**Lowenstein's Tech Group Podcast:
Crypto Innovators**

**Episode 5
From Station Wagon to Lamborghini: One
CypherPunk's Journey from Cryptoanarchy to
Solana Cross-Chain NFT Innovations**

By Eric Swartz, Leah Satlin, Zachary Silva

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Kevin Iredell:	Welcome to the Lowenstein Sandler podcast series. I'm Kevin Iredell, Chief Marketing Officer at Lowenstein Sandler. Before we begin, please take a moment to subscribe to our podcast series at lowenstein.com/podcasts. Or find us on iTunes, Spotify, Pandora, Google podcast, and SoundCloud. Now let's take a listen.
Eric Swartz:	Welcome to the Crypto Innovators podcast presented by Lowenstein Sandler's crypto practice. I'm your host, Eric Swartz, senior Counsel and vice chair of Lowenstein Crypto. We're speaking with the most innovative founders and operators and web three to shine light on the technologies that fascinate us all. I'd like to introduce you to your other host, Leah Satlin.
Leah Satlin:	Hi, I'm Leah Satlin, Tech Group Counsel specializing in IP and commercial contract.
Eric Swartz:	Today, we welcome Zach Silva, head of cybersecurity at Atwater capital. Atwater's a strategic growth equity fund focused exclusively on the media and entertainment sectors. And Zach is a cypherpunk having been in the Bitcoin space since 2012. Hi Zach.
Zachary Silva:	Hey Eric, hey Leah, it's great to be on the podcast with you guys.
Leah Satlin:	Great to have you.
Eric Swartz:	Great to have you, and also just great generally to know you. Enjoy all our conversations, so helpful for learning about crypto and all the history about crypto. Diving right in here, you've described yourself as a cypherpunk and with good cause, you've been a BitCoin user since 2012. What were you interested in that led you there?
Zachary Silva:	So since a really young age, I was really into tech in general and computers. I remember really early that, around second grade, my father brought home a new computer and he said, this computer has got one gigabyte of memory in it. That's more than anybody could ever need. And it was like that year, I made him a cup with pictures of computers and other pieces of the technology on it because I looked at my dad as just like this cool guy that knew about all this tech and stuff. Further on, my first serious report in school was about, I wrote a biographical report about Bill Gates. I found him to be an

interesting guy. He makes Windows, of course I need to know about him. And then year after that, well, MySpace kind of became a big trend and I learned HTML and CSS from doing MySpace profiles and kind of got into middle web development from there.

And I initially became into cryptography because I read the book "*Cryptonomicon*" by Neil Stevenson, which is basically like the first cypherpunk novel, a storyline revolving around this guy's grandfather being a cryptographer in World War II, breaking the Enigma code and then him in modern times being involved in this project of laying trans-Atlantic cables. And there's like a lot of examples of cryptography throughout the book. So that got me like really interested in it. In high school, I kind of became interested in libertarianism, anarchism and given the interest in cryptography, I kind of discovered crypto-anarchism. And at that point I chose, basically chose that hill to die on. It was my opinion that we're going to use technology to uproot and replace the state, so how do we replace money? And the popular anarchist answer is barter, but the emerging answer is Bitcoin.

And so in 2012, given my interest in crypto-anarchy, then I started really becoming interested in economics and such. I found out about Bitcoin through that. This is a space that was going to replace the apparatus of the state's money and instead kind of become a part of the system. And that's an interesting evolution for it, as far as Bitcoin's concerned. Outside of Bitcoin, Monero with rank signatures and such is strongly anonymized to the point that it kind of pushes outside the system as an example, but given how much analysis can be done on Bitcoin's fully public basic transaction structure and how much regulatory effort has gone into regulating Bitcoin specifically, it's become the acceptable alternative. So it's not quite the anti-money, but it isn't really the money yet either.

Eric Swartz: I agree. I mean, honestly, from my perspective though, it's a little bit of both worlds, right? And it's almost like a compromise, I would say, because my struggle always with something like Monero is simply that it won't ever really be able to gain full market penetration, because there are always going to be folks that select the option that doesn't come with all of these negative downside scenarios, for instance, the government coming in and turning it off. And I don't think that Monero is likely to be turned off, but I think the bigger issue is more like the government just never really letting it get big enough to attract institutional investors so that there's never really enough liquidity to call it a monetary system. That's I think the hard part for a privacy coin, like Monero or like a Zcash, because that's the problem.

