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WEBINAR

HOW DID THE NON-FUNGIBLE TOKEN (NFT) WAVE START?

A CONVERSATION WITH TECH VENTURE CAPITALIST BILL TAI ON INVESTING IN NEW TECHNOLOGIES

Washington, D.C.

Friday, April 16, 2021

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P R O C E E D I N G S

MR. PATNAIK: Hello, and welcome to this fireside chat of the Center on Regulation and Markets at the Brookings Institution. My name is Sanjay Patnaik, and I'm the director of the Center. In our series of fireside chats, we explore important topics related to modern day markets and regulations through one-on-one conversations with regulators, business executives, and academics.

Today, it is my real pleasure to welcome Bill Tai, who is a renowned venture capitalist in Silicon Valley, who has been (inaudible). Bill established a semiconductor practice at Alex, Brown & Sons positioning the IPO's of Atmel, Cirrus Logic, Dallas Semiconductor and Zilog.

He is also the co-founder and chairman of Treasure Data; the founding chairman of IPinfusion; the chairman of Hut8 Mining, which is North America's largest company that's a Bitcoin mining operation; and the founding chairman and CEO of iAsiaWorks. He is also the past board director of eight publicly listed companies.

And, interestingly, he is among the very first investors in Canva, Color Genomics, Tweetdeck/Twitter, Wish.com, and Zoom, and also on today's topics in NFTs. He has also been an early proponent of P2P currencies and created the Necker BlockChain Summit. He has an MBA from Harvard and has an honorary Ph.D. from Curtin University.

Thank you so much, Bill, for being here today. It's a pleasure to have you.

MR. TAI: Thank you, Sanjay, exited to be here, fun topics.

MR. PATNAIK: Definitely. And so NFTs or non-fungible tokens are really being talked about a lot in the media in the last couple of weeks, right? The frenzy was kicked off with the NFT tied to an art piece, an art collage that sold for almost $70 million at Christie's, and I trust right today that there was an NFT tied to one pixel that sold for $1.4 million.

And so, for people who don't really know what is an NFT, can you just try to explain what are non-fungible tokens? How do they work?

MR. TAI: Yeah, so -- okay, so non-fungible tokens are basically uniquely authenticated items that are expressed digitally whether they are a physical or a digital item to a marketplace and that marketplace is going to be a community of interest where the economic interests of the community are aligned.

And it's, you know, it's a little bit like a charity auction where something that might sell for, you know, a regular price on the street embedded inside an emotional community that's engaged around a product or an issue or wants to be seen, you know, for EO perspectives will pay out for something because it expresses their position in the community.

MR. PATNAIK: So it's kind of, like, it can be seen as an authenticator for digital items, if we take that and analogy for, like, a regular painting where you have an art expert that comes in and says, oh, yeah, that's a Picasso, with an NFT you wouldn't know actually if this is authentic from the original creator, is that correct?

MR. TAI: That is part of the equation. Because, you know, part of the value comes from knowing that it's the real deal. The other part of the value becomes it's low friction expression to a community of interest that is aggregated it to one place, in this case, kind of the auction market.

And, you know, I have a tale of, you know, how I got, you know, kind of my head wrapped around this. I happened to get involve in the Bitcoin ecosystem in 2010. I was Alan Greenspan (inaudible) in second life when, in 2001, Philip launched a Lyndon dollar, which was one of the first free floating digital currencies in its own economy and that led me to, you know, being introduced to the Bitcoin whitepaper around 2009 and '10, and I started mining in 2010.

And that led later to me pulling together a summit on Necker Island that involved Richard Branson, of course, called the Necker BlockChain Summit, and we tried five or six years ago to find projects that would involve Bitcoin and blockchain for social and environmental good which we swooped it around an economist named Hernando de Soto, who is famous for writing the book, "Mystery of Capital."

And so that book is about the kind of granularization, authentication, and low friction expression of land titles in the (inaudible) kind of, like, how do you make land titling the basic building block of capitalism, low friction, replicable, scalable?

And that led to basically an NGR architecture that we put together five or six years ago, that's how I got involved in it first.

MR. PATNAIK: Well, that's really interesting. So that's how the NFT wave started?

MR. TAI: No. Well, you know, I don't know that there is a starting point, you know. In a way, NFTs you can equate them with barter, you know. So I think the idea of a unique asset being traded

for another asset whether it's fungible or not currency being fungible and other items being not, that's been a part of human history ever since man could think about, you know, things as assets.

So the digital wrapper part, that's a little bit more recent. But I'm going to stretch your mind a little bit to extract it from where we are today where it's becoming more commoditized in a way and lower friction, therefore, you know, easier to buy. If you look at Uber or Airbnb --

MR. PATNAIK: Yeah.

