

What is the Future of the Internet?

<https://mindmatters.ai/podcast/ep245>

Announcer:

Greetings, and welcome to Mind Matters News. In 2009, the world's first cryptocurrency, Bitcoin, was launched. And although it took a little while to catch on, the impacts of that launch are clearly evident today. From NFTs and Web 3.0 to decentralized finance and autonomous organizations, the world of cryptocurrency is a fast-paced, rapidly changing environment. To help us get a better idea of these recent developments, your host, Robert J. Marks and I sat down with graduate student and Web 3.0 developer Adam Goad to discuss all things crypto. Enjoy.

Robert J. Marks:

Welcome to Mind Matters News. I'm your non-fungible host, Robert J. Marks. We'll find out why I'm non-fungible later in the podcast. Today we're going to talk about Web 3.0 and the future of the internet and how it may disrupt the internet as we know it. There's a lot of services I get today from companies like Google. Besides their search engine, we have Google Maps, that helps me not get as lost as I used to get, and Google Translate, that translates up to 100 different languages. Other services include free Gmail, seamless software for the office, like spreadsheets and word processors, and Google Earth, Google Flights. And as a teacher, I've used Google Forms to give tests. Google Scholar steers me to papers to help me in my research. And I have to confess, I haven't been in a library in over two decades. Google Scholar also lets me know who is referencing my papers. So it's always good for scholars to know that you're writing papers and somebody is actually reading them.

Now, is Google just being nice in giving me all these services? Are they just a bunch of really rich, altruistic guys thinking of all the ways they can make my life better? No, Google is a business, and the purpose of business is to make money. And a prime source of income is mining information from your web use. This info is then sold to help others sell you stuff. But Google services are so incredible, I've long ago surrendered my personal information to them. I block it when I can, but I have surrendered to their all too convenient services. They're just too good to pass up.

But here's the question. Is this sustainable? Can Google and other companies continue to profit from our data? A few decades ago, the top companies in the world included companies like Sears and Roebuck and General Motors and US Steel. They're kind of gone. Today, the top companies include Google's parent company, Alphabet, amazon.com, and Facebook. So here's the probing question; what will be the top companies in the world a few decades from now? Good question.

In his book, *Life After Google*, futurist George Gilder forecasts that decentralization of the web is going to be the future of the internet. This includes blockchain and something called edge computing, where a lot of the computing is done on your local device, as opposed to in some big company's cloud. Data will become more personalized and companies like Google will have to figure out some way to adjust. And we're starting to see this happen. The new generation of internet incorporating decentralization and such things as called Web 3.0. To talk about this today is our guest, Adam Goad. He's a PhD candidate in electrical and computer engineering at Baylor University. We're also happy to invite Dr. Austin Egbert, who you recognize as the editor and director of Mind Matters News. Dr. Egbert is also with Baylor University.

So Adam, welcome. How are you doing?

Adam Goad:

I'm doing good. Thanks for having me, Dr. Marks.

Robert J. Marks:

Okay. Well yeah, let's talk about Web 3.0. Before we talk about Web 3.0, today we have 5G, we have 4G, 3G, 2G, and supposedly our cell phones are getting better and better. And you're going to talk about Web 3.0. So there was a Web 3.0, which is the newest wave. There's also going to be Web 2.0, Web 1.0. What do these previous generations of the web correspond to?

Adam Goad:

Right. So Web 1.0 is generally considered to have started sometime in the early '90s, and that is when the internet was a place for people to consume information. So the whole internet was basically a giant Wikipedia. You would go to a page, you would read it, it could link you to another page, but that is about all you would do. You would not log in, you would not really interact with it. It was just something to read and be consumed. And then around 2004, Web 2.0 began. That is when we got things like Facebook, YouTube. This whole rise of all the companies we know today as Big Tech. That is where they started providing you goods and services that you could interact with. In exchange, though, like you mentioned in the introduction, you became the product. They were doing all of this to get your information so that they could do targeted advertising on you. This represented a large change, and as we saw, there was a whole shift in how the internet worked and what people used it for. Now though, people are becoming more and more concerned about the centralization of the internet. Like you mentioned, Google does everything. What if something happens to Google? Then there is nothing you can do.

Robert J. Marks:

Yep. You got it.

Adam Goad:

We've seen several times in the past years when Amazon has an outage, the AWS web service, it goes down. There are so many different websites and services that rely on that that the internet is basically shut down until they're able to recover.

Robert J. Marks:

What does AWS stand for?

Adam Goad:

Amazon Web Services. So yes, Amazon Web Services is something that Amazon began. I'm not exactly sure when they began it, actually. But in addition to providing you with whatever you want to buy, any physical good you want to buy, Amazon will also provide you with any amount of computing power you want to buy, pretty much. You can go onto their website, you can buy a machine that could host just about anything you want. For instance, Twitter is run through AWS. So that is how powerful of a machine you could get. You could also get something as small as being less than the laptop you're using, but you can get about just any size of computer you want, and you can spin it up for any kind of service you need. They also provide all sorts of different pre-made services you can purchase from them. And I believe that this has become a significant portion of Amazon's business, actually.

Robert J. Marks:

Interestingly, there was a competitor to Twitter, which was called Parler, and it was run on AWS. And I don't know if it was because AWS also hosted Twitter, but AWS all of a sudden decided that it wasn't going to host Parler anymore. And there were lawsuits going back and forth. Parler again was supposed to be another manifestation of Twitter, where there wasn't the censorship that Twitter was going through. So you're right, AWS is a pretty powerful organization and a pretty big presence on the web. So let me ask you, the future of the web, which is Web 3.0, is what?

Adam Goad:

So Web 3.0 is focused on decentralization and distributed systems. So we just talked about AWS is a centralization of all of this power, and they have the ability to turn it on and off for whoever they choose. But if you have a decentralized system, then it is pretty much impossible for any one entity to control it or regulate it.

Robert J. Marks:

The critics of W 3.0, which is this decentralization, include the former head of Twitter, Jack Dorsey. He dismissed Web 3.0 as ... let's see, I have a quote here. "A venture capitalist plaything." Whatever that means. And Elon Musk is not impressed. But it does seem to me that if you'd get this information away from central servers and onto your private cell phone or computer and you have control over it, that's going to be really disruptive to places like Google and Amazon. Do you think?

Adam Goad:

Yes, certainly. So one big thing that you can get out of using Web 3.0 is you can have much more privacy. It is much easier to be anonymous using Web 3.0 than it is with Web 2.0 currently. So companies like Amazon, Twitter, Google, that are currently invested in getting as much personal information out of you as possible would, of course, be resistant to such technologies.

Robert J. Marks:

Yes, hence the resistance of people like Jack Dorsey. One of the criticisms of doing this decentralization is that it's going to be more difficult to prevent online harassment, hate speech, and the dissemination of, I don't know, say kiddie porn and things of that sort. Yet on the other hand, the libertarian part of me says, "This is something I do not like in today's Twitter and YouTube," where offhand they discriminate and they censor certain content out of nowhere. And unfortunately, I think that that's something that comes along with the freedom of the internet, is the potential disuse of it. So I think that that's going to be a consequence of it. And the question is how do you regulate it? But then if you regulate it, you get away from this idea of privacy and people trying to impose their politics and their ideology on you. Yeah, it's frustrating.

One of the things about decentralization and distributed systems is something called blockchain. Now, we've talked about blockchain before, but I think we should revisit it. And I'd like you to talk about blockchain because that seems to be a big part of this decentralization and the way to protect your data. So what is blockchain? What's going on there?

Adam Goad:

So blockchain, at least as it applies to Web 3.0, is a decentralized ledger, basically. So if you have, for instance, Bitcoin, the most famous blockchain, all Bitcoin is it is a very large ledger of every transaction that's ever happened.

Robert J. Marks:

That's a lot of transactions. Yeah, okay.

Adam Goad:

It is. This ledger is then stored by anyone who wants to take a copy of it. You can go onto your computer right now and download a copy of the entire Bitcoin blockchain.

Robert J. Marks:

I just looked, Adam, and it turns out the current Bitcoin blockchain is over 400 gigabytes. And I don't have 400 gigabytes on my computer. And anyway, one of the criticisms is that this is going to be something which is going to limit the people that store the blockchain. It's going to limit the number of people that are able to do it.

Adam Goad:

The Ethereum blockchain, I know, is about around 600 gigabytes right now.

Robert J. Marks:

Really? So it's bigger than Bitcoin, all because Ethereum has more than cryptocurrency. Ethereum is a blockchain company, basically, right?

Adam Goad:

So Ethereum introduced a technology known as smart contracts, which allow people to place code onto the blockchain itself. And this revolutionized things. So with Bitcoin, all you can do on Bitcoin is send and receive Bitcoin. With Ethereum, you can publish a smart contract, and there's many things you can do with this smart contract. You could start your own cryptocurrency. Most of the ones that you hear of now that are smaller, that is what they are. They are a layer two token onto the Ethereum blockchain. You could sell an NFT using a smart contract. You could make an escrow deal using a smart contract. The only limits are what you are able to code.

Robert J. Marks:

Well yeah, let's get down to a specific example of this. The code contract, and what did you call them? Smart contracts that we do with blockchain. I'm selling you my house, and usually if I sell you my house, they have to do a title search, and they have to just make sure that that everything is on the up and up before I sell you my house. And I think that what you're saying is that there's certain situations, like title searches and things, that could be placed on blockchain, and we could have a contract, and it would be a lot simpler than the way things are done now. Do you think I have an idea here?

Adam Goad:

Yes. So there are many places now that have started selling land in what they call the Metaverse.

Robert J. Marks:

Wait, wait, wait, wait. Okay. We know the Metaverse. Let's talk about the Metaverse. This is a Mark Zuckerberg thing, right? That's what he wants to do. So define the Metaverse and tell me what land in the Metaverse is about.

Adam Goad:

So the Metaverse is something that is still seeking definition, perhaps. There's a lot of people trying to define what it is, and it's still trying to settle down, I think. Yes, Mark Zuckerberg has renamed the parent company of Facebook to Meta and believes that the future of the internet is in the Metaverse. So the concept of the Metaverse is that it is a place, a virtual place, where you can go, and you can buy land, you could build a house, you could decorate this house. You can have friends. You could virtually meet them at the local virtual cafe. You could buy virtual drinks at the virtual cafe, and you can go and buy virtual clothes to wear on your virtual avatar. It is this whole virtual universe that people can go and explore.

Robert J. Marks:

That's really spooky stuff. And I can see that clothes and different styles could be made available in the metaverse, but I don't know. I don't get enough exercise now. I think if I sat in an easy chair and just lived in the Metaverse and bought all my stuff and did everything in the Metaverse, oh my gosh, I would balloon and probably not get a lot of exercise and just spend all of my time doing stuff. What was that movie? WALL-E, I think it was, where he went to the future and all of these people were just driving around in little cars because robots were doing everything for them. The Metaverse, it seems to me, would even be worse, because you wouldn't even need these little cars.

Adam Goad:

A more accurate comparison would be Ready Player One.

Robert J. Marks:

Okay. Tell me about Ready Player One. I'm not familiar with that.

Adam Goad:

The concept of Ready Player One is it's in the near future and a full immersive metaverse technology has been released called The Oasis that people are able to plug into and fully experience ... well, actually, fully experience comes later in the series, I believe. But it starts off with just kind of a VR experience, but then you can buy a haptic feedback glove, so then you can try to touch things and stuff like that. And basically, the biggest company in the world is the one providing the service, and most people live in absolute squalor, but they spend all the time in The Oasis and are all right with it.

Robert J. Marks:

So these are people in the real world, that they literally live kind of in squalor, they don't care about their reality of their surroundings, and they just live in this metaverse. That's troubling.

Adam Goad:

Yeah, it's a theme common in several modern sci-fis, I believe.

Robert J. Marks:

Okay. Do you have examples of sci-fis where they do that? I guess would the Matrix ... that's the one I'm familiar with. That would be kind of living in a metaverse, right?

Adam Goad:

Yes, The Matrix. A forced immersion into a virtual world. Yes.

Robert J. Marks:

I wonder if people have done any work into the psychological and social implications of this. It seems to me that people that want to spend their time there are people that want to escape reality. And if you want to escape reality, I guess the traditional way of doing things is getting drunk or taking drugs. So this is escaping reality. I don't know. To me, it's very frightening, but I guess we'll see what happens and what Mark Zuckerberg does.

Adam Goad:

I am no expert in psychology, but I believe it would be similar to, and perhaps more extreme than the current problems and addictions we see with things like social media; people spending all day just scrolling through Facebook or Twitter. This would be a fully immersive version where they have far more shiny buttons to click on.

Robert J. Marks:

Yes. I just read an article by Andrew McDiarmid, who has hosted Mind Matters for us and writes for Mind Matters News, and he just wrote an article about one of the stars of a sitcom called Fresh Off the Boat who went through a period where she tried to commit suicide because of social media. And she recognized it was because of social media that she had these psychological problems, and she has sworn off of it and come out and is doing a crusade against some of the things on social media. She was a star, she was a celebrity, so she was getting dissed. She was getting put down, maybe even doxed, and she just couldn't take it. It was not a pretty sight. Yeah, the social media has a really incredible impact upon the youth of today, and it's something that needs to be mitigated, hopefully by parents and ourselves. We have to exercise self-discipline against it.

