

**Cryptocurrencies and Blockchain & Monoclonal Antibodies - Welcome to What Happens Next**  
**January 2, 2022**  
**Christopher Giancarlo QA**

Larry Bernstein:

Thanks, Chris. You're the first crypto speaker that I've had on my podcast. I've faced enormous pressure from my listeners to discuss this topic. Everyone's interested. I know that one of the exciting things about crypto is it was going to radically affect the payment system. And yet, I don't know anybody who actually has ever used it to pay for any good or service. What do you make of that?

Christopher Giancarlo:

There's a lot more about this new innovation than just payments. Economists will tell you that there's three traditional characteristics of money and payments is one of them, but it's not the only one. There's a unit of account. When you go into grocery store, the price is stated in dollars. You go into one in France, the price is stated in euros, so that's a unit of account. The third one is a store of value. Bitcoin is actually turning out to be a pretty attractive store of value at a time when 40% of the dollars in circulation today were created in the last 24 months.

The dollar's turning out, perhaps, not to be as good of a store of value today than it was a few years ago because of inflation and yet Bitcoin, which has a limited supply is turning out to be an attractive store of value.

So, when you look at all three characteristics of money, this new innovation is more than just payments. Stablecoins are serving to be a fairly good means of payments.

Larry Bernstein:

In my first college economics class, my Penn Professor Claudia Golden explained to us the beauty of a currency as a store of value. The enormous benefit is that if Chris wants to provide a service to Larry, Larry doesn't necessarily have to provide a service to Chris as an exchange instead Larry can get cash that can be exchanged for a service with a third party. If Chris give me a dollar that's something of value that has equivalent value the next day.

When I wake up every morning, I have no idea what its value will be. We had a flash crash a couple of weeks ago. It was down 20% on a Saturday. How do you think about volatility as undermining the concept of stored value? And why is a volatile asset a good vehicle for exchange?

Christopher Giancarlo:

So, in many ways, Bitcoin, as one of thousands of cryptocurrencies, very much resembles a commodity. And that's why during my tenure at the CFTC in 2015, we declared it to be a commodity. Commodities of fixed supply are always volatile. Why is that? Because if you cannot decrease or increase the supply in response to demand, then only one thing can happen, price movement. So, when you have a fixed supply commodity and demand rises or falls, there's only one reaction and that will be in price. And that's not so surprising because that's exactly what we see in oil even though we can actually adjust demand of oil. And yet two years ago, oil was trading below zero and today it's close to \$80 a barrel.

And yet, we don't declare that somehow that commodity is illegitimate, but we recognize there's volatility in the price.

And that's why we have derivative markets to hedge that volatility in price. And now we have derivative markets thanks to our work at the CFTC in Bitcoin, which have helped people to mitigate that price. But there's no question that it's volatile. I would say the volatility of Bitcoin is not a design flaw. It's a design feature, because of fixed supply and the inability to adjust supply. Look, the dollar is relatively not volatile because our government adjusts the supply in response to rise and fall in demand, but also uses it to deflate its value in order to service our debt or alternative reasons why a conscious choice is being made to depreciate the dollar. But as a store of value, that is challenging. And so all these characteristics are to be debated, to be discussed, but in a sophisticated economy, there's a lot more to this innovation than just Bitcoin and it's volatility or its limitations as a means of payment.

From the dawn of time until about 400 or 500 years ago, money came in one form and that was as a token, whether it was a bead or shell or a clay tablet or a piece of metal with a Roman emperor's head on it, the value was in the thing itself. And to validate its value was simply validating the token itself. During the age of discovery in the 1600s, the limitation of the token system. Tokens are local instruments. Dutch merchants found that their Dutch Guilders didn't work when they went to Venice to engage in trade.

And so they came up with the bank note system. They put those Dutch Guilders in the basement of the bank of Amsterdam and they received a bank note and their bank note allowed them to go to Venice and trade for them. And the bank note system is basically what we have today. It's solved the local limitation of tokenized money. 90% of transactions today are in the bank note system. If you use Zelle or Venmo or a paper check or a credit card, you're basically relying on the credit of an institution.

And to validate that transaction, you're not validating a token, you're validating identity, and that's why our entire financial payment system relies on identity. If you go into a deli with a \$10 bill to buy a sandwich and use a token, you validate the \$10 bill, but if you want to use anything else, a debit card, a credit card, someone's got to validate that you're Larry Bernstein, that you bank with Wells Fargo and you've got so much money in your bank and that your bank is crediting another bank.

