchants. The second limitation is lack of financial inclusion. The very architecture of today's financial institutions precludes engaging half the world's population simply because their balances are too small and it would be deemed unprofitable. The final problem is exposure to political risk. We've been observing the uptake of Bitcoin in particularly volatile parts of the world. One is in Argentina, where capital controls and a sky-high inflation rate are causing people to look elsewhere for a store of value and a way to transfer funds. Can you speak to those three challenges? You already mentioned the issue with financial intermediaries- the speed, the cost, etc. of transferring money and making financial payments. What about financial inclusion and the political risks?

Srinivasan: Financial inclusion is a very big deal for Bitcoin. People talk a lot about digital technology's potential in the early nineties. Now we're really seeing it. Billions of people have smartphones. You've got billions of people on the global Internet and they're using it for real things – not just Google but also things like Coursera and online education. The things that people promised in the early nineties are actually happening.

With Bitcoin, if you have an Internet connection, you can send and receive payments. So, if you can install an Internet connection and someone has it on a phone, suddenly you've installed all these other things. You've installed a bank account already or at least the mechanisms for it and there are no forms to fill out. There's no bureaucratic process to go through. There's no corrupt official to bribe if you're in a country with high levels of corruption. You have just reduced the barrier to entry to get an account. It's free. It's accessible to anybody with an Internet connection. So, I do think that Bitcoin will be a big deal just from a convenience and inclusion standpoint.

I think it's also going to become a big deal from a pragmatic standpoint. Recently there was a case where Somalis in Minnesota were trying to send money back and the State Department had basically flagged that whole area as a potential terrorist hotbed. So one by one various banks withdrew from facilitating remittances and so these people were out of luck. If you have them use Bitcoin, boom, they can hit enter and it can't be blocked in this way by bureaucracy. In terms of political risk, in many of those countries you mentioned, Bitcoin could be a pretty big deal. Senator Branden Petersen from Minnesota is interested in creating a favorable environment for Bitcoin in Minnesota.

A. Tapscott: I often chuckle at the cognitive dissonance of US politicians. On one hand some denounce Bitcoin as a tool used by criminals and an affront to the US dollar and on the other hand they accept Bitcoin campaign donations.

Srinivasan: Yes. I think that's going to become a big thing, by the way, this year: donations in Bitcoin. Look for a few different projects on that coming up.

A. Tapscott: Bitcoin has gotten a bit of a bad rap largely due to the high-profile collapse of Mt. Gox and also because of Silk Road. The coverage strikes me as a bit alarmist and really only highlights a couple of bad actors. Still, I would like to discuss the challenges and limitations of Bitcoin. First, Bitcoin is still very volatile. There is still a lack of widespread adoption by retailers and there's an inadequate mass market understanding. And then finally, there is currently a lack of trusted third parties. The Bitcoin protocol itself may allow for the disintermediation of financial companies – which is one of its great virtues – but one still needs strong, safe institutions to convert Bitcoin, to store Bitcoin, etc. Can you speak to these challenges?

Srinivasan: Let me see if I can summarize that: reputation, adoption, volatility, safety. Any early technology often has these kinds of characteristics. Snapchat was thought to be for sexting and Facebook for stalking and so on and so forth, right? PayPal actually in its early days was actually used on a lot of porn and gambling sites and in fact that was more than 50% of its revenue in the early 2000s. So lots of technologies initially start as either toys or they're used by people who are a bit dodgy at the beginning. So, that's actually pretty common and the thing about it is that it's not really a judgment on the technology. If an Internet business goes

bankrupt, you don't blame the Internet, right? If a bank is robbed, you don't blame the dollar bill. So, that's kind of what I'd say about reputation.

With that said, I think there are a lot of very heavy hitters who are getting into the space now. Jim Beyer, an early investor in Facebook, who sits on the board of Walmart, was quoted in the New York Times as saying that he thinks Bitcoin is going to be an important part of payments all around the country. Fred Wilson of Union Square, who was an early investor in Twitter and Tumblr and many others, said that the next phase of his fund is going to be the blockchain cycle. So from a reputation standpoint a lot of really big hitters are getting into it.