So blockchain, was it originally generated by Bitcoin? Do you know if that's the origin of it?

Adam Goad:

I'm not certain if that is the origin, but that is certainly the first big public use of it.

Robert J. Marks:

Okay. Let's talk about blockchain a little bit. I don't know if we got into it, but my understanding, it's a chain of little pieces of software that are linked together. I don't know, could you elaborate on that a little bit? Why is it so important, especially for privacy?

Adam Goad:

Yes. So blockchain is a chain of blocks. Each of these blocks for Bitcoin contains the ledger of the most recent transactions, and once those blocks are added to the chain, the transactions become official. In order to ensure privacy, and in order to ensure that these transactions are valid, there is a large amount of cryptographic security that goes into this. And that is what takes place through mining. What the miners are doing is solving cryptographic problems, fighting for the right to add the next block to the

chain. When they add that block to the chain, they get a flat reward in Bitcoin just for adding it. I believe right now it's about 6.25 Bitcoin that you receive for adding a block.

Robert J. Marks:

So how much is that worth, by the way? I know that Bitcoin goes up and down, but what is that worth?

Adam Goad:

Let's see. Today Bitcoin is worth just about \$21,000.

Robert J. Marks:

So if you are successful in this mining, you get six times 21, or I don't know, 120-some thousand dollars. Is that right?

Adam Goad:

Yes. And that is why so many people are getting involved in this. Entire companies are being built around Bitcoin mining.

Austin Egbert:

One thing to note is that with Bitcoin mining specifically, and Adam may come to this in a moment, but there's this idea of difficulty scaling in cryptocurrency mining, and it's because they do these payouts and they have to continue to ramp up how hard it is to generate a block in order to keep this artificial difficulty level in it to keep anyone from being able to take over the network. And so the people who are mining these blocks, it's progressed to the point where you can't just mine Bitcoin on your computer at home like you used to be able to a decade ago. It's progressed to the point where people are having to custom order dedicated chips, specifically designed to compute the algorithm used in mining Bitcoin. And that's an investment that requires significant capital to purchase this specialty hardware and burn through immense amounts of electricity. So you get \$120,000 if you successfully mine one, but there's a lot of money that goes into even having a chance at that in the first place.

Robert J. Marks:

By the way, you've heard his name, but he's here. I told him to chime in if he can because he knows a lot about this Web 3.0 and decentralization and blockchain. That was Austin Egbert. I've heard about companies that are mining Bitcoin, and as you mentioned, their consuming of electricity is just enormous. And some of them, in order to have heat sinks in order to get rid of the heat which is generated by their computers, have, I have heard ... I read it on the web, so it must be true. They have moved up close to the Arctic Circle where things are cold. Have you ever heard of companies doing that sort of thing?

Adam Goad:

Yes, I have heard that there are a few companies that are moving up to the northern regions trying to, like you said, get a cheap heat sink by just having it be very cold outside already.

Robert J. Marks:

Wow, isn't that interesting?

Adam Goad:

But yes, here in Texas, I know, I have some friends who work with power distributors, and they tell me that we have lots of companies trying to move here and open Bitcoin farms.

Robert J. Marks:

Okay, that's a new term for me. Bitcoin farms. What's a Bitcoin farm? Just a bunch of computers?

Adam Goad:

Right. So basically you buy a giant warehouse, you fill it with these specialized computers Dr. Egbert was talking about, and you just plug in a ton of power and you cool it down and it mines Bitcoin all day.

Robert J. Marks:

Wow. But it's getting more and more difficult. It's a situation where the more mining, you get diminished returns. Clearly some of these companies are just going to get to the point where they say, "Well, it isn't worth it anymore. It's just too hard to mine the new level of difficulty." Do you see that coming, or is the investment in these Bitcoin farms still on the rise?

Adam Goad:

So with Bitcoin, there is only a set amount of Bitcoin. So there will come a time in the next few years when Bitcoin is over, basically. The rewards for mining will basically go away and there will be very little incentive for people to continue mining it.

Austin Egbert:

That being said, I believe that miners get money from two sources, essentially. There is the actual mining reward of new Bitcoin entering the system, but I believe there's also some transaction fees that the miners charge that gets tacked on to whoever's making a transaction. So if I want to send money to you, Adam, I have to pay a small fee. I associate a small fee with that. That then goes to whoever successfully mines the block. Is that correct?

Adam Goad:

Yes. Those fees are known as gas fees, and depending on which blockchain you're using, some of that could go to the chain itself and be burned or destroyed to create a little deflation, and a part of it would also go to the miners themselves, yes.

Austin Egbert:

Yeah. So I think longterm, those gas fees are what end up providing the incentive to keep the network running.

Adam Goad:

Yes. And they very well could. And that would also mean, though, that they would probably rise significantly when this time comes.

Robert J. Marks:

Is gas an acronym?

Adam Goad:

It is not. It is just similar to gasoline makes your car run, gas makes the blockchain run.

Robert J. Marks:

I see. So this reminds me of actors in sitcoms like Seinfeld. They used to get paid their salaries for their weekly shows, but now they still get residuals in all of the reruns. And that's basically what the gas fees is, isn't it? It's getting residuals from the reruns, from the reuse of Bitcoin.

Adam Goad:

Yes. You only receive it when you mint a block onto the chain. You do not get it continuing. But yes.

Austin Egbert:

Now, one thing to note is I believe, if I'm wanting to send money to Adam, I can choose how much gas I want to spend on that transaction and it will incentivize people to choose my transaction to focus on putting on the blockchain.

Adam Goad:

Aha. Yes. And that can be a very competitive thing, particularly with NFTs. When there is a new exciting NFT coming onto the market, it will enter the market through what is known as a mint. And to mint this NFT, that is an on-chain transaction. So whoever is willing to pay the most gas fees will get it first. And if there's only a limited amount and lots of people want it, people are willing to pay thousands and tens of thousands of dollars in these fees to ensure they get them.

Robert J. Marks:

Well, we're going to talk about non-fungible tokens, which I tell you, I don't get, in the next podcast. They're just a little bit beyond my comprehension. I do understand Bitcoin, though, and one of the ways that I was explained is that Bitcoin establishes trust. We have a dollar bill that we use, I give you a dollar bill, and why do you think that dollar bill is worth a dollar? It's because of trust in the United States government. You have a trust that that dollar bill, that piece of paper is going to be worth \$1. So why do we trust that Bitcoin is a Bitcoin and that somebody hasn't screwed around and fudged it or something like that? And it's the establishment of trust. And that trust is established by depositing these Bitcoin records in numerous different places. So a number of different places have a recording of these Bitcoin transactions, which, if I read right, that the current Bitcoin blockchain is over 400 gigabytes. So there's a whole bunch of people that have these 400 gigabytes stored on their computers. And if anybody makes any change in this, tries to hack it, tries to fudge something on the Bitcoin, everybody that has a copy of that knows. So with that, there's been a trust which has been established.

Okay, last topic. Bitcoin was the first cryptocurrency. I think that Ethereum is another big one. Cryptocurrencies are just biting the dust today. I've read that a lot of the companies are declaring bankruptcy, that they just didn't catch on. And right now, as we record this, we're in a pre-recession economic state in the United States, and I'm wondering what your thoughts are. Is this a characteristic of cryptocurrencies? Are we just doing a Darwinian thing where we get rid of the weakest links in the chain? Or is this just a sign of the current economic times? Do you have any thoughts? I don't even know if that's answerable by an economics major, but I was just wondering, any thoughts that you might have?

Adam Goad:

So I am no expert in economics, but my opinion on what we've been seeing is the decline in Bitcoin, like you mentioned, it came with the decline of pretty much everything else as well. It tracked down with the fall of the stock market and all other commodities. So we are seeing that several smaller projects are not succeeding, but people just aren't investing money right now. I think that the larger projects, Bitcoin, Ethereum and such, they will make it through and they will rise once again, most likely. A lot of them, actually, if you look at the value of them, are still higher than where they were a year or a year and a half ago. It is just that they were so high about six months ago that we've seen this fall down by 60, 70% in some cases. And that just feels like it's come down so much, but really it is still very high.

Robert J. Marks:

Or could that be just characteristic of a bubble? That everybody got interested in it and then just the bubble popped? Do you think that that is a contributing factor?

Adam Goad:

I think it is. Particularly, and we'll get into it more here, but NFTs, I think we've definitely seen a bubble and that the bubble has popped. But I think that the technology is still there and that there is very much a chance for a comeback.

Robert J. Marks:

People are selling pictures on the internet using a non-fungible token. Before we talk about that, though, what's the difference between a non-fungible token and a fungible token? They both use blockchain, right?

PART 1 OF 5 ENDS [00:29:04]

Adam Goad:

Yes, they can. So an example, perhaps, a fungible token, so that means that each of these tokens can be interchanged. So a \$10 bill, a US \$10 bill, I can have one, I can trade you for your \$10 bill, we're both in the same place we started, because all \$10 bills are the same. But what if we had trading cards? If I had just some unknown rookie baseball player, and you had a Babe Ruth trading card, it would not be an equal swap to trade those. So they are non-fungible. They're not interchangeable. So yes, you can have blockchain with both of these.

So Bitcoin, that is an example of a fungible token. Each Bitcoin is equal to every other Bitcoin. There is no difference between them. It only matters how many of them you have. But with NFTs, the non-fungible tokens, that is where they become more unique. So a common use of NFTs is as a collectible. So then it's each of them is different, and some of them are rarer or legendary. And that could mean that they have more value when people are trying to sell them.

Robert J. Marks:

Okay. So explain to me non-fungible tokens. I think I understand Bitcoin. I understand why it works, I understand that the blockchain infuses trust so that people can trust that if they get a Bitcoin, nobody is going to hack it. Nobody is going to have some sort of control over it. So explain to me now, non-fungible tokens. It seems to me that it's just a way of selling art and music and gaming collections on the web. So what's the big deal about non-fungible tokens, and why would I want to buy one?

Adam Goad:

Right, so it is all those things you mentioned. People have been using them... Artists can use them to sell their arts. Musicians can use it to sell their music. There are some games that have been made where, by playing the game, you can generate NFTs of, perhaps, various equipment or items you can use.

Robert J. Marks:

Wait, so is this like mining Bitcoin in a small way?

Adam Goad:

It is not quite the same thing. It's not doing the cryptographic math to support the blockchain, but it is... In several games, currently, you can... Actually, how about we use this example? If you play Pokemon, you go into the game and you collect the various creatures, the various Pokemon. So there are some games out there now on the blockchain that you can go, and you collect those various monsters, and you get them as an NFT.

So then, with this NFT, you could continue to use it in the game. You could perhaps even level it up, improve it in different ways. Or you could go to an NFT marketplace and you could sell it to someone. And you would be selling it to them directly through the decentralized systems, so you can sell it for whatever price you agree upon with other people, you can auction it, but you wouldn't have to go through any centralized authority, and no one would be able to stop you from doing it.

Robert J. Marks:

So let me ask you this. I can understand putting a high price on a physical painting by something like Jackson Pollock, or maybe Picasso. It's a physical piece of canvas that I can hang on my wall. Yet if I have a digital painting, and that digital painting can be replicated, for example, it's very easy to copy digital files, what is the worth of me investing in such a thing that can be taken from me so easily?

Adam Goad:

So yes, this is a very common question and criticism of NFTs. It is a common joke among NFT critics that they can just right click and save any NFT someone has. The images, the artwork behind NFTs, are all publicly available. They have to be by nature for the system to work. You can go on and download NFTs right now that are worth millions of dollars. The real value, though, behind the NFT is not the image of the artwork, but the record of ownership. When you get down to the underlying technology, all you are really getting with the NFT is an entry into the ledger of the blockchain that your cryptocurrency address has this token. That token will actually just contain a link. That link will go to a small JSON text file that will have information about the NFT. It'll have the name.

Robert J. Marks:

What's a JSON tech file? I don't know what that is.

Adam Goad:

A JSON text file.

Robert J. Marks:

Text. I'm sorry. Okay.

Austin Egbert:

Yeah. A JSON text file is merely a standard way of serializing a computer code object, in a human-readable format. So you have different fields of the object, and then their value, and it's just stored in a standardized way that computers can read and process.

Robert J. Marks:

Okay, thank you.

Adam Goad:

Yes, exactly. So this file will say the name of the NFT, perhaps the token number inside the NFT collection, it will have a description, and it will have a link to the image that it represents. So when you buy an NFT, all you are buying is that public immutable record of your ownership of it. You do not have exclusive rights to it. There's actually a lot of legal debates going around right now about what rights can be conferred with an NFT. Does buying an NFT entitle you to copyright usage? Are you the owner of it? Does it grant you a license?

Robert J. Marks:

Yeah, that's a question that I would have. It seems like... Well, I had a friend tell me that copyrights and patents are... When you get one, it's just a license to sue somebody. That's really all they are. So I guess that's my question. What do non-fungible, tokens in the form of art, how do they protect you any more than a copyright does?