There's a whole series of validations of people and places. There's a whole amount of information leakage. And guess what? We're discovering the shortcomings of that system. It's exclusive. If you don't have identity, you cannot engage in that financial system. And in a world of 8 billion people, one and a half billion do not have identity today are excluded from that system. It's also slow because of all of that validation that needs to take place and it's expensive. It costs the world 1% or 2% of its GDP just to move money around the globe to do all that validation. So what's the breakthrough technology here? It's putting the validation of value outside of single point of failure banks and institutions, and putting it on a distributed ledger on a blockchain and using a computer algorithm drawing on the worldwide web and using cryptography to confirm the validity of the thing itself.

In a sense, it's a Back to the Future moment. We're going to go back to a tokenized system using a distributed ledger in the worldwide web to validate the thing itself. And it solves those four shortcomings. It solves the shortcoming of tokenized money and the exclusivity cost and latency of bank-based money. It breaks through that. It will be instantaneous. The ability to send money around the globe will be as easy as sending a text message around the world in a second, without the need for

all of those vested, rent collecting identifiers and validators in the system. Instead, you'll have an algorithm confirming it in the same way that the worldwide web... You send a photograph and it goes through the web and recreates itself on somebody's desktop in Japan, in a nanosecond using an algorithm without having to rely on Kodak or all these other intermediaries to process that and deliver it. So truly it is a breakthrough in the nature of money itself.

Larry Bernstein:

I'm very excited to disintermediate the banking system. But what concerns me is that Bitcoin's transaction costs are quite high, and in some cases, much higher than credit cards and its less convenient. Let's say Chris sends me a Bitcoin. It goes into my digital wallet. I want dollars. I go to a crypto exchange, and they charge me a commission to convert it to dollars. Very often, 2%, it's very similar to the credit card fee.

Christopher Giancarlo:

It's still so early in the development of this. It's a lot like the very early days of eCommerce when we're first doing transactions on the web, and before PayPal, and before entering credit card information. In fact, I think the ABA was sending letters, directives to lawyers saying that online trades are not necessarily legal transactions. Well now, we do those transactions routinely all the time, and the costs have come down and with Moore's law, the cost of this will come down. But it's still early. It's still an infrastructure that is augmenting the traditional framework of identification first in every case. But that will resolve itself. I don't think the state-of-the-art today or the cost of the system will be the state-of-the-art four years from now, because this is evolving so rapidly.

Larry Bernstein:

Let's talk about Venmo next. So you're right, lots of people aren't banked. My kids aren't banked. But they have Venmo and I watch the feeds and man, money between kids' accounts move fast. They love Venmo. "Just Venmo me." It's even a verb. And, the transaction costs in Venmo are low. Facebook made a press release that it was going to have a coin. And the government's put the *kibosh* on it almost immediately. Walmart was prevented from having its own bank. Why, is the government so concerned about non-banks doing banking like payments and credit?

Christopher Giancarlo:

Great question. In fact, you put your finger on it. First of all, I think there are seven reasons why every central bank in the world is eventually going to adopt central bank digital currency; Seven reasons that I describe in my book. The first one was the potential of commercial actors to capture all of that economic activity data that takes place in an economy. And it was China that first realized the potential of two very successful Chinese payment systems, commercial payment providers, WeChat Pay and Alipay, that were capturing enormous amounts of data that drove China to introduce its digital yuan and to suppress the activities of those two payment providers, because in a communist system, it's essential dogma that the party needs to control all of that economic data. But as you exactly say, it wasn't just China, because it was the same reaction in our Western democratic governments in Europe and the

United States when Facebook contemplated something called Libra, which was going to be its digital payment system.

So data capture is a huge driver of interest in either a non-sovereign or sovereign digital payment system. It's both the first reason of seven that I identify, but in some ways, it perhaps remains the most important one because in a world where either a non-sovereign could capture all our economic data or a government can, the issue of privacy and censorship and surveillance becomes preeminent of the concerns of a free society. What do fundamental freedoms: freedom of speech, freedom of religion, freedom of conscience, freedom of assembly, mean in a capitalist system other than how you spend your money, right? You give money to your church and synagogue, you give money to freedom fighters or causes that you believe in, and you expect to do that in a way that's private and can't be censored either by commercial actors to promote their goods or services, or governments to push a political cause or a political point of view.