MR. TAI: -- those are essentially software platforms that allow a car and driver to become an NFT.

MR. PATNAIK: I don't -- (crosstalk)

MR. TAI: Yeah, ownership trades for five minutes, you know, and low friction is to execute that transaction Airbnb is basically a data cloud where apartments have been turned into digital tokens where people can buy and sell them at ease, right.

So that's really not that different in some ways from other travel sites and other things, but the marketplace function has changed everything. And so, if you look at -- I'll give you another analogy.

If you think about the beginning of the internet, before the internet became this widely adopted mass standard on TCPIP, you had private functions doing the same thing in smaller private networks.

You had AOL, Prodigy; that today is to Uber and Airbnb, right. If you were going to start those companies today, you can't take away the community and marketplace that they have built, but you might start the technology platform as an expression on blockchain. And it would be easier to build as an open standard kinds of thing, like you would build on the internet, instead of having to create your own cloud as AOL did.

MR. PATNAIK: Interesting. Can you talk a little bit about how the technology behind NFTs works? It is tied to blockchain, right? So how does it work? How does it get authenticated?

MR. TAI: So in this case, so in the more modern expression. I'll give you an example, that the market share leader is a company that I was an angel backer of called Dapper Labs.

MR. PATNAIK: Okay.

MR. TAI: I don't know their run rate today. But, you know, as it was zooming up, over the last, you know, they launched the platform called NBA Top Shot about nine months ago, as it really started to catch hold this spring, it kind of zoomed up to $14 million a day, $5 million of GMV annualized run rate transaction.

That authentication takes place because Dapper Labs partnered with the NBA which had libraries and libraries of film footage from their games. And they, themselves, were the arbiter of what's authentic and not authentic, right, in this basic package things that they own, so those were truly authentic. And though in every vertical marketplace that would be "NFT'd," you can have different sources of authentication.

MR. PATNAIK: Okay.

MR. TAI: The people transaction was handled by one of the main auction firms, like, a Christie's or a Sotheby's, they are responsible for the authentication and then the question of that happened to happen on blockchain, in this case, Ethereum. If it's done on Dapper, it happens on the blockchain that they introduce called the Flow blockchain.

MR. PATNAIK: I see. Okay, that's interesting. And so, one thing that I was wondering about is, well, let's say you were the investor that bought the NFT attached to painting for $70 million, right.

MR. TAI: Yes.

MR. PATNAIK: Well, what is the value that you get out of it because that painting can replicated a million times over, right? People can now load it, they can put it on their computer screens, they can print it out, so what is value to me if I bought an NFT

MR. TAI: You know, it's the knowledge that you hold the original deal and that there are "authentic" reproductions all over the place, right. So if you think about I think their -- the basic behavior is not that different than baseball cards from tops 20 years ago, that still exists today, right.

So if you think about how that human behavior has evolved that it is a known behavior that's been around for many decades there might be multiple versions of a baseball card for Babe Ruth. There might be 100 of them, you know. I don't know, like, today it's fungible but kind of non-fungible because they're limited edition and you have people trying to collect them because they want a completed

set, or because they have an emotional attachment to a player from a certain team.

And so, to some people, you're going to have a higher value attributed to an item than other people. And so it's a marketplace function to let that good seek its way to where it suddenly has value, right. And so, you know, it doesn't matter how many of them exist, but the scarcity value adds more.

MR. PATNAIK: So treated that as long as I own the original one, and so whoever copies it, it's a copy, okay.

MR. TAI: Right.

MR. PATNAIK: So what's (inaudible) mean in that context, right, because it's (inaudible). So --

MR. TAI: Yeah.

MR. PATNAIK: -- can you explain the real risk?

MR. TAI: Yeah, okay. So this is where I think there is kind of a profound change in the way value is attributed to items in the modern world. In a way, in the old world you would want the physical item. You might stick in a frame and stick it in your house, and you want people to know that you own it.

MR. PATNAIK: Yeah.

MR. TAI: But the ability to let people know that you own it to kind of limit it, right. Because it's in your room and you'd have to find somebody to take a picture of it and print it in the newspaper and say, oh, Sanjay bought the Babe Ruth card, he's a player, right. And now it's all over social media, so now the costs --

MR. PATNAIK: That's interesting.

MR. TAI: -- the ability to drive attention has gone exponential, and therefore sort of the ego part of, "I'm the owner of the $69 billion people thing, I must be a player," you know. It's totally revolutionized the way people think about community, position in community, and alignment of interests of people around items.

MR. PATNAIK: That's actually a really interesting point, I hadn't thought about it. So it's kind of, like, bring social status to a much broader audience, right?