The regulators chill the usage to the point where, and I don't think this was intentional, I think was just open and decentralized and intended to be the anti-money. I don't think Satoshi intentionally made it easy for folks to be tracked, but I think that it kind of, by doing so, it allowed it to be a little more acceptable to folks who come from the regulatory bent and also, I mean it helps protect people because at the end of the day, part of the problem with a money like Monero or like a Zcash, is that it does actually hurt people, right? It's not just helpful to the people who want to use it for the right reasons. It's also helpful to all the people who want to use it for the wrong reasons. And for instance, North Korean terrorists, you know what I mean?

The cyber terrorism, that's like a perfect example for me, but I also, I appreciate the technology for what it does for permitting privacy. And I think if you actually incorporate in a way for regulators to view the transactions when there is a problem, it might not be as much of an issue. So I don't know. I find it really interesting because the other side of the coin is, does everyone want everyone to know every single time they transact? And I feel like the answer to that is definitely no.

Zachary Silva: For the most part, people don't want that to happen. And I think of Venmo, I don't know about you, but I set my default to private. Do you, Eric, do you, Leah?

Leah Satlin: I do. Yeah, I have it on private.

Zachary Silva: The most interesting thing that's really risen with the crypto space overall is we're starting to give people economic awareness that they have a choice in money and how your money works. The transactional systems work. To get people to further adopt, it's going to have to be made to the point where people are less aware of the tech that they're using. And with the crypto space emerging has really started to give people an awareness that they have a choice in money. And another work by Stevenson, he mentions that operating systems are kind of comparable to car dealerships. You've got the Windows station wagons, you've got the Mac Euro cars, and then you've got the Linux people with the free tanks. And the majority of the people they're choosing the station wagons and the rest of them, the rest of everybody, they're going to pick out the Euro cars. And the first two groups here that are picking out the station wagons and the Euro cars, they think the people handing out the free tanks are crazy.

Well, the kind of equivalent now with the crypto space is that traditional money finance system is the station wagon. Most people are on board with that. Some people also are in the Euro cars and people that are out there building the tanks that really end up being the basis of the Euro car later on, are still derided as crazy.

Eric Swartz: I agree. When you say the tanks, I think of, I kind of do think somewhat like a Monero or even like a Secret Network. Secret Network just has a little bit more protocols built on it and a little more UX on top of it to help with the sort of having a network that's both utility oriented and also privacy money oriented. So, I mean, that's kind of a great network. I think the technology is great. I mean, we now have movie NFTs being released on it and we also have so many interesting Quentin Tarantino NFTs already released on it. It's been an amazing project. But I think that's sort of the way my view on it comes about, I think the Euro car is kind of a lot like Bitcoin because it just, or Eth too, because I mean, Eth is kind of like the more utility oriented version or Solona is more like a utility-oriented version.

Zachary Silva: Yeah. Ethereum's definitely in the Euro car space. We actually now have multiple Euro car dealerships and Ripple's another one in the Euro car dealership space too.

Eric Swartz: Absolutely. And I think of Bitcoin Lightning and there's a few newer level twos on Bitcoin that are getting built, too. Couple side chains, including Sango, which was shocking to me. So this one, I wanted to chat a bit more with you about because... So did you see that the Central Republic of Africa has actually created a side chain to Bitcoin to tokenize their mineral deposits?

Zachary Silva: That's news to me.

Eric Swartz: Yeah. I just saw it, it literally happened yesterday and I was so excited to chat with you about it because I knew that you'd be super excited about the project generally. And I think that that's exactly what Bitcoin was meant to do, that's the anti-money use case right there, you know?

Zachary Silva: Yeah. I mean all, what we are talking about now is NFTs. If you date it back, even as early as 2013, 2014, people are talking about colored coins, which is an earlier iteration of this concept. It's just to mark a particular unit of Bitcoin, a particular Satoshi, or even greater groups, as representing a particular asset or what have you, earliest iterations of this are like Master Coin. And then like Counterparty as level twos on the Bitcoin blockchain, to create colored coins. And NFTs is just a further iteration on this process, but on chains where it's supported directly on it, though Ross Ulbricht, who was the founder of the Silk Road, he did a series of NFTs that were released through the Bitcoin blockchain on Counterparty, which I am not aware of many other situations of, many other releases of Bitcoin based NFTs currently.