And so we at the Digital Dollar Project recently released a series of policy principles that apply to both sovereign and non-sovereign money, because we believe in a democracy where there is digital money. The biggest risk in a system like that is that the convenience will be so great that people will surrender their rights to privacy either to their government or to a big tech company. And that's of great concern we believe to a democracy.

Larry Bernstein:

Why do some government agencies in their regulatory discretion encourage innovation more than others? Can you compare the SEC with the CFTC that you led?

Christopher Giancarlo:

Your listeners are quite familiar with the Securities Exchange Commission, our country's primary regulator for our equity and debt markets. And what are those markets? Those are markets of capital formation, somebody with a good idea but without the requisite capital to realize it is able to find people with capital, and marry them up. So, these are markets whether in the form of debt or shares in a company for capital formation and capital transfer. Our U.S. markets for debt and equity are the deepest and most liquid in the world, regulated by the Securities Exchange Commission. That's not what the CFTC does. The CFTC regulates a different type of market, a market for risk hedging.

A business has certain risks, usually at a price of commodities. Let's say it's a manufacturing plant, they use energy to heat the plant and cool the plant or run their machinery, or a farming operation that has the risk of variable seed costs and at the end of the harvest season, the rise and fall of commodity prices that could either make them profitable for the year or unprofitable, depending on where prices of their produce is at harvest time. So, markets where you go to hedge your risk are markets for derivatives like futures and swaps and options. And the United States in a very thoughtful way has a separate regulator for risk hedging markets and a regulator for capital formation markets. And the proof is in the pudding that the U.S. risk hedging markets are orders of magnitude bigger than they are anywhere in the world. And I think that's a result of having a primary regulator.

And why does that matter to Americans? Because our markets are so deep and liquid that the world takes its price for those key commodities from these American markets, the price for oil, the price for ag

products including cotton and soybeans, the price for precious metals, the price for benchmarks like interest rates and foreign exchange are actually set in American markets in dollars regulated by an American regulator. They're not set in Paris. They're not set in Singapore. They're not set in Beijing. They're set in Chicago and New York for the most part. And that's a tremendous advantage for Americans and one of the key underpinnings of the U.S. dollar. We have a special regulator to do this. The SEC was formed in the 1930s as a result of the great depression. The CFTC regulated markets had actually been regulated since the civil war by self-regulatory organizations. And in the 1930s, Congress actually created a bureau with the Department of Agriculture to oversee those self-regulatory organizations.

Now, here's what's really interesting. In the 1970s, a couple of brilliant people in Chicago, including one that you just had on your show, Leo Melamed, invented something that changed the nature of the world. And that was financial futures. Until the 1970s, we had an effective way to hedge the risk of commodity products, things that came out of the ground, but we really didn't have a means of hedging financial risk, the risk of different exchange rates around the world or different currency rates. And he and a few other luminaries invented financial futures. And the product was so extraordinary it actually enabled the world to go off the gold standard. The world could have never gone off a gold standard if it could not hedge the risk of exchange rates moving between one country and another, or currency rates moving. So this product was so big and so transformative that they were worried that if it was regulated by the SEC, the product would be killed.

The SEC, they didn't perceive to be a regulator where new products went to succeed, but where new products went to be smothered. And so they went to the Ford administration, ultimately to the Carter administration and said, "You know the bureau at the Department of Agriculture that oversees these futures market, let's turn it into full blown regulatory agency, the CFTC, the Commodity Futures Trading Commission, and we'll make that a regulator for these markets." And that's why the CFTC was born. And it was given a mandate from the beginning to foster innovation. And to this day, the CFTC is overseeing more new product innovation than all the world's market regulators combined, and that's how successful it's been at fostering new innovation. And it's why when the world looks to develop a new product to hedge risk it goes to the CFTC. And it's no surprise that the world's first and today only regulated deep liquid transparent market for hedging Bitcoin risk, price risk is overseen by the CFTC and Bitcoin futures, which was launched in 2017.

Larry Bernstein:

In your book, I loved your framework for evaluating a specific regulation. You looked to see if a new regulation positively or negatively impacted liquidity for a specific security. I thought that was a novel and brilliant insight to determine if the regulators were doing harm.