In terms of adoption, every new technology starts with one person, right, and then you have to scale up to billions of people over time. If you looked at Mary Meeker's Internet trends presentation which just came out and you sum up the reported user numbers for blockchain.info, Coinbase, and a few other places, Bitcoin's number of wallets has increased at least 8X in the last year. If that growth continues for another year you're talking about 50 or 60 million worldwide users. So, adoption is also improving.

Kashmir Hill of Forbes wrote a series last year on trying to live on Bitcoin and she updated it this year and she observed that this year it was vastly easier. Last year while she lost a few pounds that week by virtue of the fact that it was hard to find food with Bitcoin, this year she ate the best meal she's ever had because so many places now accept Bitcoin. I've been encouraging her to do one every six months or 12 months because I think it'll be a very interesting time capsule.

I'm reminded of one of Marc's comments where he said that in 1993 there was so little on the Internet that when an Indian restaurant put a menu on the Internet, it was a big deal. People clapped and celebrated. And I'm reminded of that when I see on Reddit or Twitter, a law firm is accepting Bitcoin now, for example. It will be a major milestone when the first country starts accepting taxes in Bitcoin. There is already discussion about using Bitcoin for parking meters and small kinds of taxes like that. So, I think that adoption is going to solve itself. The velocity there is tremendous.

The third piece of evidence I would give would be to go to github.com and go to search. Type in Bitcoin there and compare to Stripe and PayPal and other kinds of things and you will see developer adoption is just off the charts. It's greater than Stripe. It's greater than PayPal. Those are all great companies, but Bitcoin is bigger than all of them. Angellist is another good example. There are more than 130 or 140 companies now in the BTC space and that's just in the first half of 2014. So, that's adoption.

Third, in terms of volatility, there are actual technical fixes to this. Once we get a functioning derivatives market around Bitcoin, people can choose to have exposure to volatility or not. For example, merchants may not want volatility and may actually give up some upside in return for protection against downside, whereas an investor might want to be exposed to volatility. I'd also remark that volatility is a function of two things. First, it's a function of the fact that the

market is artificially illiquid right now because there aren't enough banks that are allowing wire transfers for Bitcoin. So, the smaller the market, the higher the volatility in many ways. Volatility is also an external function of human psychology and has really no impact on the bytes moving back and forth in the Bitcoin protocol.

Last, in terms of safety, I think this is going to be the sort of thing where we figure out best practices over the years to come. One thing that's very interesting is this concept of the coin network as being trackable. If somebody steals your coins, you can track them through the network and see where they're spending it. That's something that doesn't really exist right now. If somebody steals a briefcase of \$100 bills, you're just out of luck, right? They can just do whatever they want with it. So, safety – I think – is going to be something where there's a lot of technological innovation on that in response to various kinds of hacks. You have to actually see the attack vector before you can build the defense.

A. Tapscott: You mentioned one of the big sorts of "A-HA!" moments that you expect is when governments begin to accept Bitcoin for taxation. How have governments responded to this technology and specifically, how exactly will Bitcoin, given the fact that it exists outside of state control and outside of the existing monetary system, be regulated? Who will govern the bitcoin ecosystem?

Srinivasan: It's a good question. So, I would say that there's a great website, bitlegal.net, where you can actually get a global view of all regulations on Bitcoin and which jurisdictions are favorable and which are not and so on. If you look at it, the map is mostly green and yellow. Green is okay and yellow is okay with some caveats and red is negative. Governments accepting Bitcoin for taxes will take a while, just as it took a while before the IRS allowed you to use the Internet to file taxes. It did not happen in the year after the Internet came out. Governments are by their nature going to be relatively conservative, so the rest of society will have to catch up first.