MR. TAI: Yeah.

MR. PATNAIK: Instead of, like, hanging your Picasso and hold it and limit it only so that everyone knows that you own the NFT, that's interesting.

MR. TAI: Yeah, and I'm going to use another analogy, you know, when I was trying to explain this. So, Hernando de Soto, he's got a big brain and he thought through, you know, the roots of capitalists societies and why capitalism works in the West but not other places, and how by lowering the friction to land title you had a really productive economy because people could borrow against that and --

MR. PATNAIK: Yeah.

MR. TAI: -- less than other stuff; where if you don't have clear title you can't do anything, so the -- (crosstalk)

MR. PATNAIK: Right.

MR. TAI: -- capital just didn't exist, right. And I was trying to explain blockchain to him and marketplaces. And I said, "Look, Hernando, it's like this." Because he had told me that he had just bought a rug through Mercado Libre, which is the South American kind of equivalent of eBay.

MR. PATNAIK: Yeah.

MR. TAI: I said, "Hernando, okay, this is what's happening because of digital and marketplaces." That rug before it was listed was worth zero. It was sitting in someone's garage, no one knew it even existed. The guy wanted to get rid of it, it was a piece of trash. Well, it was a good piece of trash because he paid a lot for it.

But once it was authenticated because the person wrote about it and put it on, you know, Mercado Libre with pictures and said, this exists and expressed to a broad marketplace suddenly that item went from zero to thousands. So there was this great value creation because of the lowering friction of the digital expression broadcast to a very wide market.

If you contrast that to a first generation marketplace, a flea market, how would the value be created there? The guy would have to take that thing, load it into a truck, drive it to this thing where a lot of people showed up one morning and hoped that somebody walked his table and said, I like that rug.

You know, so the friction to accruing value is very high in the physical world. It's lowered greatly in the digital world and the audience reach is exponentially like a million times bigger.

So anytime in the marketplaces where you can reach more people with lower friction, you're going to have higher value because there is a higher chance that that item matches the person with interest.

MR. PATNAIK: So you can really expand your value of items that you put out on the market because they're also reconstructed based on the demand in the marketplace, right?

MR. TAI: Yes, and digital allows you also to pull into one place, the fervent community of interests that is excited about that type of topic, right. So if you think about NBA Top Shot --

MR. PATNAIK: Yeah.

MR. TAI: -- let it work because there is a lot of people that like the NBA and they're drawn into one cluster, so the granularization of marketplaces to verticals. It's like you go to eBay to look for something.

MR. PATNAIK: Yeah.

MR. TAI: You can look for rugs and find the categories as rugs, you know, instead of walking to a flea market with 80,000 items in a football field trying to figure out what's there by who.

MR. PATNAIK: That's really interesting. And so when you look back at then how NFTs have evolved over the time, who are the people that usually have invested in those and have advocated for that, and who do you think should invest now that it is becoming a bit more mainstream?

Is that something that is for the mainstream investor to actually maybe put some value in there, or again only for, like, very dedicated communities for certain products?

MR. TAI: I look at it as, again, a lowering the friction for the economic alignment and interests across communities of interest.

MR. PATNAIK: That's interesting.

MR. TAI: Just like there are clubs that trade old cars, and specifically clubs that trade old Mustangs, or people that collect art.

MR. PATNAIK: Yeah.

MR. TAI: That out there is potentially a way for all of the items out there in the world someday to find their way to specific clusters in the same way that people have found their way to specific clusters through things, like, Facebook groups, or prior to that, Yahoo groups, you know; so you know,

myself, as a kiteboarder.

MR. PATNAIK: Yeah.

MR. TAI: And I started a kiteboarder in an era where Facebook didn't exist. I had five friends in California that I do that with, but because of the reach of social media and the ability to place attributes on what you do, what you're interested in, other people can find you.

So now I have a network of thousands and thousands of people that do what I do that I got see when I could travel, you know. So it's a great liquification and then of community, of the disaggregation, and then reaggregation into clusters that matter to you. And that's happened (inaudible).

MR. PATNAIK: That's actually a really interesting aspect because you can think of it about kind of, like, with facilitating the global marketplace even further than what we have seen in the last couple of decades, right, if you really have the global market and you can find the communities and the different soft target audiences that you are looking for, for your product?

MR. TAI: Yeah. And on that note, you can make an analogy that NFT clusters are not any different than loyalty points, right. So if you think about what is a community of interests around a brand that has its own loyalty programs, whether it's an airline mile or a Starbucks point system, right, you have an affinity for that branch and cluster; you trust that brand and cluster.

They are the authenticating entity around a fungible token, in this case, sometimes non-fungible, but that becomes a unit of exchange of value. So it's been happening ever since humans have been around.