Adam Goad:

I would say it protects you even less than a copyright.

Robert J. Marks:

Okay.

Adam Goad:

So like you said, with a copyright or a patent, you can take someone to court and stop them, attempt to stop them, at least, from using your artwork, or whatever it is you have created. With an NFT, you have no such protections. Anyone can just take your image and use it however they please. And it is public record, and there's no way you can stop them.

Robert J. Marks:

This right to use is a big thing when you do a lot of publication. I just published a book that I wanted to use an old Dick Tracy cartoon in that referred to neural networks, and it was of course copyrighted. Dick Tracy, for those who are young, used to be a detective in the comic strips. Anyway, we attempted to obtain a copyright permission for doing that, was even willing to pay a little bit for it, but there was no contact that we could make, because the strip was so old, it went back to the 1980s. So it seems to me if that Dick Tracy comic was in a non-fungible token, there's a possibility that we could have gone to the non-fungible token, paid for the copyright usage, and then used it in the book. It would've been much more convenient than trying to go through all of the bureaucracy that we tried to go through. So could this be one of the advantages of doing non-fungible tokens of that sort?

Austin Egbert:

So one complication that I can see that would arise from that, and Adam May have more to say, is it's a little bit less flexible than copyright. Copyright is, if you have the primary ownership of it, you have the ability to grant copyright to other people. However, non-fungible tokens, by their nature of not being interchangeable with other things, implies that it's not that you could get a copyright request to use something via an NFT, you would actually get the ownership and then you would be the one who controls who's allowed to use it. So it's not them granting you permission, it's they've just sent you the whole thing, and now it's yours. Not you have permission to use it.

Adam Goad:

Two points on this. First, I am not a lawyer, and cannot give legal advice, but-

Robert J. Marks:

But you look like one. You look like one, Adam. Okay, go ahead.

Adam Goad:

So my understanding of some of the legalities behind this, though, is basically the creator retains the copyright rights to the artwork that they have published through NFTs. So NFT law is something still being developed and is undefined in many ways. The current theory is, though, that they cannot pass along copyright privileges through the sale of an NFT, because there is no way to enter into a contract with a buyer, or the people that buyer transfers to. Perhaps you could have someone agree to something on a website before they're the first one to buy it, but if they pass that along to someone else, that person has entered into no contract.

Robert J. Marks:

I see.

Adam Goad:

And then to Austin's point, though, if we do define laws that allow this to work, to allow copyrights to function in this way, there is such thing as a semi-fungible token.

Robert J. Marks:

Semi-fungible. Is that tokens that kind of look alike?

Adam Goad:

Yes. So, a common implementation of this is through EOC 1155, which is a type of Ethereum smart contract. And what that allows is to have multiple of the same token. And perhaps these tokens can change in other ways on their own, but they all start the same. So they start fungible, and perhaps they can become non-fungible, or whatever the creator has developed for them. But this would be a way that you could grant multiple people a license to a copyright, perhaps, is they would all have an equal license through a semi-fungible token.

Robert J. Marks:

Would this be, for example, something like prints of paintings? You can have a painting, and usually there's something like an announcement that there have been, I don't know, 20 prints made of this

painting, and then you sell the 20 prints, and each one of those prints becomes its own token, if you will. Is there an analogy there?

Adam Goad:

Yes, you could think of it in that way. I do not know if I've seen anyone use it in that manner, but that would be a use of it. You could have one of the official non-fungible version of an artwork, and you could also perhaps provide lesser versions as these semi-fungible 1155 tokens.

Robert J. Marks:

So somebody has a non-fungible token of a art. You can make as many copies of that image as you want to, whether you own the non-fungible token or not. Why in the heck should I ever want to invest in something like that?

Adam Goad:

Right. So there are all sorts of different motivations. Perhaps you are a collector, and instead of owning a print of a piece of art, you want to own the original piece of art, or at least be able to say you are the owner. That is kind of the original use of NFTs that came about. Several of the beginning, high value NFTs that were sold were the "originals" of the digital files of various popular memes. Several of those sold for millions of dollars when they were released.

Robert J. Marks:

Millions of dollars? Wow.

Adam Goad:

These are images that are all over the internet, but now someone can say that they own the original, that they own that meme.

Robert J. Marks:

I've seen a lot of memes, I don't think I've ever seen a million dollar meme, though. That's really astonishing. So let me see if I get this right. So you might have a beautiful piece of digital art, and you can sell pieces of it, maybe 10%, 10 units of 10%, and then I want to come along, and I want to own 20%, I have to go to the people that have two 10%'s and see if I can get them to sell that to me. Is that a decent description? Or am I off?

Adam Goad:

So one property of NFTs is that they are non-divisible, that they-

Robert J. Marks:

Oh, they are? Okay.

Adam Goad:

So you cannot have half of an NFT. You can only have a whole NFT. But I think that perhaps something similar to what you're talking about there, is the use of the NFTs as collectibles. So the NBA, the Basketball Association, they have actually gotten involved in this, and they sell NFTs of video clips of famous basketball moments.

Robert J. Marks:

Wow.

Adam Goad:

You can go onto their websites, and you can... It's just like buying trading cards. You buy a foil pack of them, and you can open it, and it will have various video clips of various basketball moments. Some of them... Maybe it's a LeBron James getting a slam dunk, or maybe it's just an average player dribbling down the courts. They have various varieties to them and various significances. And then, on that website, you could trade them, sell them to other people who would also be interested in buying them.

Robert J. Marks:

But copyrights aside, anybody can basically use those clips, is that right? What's the advantage of me owning them?

Adam Goad:

That one is a bit of a special case in terms of copyrights. They do not quite follow the same decentralization as everyone else. They have set up their own system there that kind of mimics the Web3 idea, but they are still selling them as NFTs, but you cannot really use them outside of their website, so that they're able to maintain that control over them. And you do not actually have ownership of the video clip, but you may look at it, and you may tell people that it's yours on that website. But yeah, you do not get the rights to those highly valuable NBA videos.

Robert J. Marks:

Okay, understood. One of the interesting applications of non-fungible tokens that you told me about was investment in business. If you have a business, and you want to raise capital, maybe you can do it using a non-fungible token. Could you talk about that?

Adam Goad:

Sure. So yes, there are several companies all over the world who are trying this, and have been very successful, getting hundreds of thousands, millions of dollars, the people who are able to successfully do this. Now, I will say that just like with the copyright laws with NFTs, the financial laws with NFTs are also still being defined. So I know that the Biden administration is currently looking into a lot of NFT regulations, and how they will handle these moving forward, and looking forward to a report on that some time in November of this year. But yes, so the SEC is still trying to figure out how they're going to weigh in on this issue, and I cannot give financial advice the same way I cannot give legal advice, but yes, there are companies who have been very successful in raising money by selling NFTs.

Robert J. Marks:

Oh my goodness. It turns out that if the government gets involved, lots of advantages of distributed systems and blockchains become, I don't know, diluted in a way. It used to be that Bitcoin could be done pretty anonymously, but as you pointed out to me, on the current tax forms that you fill out, one of the first questions is, have you messed around with cryptocurrencies at all? The government wants to know how much money you've made on cryptocurrencies, so that the IRS can grab the taxes. So yeah, I don't look forward to the government regulation, but there does have to be some sort of

oversight of this, so that people know what their rights are with non-fungible tokens. Right now, I think it's totally in the air.

Adam Goad:

Yes, it's very much kind of the wild west out there right now with NFTs. It feels like it especially. But yes, you're right. If the government wants to do something about it, they can try to tax you, they can tell you that you can't do things, but due to the decentralized nature, they have no enforcement mechanism. One example of this that we've seen recently is that Russian oil guards are using this to get around sanctions. They are able to still send transactions through cryptocurrencies, and there's nothing anyone can do to stop them. So they were able to send millions of dollars worth of money and funds through crypto, and get around sanctions using that.

Robert J. Marks:

Yes, there was a great book, it was called American Kingpin, and it talked about a guy that used to sell drugs over the Tor internet, and used to do the trading using Bitcoin. And for some reason, in the book, they couldn't track him down through the transactions. Apparently there's a record of transactions, but they were unable to use that to point to the person that was doing it. The person adopted the pseudonym, the... What was it? The Dread Pirate Roberts after The Princess Bride. And the FBI, the federal people came in, I forget if it was the FBI or the DEA, but they came in and they did a sting on this guy, recognizing that if he closed his laptop or hit a certain key, everything in his file would be encrypted.

He used to do his work at internet cafes, and they knew where he went for the internet cafe. So they set up a sting, and this is in the book, the American Kingpin, it's a fascinating book. I recommend it. But the Feds came in and a number of agents positioned themselves at different places in the cafe while this guy was clicking away on his computer, his laptop computer. And something happened. Behind him, two of the agents, a male and a female, pretended to get into an incredible fight. And the guy who was at his keyboard turned around to see what was happening.

A guy sitting in front of him across the table grabbed his laptop before he could close it, and the guy behind him grabbed him across the chest and the arms so he couldn't move. So for some reason, that's the way they put the sting on him, as opposed to tracing it through the Bitcoin transactions. Yet I know later on there was a great sting of kiddie porn, a kiddie porn site that was run similarly through the Tor network, and run out of, it turns out, South Korea, and they were able to put the sting on this guy, and arrested over 600 people that were using this kiddie porn, simply by tracing the transactions on Bitcoin. How private are your transactions on Bitcoin?

Adam Goad:

So on Bitcoin, there is no inherent way to trace who owns a wallet. So when you set up your Bitcoin wallet, you get what is essentially a random sequence of a hexadecimal values, and you have a private key and a public key. That public key, part of it goes into becoming what is known as your address. Anyone can send something to your address. Your address is public, and will be recorded in the chain. Your private key is what sets up your ownership of it. This private and public key is then used cryptographically to confirm that you own this account. And to send any transaction from your account, it must be encoded using that private key. So that way you are always able to confirm who owns an account, but that does not require someone to identify themselves to say that they own it.

Robert J. Marks:

And you identify them through their public key, right?

Adam Goad:

Yes. Which is just a hexadecimal value. It has no connection back to a person's real identity.

Robert J. Marks:

And I've heard of people losing their private keys, and end up losing millions of dollars on Bitcoin, because they forgot what their private key was... or their personal key was, or they died or something like that. And it's totally lost forever.

Austin Egbert:

Without the private key, you no longer have a way of accessing the funds within your wallet. So it would be like if you kept all of your money in a safe deposit box at the bank, you lost the key, and let's assume that you had no other mechanism of drilling into it or getting stuff out of it, that's just locked in the box and no one's ever getting ahold of it, essentially.

Robert J. Marks:

I see.

Adam Goad:

Yes. And there are several people who, back in the early days of Bitcoin, perhaps they mined Bitcoin or bought it in different ways, but then they thought it would never go anywhere, and they lost the keys, they lost the computers it was on, and they lost millions of dollars from doing that.

Robert J. Marks:

So how did the people... How would you conjecture that this guy that ran this kiddie porn site, off of Tor, got stung? Were they looking up patterns of transactions? They clearly identified him from that, right?

Adam Goad:

So all transactions are public. It is all stored in the public blockchain ledger. It is an immutable record, anyone can look at it, there are websites you can go to, Etherscan is a very popular one for looking at the Ethereum blockchain. You can go on there and follow transactions all day long. So, though, the only way to tie that back to someone is to have them interact in the real world somehow. So you can have a thousand Bitcoin, but you can't buy a loaf of bread with it, unless you can take it out of the blockchain, someone will give you dollars for it. And that is how they catch and identify people.

Austin Egbert:

Yes. So the government had passed regulations saying that if you are a business that is operating an exchange, where I can give them dollars and they give me Bitcoin, or vice versa, I give them Bitcoin, they give me dollars, those exchanges are required by law to confirm people's identities. And so when I make an account there, I have to say, "I'm so-and-so, here's my driver's license," or whatever else, and they have to report all of that for tax purposes, et cetera. But it also allows the government to make those connections in terms of who is operating a given Bitcoin address.

Robert J. Marks:

I knew the IRS had to figure out some way to tax Bitcoin earnings and things of that sort. So that's-

Austin Egbert:

Yeah. Now, it's interesting to note that it's the exchange where everything kind of breaks down. So just like with cash, if you only ever receive cash and spend cash, that's not going to be traced back to you. There are going to be records if the store goes, "Hey, we sold this stuff to somebody for this amount of money." There's a record that a transaction happened, but not... They don't write down necessarily who paid them in cash.

Just like with Bitcoin, as long as you're only ever receiving Bitcoin and then spending Bitcoin, there's no necessarily record of who is making that transaction. It's only once you try and jump currencies. To go back to the dollar example, if you had a job, and your employer paid you with a transaction straight to your bank account, you weren't paid in physical cash. So now there's a record of, "Hey, this transaction was tied to you," and now the government knows you received that much money, because it gets reported.

Robert J. Marks:

Got it. Adam, let me ask you another question. I have... I'm a cartoonist. I cartoon for fun, because I go to all these faculty meetings, and I'm bored out of my skull, and I sit there with a blank sheet of paper and a pen, and I draw characters of my colleagues. So I have a bunch of these sketches, I want to put them in a non-fungible token. Where do I go, and does it cost me money to start a non-fungible token?