In terms of regulation, I think that's very much open-ended right now. Some countries are looking at it as a commodity and some as a currency and so on and so forth. I think regulation can be somewhat premature potentially. My analogy is the Internet. In the parable of the elephant, one person is pulling the tail and one person is pulling the trunk and one is grabbing the leg and each of them is saying it's something different. In the same way, what is the Internet? Is it like physical mail in that you can send email? Is it like broadcast in that you can have YouTube and you can put movies on it? Or is it like telephony in that you can make audio calls through it, right? And each of those three areas is regulated in a completely different way in the physical space, but they all blend together when you're sending packets in the informational space. So, a premature regulation would miss the point – is Bitcoin a commodity? Is it a currency? Is it a programming language that you can do contracts on? Is it futures? Is it a security? Is it any of these things? Is it all of these things? I think that we want to let it develop for a while and see what people do with it before we jump in prematurely.

A. Tapscott: Staying on the topic of regulation – it’s a lot easier to regulate usage of a currency when you’re the monopoly that issues it, which is the case for government and – I guess – large intergovernmental organizations like the European Union. Because Bitcoin is this global phenomenon, will it require a global response? Will various states need to band together to regulate it cooperatively?

Srinivasan: I think it’s like the climate change discussion, where it’s really hard to get every state to cooperate on this. It was hard to get them to cooperate on terrorism. It’s hard to get ten people to cooperate something, let alone ten nation-states. So, I’m not sure that global cooperation is really going to happen. You already have lots and lots of different jurisdictions with their own opinions on Bitcoin if you look at bitlegal.net. So, I think each country is going to figure out its own rules. For example, the US is not going to be cooperating with Russia anytime soon on this, right?

D. Tapscott: That’s a good segue for me to step in. In this project, we’re exploring ten different types of these multi-stakeholder networks. They involve private sector, civil society, government and others and one of the ten types...we call them governance networks and the ecosystem that governs the Internet is a great example of that, but it’s a truly multi-stakeholder network and it’s got a lot of different moving parts to it, but so far at least in creating the technical standards and the basic operations of the Internet, it’s working really well. Now, it’s trying to evolve into some higher-level governance activities, but we’ve been studying this. It’s actually Tim Berners-Lee, Vint Cerf, me, Lynn St. Amour (who is the CEO of the Internet Society), and Fadi Chehade (the CEO of ICANN). We’ve done – I think – the most in-depth evaluation of how that thing works, what makes it tick, how it’s achieved legitimacy, and so on. We’re exploring the idea that a similar multi-stakeholder ecosystem could address a lot of the requirements for small-g governance for Bitcoin. Have you thought about that, sort of a multi-stakeholder model?

A. Tapscott: Let me expand that. Will there be a network model of actually managing the Bitcoin ecosystem or will it be something that happens more just by rough consensus? In our minds a hypothetical Bitcoin governance network – if there is such a thing – would perform a number of important tasks: setting standards, advocating governments, acting as a watchdog scrutinizing bad actors and improving on faults or shortcomings in the network itself. Is this something that will happen organically?

Srinivasan: Yes. I think so. Niall Ferguson has this interesting thing on hierarchies versus networks and I think that here it’s going to be very much a network-driven kind of thing. Bitcoin’s origin was a post on a forum board five years ago. Now governments around the world are reacting to it. The beginnings of things often shape them and the people who are the most knowledgeable about Bitcoin, who have the ability to modify it, who are invested in the community, and so on are the kinds of people who were just doing it from the very beginning. They achieved what I call the execution veto. That is to say, by virtue of actually doing things, they gain control of it because they have the practical knowledge to modify the code and improve it and so on. So, yes, I do think it will be much more organic.

A. Tapscott: In terms of liquidity you mentioned that the amount of new Bitcoin being created is declining and will stop, for all intents and purposes, in our lifetime. How do you address the challenges of a currency with a fixed supply? To me, it harks back to an earlier era when the supply of a currency was based largely on its availability and accessibility in nature, such as gold or cowrie shells. Now in the modern monetary system we just create new money. As Bitcoin becomes larger and more pervasive in our economy, how do you think we'll deal with the question of scarcity and supply?

