

Darryl Gobbert ([00:00](#)):

Okay, we'll get started. My name's Darryl Gobbert, welcome to the 2016 Adelaide festival ideas and today's session smart money, knowledge that today we get gathered on the traditional country of the Ghana people of Adelaide Plains recognize and respect their cultural heritage beliefs had relationships with the land. We acknowledge that these are of continuing importance to the garner people today, living today, and that we respect their elders past and present a little bit of housekeeping. Before we start, please switch your mobile phone to silent during the session, but you're welcome to connect with the festival through the tweet handle of at ADL FOI. The hashtag is ADL or hashtag ADL FOI. Instagram is also at ADL FOI slash hashtag ADL FOI. Please note that unauthorized recordings are not provided during the session, but today's session is being recorded by radio Adelaide for broadcast and future podcasts.

Darryl Gobbert ([01:03](#)):

As an introductory mark, Mark Pesce is a thinker and an inventor related to which was being a panelist and judge on the ABC's new inventors. He's an author, several books, countless magazine and newspaper articles, a serial entrepreneur, and an educator and teacher. He's a regular guest on radio TV, irregular, and highly regarded speaker and consultant in Australia and internationally, including to the world bank to last year's meeting in Turkey of the group of 20 nations and to Westpac amongst others, he's been involved as an inventor and entrepreneur with the internet and worldwide web. Since the early 1990s over the last decade, mark has become much more focused on the internet of things and connected business, including creating consultancy future street in co founding in 2012 Moore's cloud and internet of things, startup and products have already been shipped. Mark is to speak to us today on the blockchain and in particular smart money, mark says, this is the presentation just completed.

Darryl Gobbert ([02:00](#)):

He wanted to give to the G 20. They probably weren't as intuitive and interested in audience as he is today. As background, it is estimated that there will be 6,000 million devices connected through the internet or wifi this year for 2020 estimates from groups such as Gartner, Cisco and Siemens range from 21 billion to 50 billion. But that in context, that's about six per person across the world. 3.2 billion people are accessing the net security of those devices and there, and you'll use any directions on the interactions on the internet. And wifi are very big issues. Mark May well talk about the denial of service attacks last night, verifiable indicative identification is another. Do you really know who was at the other end? There's an old cartoon. Anyone on the other end could actually be a dog. Mark explained how the and smart money can play a role in this and impacts in other ways, while mark is speaking and in preparation for the Q and a please be thinking about the potential issues and products coming from these ideas that Mark will present today, some of the spinoffs, how they could affect you, your families, your businesses, society, and institutions, such as government as an analogy, think of the way the internet has affected the media, because we're now told the mastheads of Fairfax, press and news are not worth a cracker these days, how you buy and sell cars and houses, book your travel, do your banking, get information and interact socially. I don't think anyone's for sure how the internet and world wide web would destroy businesses like Australia post. This is all effectively in 20 years, the blockchain could be similarly disruptive and creative. Please welcome Mark Pesce.

Mark Pesce ([04:01](#)):

Good afternoon, everybody. I have been looking forward to giving this talk for a year. I did try to give a first version of this talk to the G 20 last year in Turkey. But before we go to Turkey, which will be our

next stop. I'm going to give you a brief tour through the history of money. And I added this slide this morning because I was reminded by someone I was talking to last night, writing, you know, we do all that thing. We've been doing that thing for 5,500 years. The invention of writing, the first examples we have of writing are ledgers. They aren't poetry. They aren't stories. There are people keeping track of things and so money and writing. They kind of have always been together. Now, when I was in Turkey for the G 20 last year, I was really excited because it was in Antalya.

Mark Pesce ([04:54](#)):

Antalya is in the Southeast corner of Southwest corner of Turkey. And I went to the Italian museum because I was looking for this. I know it looks like a lentil hair. We'll zoom in on it. It's about the size of a lentil. That is the first coin. It's not exactly the first coin, but it's among the first coin. So about 650 years before Caesar got it. They started mining coins in this corner of the world. They did that because it was a trading crossroads and traders needed a portable form of wealth to be able to move between the Aegean, Egypt, the middle east, all of these places. And so they invented coins to solve a problem. They were having. It was such a good idea. And this is a slightly later coin. So it's slightly prettier, such a good idea. That coins showed up at three places in the world, three civilizations, nearly simultaneously.