Adam Goad:

Yes. So there are a couple of options you have. There are some services that will kind of do the legwork for you, places like OpenSea. OpenSea is kind of the... Well, it is the most popular NFT marketplace right now. And they also provide a service where they will basically make an NFT for you.

Robert J. Marks:

Okay, this is OpenSea, is this a website? Is it O-P-E-N-C.com or something like that?

Adam Goad:

OpenSea.io

Austin Egbert:

For the listeners, that is sea, like the ocean, so O-P-E-N S-E-A.io.

Adam Goad:

So yes, you can go there and you can buy, sell, trade auction NFTs, but they also provide a service where they will launch an NFT for you, using a slightly different mechanism than usual, that is not really an on chain NFT as much, as it is kind of through their service. So you can go through a company who will do something like that for you, or you could go to the blockchain itself. You could write a smart contract, or you could go find a copy of one, and just use it, and then you would upload your images to the internet. The most common way of doing that is actually through a protocol called IPFS, the interplanetary file system.

Robert J. Marks:

Interplanetary, do they know something that we don't? Is there another planet out there that we're communicating with? Or is that just hubris on their part? I guess it's hubris, okay.

Adam Goad:

It's hubris on their part, but I think they also... I'm not as familiar with the backend of it, but I think they do intend for it to work interplanetary one day, perhaps if we have people on the moon and on Mars.

Austin Egbert:

I think the idea is that it's decentralized storage.

Adam Goad:

Yes.

Austin Egbert:

So as opposed to a hard drive exists in the hard drive and could hardly be described to be interplanetary, you can think of it as... the file system as you can access any of the files, and the files are going to be physically distributed anywhere that has access to the network, essentially.

Fascinating. Okay.

Adam Goad:

Right. So instead of storing a photo for, say, in Google photos, which puts it only on Google's server, who could go down or delete it or whatever they wish with it, it is decentralized, and puts it onto the servers of anyone who is supporting the IPFS network, and they get a small bit of the IPFS crypto, and payment for doing a service, and you pay a small fee to upload to it.

Robert J. Marks:

What is that small... How small a fee is that?

Adam Goad:

I'm not familiar with that fee particularly, but I believe that is the smaller of the fees we're going to come to.

Robert J. Marks:

Okay. Oh, there's more. Okay.

Adam Goad:

So then you upload all your artwork to this so that it is now decentralized, and it is out there, and anyone can access it. So then you have to create these JSON text files we talked about earlier that will actually describe the NFT. So it says, "This is The Dr. Marks NFT brand, this is drawing number five," and it points to the image of it. So then you actually also store that on IPFS, and you get a link to that. So then you go to your smart contract, and you tell it, "All right, we're going to have 20 tokens and each of those tokens is going to point to whatever address you have."

And then you would pay, you would have to pay the gas fees. You have to pay the transaction fees to put this contract onto the network. Now this contract is bigger than a normal transaction, just the

amount of bytes that it contains. So you have to pay much more in transaction fees, because you're going to take up a larger percentage of a block. So instead of the miner being able to get fees from 20 different people paying for a transaction to go through, they're going to only be taking your contract onto the network instead. So you have to pay more fees. Now, the fees you have to pay go up and down based off market demand, but that could be anywhere of 50 to \$1000 or more that you pay just in the fees to get that contract published. But then it is done. And it is out there, and it will be out there as long as the blockchain exists, and-

Will be out there as long as the blockchain exists and it is ready for anyone in the world to come interact with it and buy your drawings.

PART 2 OF 5 ENDS [00:58:04]

Robert J. Marks:

So how much would it cost me, Adam? Give me a ballpark. 10 bucks, a hundred bucks, a thousand bucks?

Adam Goad:

Probably right now with the current market \$500 or less.

Robert J. Marks:

Oh, is that right? Okay.

Adam Goad:

Maybe a fair bit less right now, but-

Robert J. Marks:

Okay. Well that's great. Now, I know you've gone to, what is it, opensea.io. I know that you've invested in a few non-fungibles, Adam, and one of them was a pizza place, right?

Adam Goad:

I'm forgetting. It wasn't pizza.

Robert J. Marks:

It wasn't pizza, but it was a restaurant of some sort, right?

Adam Goad:

Yes. I have invested in an ice cream store, actually.

Robert J. Marks:

Ice cream. Okay. I get ice cream and pizza confused all the time. So it was an ice cream store. So how was your non-fungible token doing?

Adam Goad:

That one in particular, with the fall of the market, they had problems as well. And so that is something that we can get into more is actually that a lot of these things don't work out.

Robert J. Marks:

We have talked about in the current place in our economy of non-fungible tokens hitting the skids. Is this a bubble pop? What's going to be the asymptote of reality here? Are non-fungible tokens going to disappear as an interesting thing in history? Or are they going to survive in some form? What do you think?

Adam Goad:

So I think that a lot of things are not going to survive this. I do believe it is a bubble pop, but I think that we have perhaps passed the peak on the technology hype curve. I believe that's something you've talked about here on this podcast before for you listeners.

Robert J. Marks:

Well, no, let's talk about it because this is in my book and I never hesitate to promote my book. There's something called the Hype Curve, and this is in my book, *Non-Computable You: What You Do That Artificial Intelligence Never Will*. And this is a curve that's followed by new technology. And I've seen this happen in many, many different areas. I've seen it happen in artificial neural networks. I've seen it happen in superconductivity. I've seen it happen in the Segway, for example, the Segway human movable cart that the actor, I think his name is Job on *Arrested Development*, rides around. But there is inevitably an introduction of new technology and there is this buildup of incredible hype and people begin to explore it and dig into it, and it's a bubble. And eventually people are going to recognize the limitations of this technology, and it's going to pop down into a depth of cynicism.

And those that are control engineers and electrical engineers know that the greater the peak, the greater the undershoot, the greater the overshoot, the greater the undershoot. And then all of a sudden more sane brains begin to prevail. And we find out the places where this is indeed applicable and where it can be reduced to practice, where it is useful. And this is referred to as the asymptote of reality. And so I think that all technology goes through this so-called hype curve, again over excitement, depth of cynicism, asymptote of reality. And that's what Adam was referring to here. Okay, we're talking about now, I guess the asymptote of reality, right, Adam?

Adam Goad:

So I think that the current market downturn here was seeing us falling off the peak and going down. I don't know where we are, how far we've gone yet, but I know that even just a few months ago, towards the end of last year, the beginning of this year, anyone selling any NFT, it would've sold out instantly and they would've made thousands of dollars. But now people are starting to be a lot more particular. You're not nearly as likely to be successful just selling a picture of monkeys on the internet as you would be if you had some use behind your NFT.

Robert J. Marks:

But this is true throughout the economy. I know my son and daughter-in-law like to buy rental property. So all of a sudden with the inflation that we're seeing today and the economy the way it is, the interest rate hiking, they can't do that. It's just out of their price range. So I can imagine that's somewhat similar to non-fungible tokens. I have a lot less discretionary income, and so non-fungible tokens are way down to the list of things that I might want to buy.

Adam Goad:

So the only things people are really spending money on right now, or at least significant amounts of money, are NFTs that provide something more than just the ownership of the image. So another way that NFTs could be used is as a marker of membership.

Robert J. Marks:

A marker of membership. So my non-fungible token is membership in something. Okay, go ahead, elaborate. This is interesting.

Adam Goad:

Yes. So if you were to say you're offering a service, a subscription, perhaps, just some kind of service, and you believe that your service can currently support 10,000 people, you could sell 10,000 NFTs and say that you have to own the NFT to have access to it. So then people can also go and trade that NFT still.

Robert J. Marks:

Could you elaborate and give me a specific example of 10,000 of what?

Adam Goad:

So the most common use of this right now as the technology develops is actually NFT analytic tools.

Robert J. Marks:

Analytic tools, okay.

Adam Goad:

So there are tools that people have developed that help you analyze the NFT market or the crypto market and find opportunities to buy or sell and make a profit. And so the way they provide access to these is through ownership of their NFT.

Robert J. Marks:

Is this something like stock market tips or something like that?

Adam Goad:

Yes, there are people who do that. In the Web3 community that is known as an alpha call. There's a whole lingo inside the Web3 community of various things. But yes, providing tips or information about things is known as an alpha call.

Austin Egbert:

As kind of an analogy of where you could take that is it would be like having a transferable software license. Let's say I've bought a license for Microsoft Windows or something. Usually that's then the product key. Those product keys are unique and it's sort of a way of, I could sell my product key to someone else. I no longer have the right to use that thing, but somebody else now has the right to use that. And Microsoft didn't see any money from that transaction because it was sold secondhand essentially. So I'm the one who ended up making money from that transaction instead of Microsoft. So it ends up being a similar sort of process in that sense, right, Adam?

Adam Goad:

Yes. So exactly. That's a use of it. I will say though, that there is a opportunity for the creator to get a cut of that secondary sale if you use one of the marketplaces. In the last episode, we talked about opensea.io. That is the most popular marketplace. On that, they will provide a percentage fee to the creator and the creator gets to determine what that fee is. But you can still just go through the blockchain itself and send an NFT to anyone you want with no fees going back to the creator.

Robert J. Marks:

So in non-fungible tokens, there are clearly things which you shouldn't mix with non-fungible tokens. There are things which are more successful with non-fungible tokens. Could you give us maybe just a short list off the top of your head of things which should or should not be done with non-fungible tokens?

Adam Goad:

So one example of something that's been done fairly successfully with non-fungible tokens that I think could become more popular in the future is tickets for various events. As NFTs have grown, there's been a number of conferences of people gathering to discuss the technology and stuff. And so what they do to ticket those of course is sell NFTs. So when they release the tickets, instead of going to the website and putting in your credit card and going through Ticketmaster or something to get the tickets, you go to their websites and you hook up your cryptocurrency wallet and you provide them some Ethereum or whatever they're asking for, and they'll give you an NFT. This NFT is then just like any other NFT, you could perhaps sell it to someone else. Maybe you can't go to the conference, maybe you bought the ticket just to sell it to someone else, like we see scalpers with sporting events and such who buy tickets just to resell them.

With this, it takes out the middleman, just like we were talking about a moment ago. You can sell them to anyone for any price. It's just a matter of what they are willing to pay them. And so this is something that can provide people a lot more flexibility and decentralization, more privacy, all of that, because their information would not be tied to this ticket until perhaps they arrive at the registration for the event. And then an example I was reading about online actually is what if this was the tickets to a concert of your favorite band. After the concert, you would still have the NFT and then it would become a memorabilia of the concert and perhaps would still regain value if this was a popular band and people wanted to have the ticket. We see people selling tickets of popular concerts to people for nostalgia. The same thing could be done with the NFT of the ticket.

Robert J. Marks:

Oh, my brother is big into that. You could do this with a non-fungible token, huh?

Adam Goad:

Oh yes.

Robert J. Marks:

Wow. Okay. So what are some things that have been totally a mess with non-fungible tokens that probably should not be revisited?

Adam Goad:

So some things that have been tried and perhaps will come back one day, but I am not overly confident in them, is trying to actually run a business through NFTs.

Robert J. Marks:

Wait, run a business. How would you do that?

Adam Goad:

So these are known as decentralized autonomous organizations or DAOs, DAO. They are an interesting concept, and people buy a share of this company, it'd be that an NFT or perhaps owning an NFT generates a token. And the amount of token you have is your amount of ownership or amount of voting power in this organization. And then people can suggest actions for the organization. But in order for this concept to truly work, they must be fully executable autonomously. It has to be fully written into code that can be executed without people interfering. So the idea of a true DAO is a company with no presidents, no CEO, it's just an algorithm that runs.

Robert J. Marks:

That seems like a terrible idea. I can imagine no viable organization without a central leader that is distributed.

Austin Egbert:

Well, and it sounds like the algorithm would have some knobs that could be turned and it's how to turn those knobs is what's voted on by the holders of the NFTs.

Robert J. Marks:

I see.

Adam Goad:

Yes. So the holders could suggest a change in this code or in addition, a subtraction, an alteration, whatever it is. And then that change would be put up to a vote of all the people who own the NFT or the token or whatever it is, and based off how much they own, they have various levels of voting power. And if it meets whatever the defined threshold is of people supporting it, it becomes part of the DAO and is enforced.

Robert J. Marks:

There is some background for this. There is a book called the Wisdom of Crowds, which is just a fascinating book, and it shows how crowds many times are more accurate in their assessment than individuals. The classic example is trying to guess the number of jelly beans in a jar. And you will have all sorts of people guess how many jelly beans are in the jar? And some are going to be off, some are going to be on. But remarkably, the average of these things is incredibly close to the true number of jelly beans in the jar. Now, there's some conditions for this. One is that whoever votes on it must be disinterested. In other words, if I guess the number of jelly beans in the jar, I can't know what the person before me guessed; otherwise that's going to bias me. So it has to be disinterested. So I can see the motivation behind this, but boy, it sure sounds, it sure sounds weird. And you're saying, Adam, that these really haven't worked very well. Is that right? These, what did you call them? DAOs Or something?

Adam Goad:

DAOs, decentralized autonomous organizations.