MR. PATNAIK: It's an old idea with a new twist to it. That's really fascinating. And so the last thing that I saw this week is that I read an article and fee prices are already graphing.

And so I'm curious, like, you know market, do you expect that, and what do predict for the NFT market in the long-term? And, especially, too, I think that NFTs might become a bubble, or do you think it's going to settle up into an equilibrium again?

MR. TAI: You know, every sort of mass realization that something has value creates this quick, fast, spike of an onboarding that, you know, goes into this sort of, you know, excitement phase that then, you know, may fiddle around a little bit, but a lot of things are durable from that.

It's kind of, like, the IPO placement of something that, you know, people are crazy about

in the beginning and then they realize, wow, I know it's going to work but there is no business mode and income model.

MR. PATNAIK: (Laughter)

MR. TAI: Now, in this case, there is a real business model. That's the amazing thing, you know. You look at Dapper hitting $5 billion of GMV in 90 days.

MR. PATNAIK: Wow.

MR. TAI: I don't think I have ever seen a company grow that fast in my life, you know. So part of it was a little bit of this, you know, bubbly uplift. But bubbles, you know, what is a bubble? It's prices are where supply meets demand, and at that moment demand far outstrips supply.

And so it will settle and more supply will come on, as you have been seeing, and what the demand starts to distribute itself across that supply and you get this equalization point, can't predict the price, you just know it's going to go up and down.

MR. PATNAIK: Okay, that's interesting. And one thing that when we tried to think about it as a new technology here in my center, we always think about the intersection of markets and regulations, right. And so when you look at NFTs, I'm curious, do you know if NFT trades are taxed anywhere in the world currently, and what is your view then? Should they maybe be taxed or not?

MR. TAI: NFTs -- I am not a lawyer, and not a regulator myself.

MR. PATNAIK: Yeah.

MR. TAI: But I think, because I have been around the space, I think the way it's looked at -- I'm pretty sure the way it's looked at is that they are treated like commodities.

MR. PATNAIK: Okay.

MR. TAI: Meaning that if you bought an item for $1000 and then you sold it for $10,000, you would have gained on that asset, just like we would have on your house, or a car, or anything else.

MR. PATNAIK: Oh, okay.

MR. TAI: So you'll owe a capital gains tax on that item and the rate of tax is going to depend on your jurisdiction and the classification of the item.

MR. PATNAIK: So then, actually, do you think the regulators wouldn't need any different approaches to NFTs, or even a broader theme about blockchain to regulate those, or do you think we can

think about that in the case of NFTs as just regular assets, we don't need any new approaches to that?

MR. TAI: You know, it's a question of how close the NF -- so, so long as there is the N- in the NFT, instead of the FT, fungible token --

MR. PATNAIK: Yeah, that's a good point.

MR. TAI: -- it's far easier to make sure that it's not classified as a currency.

MR. PATNAIK: Okay.

MR. TAI: You know, because it is a non-fungible unique item. The closer it gets to a fungible item, interchangeable of like, you know, let's say you had a "NFT" that was one of issuance of a thousand copies, or one of a million copies.

MR. PATNAIK: Yeah.

MR. TAI: Then you start getting into this era of, well, is it an ICO? Is it a tradeable item? And those may or may not be treated differently, you know, and at the extreme of that argument, if you were to look at digital currency and it's not classified as currency, it's classified as commodity, you know, every Bitcoin, in a way, Bitcoins are a subset of NFTs. Now that's going to be, like, what? What did he just say

MR. PATNAIK: How so? Can you explain that?

MR. TAI: Yes. Okay, so every Bitcoin is swappable for other Bitcoin in a sense.

MR. PATNAIK: Yeah.

MR. TAI: But it's a unique item. Every single Bitcoin has its own identity with a different address, just like a dollar bill --

MR. PATNAIK: Yeah.

MR. TAI: -- has a serial number that's different than the next dollar bill. So every dollar bill is an NFT, but it is fungible, right. So think of it as your other units that are interesting.

So the closer you get to currencies, then you enter this other regulatory question or dilemma, do you really want it to be low friction?

And, if so, like, you know, if you and I are trading around stuff for Swiss francs in the United States, we don't pay tax on that, like, you know, if I went to Switzerland, came back with some Swiss francs and the exchange rate was lower, and then I bought that jacket you're wearing from you by

handing you some Swiss francs, I don't pay a capital gains tax on the delta between the Swiss franc and where I bought it and where today's price is if I changed it for that jacket.