Earlier you mentioned that there is less liquidity in the cash wheat market as compared to wheat futures. And that contrasts sharply with our experience so far in Bitcoin. Bitcoin liquidity is enormous, it is global, 24/7, and you can trade lots of bitcoin without a substantial market impact.

And last night, as I was preparing for this talk, I looked up the volume for Bitcoin futures in the previous few hours, and Bitcoin futures had only traded 110 coins. That's nothing. So to my surprise and disappointment, Bitcoin futures has failed as a product. Generally, liquidity gravitates to one market. And in Bitcoin's case, volume and liquidity is in the spot market for Bitcoin and not in futures.

Christopher Giancarlo:

So, let's start with liquidity itself. Liquidity is not measured in quantity, it's measured qualitatively. It's almost like a diamond, that's different for facets to it: there's depth of liquidity, there's breadth of liquidity. By breadth I mean how many participants are in the market. Sometimes the number of participants is much more important than the depth of liquidity.

There is the dynamics of liquidity. Is it there in a bunch at 3:30 PM to 4:00 PM, and otherwise not available most of the day in the cash Bitcoin markets, is it 24/7, and, actually more prevalent on weekends than it is during the weekday, because a lot of retail traders can actually trade on Saturday, as opposed to being busy during the rest of the week, earning a living? Where is it concentrated? What does concentration look like? Is it large players, as we find in our equity markets, or is it a lot of little folks, as is in case in the Bitcoin?

There's a lot that's actually quite attractive about the liquidity in the Bitcoin market, it's a much more retail environment. In fact, it's almost a place where the SEC has forced small traders to go because the SEC's approach to investor protection has basically been to squeeze small participants out of the market unless they qualify as accredited investors. And they've actually gone to this marketplace as a place where they can engage.

The nature of Bitcoin liquidity is very unique. Now this is a very nascent market. This is very young, it's relatively new. I disagree that Bitcoin futures are a failure, because I think this is an ongoing... And I love interviews that are provocative, it makes us all have fun. I think it's actually provided the place where institutional investors can get access to the market, in a way that they can't approach some of these overseas retail venues for regulatory compliance purposes. And the fact that it's transparent, the fact that it's regulated by a regulator gives them access to it. I think it's succeeded in bringing an institutional level to what is still largely a retail marketplace.

The other thing that's interesting about this market is it's very much a global 24/7/365. It's the world's first truly global retail marketplace that's open seven days a week, and I think, in that, it's a precursor of what's likely to come. Up to until now our markets have been pretty much globally and nationally divided, but that's one of the things that the internet did to commerce, it's one of the things the internet did information, and I think it's naive to think it won't do it to financial markets. Bitcoin proves it's already doing it to financial markets.

I'm a former chairman of an agency with a strong enforcement tradition, there is a lot of fraud manipulation taking place in all of the cryptocurrency markets today. There is a lot of policing that needs to be done. One of the reasons we went forward with Bitcoin futures at the CFTC, despite a lot of pressure by domestic and overseas regulators not to do so, was to bring sunlight to it, to bring a degree of regulation to it. If you try to avoid regulation of a market because you think you do not want to legitimize it, all you do, in a sense, is turn it over to the bad guys who can prey on the unwary and the unsuspecting.

Despite the bad guys, there's plenty of good people, plenty of legitimate activities in this market, and in fact, it's attracted an interest that we regulators, in some cases, have driven away from our own equity markets because of our over-paternalistic approach to them. And so I think the right approach is that first do no harm approach of the early internet. We need to bring regulation in, but in a way that is

smart, that's open, and that's conducive to people exercising economic activity, while we go out and catch those bad guys and crack down on them.

Larry Bernstein:

The most popular show this past year on What Happens Next was on GameStop.

Bitcoin and Gamestop have a lot of similarities.

Both Crypto and GameStop are dominated by small retail investors and not institutional players.

You've got the chat rooms. Both assets have enormous volatility, and huge runups and crashes. I suspect all this volatility might be driven by high leverage by individual holders at over 100:1. So a 1 percent decline will stop out the investor.

During my Gamestop episode, I interviewed Marcy Engel who is a former Salomon Brothers lawyer and she told us that historically regulators have viewed manipulation to be when a handful of large speculators work together to move the price. But here with GameStop and Bitcoin, thousands maybe even a million people involved.

How do you think about the regulatory enforcement given current law for pump and dump schemes as applied to crypto?