Robert J. Marks:

Okay. They haven't been too successful.

Austin Egbert:

Could you give an example of what one of these DAOs was maybe trying to do? What service were they providing, or what was their business output, so to speak?

Adam Goad:

What example of a DAO where this can actually work, you get into the whole world of decentralized applications, dApps, D- app.

Robert J. Marks:

Too many acronyms in the world. Okay, dApps.

Adam Goad:

Yeah, these are places where you can go and do more cryptocurrency and NFT trading sales, whatever it is. A popular one of these is known as Make a DAO. You can go there and you can invest your cryptocurrency and they will provide loans to people as one of the primary services. So then those loans follow the direction of the algorithm. That algorithm is changed by the voting in the DAO. So that is something that can work, that is entirely encapsulated inside the Web3 universe. It will work there. It can be autonomous. It is all code. It does not have to interact with the outside world. Where this breaks down is when people have tried to make them interact with the outside world. As soon as you get a human involved, that human can do something that the code is not telling it to do. An example of this, the is the Helium blockchain, actually.

So Helium is an interesting concept in blockchain. It is a decentralized network that provides internet in the form of a long range. It's called LoRaWAN, if I'm pronouncing that correctly. It is targeted at IOT devices in and out of things. And the way you join is by purchasing a transmitter, and then you set up this transmitter in your house, you plug it into your internet, and that is how you mine on the Helium network. Instead of solving complicated cryptographic problems, you were just expanding the network. I actually have one of these miners set up in my apartment. It's just a small little box that sits on an end table and makes me money.

Robert J. Marks:

Really?

Adam Goad:

Yes. So in that one, they're expanding currently. They're looking at adding 5G service to it.

Robert J. Marks:

Okay. What do you do again? This little box sits there and does what?

Adam Goad:

Provides internet connection.

Austin Egbert:

It's basically you, like you have your home wireless router. It would basically be if you were setting that up and you were offering service to anyone, but you got paid for offering that service essentially. So somebody else would come along, they would pay a subscription to the network, and that network would distribute that money back to you for operating a node on their network essentially.

Robert J. Marks:

I see. Okay. Okay.

Adam Goad:

But yes, it operates as a DAO. So whenever there are major decisions to be made, then it is put to a vote of everyone who owns the Helium tokens. And your voting power can be based off how many tokens you own. A vote that came up recently was to add additional tokens to this chain. Instead of having just the main Helium token, it could be broken down into a 5G token, an Internet of Things token based off what connection you are providing to the network. But this is not a pure example because this is still run by Helium, the company. So even though the community has placed the votes on this, it is still on the humans of the company to enact what is voted on there.

Robert J. Marks:

Wow. That is really, really strange stuff. Adam, you've told me that one of the problems with NFTs is that they are prone to corruption. Could you elaborate on that?

Adam Goad:

Yes. So while an NFT itself is cryptographically protected and cannot be taken from you without someone getting access to your private key, people can still trick you into buying things or authorizing them to do things on your behalf. This is a common criticism of this Web3 space and NFTs in particular. There are innumerable scams out there, because people know that everyone is looking to get involved in this particularly several months ago. And if they can get you to make a split second decision and buy something, then they have your money. Gotcha.

Austin Egbert:

As an example of that, I guess before we mentioned you could buy and sell tickets, would it be possible that I could go on and impersonate some organization selling tickets for an event and I just sell fake tickets that don't actually go to the event, but then still take advantage of people who are trying to attend that if they come across my listing instead of the authentic one? Is that the type of scam that can happen in this space?

Adam Goad:

That is a very common type of scam? Yes. People pretending to be someone else. So most of the community for this space is run through an app called Discord. This is a common app. It was used originally for gamers, but has grown a lot larger. But yes, it provides the ability to talk with people all over the world through text, video, pictures, whatever. So since these projects are pretty much all run

through Discord, people attempt to impersonate someone on Discord. So if you can make it look like you are the owner of a project and you have just messaged this person a private message saying, Hey, we're about to do something new and exciting, get in now. That is a very common type of scam and a lot of people have fallen for it.

Another one is what is known as a rug pull in the space. So that is where someone builds up a project, they make it look like they're setting up this project, it's going to do great things. Perhaps they've even done a lot of the legwork. They've gone, they've talked to other projects, they've gotten connections, and they're promising to do something new, big and exciting. But then as soon as they have everyone's money, they disappear.

Austin Egbert:

Which is a common scam from the early days of Kickstarter, is you can make up a great proposal. You can propose some fancy sci-fi sounding technology like the folks who had projected computers built into a wristwatch, and you would aim at a screen or something and you can make a flashy concept video that looks great, and then get a whole bunch of people's money and you go to actually make it and you find out, oh, there's no way to integrate a high fidelity projector with the brightness needed in a box the size of a couple dozen postage stamps stacked on top of each other.

Robert J. Marks:

What is, you said Kickstarter like I knew what it meant. Okay.

Austin Egbert:

Yeah. So Kickstarter is a website, I think one of the first ones in the concept of what's called crowdfunding. So it would be, if I have a business idea, one option is I can go track down a bunch of venture capitalists and try and convince them to invest money in it. But the other thing is this, essentially I can go on Kickstarter and basically pre-sell whatever product I want to make. So it goes, I've got this idea, I've developed a prototype, but me as an individual inventor, I don't have the startup funds to go spend, say, \$100,000 to have a company somewhere manufacture this for me. What I can do is I can go on Kickstarter and I can say, "Hey, if you buy this from me now you maybe can get a discounted version. Maybe I sell some special additions of it, and you provide me the funding upfront. I then go and make the product and I distribute it to people." It's a way of funding it by the people who would actually buy my product essentially.

Robert J. Marks:

Well, before investing in that, I would have to give that lots of scrutiny.

Austin Egbert:

So I have purchased things on Kickstarter before, and it's usually small hobbyist electronics or something. I could go, I can make a prototype of it and it's like, I just can't produce this at scale, but I know it works because I've made at least one or two of them and I want to make a whole bunch of them and I want to make them more cheaply. But those types of things take upfront investment that I maybe don't necessarily have. And so Kickstarter is where you can set a goal and it's essentially, we need X amount of money to make X amount of these things. And if you hit the goal, then you get the money, you're off and running, and then you can ship the products out to people once you get it finished. A lot of times if you don't reach the goal, then the people who invest get their money back because you weren't going to be able to deliver on what you were pitching to people.

Adam Goad:

We talked about previously starting businesses with NFTs. I have seen people doing this same thing as well with them. There was one project I saw that was trying to build and mass produce a small little holographic cube projector that you could use to display NFTs in your house. And they just, like Austin said, they have developed one or two of them that they could show, but they were looking for funding in order to mass produce them. And if you were to buy the NFT and give them money, they would promise that they would send you one when they were done.

Robert J. Marks:

So this is just a different way for inventors to get money other than angel investors and such, right?

Austin Egbert:

Yes. Now this does bring up an interesting, almost philosophical point on Web3, NFTs and this whole decentralized versus centralized space. And that is the question of should we go after decentralization? We can talk about oh, centralization has these various pitfalls. Large companies are able to aggregate your data and make decisions with that, but at the same time-

Robert J. Marks:

And censor what censor what you say, that's my big beef.

Austin Egbert:

Yes. And at the same time, though, there are some benefits that are derived from that centralization largely in some of the scams and other things that we've talked about where people can be taken advantage of. If I go on eBay and buy something from somebody and it never gets shipped to me, eBay will send me my money back. But if I just went on a decentralized platform and tried to execute some contract with somebody on Bitcoin or something and I get scammed, I have no recourse because there is no central authority to review that claim and try and reverse that. And so there are pluses and minuses to the site, and there's that question that society's just going to have to figure out in terms of where is decentralization beneficial and how can we overcome some of those pitfalls that come from that lack of regulation in the space.

Robert J. Marks:

I think that this is just another manifestation of the risk reward tradeoff. It seems to me that if you get more decentralization, yeah, you're going to have more risk in terms of the fraud that you talked about, but establishing credibility and establishing a reputation and making sure you do due diligence and are just open to scrutiny. I can see that the decentralization would eventually work, except for very naive people. And you're right, I think that there would be a lot of different things which would happen, which would not be good. But on the other hand, as I mentioned, I don't like this censorship that we have all over the place on Twitter and YouTube and it would get rid of it of that sort of thing, hopefully. So final question, what do you see as Web3 of Web3 is with us, whether we like it or not, and it's going to be here, non-fungible tokens, blockchains, this decentralization sort of computer. Do you have any prophecies about what this is going to be in the short term or the long term?

Adam Goad:

It is certainly hard to predict. I think that, like you said, it is here and it's here to stay. I think the hype of it is going to die down, and it already is, but it is very difficult to tell what will remain. I am hopeful that we will see a greater decentralization of things for many of the same reasons you just said it. It prevents censorship. It provides individual power and freedom to the people. It also enables a global community. There are a lot of people in Third World countries who have actually made a living and more by investing in Web3 because it is available to them, unlike many other things, and they can get in for very small amount of money and grow it very quickly. So I think it's here to stay, but-

Robert J. Marks:

I think it was the famous physicist, Niels Bohr, that said, "Forecasting is dangerous, especially if it's about the future."

Adam Goad:

Yes, exactly.

Robert J. Marks:

I think that we have that situation right now. Austin, do you have any thoughts on this?

Austin Egbert:

Yeah, I think one difficulty going forward, and in case you couldn't tell through it, Adam tends to be more pro NFT Web3 Hype Man compared to my Debbie Downer, I don't see the point, I don't know that this is going to go anywhere. I don't think it's going to disappear, but I think if it's going to become more mainstream, there's certainly some user experience, ease of use questions that are going to have to be tackled. That's one thing is when you decentralize something, each interaction with it is a one-off thing that somebody has to learn. You can't just go, oh, I know how this works with X service. Y service is going to be completely different. And so when you have that decentralization, there's a much steeper learning curve for anyone wanting to get involved in that space and having to figure out how each individual operator handles something potentially.

And so that's one thing where how Web2, and we've had all of this centralization, is there's this unification of experience. Like with Facebook, it's if I want to go check up on my friend Bill, I don't have to go track down where Bill is, or if I want to go meet with Sally, I don't have to go track down where Sally is. Do they have texting? What platform are they on? There's this whole search to figure out how to get in contact with somebody.

If everyone's on Facebook, you just go on Facebook, type their name in, and it's easy to find no matter who you're trying to track down, when you go to decentralized platforms, you have to figure out, well, what platform do I even have to go to find the thing that I'm looking for? And so there can be a complication in the space from that, and it eats into the ease of use of trying to interact with those platforms. So I think there's those benefits from privacy and things, but it also can make some things more difficult to actually accomplish when you have a decentralized platform like that.

Robert J. Marks:

Yeah. The thing I'm interested in is whether Web3 is going to disrupt large companies like Google, Amazon, and Facebook, or whether it's just going to be an augmentation of the technology we see. I suspect that the truth is going to be some combination of that. I think it's going to augment, but also affect these different technologies. Okay, any final words?

Adam Goad:

So a lot of optimists in the space think that Web3 will be the downfall of big tech, that the decentralization, the privacy aspects of it will disrupt their business model so much that they are not able to buy and sell personal information the way they do now. I think that we are certainly a long way off from that if we ever see it, but I think that this will be the next revolution on the internet, just the same way that Web 2.0 brought around the big companies of today, brought you Amazon, YouTube, Facebook and the rest, Web 3.0 will have similar ramifications on our society, but we'll have to wait a few years to see exactly who comes out on top and what changes those will be.

... and what changes those will be.

PART 3 OF 5 ENDS [01:27:04]

Robert J. Marks:

We're going to talk today about decentralized finance, and here's what I understand and we're going to let Adam and Austin fill in the details here. When you pay Uber for a ride or anybody else, you use a bank or a third party like PayPal or Visa or MasterCard or something like that. Decentralized banking hopefully will let you pay for the Uber driver directly without a third party. And again, this can be done using decentralized finance. So Adam, what is centralized finance? What is decentralized finance and why should I care?

Adam Goad:

Good question. So centralized finance is the system we have now. It's like you described. Whenever you want to pay for something, you would take out your credit card, you would swipe it and it would go over the internet. It would tell your bank that you want to pay. Then the bank would figure out who you're trying to pay and send them some money if you can. The currency is also regulated by the government. In the US we have the Federal Reserve Bank and they have all sorts of control from how much money is printed, setting interest rates, all sorts of things. With decentralized finance, you do not have these central authorities having this power over the currency. So like you said, if you want to pay that taxi driver, you could just send them a transaction directly using Bitcoin or Ethereum or something, and then those currencies cannot be blocked.

They're not run through a centralized exchange of any kind. They can be sent just through the distributed system of the blockchain that we talked about previously. And the record would be in the public ledger. You sent him money. He could confirm that, and you can both go along your way.

So this has several benefits. It prevents any kind of centralized regulation. So you can have regulation in a decentralized finance. Last time we spoke briefly about DAOs, decentralized autonomous organizations. Several of these larger defi, decentralized finance projects are run as DAOs, where people who have invested money into them do get a say in how it is run and it is run purely as code. So anyone can confirm this code and what it's doing and that it's doing what it says it's doing. And people can make proposals and vote on changes to this code. And the code can only be changed if everyone approves these changes or at least a majority or whatever the rules are for that particular DAO of how many people must approve.