Eric Swartz: Yeah. There's not a lot of instances of it. RSK is the only one that I know of. So like Roofstock Network, and they have a few NFT projects. And I think that depending on how you think about it, there's also a few others on a couple other side chain projects or merge mind projects out there, but they are definitely not sort of mainstream projects yet. So totally agree. And then they're also just not ever sort of hitting anywhere near the volume that you see on Solona's Magic Eden or on Open Seas, even like simpler instances, not the Eth one, even its Polygon instance, you wouldn't see as much. So totally agreed.

Zachary Silva: Yeah. And I think where one of the places where second layer on Bitcoin really failed a bit early on was with kind of Counterparty versus Ethereum and that for the Counterparty release, they did a Bitcoin burn. So you sent your Bitcoin to an address. It was burned. You received an equal amount of Counterparty at parity. So for the Ethereum sale, they retained their Bitcoin. So down the road, it put it in a situation where the Ethereum foundation has ballooning savings versus Counterparty, since they burned the Bitcoin in their mint, and the asset wasn't so hot, they didn't really have quite the ability to push as hard as Ethereum did. And so that kind of started to boost the ecosystem of alternative change.

Eric Swartz: That makes a lot of sense. I didn't even realize that that was one of the big differences between those two ICOs. I think that's just generally the value of kind of being around since the beginning and for beginners, the question that we did want to ask you specifically is just, how would you explain Bitcoin to a beginner, breaking it down for them and a simpler couple of sentences that gets them a good understanding of maybe what's going on.

Zachary Silva: Bitcoin is, its most fundamental level, representation of consent to transfer through time. So the most fundamental transaction structure of Bitcoin is that owner zero, say I, gives owner one, Eric, a unit of Bitcoin, and I sign the transaction with Eric's public key, which most people will understand is contained in their wallet. And so with my private key, I sign a transaction that says this public key now has this unit. And then Eric can go over to Leah and say, I am signing a transaction as owner one to Leah who is owner two, and Leah can go further down the road and do whatever she wants with it. Owner two to owner three, to owner four. So this is a chain of signatures. And then you take multiple chains of signatures saying this unit of Bitcoin originated from here and it's gone through this chain of transactions to this point.

And you take all of these chains of transactions and you put them into a block. And those are the transactions that happened within the last period of time, which is on average 10 minutes. And that is the block chain. The blocks are mathematically linked together to prove that the last block is related to the next one is related to the next one. The blocks are mathematically linked to each other. So Bitcoin, as a system of money, anybody can participate in validating the transactions, and for validating transactions, there's a reward. This is an incentive structure to encourage people to participate in making sure that transactions are secure, that people actually have the balances, et cetera. And so this process is ideally fully decentralized in that every single participant in the network has a total record of the transactions and can verify all the way back every transaction.

And this is what is referred to as mining. Mining is the process of verifying transactions on the Bitcoin network. And every 10 minutes, the fastest miner gets some Bitcoins and the transaction fees associated with that particular period. So what this means, that everybody validates every transaction, is that there's resilience. So even if a single node or multiple nodes are shut down, as long as there's a consensus among nodes on how the protocol operates, the system will continue to operate overall. So that's kind of a basic technical overview. If you wanted like an overview of what does Bitcoin mean to people practically? Then I could kind of give you a little of that too.

Eric Swartz: Yeah, definitely. I mean, honestly, I think that was a super elegant way to explain it, frankly. It's so hard to explain to new people and I really appreciate you jumping on with us to just educate folks, because I think it's so important that people hear that simple explanation and understand that it's actually a pretty simple process that they can be involved in either as holders or as node operators, as miners, and that it continues this robust network that has accrued in value so significantly. I would love to hear your thoughts on it though. Just more why does it matter. As you had said.

Zachary Silva: Why this matters, it changes the way that we interact with what is the machine of money. So the station wagon money wasn't really built for the Internet, there's adaptations for it. There are all these different layers and interfaces in the industry to make things work, but at the basis of it all, you have the automated clearinghouse, no banking infrastructure has got better. It was never built to be for the Web first, while cryptocurrencies are built for the Web first. And that's really the reason why cryptocurrency is important for a user, is that as we evolve into more and more digital and Web first experiences, the best applications, developers are overwhelmingly going to

choose to integrate systems that support greater flexibility, that support use cases that are outside of what is accomplishable within the traditional money scope. So yeah, that's kind of what the importance of cryptocurrencies might be to practical users, just money that is by and made for the people of the Internet.