Christopher Giancarlo:

I think there's a generation gap here is wide as the generation gap that I grew up in, which was over social issues, like the war in Vietnam or civil rights. Today we've got a generation gap that's based upon who do you trust. And the institutions that I grew up in admiring, like the Securities Exchange Commission, like the Federal Reserve, and like the banking system, do not enjoy the trust of this generation. My first institutional relationship and most people my age, outside of my school, was a bank. Because I had a summer job and they needed to go to the bank to get my cash check, and I had a passbook savings account. Young people today, long before they set foot in a branch bank, have had relationships with social media companies, with online retailers like Amazon, long before they set foot in a branch bank. Is it any surprise that they are more comfortable with getting financial information from TikTok than they are from listening to Jim Kramer?

And I think a lot of the speaking past each other is people my age telling young people that they should approach financial markets the way I was taught to do it. That's not happening. They are in a different world, and we need to go to them rather than demand they come to us. The SEC's approach to investor protection, that basically says unless you're one of 13 million Americans out of 300 million that have enough wealth or experience in financial markets to be able to trade some of the most exciting opportunities as accredited investors, otherwise you're locked out, that's just not working anymore. And so the SEC is squandering, I think, a lot of its goodwill by this regressive repressive approach.

We need to go where these young people are. Not to say, "You're foolish and you're silly and you're dumb," and it's just not going to work. And especially at the time when government's handing out money without any restrictions, of course they're investing in what excites them. And so we've got to rethink this. If we're going to close the generation gap, it's not that they've got to come to us, we've got

to kind of go to them a little bit, and that's unfortunately not taking place right now. We need to start opening up to this new innovation.

Young people are attracted to trading these markets because they're finding a lot of the same characteristics, this gamification environment, that they grew up in playing video games. A lot of what's driving this activity is at age 14, they were trading suits of armor and avatars in their game environments with people they didn't even know around the world, and the experience was one that they enjoyed. And they're now coming into financial markets, they've got jobs, they've got some money, and they're engaging in these markets in a lot of the same way that we, as parents, allowed them to do in our basements. But suddenly we're going to say to them, "Oh, but now that you're an adult making your own money, you can't do that anymore." It's just not going to work. Larry.

We've got to recalibrate, we've got to bridge this generation gap, and it's not going to work by saying the only way you can trade stocks is you've got to go to a full-service broker or go to Charles Schwab. You can't do it on a Robin Hood, because it too looks too happy, and no confetti when you when you buy a stock and it goes up in value. I tell you what, I think Elon Musk said it best. It's like being yelled at by the mother of the house you visited in the afternoon after school. That seems to be what passes for investor protection, and it's not working.

Larry Bernstein:

I held a bitcoin conference probably a decade ago and a Winklevoss twin described his difficulty in getting a ETF listing for Bitcoin, and it took the SEC over a decade to make any progress. Why is the SEC so slow with its ETF relative to your CFTC that turned around the Bitcoin future in a few months?

Christopher Giancarlo:

I'm not naive, I know quite a bit about the degree of fraud manipulation that takes place in the spot markets. And yet there's enough activity there that I don't think they are entirely driven by fraud manipulation, but it takes place there. When our well-established exchange operators, Chicago Mercantile Exchange, Chicago Board Option Exchange, came to us with their Bitcoin futures, we spent a lot of time drilling down into that methodology of how they developed their settlement price. And these operators are quite sophisticated. They understand the underlying markets well, and so they had methodologies that make it very hard to manipulate the future's price. How do they do that?

Well, for example, they don't just take the price at the close of the trading day, when it can be manipulated by large orders. They take it at a series of random six-minute intervals over the course of a day, and so their methodology of developing a settlement price is very, very hard to manipulate. And that's why we could get comfortable that the future price was not readily susceptible to manipulation, which is our bright line test as to whether a new product can be listed or not. And we greenlighted that in 2017, I believe that market is working well. It's well policed for fraud manipulation, and it's now four years, the proof is in the pudding as to its workability.

The SEC recently was able to get comfortable with an ETF based upon that CFTC Bitcoin futures market, but still has not gotten comfortable. And this goes back to the original Winklevoss Gemini application for a Bitcoin ETF based upon not the CFTC regulated Bitcoin futures market, but an underlying spot market in physically settled spot, meaning physical delivery Bitcoin. And I can understand their hesitancy,



because our surveillance people at the CFTC, at the SEC, are aware of the degree of manipulation of those underlying spot markets.