Robert J. Marks:

So the bottom line is that individual users have more control and transparency over their finances. I like that. You don't have to go through a third party. How does this work? How do the blockchains enter into

this? I'm sure that the blockchains enter into this in order to establish trust and stability in terms of the decentralized finance. What's the role of blockchain here?

Adam Goad:

Right, so you mentioned trust. The blockchain adds trust because it is a trustless system. It does not require you to trust anyone in order to use it.

Robert J. Marks:

Okay. This is interesting because I've seen the word trustless, and trustless doesn't sound good. But in the context of crypto, it means you don't have to trust any human. So trustless always refers to humans. Is that right?

Adam Goad:

That is my understanding of it. I haven't looked at a dictionary definition, but that's how I've always interpreted it. So if you want to transact on a blockchain, then in order to use any funds that are in an account on this blockchain, you'd have to have the private cryptographic key for that account. That's going to be a long string of letters and numbers that you should keep private because anyone who has that string can have complete control over the funds in that account. So using that private key along with your public key, which in most cases is your address that people would use or a derivative of it, then you can encrypt any transaction you want to send into the blockchain, send it off to the blockchain, and it's encrypted in such a way that it can be confirmed that it was signed by your private key as long as someone knows the public key. And the public key can also be derived from the way it was signed.

So then after the blockchain and anyone else who wants to is able to confirm that I sent this transaction to the chain, the ledger, the chain itself, would then have a record that my account sent the money to your account and you can go check the chain. You can use various services that will check it for you and just tell you your balance and you'll know that I have sent you the money and there it is. We didn't have to talk to any banks. We could have used any number of Ethereum nodes or any other kind of chains, nodes, distributed all over the world without a centralized authority having a say in things.

Robert J. Marks:

Interesting. It does seem though, blockchain has replaced the bank as the third party. So what's the difference here? Is it that the blockchain doesn't tell anybody what's going on? Or what's the advantage of using blockchain instead of a bank?

Adam Goad:

So it's not that blockchain doesn't tell anyone what's going on. Instead it tells everyone what's going on.

Robert J. Marks:

Okay, so blockchain knows how much you paid the Uber driver?

Adam Goad:

Yes. And everyone else in the world can know too. But what they don't know is who you are or who you paid or why.

Robert J. Marks:

Oh, now that's interesting. If they don't know who I am, who I paid or why I paid them, then that looks like a lot of privacy. So that's the advantage that this decentralized finance gives to you. Is that right?

Adam Goad:

Right, exactly. All that's recorded is a record that this address paid this address, this much at this time. Who owns those addresses? Why did they feel the need to send that money? None of that is stored and you'd have to know a lot about someone to figure it out.

Robert J. Marks:

Isn't that interesting? Okay. Where do these decentralized finance blockchains live? Do they live on your computer?

Adam Goad:

So the blockchain itself lives on anyone's computer that wants to have a copy, pretty much. It can be fairly intensive to have it, so you need a pretty powerful computer if you want to be what's known as a node. So a node is a computer that stores a copy of the blockchain and helps to process the blockchain as new transactions come in. You can also set up a miner to be on a node to try to mine new transactions. And basically then if someone wants to send a transaction, they send that transaction to a node and then that node will work to send it through the network to get it to the miners to get it put onto the chain.

Robert J. Marks:

I see. So it's just everybody has copies of the blockchain, but nobody knows what's inside of the individual links on the chain, if you will. Is that right?

Adam Goad:

Nope. Everyone knows what's inside every link.

Robert J. Marks:

Oh, they do know what's inside every link. But they don't know who it is or why you paid it. Okay.

Adam Goad:

Right.

Robert J. Marks:

I see.

Adam Goad:

There's a website you can go to. It's called Ether Scan, etherscan.io. It is one of the most popular websites. You can use it to browse any transaction you want on the Ethereum blockchain. You can search them by who sent them, who received them, when they were sent, all sorts of things. And you can look at every single transaction ever sent if you wanted.

Robert J. Marks:

Oh my goodness. Okay. Well, I bet you the IRS is happy about that, aren't they? By the way, if you know that person A was a transaction on one of the chains of the blockchain, do you know that person A was also a participant in Blockchain 36?

Adam Goad:

Yes. So well, on a single chain, yes. You can say, okay, if I know that this person sent this transaction, then I now know the Ethereum address, whichever chain it is, and you can look at all the other activity for that address and you can see where it sent money. You can see who those people sent money to. It's all there.

Robert J. Marks:

Isn't that interesting?

Austin Egbert:

But on a separate blockchain, that address isn't the same as the address they might have on a different blockchain?

Adam Goad:

Correct. So in order to figure that out, you would have to see them try to send the funds through to the other blockchain using various services or you'd have to, if they did it through a centralized cryptocurrency exchange, you could force them to report to you what addresses they sent to and such. Because the way the centralized exchanges work such as Coinbase, they are subject to government regulation.

So when you sign up for an account on one of them, if you're going to be transacting at a certain amount, some of them, I think there was a small amount you can do without having to do this. But if you get to a certain level, you are required to complete what is known as know your customer, KYC. And that's a process where you have to go through and prove your actual identity to the exchange. You have to send them a copy of your driver's license or something like that so that they can then tell the government who you are and file your taxes accordingly.

Robert J. Marks:

But this is only for certain blockchains, is that right?

Adam Goad:

This is anytime you want to use a centralized exchange. So these centralized exchanges are by far the easiest way to get money in and out of cryptocurrency. So they will let you hook up to your bank account or hook up to your credit card and put your US dollars into cryptocurrency through their service.

Robert J. Marks:

I don't know if you remember, but the FBI at one time was monitoring telephone calls and they didn't monitor who called who, but they did say A called B, A called C, C called D, and then B called D. And so they built up this tree of interconnections and they maintained that they were not violating anybody's privacy because names and telephone numbers weren't associated with that. But they built up this great tree with lots of clusters and if they found out one node, if they found out the identity of A, all of a

sudden the other ones began to fall down with certain probability with that knowledge. The blockchain as you've described it, kind of reminds me of that. Is there any truth in my analogy?

Adam Goad:

Yes, you have it exactly right. If the FBI or any other law enforcement agency is trying to track down some kind of criminal who's using cryptocurrency, they most likely know what transactions they're trying to follow. And they just don't know who is on the other end of those private addresses. So as soon as they figure out who owns one of them, it's the same thing. They can start trying to guess who owns these other ones based off when they were paid and how much they were paid and how often, such like that. Exact same sort of thing.

Robert J. Marks:

Interesting. I listened to the book *American Kingpin*, and it was about a guy that called himself the Dread Pirate Roberts, who ran a website through Tor, which is a very private internet service. And they sold drugs, and the government, I think through the DEA, went through and tracked all of the finances because one of the people in the DEA bought some drugs from this guy and he knew where it went, and there all of a sudden he was able to determine all of the other places that this money came from. And they determined who it was, but they didn't find the identity after some, oh, what do they call it, leather shoe investigation where they had to go out and use normal intelligence in order to do it. It's just a fascinating book. If anybody who's looking for a good reader or a good listen, *American Kingpin* is just riveting.

So that's the way that they eventually found him is through this process that we're talking about, just like the FBI tallying all of these telephone calls. But not saying what the number was and not saying the identity of the person, but simply connecting a bunch of nodes about A calling B, and B calling C and then C, calling A, et cetera. That's really interesting.

One of the things I read in looking at this for the prep today, because I understand very little about blockchain, and I really appreciate your time and your effort to explain it to us, but somebody said that blockchain hackers stole nearly \$1.3 billion with 79 hack events through the first quarter of 2022. So what's a quarter? Three months, right? And so in three months they were able to steal \$1.3 billion. Reading deeper though, it seems that the blockchain hackers took advantage of flaws in the project code, which I guess maybe in some ways was made public. That seems to me to be strange to make the code in a blockchain public.

So it seems to me that if you're going to do this, if you're going to do distributed banking, you got to choose who you're dealing with very carefully because some of the new kids on the block aren't going to have the security that the older guys have. So who are some of the older guys? Who are good people with lots of experience in distributed finance?

Adam Goad:

Well, to comment on that theft first a bit, I'm of course not familiar with every case. But a lot of times when people have the cryptocurrency stolen, it is because they fell for some kind of scam.

Robert J. Marks:

They were kind of phished in a way?

Adam Goad:

Yes, exactly. They personally gave out their secure key to someone, or they downloaded something onto their computer that was able to then trick them into doing something, or they submitted a transaction to something that was not what they thought it was.

Robert J. Marks:

I see.

Adam Goad:

And so I think a lot of also what you might have found are things known as rug pools. So that is where someone sets up a project, whether it be an NFT or a new coin or a decentralized finance system, and they tell everyone it's the newest, bestest thing and they convince all these people to invest in it. But really, all they're going to do is take all the money everyone puts in and run away. And it's not going to ever do anything.

Robert J. Marks:

I see. Okay. I'd like to pride myself in the fact I'm very hard to phish. But I have a bunch of websites and I ran them on a host called Blue Host, and I got this email from Blue Host one time, and it says, "You have too many files on the host server. You need to remove some. Click here to log in." So I clicked there. It took me to the Blue Host page. I entered my name. I entered my password. Then I hit return and nothing happened. I was phished.

What they had done is they had taken an exact duplicate of the Blue Host site and they had replicated it. And with this email and me trying to log in, I was phished. The next day, all of my files had viruses in them. And I had to contact somebody to scrub all my files and I moved them off of Blue Host onto another server. And you think that you're immune to phishing, but man, I fell into that so easily. I guess I have to be less naive in the future. And that's what I've heard, is that encrypting is something that is very difficult to break. And the only way that you can actually break it is through the weakness of the human element.

Adam Goad:

I have not heard of any case where cryptocurrency of any kind was hacked by breaking the encryption. I've only heard of cases where it was a human error that caused the fraud or something.

Robert J. Marks:

I see. Okay. Now in talking before we started this recording, you mentioned something which blew my mind and that was something called flash loans. Could you talk about flash loans for a second and try to explain it to me so that I understand as best as possible? These flash loans seem incredible. What's a flash loan?

Adam Goad:

So a flash loan is a loan that you take out for very short amount of time, usually a few seconds.

Robert J. Marks:

A few seconds.

Adam Goad:

But it can be for very large amount, like millions of dollars. So if you want to feel like a millionaire for a few seconds, you can go take out a flash loan. But the point of them most often is to use them for arbitrage.

Robert J. Marks:

Oh, okay. Well first of all, explain arbitrage. I think most people know what it is, but I think we should probably explain arbitrage real quickly.

Adam Goad:

Yes. So arbitrage is when you see an opportunity to buy and sell something at a different price in different places. So let's say if you are on Coinbase and you can buy Ethereum for \$2,000. But if you look at another cryptocurrency exchange such as Kraken, and you see that over there, you could sell Ethereum for \$2,100, you would immediately want to buy all of the cryptocurrency you can from Coinbase and sell it to Kraken, and you'd make a hundred dollars per Ethereum that you did in this manner.

Robert J. Marks:

Right, because there's this price disparity.

Adam Goad:

Yes, exactly. And by doing so, you would equalize the price disparity between the two as they adapt to the market.

Robert J. Marks:

Wow. \$10 million for 10 seconds. Clearly you pay a premium for this. You pay some sort of interest to borrow that \$10 million, is that right?

Adam Goad:

Yes. You would pay a fee. And flash loans are often enforced through smart contract. So you would actually put these transactions you're going to do in the arbitrage into the smart contract so that the lender can see this and be satisfied that they're going to have their money back in 10 seconds and you're not just going to run away with it.

Robert J. Marks:

I see.

Adam Goad:

The transactions of them sending you the money, you buying and selling to do the arbitrage, and then the money being returned to them with the interest and then the money being returned to you with your profits is all set into code that the blockchain executes and that in that way it is trustless and therefore you can trust each other.

Robert J. Marks:

Now, to do this \$10 million loan, do you need collateral?

Adam Goad:

So with the flash loans, since it is enforced through smart contract, there's no need for the collateral. It is the risk of you and the lender that it's going to go well. And you both know that neither of you can run off with anything because you can both trust the code in the smart contract.

Robert J. Marks:

Okay. Thinking about that though, if you want to do arbitrage between two different markets, for example, and you borrow the \$10 million and the markets go kablooey. Maybe the prices even out or something. I guess the only loss you have is the fee that you paid for the \$10 million. So you risk that in a way, don't you?

Adam Goad:

Yes. The lender would be risking that as well. They would risk that perhaps the value of it went below \$10 million in those 10 seconds that you had it. So yes, there is risk involved on both parties there that it could not work.

Robert J. Marks:

I have heard that most computer trading is arbitrage. And in fact, there's some trading institutions that want to get faster cable so that they can do arbitrage more quickly than somebody else. Have you ever heard of that scenario of these trading houses wanting to do arbitrage by beating the other person with the speed of their computers?