But in cryptocurrency theoretically you do, but it's very hard to figure out that I'd be counting them for that. Everyone just ignores it, you know, because it's too hard to track. But that's the regulatory question for you guys, like, if crypto is going to be important to this world's future, and if America is going to continue to be a player in it, we can't have the highest friction system in the world, right.

So, at some point, if currencies go digital I think it's important for Brookings to make it clear from an academic and regulatory standpoint that it's better for America to do what it's always done to be the place of low friction to drive innovation.

MR. PATNAIK: And I think you would probably need an international agreement of how to regulate those because it doesn't make sense to do it in different jurisdiction. And I think it's an interesting case of -- which we have seen in a lot of other areas where you have basically a global market, global technology but you have regulatory agencies that are tied to domestic and to international borders, right.

And so that's quite interesting in many cases. So it's always better to have some cooperation on there to come up with a common framework.

MR. TAI: Yeah, it's going to have to happen.

MR. PATNAIK: Yeah, I agree. And so when we look at that little aspect, which is intellectual property rights protection, right, how does that play to NFTs? Can NFTs maybe help with that other authentication, I'm curious?

MR. TAI: That's going to be a question of -- because if someone is going to launch an NFT -- let's take a category where you are starting to see some activity that has been kind of IP-based the whole time, which is music, right. So when you think about the various layers of music --

MR. PATNAIK: Yeah.

MR. TAI: -- and the publishing rights; you have the copyright rights of the person that wrote the song; you have the performance rights; you have the -- you know, there is like five or six different possible layers of rights that all have to come together when a song is either sold or streamed.

And so it's been historically a very clunky process where lawyers at Universal, or Sony, or Warner Music work out something with each individual artist, and then sometimes the owner of one part of that might sell part of the rights, you know.

So you've got suddenly a split and it's not just one person managing everything but, you know, Universal, and it's a publishing. Guns N' Roses might own the copyright to the songs. Again, it could be all over the place and you have got to synchronize all of that stuff again and so things get pretty complicated.

And so what you're seeing today in the music space is that there is going to be some launches where you get the whole stack of IP, and some that are just carving out the masters, some of them are carving out just the copyright, and then it's interesting then the right to stream those.

I think it's going to go to a point where people will sell the item and the economic rights that go with the item later, where today they're selling basically, like, the baseball trading card, right. You don't sell the baseball player, you sell his picture on a piece of paper that won't hurt nothing.

MR. PATNAIK: Right, yeah.

MR. TAI: But, eventually, you might sell the song with all of the royalties foregoing in that item, like David Bowie did when he sold his bonds.

MR. PATNAIK: That's interesting. That has really the potential to shakeup a lot of industries you said, if we see more of that.

MR. TAI: It could redefine industries based around IP, no question.

MR. PATNAIK: Wow. So another question I want to talk to you about is a little about future technologies, right. So you have been at the forefront of investing in future technologies way before they become implemented and trendy, right? You were one of the early investors in Zoom many years ago, and now all of us using it in this unprecedented COVID-19 world.

And so, similarly, kind of, like, NFTs is one example where you already saw it already coming. How do you assess, as an investor where the technology or a company is likely to be successful? I mean that's the million dollar question for any VC, right? But I'm curious what your thought process us, how do you go about it?

MR. TAI: You know, I had the great, great pleasure of the -- at the first startup I joined, I

had a noard member on there named Don Valentine. He was the founder of Sequoia Capital and people in the venture business, you know Sequoia because it's, like, it's the one that really over time was a little firm at the time but it became the real player.

And, you know, Don, himself, was the backer of Apple, Oracle, Cisco Network Appliance, LSI Logic, Electronic Art. So that's probably a thousand billion on seven companies, you know; and then the firm went on to Google, and everybody else, right.

So in my very, very early days, we were both investors in microchip technology, a good, you know, $100 billion market cap company today. And we were stuck at an airport in Phoenix after boarding because our flight got cancelled. And in my young pup days I was like, "So, Don, what do I have to do to be good at this?"

MR. PATNAIK: (Laughter)

MR. TAI: And Don, and everybody that knows him, knows he's a very terse person.

MR. PATNAIK: Okay.

MR. TAI: He says, "It's really quite simple, Bill. You only have to get three things right, you know: get the right market, get the right person in place, and don't overpay." Okay, so now I know that sounds extraordinarily simple.

MR. PATNAIK: Right.

MR. TAI: Then he followed that up with, "Make sure it's a really big market." He said, "If you think about it, it's obvious. You take a big market and a couple of good people, time it right, don't overpay, you're going to do fine every time." "You take a shitty market and an A-class team and infinite money, you'll lose money every time."

MR. PATNAIK: Yeah.

MR. TAI: So my view on that has evolved to really one about market size, timing of market on some disruptive change, the right rider, and it's a lot like surfing, you know.