If we need to rethink an investor protection approach that simply says, "We're going to protect you by banning your access," I think we need to get to an investor protection approach that says, "We know you want access, let's work with you to find ways to mitigate your risk." But just say no is just not going to work in a digital borderless world.

Larry Bernstein:

Chris, why are you called the CryptoDad?

Christopher Giancarlo:

After we had greenlighted Bitcoin futures in December 2017, I received a summons to appear before the Senate Banking Committee, alongside SEC Chairman Jay Clayton, to basically explain what we had done and why we did it. And I was anticipating getting bloodied by some that felt that we had legitimized Bitcoin, and so I prepared a long summation of every step we had made. I think it, when it came out, it was 45 or 50 pages in length, going through chapter and verse of our decision to greenlight Bitcoin futures.

When you give testimony in front of a Congressional committee, you have in front of you a clock. And when you give your statement, you've got five minutes, and it immediately goes green at 4:59, and then it starts counting down. And at one minute it goes yellow, and at zero, it goes red. And a second later you're gavelled to stop, so you've got to get your words in, sort of like my opening to your show today.

And so I looked at that 45 page manuscript and said there's no way I can summarize this in five minutes, so I actually decided to do something different. And so that next morning, when my light on my screen went green, I'm in front of these assembled senators on their raised dais, in a face-to-face meeting and the whole room is packed, I said, "Senators, I know I'm here as the chairman of a federal regulatory agency, but if you don't mind, I'd just like to talk to you as a dad." And then I explained that I'd just come back from our family ski trip, and all my nieces and nephews and kids wanted to talk about the whole time was Bitcoin. And they knew we had just greenlighted Bitcoin futures, and it was Bitcoin this, Bitcoin that, and I was thinking these are kids that my brothers and I had tried to interest in the stock market when they were in their teens. We'd give them little brokerage accounts, a few hundred dollars, and they had absolutely no interest, but suddenly all their interested in is Bitcoin.

And I said, "Senators, you've probably had some of these conversations around your own kitchen table, and I think we owe it to this generation not to dismiss their interest with disdain and derision as if it's something silly, but to take it seriously and get these regulations right, in a way that respects this interest." And it's like the words are out of my mouth, and my Twitter handle just exploded. I think I had like 1,200 Twitter followers when I started that hearing, three days later I had 50,000 Twitter followers, and they were giving me all kinds of names.

But one that stuck was Crypto Dad, because I said, "I want to talk to you as a dad," and so that's where I got the name. At first, I didn't know what to do with it. Then I decided I'm going to embrace it.

If I'm known for anything, I think, it's that I recognize this generational difference. I'm 62. I guess I'm the kind of parent that listened to my kids and learned a lot from them. I recognize that this digital divide is real, and it's big, and it's not going away and just dismissing it or saying that you've got to do things in the markets the old way. It's just not going to work.

We've got to meet this generation where it lives and where it is and understand what they're doing. This innovation is coming. It's not going to be pushed aside. It's not going to be shut down. We can't just say no and preserve the banking system, as I think the President's Working Group would like to do. This is going to change everything.

To think that the internet won't change banking and money and financial services in the same way, it's totally changed retail shopping, photography, music, entertainment, and travel is just naive. It's going to, and I think every one of your listeners needs to anticipate how it's going to happen. I don't know every detail, how it's going to play out, but it's going to affect financial systems and money itself the same way it's affected everything else that we've come to know in the last generation.

Larry Bernstein:

In your opening remarks, you talked about the importance of blockchain and that it's a huge energy user. Most of my listeners have no clue about crypto, the ledger or blockchain. Can you explain what the blockchain is and why it's important?

Christopher Giancarlo:

It uses a lot of energy to keep all those ATM machines open in those branch bank foyers and the lights on and the security cameras operating. Takes a lot of energy to mine nickel and other materials out of the ground and mint paper dollars.

The value of all these cryptos is in the network itself. You might say the same thing about Amazon. What makes Amazon so powerful is the network, is the fact that you can shop for anything on it from any vendor. It's the network effect. That's one of the things we've learned in this internet wave. It's the network effect of Facebook.

Yet, the thing that has perhaps one of the biggest networks is still analog, and that's the dollar network. Imagine if you put monetary systems from an informal network of influence, which is what the dollar zone or the eurozone is, and you actually move it to a network. That's the power. That's the power of what the internet did to retail shopping.