Adam Goad:

Oh yes, certainly. And cryptocurrency is a constant 24/7 market where milliseconds matter.

Robert J. Marks:

Wow.

Adam Goad:

When you find these arbitrage opportunities, since there are so many people looking for them, it's constantly going. So it's very rare to find a very large one. So you're only going to find maybe perhaps a 1% difference between prices. And if you know that that price is greater than the fees you're going to have to pay to conduct these transactions, then you of course want to do your arbitrage.

But like you said, at the same time you found that, there's going to be dozens of other people who found that same opportunity because their computers were also looking for it. So who gets there first? This is actually something I've been working on with an NFT project I work for. Then we've created, we call it the hyper node. What we've done is we've taken very fast computer servers and we've put Ethereum nodes onto them. And we have also, I suppose I have, modified these nodes so that only select individuals can use them. In this case, the holders of the NFTs from the project.

Robert J. Marks:

Let's back up a little bit and define some of these things. What's a hyper node?

Adam Goad:

That is the name we've given to the service we provide of these very fast Ethereum nodes that we allow our holders to have access to.

Robert J. Marks:

I see. Okay.

Adam Goad:

And we limit the access to only being available to the holders. So then that encourages people to, well, of course enter into the project. But also it provides insurance that our node will remain fast. There are plenty of public nodes on the Ethereum network that anyone can do, and if you download any kind of app to transact with Ethereum, it will have some kind of default node it applies you to.

Robert J. Marks:

I see. Okay.

Adam Goad:

But by restricting who can use our node and making sure that we have very fast hardware supporting it and internet connection, we can provide our users with a faster connection to the blockchain than anyone just using a public node.

Robert J. Marks:

I see. And is that enough to beat some of these different trading houses? I have heard, for example, that there have been trading houses that have geographically moved closer to the New York Stock Exchange and laid fiber in order to get quicker responses. That seems to be very difficult to beat.

Adam Goad:

So since the New York Stock Exchange is a centralized system, you have to be close to it in order to get those speeds.

Robert J. Marks:

Oh.

Adam Goad:

With Ethereum and other cryptocurrencies being decentralized, you can place a node anywhere and get that fast access to the network.

Robert J. Marks:

I see. So your business is for decentralized finance, so you don't have to go to the places like the Chicago Mercantile or the New York Stock Exchange right?

Adam Goad:

Exactly. There is no central Ethereum market in a physical location anywhere that you need to be close to. What matters is how close you are to a node and how fast that node is.

Robert J. Marks:

I see. So let me ask you, how close are you to market? Are you geared up yet? Are you selling these services?

Adam Goad:

Yes, we've been online for several months now.

Robert J. Marks:

Okay. With the stipulation that Nine Matters News is not being paid at all for this endorsement, tell me how somebody can find out more about your business.

Adam Goad:

The project name is Just Cubes, and you can find out more@justcubes.io. J-U-S-T-C-U-B-E- s.io.

Robert J. Marks:

Okay. Well, great. Well, best of luck in that. I hope you become a very wealthy person because of that. One final thing that I'd like to ask you about is something called stable coins, which you're going to have to explain to me. It turns out that most cryptocurrencies are incredibly volatile. They will go up and down. Their variants, their volatility is just wild. Yet these so-called stable coins are cryptocurrencies as I understand them, that don't display this volatility. What's going on there? How do you do that?

Adam Goad:

So yes, like you said, the crypto market can be incredibly volatile. Recently the Ethereum market dropped 10% in a day. It's had wilder swings than that in the past as well.

Robert J. Marks:

Wow.

Adam Goad:

But yes, stable coins. There's a handful of these. USD coin, US dollar Coin, Dow, Tether there's several of them. But what they do is they have something backing them, and by being backed by this, they are pegged to a currency such as the US dollar. There's ones for the pound, the Euro, and other such currencies around the world. So the one I'm most familiar with, USD Coin, what they do is they actually go and they take a dollar bill and they put it into a bank vault for every single one of their coins that they issue. And you can go to them and you can say, here's five USD coins, give me \$5, and they can do that for you. So since there is something actually backing and pegging this currency to the US dollar, it will always have value of \$1. Now, there is a slight bit of fluctuation around it just based off the momentary demand for it, but that usually is in the tens of thousandths or hundreds of thousandths of a cent range of how much it changes.

Robert J. Marks:

Now, clearly, in order to back up this USD coin, that's going to cost big bucks. Who fronts that big bucks? And whoever fronts the big bucks has to have reason to do it. They need to get paid. So how does that work?

Adam Goad:

So there have been plenty of investors getting involved in different Web Three and cryptocurrency projects over the past few years. And they would get paid the same way that people who get paid for mining and such would. They would take a percentage of the fees that are provided to transact on the network.

Robert J. Marks:

I see. Okay. So every time you trade a USD coin, you are charged a little bit, almost like charging something on Visa. The merchant that you charge it to has to eat a little bit of the purchase price because that goes to Visa or MasterCard or something like that. Is that a good analogy?

Adam Goad:

Yes. But in the case of cryptocurrencies, it is the one initiating the transaction who has to front the cost of the fees.

Robert J. Marks:

Very interesting. I think that this decentralized finance is going to be a big deal. I was talking to an employee of a bank who said that banks really hate decentralized financing or decentralized finance in general. Do you think that maybe banks are going to come and try to crush this decentralized banking, or do you think that they're going to go with a way of the brick and mortar stores, some of which have just gone belly up?

Adam Goad:

Well, like you said on one of our last episodes, always hate to make predictions, especially about the future.

Robert J. Marks:

That's right.

Adam Goad:

But I am certain that there are aspects of this I'm sure banks don't like because it is taking away some of the power. It is allowing people to borrow money, to do loans, to invest without having to go through the centralized systems, and therefore they're not getting a cut. Which one will win out in the end? I don't know. But I do think that this will be around for a while.

Robert J. Marks:

Yeah. It really seems to be exciting stuff and just an incredible thing for the future. And a thing to keep your eye on.

Like gold, cryptocurrency, like Bitcoin and Ethereum is mined at least so far. Mining becomes harder and harder as more gold is mined and they're trying to mine cryptocurrency just like they mine gold. The supply of gold is diminish and finding fresh gold deposits becomes more and more difficult the more gold you discover. In the same way as the supply of a cryptocurrency increases, computers have to solve harder and harder-

If a cryptocurrency increases, computers have to solve harder and harder problems to be rewarded cryptocurrency. Investment banker, JP Morgan, estimates that the production costs to mine one Bitcoin today is between 13 and \$24,000. At this recording, one Bitcoin goes for about \$20,000. But famously, the price of cryptocurrency like Bitcoin is very volatile, you know where it is today, but you have no idea where it's going to be tomorrow. There is a new approach that replaces mining and reduce costs, especially the use of electricity. The new approach is called staking. And let's start with Adam. Adam, what does it mean to stake your money today?

PART 4 OF 5 ENDS [01:56:04]

Adam Goad:

So in terms of what you're talking about there, the blockchain, especially the one everyone is talking about in the news right now, Ethereum. Ethereum is moving from proof of work, which is the mining you mentioned, to proof of stake sometime here in the middle of September 2022. So what that means is that instead of having all these fancy computers that are constantly trying to solve cryptographic problems to have the right to set the next block onto the chain and get the rewards for doing so, instead what's going to happen is people are going to have to stake some Ethereum. I believe the going rate for becoming your own staking validator node is 32 Ethereum.

Robert J. Marks:

Okay. Let's translate that into dollars. I don't think people think Ethers yet. How much is that in US dollars, 32 Ethereum?

Adam Goad:

Well, today, one Ethereum is worth about \$1,500.

Robert J. Marks:

Okay. So we're talking about 40,000 or so, is that right?

Adam Goad:

Yes, it'd be around there.

Robert J. Marks:

Okay. Okay, go ahead please.

Adam Goad:

So yes, but if you don't have about \$40,000 burning a hole in your pocket, you could get together and make a pool of people that you all contribute a little bit to make one of these validators, and you have validated pool then. Now, instead of everyone racing to solve this problem and using GPUs and dedicated mining machines to the maximum power to do it, now the chain will select one validator for every block. And this validator gets to propose the new block to be added to the chain. And then once they have proposed this block, there will be a randomly selected committee that confirms this and makes sure it's all good and everything. And then once that is done, it is added to the chain, and then everyone else on the chain gets to also confirm the validation in a more passive way. And as long as

most people agree, 51%, then it won't be kicked off the chain. And the person who did the validating will get an award, and I believe also the people in that committee would get an award as well.

Robert J. Marks:

Now let's talk about validation. You get a validator and they go to the crypto and there's a committee. This committee has replaced the entire universe, which is trying to mine for something like Bitcoin. So you have a much smaller group. And then you choose the person who takes the place of what the old miner was, right?

Adam Goad:

Yes.

Robert J. Marks:

And they interact with the blockchain, and the blockchain comes back, and don't they give them a problem to solve.

Adam Goad:

So yes, they do have to solve the cryptography of making sure all the transactions being added are valid and then added into the rest of the chain.

Robert J. Marks:

I see. Okay. So they do have to solve this problem, and then once the problem is solved, all of a sudden some more crypto is created. Just like if you mine and you solve the Bitcoin problem, you get more crypto. So the validation gives you more crypto on the blockchain, is that right?

Adam Goad:

Yes. So currently when you mine a new Ethereum block, you get two Ethereum plus a percentage of the transaction fees for all the transactions in that block.

Robert J. Marks:

And currently in Ethereum, I forgot, my short term memory is going, how much is the Ethereum worth roughly now?

Adam Goad:

About \$1,500.

Robert J. Marks:

Okay. So you make about \$3,000 by doing that. But you got to put in big bucks to do that. Now the claim is that stakers are approving and verifying transactions on the blockchain, and that this process in some way replaces spending all of this time and money that Bitcoin mining requires. How does this work? Where does the money come from that? That's something that I'm having a problem with. How do they make money? Why would I ever want a stake? Why would I want to take my money and stake it?

Adam Goad:

So yes, when you stake your money and you become one of these validators, then you have that chance of being randomly selected to be the one to propose the block or be on the committee to approve it. So if you are one of those, then you would get a portion of the newly created Ethereum that's added to the chain. Like I said, they get about two Ethereum currently. I have not confirmed if it will be the same on the new blocks, but I imagine there will be some amount. So yes, so you get that flat reward as well as the portion of the transaction fees for the people who you're putting into that block to be added to the chain.

Robert J. Marks:

Okay. So in mining Bitcoin, the investment that you have is in electricity and computer time, that's the investment that you have?

Adam Goad:

Yes.

Robert J. Marks:

For this new idea of stakers, I guess your investment is the monetary commitment that you make, is that right?

Adam Goad:

Exactly. So if you somehow make a mistake or you try to lie when you are the one doing this validation, then that money you put up, part of it, if not all of it would be taken away.

Robert J. Marks:

Why would somebody ever want to lie?

Adam Goad:

Because they could say, "Yes, everyone sent me all of their Ethereum and now it's all mine."

Robert J. Marks:

Oh, I see. So they swipe it all. So is there a distributed ledger that all of the stakers share?

Adam Goad:

Yes, exactly. So still just like it is right now, everyone who wants to can have a copy of the ledger, and they can also look at all of the transactions that are currently in what's known as the mem pool, the memory pool, which is most of the transactions that are waiting to be added to the chain. And then if these transactions that are put into this new block, if they look funny for some reason, if they don't pass the cryptographic checks, if they're unable to confirm that they came from the addresses that they're claiming to come from, then everyone else can say, "Hey, no, that is not a valid block. You did not do a good job of proposing this new block," and reject it and cost you some of your stake.

Robert J. Marks:

I see. Now, I guess for the old mining, you have to do something called proof of work, and with this new idea you have a proof of stake, is that what they call it?

Adam Goad:

Yes. Proof of stake is the term.

Robert J. Marks:

What's the difference between the two?

Adam Goad:

So proof of work, the proof of your work is that you were able to basically guess the random number that was needed to be the person who gets to add the next block. And it gets progressively harder and harder and harder to guess that random number. With proof of stake, the chain just has to look and say, "Okay, yes, I have record that this person staked their money, that they were willing to be a validator, and now I will let them attempt to validate."

Robert J. Marks:

Okay, understand. One of the big claims for staking I read is the reduction in the use of electricity. I read online, and it was on the web, so it must be true, that Bitcoin to spend or trade consumes about 91 terawatt hours of electricity every year. This is more than used by the entire country annually of Finland, which is a nation of about five and a half million people. So this is really going to save our electricity bill, and hopefully for those that are into this, maybe help save the planet, right?

Adam Goad:

Yes, it's estimated that with Ethereum making this transition, it will save greater than 99.9% of the energy that was being used to mine Ethereum.

Robert J. Marks:

Wow. And we could give all that to Finland and nobody would've to pay an electric bill if we could figure out how to do that. Okay. Now, my understanding is that both Bitcoin and Ethereum, as we record this, are using data mining, but Ethereum is about to make the big switcheroo. Is that right?