Srinivasan: My short answer on that is that digital currencies offer something new which is neither deflation nor inflation as classically understood but rather subdivision. That is to say, subdivision allows perfectly distributed inflation. Proponents of a fixed money supply say if there's a fixed money supply, then the government or some other entity can't monkey around and get an artificial amount of new money, like the financial services bailouts and so on. The counterargument to that is if we are all transacting in gold bricks, as productivity increases, the value of a gold brick increases to the point that you can buy a whole house with it and we'd enter a liquidity trap where people would otherwise transact but couldn't or didn't because the value of their holdings was too large and so they were not actually transacting. So, that's the liquidity trap argument.

But what if you didn't have gold but you had Bitcoin and you could issue ten new "decaBTC" for every one BTC, right? That is to say, what if for every dollar you could take it back into, say, the Federal Reserve and issue ten new dollars, right? This would have the effect of getting you out of the liquidity trap because now you have tokens that were more sub-dividable and more tradable. You no longer have one thing that bought a whole house. It would be reduced in value and this is effectively organically what is already happening. If you go for example to bitcoinity.org, you'll note that at the top they now measure the price of Bitcoin in milliBTC rather than BTC; that is, one one-thousandth of a BTC rather than a BTC because Bitcoin has increased in price about 1000X over the last few years. So, as such, this organic process of subdividing the currency to get perfectly distributed inflation and thereby avoid liquidity traps is not even theoretical. It's already ongoing and moreover has no upper limit. You could have a trillion-dollar economy in Bitcoin and people just transact in microBTC and then nanoBTC and then picoBTC and so on. The protocol needs to be extended to go below nanoBTC. It has eight decimal places right now but that is easily fixed with a change to the protocol. So, I don't look at that as a long-term problem.

A. Tapscott: Great. And then one other question: we've talked a lot about Bitcoin, but there are other digital currencies such as Litecoin and Dogecoin. Do you envision a world where there is a plurality of digital currencies or will one ultimately become the dominant or only digital currency?

Srinivasan: I do see a plurality of digital currencies. I would say that basically you have a tri-architectural decomposition here. You've got Bitcoin itself, right? You've got what we call alt coins, which are, like, Litecoin and Dogecoin, which are basically the same as Bitcoin except with a different hashing function and maybe different approval times. Dogecoin is no longer exactly

the same because it also prints more. It's not scarce in the same way that Bitcoin is, but these are pretty similar in that they work the same way. There's a third group which are the appcoins. So, these are the things where I think there will be a profusion of them. So, for example, Namecoin...that is something which does a different function of Bitcoin. It allows you basically to set up a distributed DNS and so it's not just a matter of changing the parameters in Bitcoin but actually has a different function and I think we're going to see many more of these appcoins.

You can Google the Bitcoin model for crowdfunding. The basic concept is: let's say that you wanted to come up with a new version of Tor. What you might do is you might say, there's going to be a million Tor coins and 30% of them at the beginning I will sell for some amount of money to early holders. Then I will develop the software open-source and I will give it to be people and anybody who runs a server based on this can accept Tor coins in order to return requests, so now we've created a way to monetize open-source in a way that was never possible before, right? So, the early holders of the Tor coins now have a use case for them, which is to say, to pay for digital labor; namely, somebody hosting a piece of code on their server and also engaging in long-term development of it, right? So, in this fashion I do actually anticipate there being quite a few different appcoins. Every single protocol that you can think of can potentially be attacked with some sort of blockchain-based methodology. I see half a dozen of these a week now. I see distributed DropBox. I see distributed Facebook. I see distributed Google. I see distributed Twitter. Many of these are rudimentary right now, but the entire Internet is going to get decentralized. I'm not sure of the exact timescale. It might take a while, but it's likely going to happen because we have a new model for monetization.

A. Tapscott: Balaji, thank you so much for your time. It has been enormously helpful and enlightening speaking to you.

* ["A Bitcoin Governance Network"](#) is a research project of the [Global Solution Networks](#) program.