Right now, in our financial system, we've got a series of silos. If you want to do a commercial loan transaction, you go to one banking institution. If you want to do global payments, you're using MasterCard, Visa, Zelle, Venmo. You're in another silo.

If you want to go and do a wholesale hedge on oil prices, you're dealing with other intermediaries. The potential is for a digital currency, say a digital dollar, to be the operating system for a fully integrated financial system network. That is such a powerful idea. That would take so much cost and latency out of our financial markets, and that's what China envisions their digital Yuan to be able to do.

It's not about ultimately about Bitcoin or Ethereum or this currency or that currency or Stablecoin. It's ultimately about taking that same network effect that totally transformed retail shopping, that's transformed information, and bringing that into financial services and money itself. That is very, very powerful.

Now, how it all plays out, I can't tell you, just as in the 1990s, I could never envision what that first surfing the web on something called Netscape Navigator would've resulted in a world going lockdown during COVID and yet still seemed to access meetings and conduct commercial activities and still do shopping because of these network effects of the internet. I can't quite tell you how this network effect of finance and money is going to play out, but I can tell you, it will be as transformational.

Larry Bernstein:

You mentioned a digital dollar or Stablecoin, and I'll define it first.

Bitcoin is just that, you're buying and selling some cryptocurrency and its non-convertible. A Stablecoin for a US dollar is exchangeable for a USD. As a result, it should trade at parity at \$1.

Now, if you take a dollar and you put it in the bank, you will earn interest. A Stablecoin may or may not pay interest, and so that will create an arbitrage. When Chris was discussing that the Federal Reserve would offer you digital dollars, I suspect that Federal Reserve digital dollar will not pay interest, and so the government would benefit by seigniorage, which is equivalent to what it is for cash.

But arbitrageurs will offer a product that pays interest unlike the Federal Reserve. And that will be a competitive interest rate. This product will place the dollars in a safe risk-free investment like a Treasury bill or have the money on account at the Federal Reserve.

Another Stablecoin will take some credit risk, and invest the Stablecoin reserves in a short-term asset that is not risk-free, like a bank deposit or a money market fund.

Back before the Federal Reserve existed, state banks would issue bank notes backed by a combination of gold and loans, and during economic downturns, these state banks went bust. So, we should expect similar results for a Stablecoin that takes credit risk?

Christopher Giancarlo:

Look, Stablecoins are relatively new. They're evolving, where they might evolve to is a fascinating subject. I'm in favor of a great deal of experimentation and diversification as we learn our way through. I think that the pre-Fed period of state banks, national banks, and George Selgin at Cato has written on this, is often denigrated as being a crazy period of time.

It was time of enormous economic growth in the United States, even though some of those state bank issuers of money failed. I think we can tolerate some innovation for some period of time here. I'm not in favor of the Fed launching a digital dollar to squeeze out Stablecoins until we see what results from this. Giving people access to portability of money 24/7/365 days a year, as opposed to what we have today, which is money moves during banking hours for the most part, I think is a tremendous advantage. I think we should take a national interest in promoting this innovation.

Now, my predecessor at the CFTC, Chairman Tim Massad, wrote a very good piece at the Brookings Institute recently, where he rightfully identified some of the risks and concerns, including a lack of disclosure as to what Stablecoin holders are actually holding. But he also identified, I think, some of the upside opportunities in this, which I think is the right approach. Let's be even handed about it.

I think we should follow Tim's lead with some regulation, perhaps legislation, that would require better transparency by Stablecoin operators, some guardrails against risky holdings. But I think we should further this innovation not try to stifle it, and I think there will be opportunity for arbitrageurs.

I think there will be opportunity for financial innovation, and I think that's good. We are a capitalist system. We should be engaged in capital experimentation with good sound regulation at all time. Regulators do not have a mandate to say, we like the financial structure circa 2018, all innovation needs to stop, because we're comfortable where it was.

Regulators always have to follow the innovation. That's our lot in life. That's our job. We should forward innovation, and some things may go wrong. Then we'll have to catch up and we'll have to correct those, but I'd rather have some things go wrong because we're innovating as a society rather than try to hope that nothing goes wrong because we stop innovation as a society. That will never work.