Adam Goad:

Yes. So Bitcoin being the first major cryptocurrency, it was not really written to be flexible. So changes to its algorithm can't be made, but Ethereum is able to be changed as it goes. So yes, here in the next few days, sometime between September 10th and September 20th of 2022 here, Ethereum will be switching over to what is being called Ethereum 2.0. And that is when the proof of stake will take place and mining will end.

Robert J. Marks:

Interesting. But Bitcoin, it looks like we'll never make that transition, because I think I read that it would take 51% of the Bitcoin owners to make an agreement that they could change the software. And I don't think anybody wants to do that. I don't think they'll ever get 51%. Do you agree?

Adam Goad:

So yes, that would be possible, because the 51% is basically the threshold for controlling any of these cryptocurrencies, since the way they work is on a consensus. So as long as 51% of all of the nodes, all of the people with copies of the chain agree that something is the way it is, then it is.

Robert J. Marks:

I see.

Adam Goad:

So yes, you could change Bitcoin by having 51% of the people agree to run it differently, but that would be fairly hard to convince people since it does not have quite as much of a centralized organization trying to produce software updates and such like Ethereum does. And I don't think there's much interest currently in changing it broadly.

Robert J. Marks:

So why would I want to stake my money? Clearly, I'm going to get some returns. It struck me as like a savings account. You put money in a savings account and then there is a percent return. What percent return can I expect by staking?

Adam Goad:

So it's currently estimated that someone staking Ethereum for proof of stake would make about two to maybe even up to 20% back annually.

Robert J. Marks:

Whoa. I have some money in a savings account. I think I get a half of 1% annually. It's just terrible what banking savings accounts pay. So that really sounds good, but you do have to have the big bucks in order to go into staking, right?

Adam Goad:

So yes, if you want to be an individual validator, you would need that about \$40,000 or so we discussed at current rates. But you could join into a pool, you can have 32 people put in one Ethereum and all of them come together to act as a single validator.

Robert J. Marks:

I see. Now, there's a number of stakers that go into one of these pools, and then somehow a validator is chosen. What's the advantage of being a validator and how are they chosen from all of these people that have been participating in these pools of stakes? How has the validator chosen?

Austin Egbert:

Yeah, so the question of how the validators are chosen is one that I've had a bit of a struggle tracking down on the internet, and I've been looking into it recently because it's really been bugging me, because you'll go and everyone will just say, "Oh, we pick a committee of validators at random to work on the next block in the chain." And I go, "Yeah, but who's doing the picking? The picking is happening somewhere." Somebody says, "Okay, you get to be the one who validates this next transaction." And I've eventually tracked it down, and it comes back to the DAOs that Adam had been talking about in previous episodes, those decentralized autonomous organizations. So there's essentially a process by which several different people can contribute randomness towards a final random answer, and then they all agree on how everyone's input and contributions will be used to create the final solution. So as one example, you could have everyone who wants to be a validator each round submit a number, and

then they all agree on how they'll take everyone's numbers to pick the final batch of validators that should be chosen to work on the network.

Robert J. Marks:

Now, to be a validator, you have to have some computer skills as I understand it. So not every Tom, Dick and Harry can be a validator. So the question is, number one, why would I want to be a validator? And number two, do I have to have these technical capabilities, these coding capabilities, in order to be a validator?

Austin Egbert:

I would say you don't necessarily need to have coding capabilities, but it wouldn't hurt. Essentially, by being a validator and working on the network and putting up that stake, you're basically saying, "Hey, I am committing to be a reliable operator of the network." So where some of that expertise comes in is that you are expected to provide a certain amount of uptime or availability so that if you get chosen to be a validator, you're actually there to answer the call, essentially. It's almost at that point like jury duty. If you don't show up for jury duty, the government's going to come and punish you in some way. In the same way, the network, if you don't show up to validate, it's going to actually diminish some of that stake that you have placed. So while you get rewarded for validating successfully, if you for some reason don't work, if for as simple of a reason as, oh, maybe your internet's out and you can't be reached, then you're actually punished for failing to perform the duties you said you would be willing to do. So the reason why you might want to go ahead and do this is because you do get those payments when you do complete the job successfully.

Robert J. Marks:

Understood. Now, there's something in staking called market maker algorithms. What is a market maker algorithm?

Adam Goad:

So market maker algorithms, they come up as we get into a different topic, a different way of staking, and that is providing liquidity. So let's say that I have Ethereum, but I want to have Bitcoin, so I want to be able to trade my Ethereum into Bitcoin. So in order to do that, I would need to go to someone who wants my Ethereum and can give me Bitcoin. So to do that, I could go to a centralized exchange, Coinbase, Kraken, or any of the other ones that have gained popularity, or I could go to one of these decentralized exchanges known as DEXs. And what they do is they have people provide liquidity to these various pools. And then I could go to one of these pools and I could put my Ethereum into it and it would give me out some amount of Bitcoin equivalence to it minus a fee of course.

If you wanted to stake your money and you wanted to put it into this pool, what you could do is you could say, "Okay, here's \$10,000 worth of Ethereum and \$10,000 worth of Bitcoin, and I'm going to take this liquidity pair and put it into a liquidity pool so that anyone who wants to transact between those two can come to the pool and they can transact with it." And they would give me a small fee. And then for whatever portion of the entire pool that my input to it was, I would get a portion of that fee as a reward for providing this liquidity. So this is another way that you can invest with your cryptocurrency, and you can get very high returns on this. Like Dr. Marks mentioned earlier, you can get somewhere around half a percent if you're lucky with a savings account in a bank.

With these liquidity pools, if you're providing in a good one, especially one that's in high demand, you can get anywhere from four, five to up to thousands of percents of annual return on your money. All of

that's due to the volatility of the crypto market and all sorts of other factors, as well as you have to watch out for scams of course when doing this. But there's plenty of people out there that have millions and millions of dollars put into these pools that are making very good annual returns on them.

So you asked the question of what is a market maker? I didn't really answer that. I jumped up to what is a liquidity pool? So in a traditional exchange like the New York Stock Exchange, there is a book, an order book, and this book lists all these transactions that people have said, "I am willing to sell my stock in, say, Apple, and I'll sell it to you for \$500." And then someone else that has put in an order to the book saying, "I'm willing to buy Apple, and I'll buy it for \$400," or whatever. And then as time goes on, whenever there's a pair of these that match, a transaction occurs. So the order book is how a lot of traditional exchanges do it, and even centralized cryptocurrency exchanges, Coinbase and the like often have order books as well.

But the way these liquidity pools work in these decentralized exchanges is they have automatic market maker algorithms. These are algorithms that control the liquidity pool. So if I come up to this liquidity pool that's going to transact my Ethereum and turn it into Bitcoin, I would just say, "I'm going to give you 10 Ethereum," and then this algorithm will say, "Okay, you have given me 10 Ethereum. I'm going to give you this much Bitcoin." One of the most common ways for this algorithm we implement currently is a constant product market maker algorithm. So what that means is that the product of the amount of Bitcoin in the amount Ethereum must be constant.

Robert J. Marks:

Constant in what sense? In the count number or the value?

Adam Goad:

The product. The multiple of the two numbers must be a constant number.

Robert J. Marks:

The multiple of what two numbers, the number that you own or the dollar amount?

Adam Goad:

I believe it is the value, but different places could implement it differently.

Robert J. Marks:

Okay, thank you.

Adam Goad:

Say when the pool was started, it had a hundred dollars worth of Ethereum and a hundred dollars worth of Bitcoin, so the product there would be 10,000. So if I come up and I want to add in some Ethereum, then there will now be more Ethereum. So to keep a constant product, there would have to be a smaller amount of Bitcoin. So then whatever the difference is between the current amount of Bitcoin and that smaller amount of Bitcoin required to have that constant product is the amount of Bitcoin it would give to me.

Robert J. Marks:

Okay. In a way, it sounds like in derivative tradings, this is kind of like a swap, wherein, for example, the president of Apple talks to the president of Microsoft and they say, "Today, I'm going to give you a

million dollars worth of my stock. You give me a million dollars worth of your stock, and then in three months we'll settle up whatever the difference is. If yours goes up more than mine, then we'll make a transition in order to make the amount the same." Is there any similarity in that?

Adam Goad:

It sounds like there might be some similarity there, but that also sounds somewhat similar to how loans and borrowing work in cryptocurrency.

Robert J. Marks:

Tell me about loans in cryptocurrency. I want to take out a loan. I want to buy a house or a car or a new flat screen television. How do I get a loan from crypto?

Adam Goad:

So loans, in centralized finance, of course, you have to identify yourself and they will perform an extensive background check on you. They'll check your credit score and such, and if you fail to pay back your money, they will send debt collectors and perhaps the court and stuff after you to try and recoup their funds. But in the world of Web 3 you are, of course, anonymous. So if someone wants to lend you money, they can't come track you down.

So what you have to do for loans in cryptocurrency is you have to over collateralize them. Let's say that you have 10 Ethereum and you believe in Ethereum, and you think its value's going to go up, so you want to keep it, but you want to be able to use that money. So you could come to me and you could say, "Okay, I want to get a loan from you for \$10,000." And I'll say, "Okay, if you give me your 10 Ethereum, I'll give you 10,000 USD coin, the stable coin worth \$1 a piece." Then you could go off and you can use that \$10,000 USDC as you please. And we could have terms of our loan of course, so you could owe me some interest, or perhaps there was a limited term on our loan or something. So then if you fail to pay me back my interest, or if you reach the end of the term and you don't want to give it back or you can't for whatever reason, then I get to keep the Ethereum you gave me.

Of course, there is some risk there on both sides. If you take this loan and you use the money from the loan and you're unable to recoup your money or you can't pay back the loan, you've lost your Ethereum. But I also take on risk because if the Ethereum you gave me goes down in value, then I gave you more money than the collateral I now hold is worth. So there would be very little reason for you to come and get it back. And now I have lost some money.

Robert J. Marks:

Interesting. I don't know if I'm ready to refinance my house yet using crypto, but I'll keep my ear to the railroad track as they say. So what advice would you give for people that want to learn more about this, that want to learn about flash loans, liquidity, crypto facts, how crypto works and how to invest in crypto and how to do staking? Where's a good place to learn about this? I would suspect that they have entire courses in this.

Adam Goad:

Oh, yes. So a common saying in the Web 3 community is do your own research. DYOR is the abbreviation you all often see for it. So that's the whole saying of everyone knows there's all kinds of scams out there for everything. So whenever someone gives you advice on something, they don't want to be seen as a scammer trying to trick you into anything or something. So they'll say, "DYOR," or do

your own research. But yes, good question, what does that mean? So to get started with this, I think one of the best places to go to is YouTube, honestly. That's how I got started with it. I just started watching YouTube videos on it. There's lots of good educational YouTube channels out there there that can teach you about any aspect of this really. And you can spend hours and hours and hours learning and getting ready for any kind of adventure into Web 3 you want to take. But then when you want to get down into, "Okay, should I invest in this particular project or not?", That's where things get a bit more complicated with your research. So when you're looking at different cryptocurrencies, there's a term that's been coined called tokenomics.

Robert J. Marks:

Tokenomics, okay.

Adam Goad:

So that's looking at the economics of a particular cryptocurrency token. So you look at things like, okay, so when a new block is added, it adds in a certain amount of currency. When transaction fees are paid, a certain amount of that fee is destroyed. Is the currency inflationary? Deflationary? How is it run? Just all those different things. And it can take a while, of course, to understand what all those are, and also even more to know what you should do based off what they say. And I suppose I am also leery, of course, of providing advice here, and you should do your own research. But yes, there's plenty to look into here and there is tons of people talking about it online. But of course, you should always be aware of anyone trying to sell you something and saying it's a good thing to buy.

Robert J. Marks:

Got you. I know that there are people that call themselves wealth managers and finance advisors. It seems to me that there would be a market opening for crypto finance advisors. Do those exist? Do you know?

Adam Goad:

They do. I know there are some more traditional organizations trying to get on this, and a lot of banks and investment companies are getting into crypto. They've been mainly sticking to the larger currencies, Bitcoin and Ethereum, as far as I know. I don't think they've ventured too far into the more lesser known parts of this. But in the space, there's what is known as an alpha call and an alpha caller. Now, that term started as someone who will tell you, "Hey, I know this information and something's about to happen and you should get in on this." And it still mostly means that, but it has also become more of a broad term for someone who provides advice, provides advice on, "Hey, I like this NFT project. They're doing good things." Or, "Hey, they tokenomics on this new coin look really good. I'm going to invest in it myself." Or, "Looking at the market, I think that Bitcoin is going to drop in the next week and you should sell now and buy on Thursday," or whatever. So just anyone who wants to try to provide that kind of advice is known as an alpha caller.

Robert J. Marks:

I see. Okay. So those are the financial callers, and I'm sure that they set up things like portfolios of different things in distributed finance in order to spread out your risk. I think we've just touched the tip of the iceberg here, and I really want to thank Adam Goad and Austin Egbert for sharing their expertise. And I suspect that distributed finance, just like maybe electric and hybrid cars are something which everybody doesn't have today, but I think they will in the future. And I think that decentralized finance is

going to be something which is just going to be dominant in the future. Fascinating stuff. So thank you for joining us for Mind Matters News. Until next time, be of good cheer.

Announcer:

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