So if you think about, you know, surfing, you're sitting out on the water on this board looking backwards at some waves coming, and all that really matters is when you paddle, and if you paddle, right. So you have to pick the right wave because if you pick the wrong one you just waste your energy and it was a zero.

MR. PATNAIK: Yeah.

MR. TAI: If you pick the right wave, you might paddle at the right time or not. If you paddle at the right time, you only have to paddle once, right. So it's a very efficient expenditure of energy and you're on the wave.

So I, basically, I have been around doing venture now for 30 years. So I think over lots of wins and losses, I just have developed some instinct about what's coming down the pike. And, usually, if I think of something myself I have to say, okay, stop thinking about it for about seven years, and then that's when it will hit, you know.

So, somewhere between now then, then I have to find the rider. And if you pick a great rider, like Eric Yuan and Zoom, or Melanie Perkins at Canva, you're going to do great every time.

MR. PATNAIK: But I think I would imagine the challenge here is also to assess what new market is potentially there, right, because a lot of these markets don't exist yet.

So if you look at the markets, as you have to trying to assess what's the potential markets such as in smartphone, right, like before we had smartphones the market was much worse, modern people didn't know that they actually needed that kind of technology.

MR. TAI: Yeah, so some of it is basically looking at the underlying foundational technology and the impact it will bring to other markets surged and when. But I think I kind of tuned that.

My original experience was actually designed silica chips. And so a lot of the stuff that I worked on ended up in products later and you could see the impact of being able to take a whole bunch of stuff and putting it onto a whole chip in reducing costs, expanding the market greatly, really, really making use cases easier and therefore a lot bigger.

And so, as I look at the things that I do tend to be a technology disruption that is applying itself to a market that is pretty big and kind of inefficient where you can just see the obvious impact.

That was the case with Zoom with, you know, cloud-based video; that was case with Canva, could-based design; it was the case for Treasure Data, could-based ado. So all of the investments I made that really hit at that time between kind of 2010 and 2013-14 were a question I had of:

How will the cost structure change in major businesses by taking what they did and compressing it into cloud infrastructure and mobile expression at the endpoints?

MR. PATNAIK: That's an interesting angle to look at to really see how it effects the common industries, that's great. And so another question is, when you look at entrepreneurs, I think oftentimes when you look at Silicon Valley, many times regulatory issues are in the, kind of, like, the back of the mind, right.

I mean these entrepreneurs they have to deal with so many issues. But how important do you think it is that startups engage with regulators on their potential products early on? I mean if we look at things, like, Lyft and Uber, right, those kind of, like, went into markets without the warning about regulators too much, and then they ran into a headwind, both in the U.S., and in Europe, and in Asia.

So what is your experience? How important do you think startups should think about these issues

MR. TAI: You know, I think they have to be aware enough of what the regulation is at the time, but they have to have a healthy disrespect of what those rules are because if they respect the rules too much they are never going to try, right. And if everybody that started those companies knew everything that they were going to run into, they probably wouldn't have done it, you know.

And Coinbase is another example, right. If the folks that started Coinbase sat around thinking about the ways the government might be offended or threatened and try to, you know, dampen their business they might not have ever started. I don't know that, you know, but I'm just presuming that. They were very much religious zealots so maybe they would have started it anyway.

But I think it's important to know what the rules are. But if you bring great efficiency to a market and a service that people want, in the end, at least in a democracy, the people using the services elect the regulators, so it takes a little while for the cycle to take hold. But if everybody is using Uber, the government that, you know, tries to shut off people's transportation they're going to get voted out.

MR. PATNAIK: So it's really pushing the boundaries of current regulations and adopting into new markets, right. Because I think oftentimes, even regulators that I speak to this they have the challenge of not really knowing how to regulate some of those new markets and products.

And I think ridesharing is a good example for that, right, it completely changed the transportation industry and the taxicab industry. But it pushed the boundaries of the regulatory framework that was in place previously.

MR. TAI: Yes, and I think, you know, the ridesharing thing was big, is big, but it --

MR. PATNAIK: Still is in the phase going on, yeah.

MR. TAI: Yes, but it's infinitesimal in impact compared to the world of currencies. So I think, you know, the regulatory questions, issues, answers, battles around monetary systems are going to be mindboggling compared to the little smaller marketplaces that are being themselves.

MR. PATNAIK: Yeah.

MR. TAI: That are being addressed now.

MR. PATNAIK: And I think that's really a lot of key to good and smart regulation that we also work on it already is finding that balance as a regulator to correct potential market failures, which regulation is here for, but to make sure you don't stifle innovation for products or new ideas that could actually improve efficiency. I think that's an interesting tension.