I call it the fight for the future of money, and I think part of the fight is perhaps some voices that would say, let's stop innovating, because it's too risky to innovate. I reject that approach. I think we've got to take the risk of innovation. Once you stop innovating, you stop learning. Once you stop learning as a society, you regress, and the lot of your fellow citizens declines.

I think we've got to innovate at the risk of getting some things wrong, and our regulators need to be empowered to be kept up to date. They need the funding. I argue for this in my book, regulators need to be affirmatively funded well, so they can keep pace with innovation, not have their funding limited so that they then try to stop innovation, because they simply can't keep up with it.

Larry Bernstein:

Crypto is held with third parties. A crypto exchange Mt. Gox located in Japan was hacked and bitcoins were stolen. The stolen bitcoin resulted in the bankruptcy of the exchange. I appreciate that banks get hacked too, and they spend billions of dollars on cybersecurity.

Do you expect hacking to be a serious problem for Crypto owners?

Christopher Giancarlo:

Well, except in 14 years, Bitcoin's never been successfully hacked.

It's pretty remarkable statistic though. It's a pretty remarkable fact, because once you take away the single points of failure, it's very hard. You'd have to bring down the whole internet. In the same way that Wikipedia or the same way that the internet has never been brought down, because there is no single point of failure.

The promise of this technology is by disintermediating the single points of failure and putting things on networks, then unless one can bring down the entire network and the broader the network, the less likely it is to bring down the entire network, that you take away the single points of failure. Now, I think

that's theoretical, and yet, we do have some proof that it works, but it's a very promising opportunity when you think about, when we're talking about things of value, there's always bad guys.

As the famous bank robber said when they asked him, "Why do you rob banks?" He said, "Because that's where the money is." If you have single points of failure in the banking system, there're always going to be attempts to hack. But if you can go to a network effect, it's very hard to bring it down, and I think that's one of the exciting opportunities.

Larry Bernstein:

Another strange example of criminal malfeasance was when hackers took over a natural gas pipeline and demanded a ransom paid in Bitcoin. I was shocked when Colonial Pipeline got their bitcoin returned. What happened?

Christopher Giancarlo:

Well, because once you go to an immutable ledger, which is what the blockchains do, you know where all the money goes. You know where everything goes. Now, in Bitcoin, the system is of pseudonymity. So, day-to-day transactions are apparently anonymous, but the blockchain keeps a record of every transaction. If you can unmask that pseudonymity and get to the underlying identity, you can identify who is involved in every stage.

With the Colonial Pipeline hack that was the case. They were able to identify, quite frankly, every party to the transaction, and those parties that were reachable, basically either onshore or in destinations that were reachable by law enforcement, they were able to recover the money. For the ultimate fraudsters who were out of reach of law enforcement in parts of Central Asia, they were not able to get them, but they know who they are.

Now, had those hackers asked for ransom not in Bitcoin, but in paper dollars or diamonds or gold, we wouldn't even know who they are. In everything there's a silver lining. That hack is both cited by opponents of Bitcoin, but also cited by proponents of Bitcoin as once you go to an immutable ledger, everything is part of history. The record is there. It's immutable. .

Larry Bernstein:

I end each episode on a note of optimism. Chris, what are you optimistic about?

Christopher Giancarlo:

Oh, I'm very optimistic.

Larry Bernstein:

I can tell.

Christopher Giancarlo:

I'm optimistic about this new generational thing. I actually think that if we listen carefully enough, young people are actually pointing out to us older deficiencies in the financial system that somehow we've gotten okay with. It's slowness. It's cost. It's lack of user friendliness. It's exclusivity.

For some reason, we've become too complacent about it. The notion of tokenized money means that people without identity can engage in financial transactions. That's a lot of people. That's about a billion and a half people in this world.

Young people are saying to us, why have we excluded them for so long? Why are we forcing expatriates around the world to pay up to 17% to remit money back to their home country? There's a lot of things that are unattractive about our financial system that we take for granted and young people don't. Life's a conveyor belt. People of my generation, we're close to the end, they're coming along and they're going to bring these notions with them.

If you don't believe the technology's going to change things, young people will, because they're bringing different ideas to their financial interactions. They're not going to discard those ideas simply because we tell them they're foolish or they're naive. They're not listening to that old people talk. They're going to bring these notions with them.

Regulators come and go. I served proudly for five years. I'm now in the private sector. The current slate of regulators that may be looking down their nose at this innovation, they will come and go. These young people are going to move forward and these changes are happening and they're going to happen.