Eric Swartz: Yeah, I think that's well said. And I think it's so important for people to understand that there is no sort of digitally native version of that that is in the fiat space currently. And it's super interesting to kind of see the implementations of fiat on the networks, because they never really achieve the same sort of framework that we're thinking about, which is just to truly have a money that folks can rely on, that doesn't really have any tie to a specific government and its economic policy. And I think that's really what I love about crypto so much is that you can really rely on it regardless of whether or not there's strife in your particular country. And I think folks in Ukraine and Russia have really learned recently that there's a lot of importance for that. And that Bitcoin really does answer that question sometimes for some people.

And I think that that's sort of where I come from a lot of the time when I'm thinking about crypto and when I'm concerned about things that relate to the use of money, I'm coming from a place of just always being afraid of the realities, that there could be geopolitical problems wherever you are, and it's not a problem that doesn't exist for you wherever you live. So I think it's super important for folks to kind of realize that difference. And I'm super glad that we got to flesh it out in so much detail because I think a lot of people will find that super useful as they start to delve into this space. And I know that a lot of our listeners may be super expert on all of these topics, but it always is helpful to hear a really succinct explanation like that. So I really appreciate you helping us out with it.

Zachary Silva: Cryptocurrency really is just cutting a few level of abstractions, between money and the Internet. Before crypto's a thing, you have PayPal blowing up and other such services because they provide a way for the Internet to interface with the old money system. And the whole idea of cryptocurrency is that we now have effective Internet money that is beyond this old money system that was not made for the Internet.

Eric Swartz: Yeah. And I think that's just also really crucial too, is just understanding that it is very Internet native and that at the end of the day, I think what's super interesting about crypto space generally is just that it really is a better implementation of ledger technology, which is part of what money is. So ledger technology, meaning accounting, simple accounting. It actually just accomplishes that in a simpler, better, more efficient way. And so whether or not the current implementations of it are exactly what people want or what attracts users ultimately, I think that revelation is what's so exciting to me about what cryptocurrency can bring to the world. And that's really what I think is so important.

Zachary Silva: You know the phrase like don't go reinventing the wheel or something like that. I disagree with that. You can create so many better iterations of the wheel and adapt wheels to many very specific situations. You've got

skateboard wheels, you've got car tires, you've got big old tractor tires. Somebody had to reengineer and reinvent the wheel for each of those. And same goes for the technologies that people are going to continue to use for however long that they may be used. Ledgers have been used for hundreds and hundreds of years, and they're going to be continue to be used into the future in whatever iterations they may be beyond what we might even see, what we will see in our lifetimes.

Leah Satlin: Absolutely. Zach, I think we want to move on and talk a little bit about your work at Atwater and maybe some of the projects that you're doing that are Solana based. Any news you can share, anything that you want to talk about as far as what you're doing at Atwater would be awesome.

Zachary Silva: So with Atwater kind of my role is three things. One, head of cybersecurity, maintaining the secure environment at the office. I recommend for most secure environments that you use logins based with physical security keys, like Yubi keys, and wherever possible to use two-factor authentication. Use two-factor authentication, once again, preferably with using a security key as your two-factor method. I also do disruptive technologies research where we're looking at port or tech media and entertainment, tech related companies, kind of delve into how their applications are built, both from kind of an external view and then giving these prospects kind a really deep dive into their internal side, their server architecture, how sustainable is it? What's the hiring outlook based on the languages they're using? If they're growing acquisitively, what are the tech debts from acquiring and integrating systems. And so that's what I'm doing on that and there. And third thing I've got going on at Atwater is we're proud to be a really diverse and inclusive workspace. And I have the neurodiversity work group at Atwater and I do identify as autistic.

Leah Satlin: That's fantastic. Really great. So we'd like to also talk about from a development perspective, what technological innovations you're most excited about across all the crypto ecosystem? What has you really thinking that this is the future of crypto?