And I'm curious, does the VC community at all support startups in their consultation with regulators with thinking about those political aspects? I think what we have seen, at least in the last 10 to 15 years, I would say, that a tech companies historically have not engaged much in Capitol Hill, but they are much more engaged now.

I think they realize that some of those battles are quite important. And so I'm curious how that debate is being framed within the VC community and amongst startups in Silicon Valley?

MR. TAI: You know, it's always a very late realization when you have it.

MR. PATNAIK: Yeah, that's great.

MR. TAI: And it's also over time it's become more important when those late realizations come than before. So, you know, I look at the evolution of Silicon Valley venture caps, Silicon Valley style venture capital is a series of ways of technology.

MR. PATNAIK: Yeah.

MR. TAI: And they really start at more business-to-business and now are becoming very heavily consumer. But, you know, in the days of Silicon, all you really wanted to do was deliver a product that was better and faster and cheaper and more reliable that did a lot for less money.

MR. PATNAIK: Yeah.

MR. TAI: And that founded expression in computer and communications equipment, it

revolutionized networks, telephone networks from the inside out. And that's where regulatory issues started to crop up.

I think in the mid-'90s, as I was working on a lot of stuff in communications equipment and internet networks there was a lot of confusion about what would the government and regulators do without the structure of telecommunications and the rates at which the phone companies can charge the internet providers.

And are internet providers, are ISPs phone companies or not, you know, because they're selling packetized data services, like, voiceover-D, on top of the phone lines from low prices, you know.

So it was a very confusing period and a lot of the swings and market cap of the public companies depended on what would the SEC state, you know. So that's when we started a consumers-at-mass scale at digital technologies.

And then, as the internet started, as the venture investing started to move to the overlays on top of the internet, so Facebook, Google, and things that ran on them. It wasn't until those things hit, you know, mass adoption points that we started to hit these, like, questions of privacy, and questions of fake news, and things where regulatory good governance is very important is becoming increasingly so because you could swing elections the wrong way.

So I think as we now move forward even more to consumers being touched by technology every single day because of the smartphones, and networks, and the delivery mechanism that is so easy now for everything that we're going to start to hit the regulatory issues much sooner because these companies can go from nothing to a billion users in a year theoretically, where it would have taken 20 years in the old technology, hardware technology era to do something like that.

So the awareness and the support and/or thought process that can be imputed to the entrepreneur so the venture firm is far more important today around regulation.

MR. PATNAIK: And I think that's a challenge that a lot of policymakers and regulators face, right, because it has moved so quickly, the technology, that oftentimes it's very hard to keep up and start thinking about these new technologies that are difficult to understand and how to regulate them.

And I do think that we need reforms in our regulatory system to make regulatory systems more dynamic, right, that they can adjust more flexibly to changes in technology than we have had in the

past given the space of development.

MR. TAI: Totally get it. And I think we're at this point and there is a very special set of issues today around generation, you know, because I think the regulators that are in place today largely grew up in an era where the technologies were not in their hand in the phone, you know.

And I think now you have this, like, mass adoption in the younger crowd, like, on Robinhood, you know, like, you know, the Robinhood experience with stocks is a totally different experience than your grandma loading up on stuff in Charles Schwab.

MR. PATNAIK: (Laughter)

MR. TAI: But so, by yourself and no one to talk to except, you know, calling your friends on the phone maybe, you know. So I think there is a totally different approach being taken by people that are a vessel with technology because they were kind of born into it; that the regulators, they don't understand the human behavior that comes with it. It's hard to regulate something you totally just don't even understand or use.

MR. PATNAIK: Yeah, and there is a lot of research I think that needs to go into that behavioral economics on the behavior patterns that we can observe with consumers that maybe hasn't made it into the regulator decision-making process yet, right.

MR. TAI: Totally true.

MR. PATNAIK: Let me see. I think I have some other questions, one or two, before I go through with my final question. Let me see.

MR. TAI: Did we get a lot of questions from the audience?

MR. PATNAIK: Yeah, very interesting ones actually.

MR. TAI: Awesome.

MR. PATNAIK: So here is an interesting one. Do we think that NFTs eliminate forgeries or the potential for forgeries?

MR. TAI: I think it depends on the authentication layer that goes with it.

MR. PATNAIK: Okay.

MR. TAI: You know, so now it is the case in the non-NF, digital NFT world that people found out that, you know, these famous paintings that they have hanging in a museum were fake, you

know, so.

MR. PATNAIK: This is my zone, (inaudible), right.