Zachary Silva: As far as extending the ecosystem further, I'd say stuff that enables inter-chain operabilities. Things like xNFTs that are being executed on Fauna. So the xNFT or the executable NFT is like a protocol agnostic framework for managing NFT ownership. So it acts like an application that can be executed to any chain. So you can draw functionality from a particular chain that you want to integrate into your project overall.

And I think things that create more extensibility because every chains got trade offs, a lot of trade offs are by design, they're not necessarily strengths or weaknesses. For a particular use case, these design choices will be strengths or weaknesses, but for the use case they're created for, for the most part, they're intentional. So allowing this interoperability to optimize for where one chain's best for a particular project or need, I really think that's the future of where the space is going technically.

As far as where the space is going consumer wise, the closer and closer we get to offering abstractions over the chain that are more comfortable station

wagon, sedan-like, so we get their really mainstream adoption and it is going to be slow. We're still in the Euro car dealership phase with Coinbase and people simply buying into crypto and the like, and NFT is more really at the far edge of that.

Leah Satlin: So with that in mind, what do you think is like the biggest technological problem with adoption, or like a roadblock for adoption? Are you thinking better user interfaces would be helpful, interoperability, something else?

Zachary Silva: I'd say, yeah, it's mostly really an issue of use cases for adoption. The less people have to understand, the more station wagon like it could be made for people then, the more sedan like it can be made for people, then the more adoption will follow. The issue in adoption is matching use cases to users. You have so many use cases right now that are very niche and these use cases may have expanding opportunities to reach users.

And if I were to go kind of a little abstract into this, I don't know if you've ever heard of this piece of software called Marvelous Designer, but originally it was made for the fashion industry and its use case is kind of designing clothes. Well, three artists in gaming started adopting it and in other spaces, because it had really good simulations of fabric and such. So kind of trying to say is, is you have cryptocurrency and different protocols on it, like NFTs and the whole space there, where people have designed a particular program around a particular use case, but the broader audience might actually lie in another use case that has to be developed more for and leaned into.

Leah Satlin: That's a good answer. You've given us a lot to think about. So I really appreciate it. Anything you want to add to the conversation as we wrap up?

Zachary Silva: Not really that I can think of, and if you wanted me to go back a little more on the Fauna thing, since we kind of a little bit skipped over that.

Leah Satlin: That's true. We didn't talk much about the work you're doing that Solana based. So yeah, I would love to hear about those projects.

Zachary Silva: So along with a couple of my friends, Peyton and Dominic, we're Triptic labs, basically we've been building tools to extend the Solana ecosystem. And this is one of the things is, we're extending use cases. So one of the earlier products was Stakehouse, which would allow you to take an NFT, stake it to a staking address for a staken period and receive back tokens or NFTs for your staking. And this is kind of like a building block and the more building blocks that are put out there in the open source ecosystem, the more used cases and user needs can be met. And from a simpler thing like this, we can build on further things like automated items shops, because we've now found a way to use a NFT to gate access to a particular token, which can now be used in this item shop.

And it's creating these blocks, these iterations, that will expand the user base by expanding the use case and to kind of cap it off there, the most recent thing we've got released in the past week is Questing. And the concept of this is to take two NFTs from different collections and have a collaboration. So you'll have NFT from X collection, you'll have an NFT from Y collection and

you will stake them both in the staking campaign and you'll receive quest tokens. And we're actually really trying to create a high level of interoperability in that if implemented, as based on the code base that we're providing in the Quest tokens, we are actually planning to create an ecosystem where across people who are using this pair staking, we can create kind of a universal swap for whatever endpoint rewards that they might want in their particular pair Quest.

Leah Satlin: Exciting. That sounds super cool. Thank you so much for joining us. We'd love to know where our audience can find you online in case they want to get in touch.

Zachary Silva: All right. Yeah. So as far as where you can find me online, you can find me at my website 1za.ch, there's one Zach, that was inspired by Matt Mullenweg, one of my favorite founders, founder of WordPress and his site's ma.tt. So I thought was the coolest. And you want to ask me some questions? You can connect with me on LinkedIn. I'm Zachary Silva. Thank you guys so much for having me on the podcast.

Eric Swartz: Thank you, Zach.

Leah Satlin: Awesome. Well thank you so much. And for everyone listening, if you enjoyed today's episode, please be sure to subscribe and hit the like button.

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