MR. TAI: Yeah. So it's not the -- you can separate the authentication and the transmission as two separate functions, right. So kind of, like, in internet you have TCPIP as a transport layer and they have the wrapper of content above which might be Gmail, right. So someone can create a fake identity on Gmail and send you something that that is an imposter. You know, the export doesn't know and doesn't care.

MR. PATNAIK: Right.

MR. TAI: But it's the authentication layer that did. And so I think that parallel exists in blockchain and NFTs, too.

MR. PATNAIK: And that's actually another question from the audience. If you're thinking about that, do you think there should be one entity that can ensure that the official assets sold by NFTs have secure ownership prudence, like, who should do that authentication?

Is it, (inaudible) said, that are my two companies, for instance, that are working and they have different systems, we were thinking it should be a common standard for that, or an agency overlooking that work, what is your thought in that direction?

MR. TAI: That's going to depend very much on what the vertical market is.

MR. PATNAIK: Okay.

MR. TAI: And so, you know, if you look at the market share leader in Dapper Labs or the NBA Top Shot, they have created their own blockchain from the low blockchain and the layer that's like the TCPIP part.

MR. PATNAIK: Yeah.

MR. TAI: And then, like, the Gmail part is NBA Top Shot with its own governance layer that's done in concert with the NBA. So there is a very clear regulatory authority on the governance. But in the transport layer, if something goes wrong up there, they can use the transport layer to kind of, you know, make changes as needed.

If you think about another system that was, like, people and the $63 million item that was auctioned off and handled on Ethereum that's a little bit more open standard. The governance layer was

the auction house that is identifying the item with people and creating whatever certification it may need around that.

There is going to be hybrid cases where you have physical items that are one of a kind, like, you know, a pair of sneakers worn by a basketball player in a game, you know. And so I think that part of the world there is going to be the function that bonded art warehouses play in the auction markets where you'll have a physical entity that's bonded, insured.

You take your item, you put it there, and you would buy and sell that ownership and then they might ship it to you if you bought it. But, in this case, now there can be a digital certificate and a cool 3D item that -- or maybe a room with a webcam, you know, where you own the rights to it, so you can just stream that and let people see it if you want, or and it just stays there.

But the ownership is represented by the digital certificate like a stock, share certificate in the stock. That's basically like an NFT, too, on an exchange, right. I, myself, can't go and pick up a piece of AMD, the ownership of AMD, but I can buy the share certificate that is now digitized and I can trade that in marketplace system, might be a Morgan Stanley marketplace on Nasdaq.

MR. PATNAIK: That's true. That's actually an interesting perspective on this. And so, my final question is: You have been really at the forefront of investing in new technologies. And so, if I had to pick your brain now, what exciting technologies or industries do you see coming down the pipeline?

MR. TAI: You know, I'm still, as I talked about that series of ways, there were chips, systems, telco, expression of, you know, kind of user interfaces on top of that telco, data science, and so I think we are still at the very, very beginning of a wave of applied data science.

And I look at blockchain as kind of a subset of that where you're taking digital techniques to essentially represent other physical items, express them to a system, and open up a marketplace that's far more efficient than it ever could have been. That applies to the outside world for things like, you know, the items, video moments on NBA Top Shot.

It also applies to every company in the world that is moving things around. And so I often use the analogy, if you think about Sears, JC Penney versus Walmart, Amazon.

MR. PATNAIK: Yeah.

MR. TAI: Walmart and Amazon are NFT engines. So if you think about Sears, they just piled up all kinds of stuff and sent a buyer to Southeast Asia and said, oh, I think I can sell $20 million worth of this, set it up, you know. And it sits in a warehouse, and it goes to stores, and at the end of Christmas maybe they have a pile to write-off, you don't know, right.

In the Walmart system, every single thing is kind of an NFT. It has a bar code and it's expressed to a data cloud, like, NBA Top Shot moment is expressed to the marketplace and the system knows where everything is all of the time. And if there is many of them sitting in a pile of inventory in Boston, and a lot of sales in Atlanta, it moves.

So the system has no working capital compared to the other ones with piles of inventory and far less (inaudible) -- (crosstalk). So I think what's happening today is that every major business that is not run on data where they're sort of an expression of everything inside on a data platform is going to be replaced by the companies that do express themselves in data because they are more working capital efficient, less prone to write-offs and there is great turnover in the Fortune 500 now, all based on data.

MR. PATNAIK: And I think that's something we're leaving it to companies also. Even in our own industry of research, right, I think there is so much potential for really using big data and data science that we are just starting to explore. So I think it can really disrupt a lot of the current traditional methods.

MR. TAI: Yeah, yeah.

MR. PATNAIK: Well, this has been wonderful. Thank you so much for your time. It's been great. It's been fun to get to know your work, and thank you for your time.

MR. TAI: Thank you.

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