Mark Pesce ([05:49](#)):

They showed up in Turkey. They showed up in India and they showed up in China. And of course we've all seen Chinese coins. They're a little odd because they have holes in the middle and we're like, why would they do this? Well it's because the Chinese aren't stupid. And they realized that if you stick a hole in the middle of the coin, you can stick a string through it and you can carry your coins around really, really efficiently. And the Chinese did this and Chinese traders would carry these vast strings of coins around them. And that all worked out well until you got to the song dynasty 1100 years ago, this is the Chinese golden age. Before you get to industrial era Britain, there was never a culture that was as rich as song dynasty China. They had an actual middle class and they had very wealthy traders.

Mark Pesce ([06:39](#)):

In fact, they had traders who were so wealthy. They could no longer walk around with all the coins they had because they were just falling over. Fortunately, the song dynasty is also responsible for another invention paper. And this is where you get the invention of paper money. So all of a sudden, the traders now start using these strips of paper to mean 10,000 coins or whatever. It would be. The song dynasty bureaucracy figures this out and says, gee, maybe we want to have control over the money supply. And all of a sudden it becomes effectively the first central bank printing the first central bank money. Now Marco polo shows up in China 300 years later sees all of this. It's still going on, goes back to Europe and writes in his book that the Chinese use money made from the bark of trees and the Europeans went, what are you smoking?

Mark Pesce ([07:34](#)):

They couldn't possibly understand how money could be anything other than a real coin. And yet at exactly the same moment. Some very clever folks in Europe are inventing this. This is double entry accounting. So this is the next place you have ledgers in cuneiform. And now you have double entry accounting, which is a ledger with error checking built into it. You can't cook the books. Yeah. And it makes it much easier to catch errors in your arithmetic. Now this gets to be useful because Europe is now starting to become a trading center, which China has already been for a thousand years. They now need to start to move money around in Europe. That's really hard because unlike China, Europe is not

just one big nation. It's a whole bunch of little principalities and kingdoms and this and that. And the other thing. So how do you do it?

Mark Pesce ([08:22](#)):

Well, there are some banking families generally in Italy at this point. And what they'll generally do is tell one of the younger children in the family. I know you like it in Venice, but we're asking you to move to Paris. You're going to set up a branch office, they'll move to Paris. They set up a branch office. And then when a trader wants to move money that maybe they've earned in Venice, from trading to Paris, what will happen is they'll go to the bank and the bank will write them. What's called a bill of exchange. And that bill of exchange will be written in Venice and then presented in Paris and they'll receive payment for it. Now we think of the bill exchange as being this very old-fashioned thing. It's not, it's the check. That's what it has evolved into. And so this is how Europe gets not just paper money, but it's paper money that everyone can have fun with.

Mark Pesce ([09:11](#)):

So that's, you know, 600 BC to 19, 18 65 was all well and good banks were keeping their ledgers on pieces of paper. People were sending checks around. Everything was really fun. And then this happened now, for those of you who may not know, this is an IBM systems, 360, it is effectively the first modern computer. It's a mainframe. So it's big, but it is effectively the world's first modern computer. Now this was a moonshot project for IBM. They spent a billion dollars and bet the company on developing it. But once it came out, every financial institution in the world bought one of these or a clone of one of these over the next 20 years. And for those of you who are old enough to remember in the 1960s and the 1970s, IBM was then what apple is today. It was the most valuable company in the world because they could not make these things fast enough and banking, which for all of recorded history had been done well first on clay, and then on pieces of paper and on ledger sheets, all of a sudden became software.

Mark Pesce ([10:21](#)):

And so in the period of time from about 1965 to 1985 banking went electronic. That enabled something that we're now all really familiar with. Because until you get to an electronic banking system, you can't really have credit cards. You can have a few of them, but how many people would you need to count all of the transactions from all of the credit cards that are coming in all of the time. Now there are billions of transactions per day. There is no army of accountants, big enough to do all of that accounting, but when you can do it with a computer, it all sort of works out. And so things were very good until we get to 2007. And then this happens. The smartphone is the most important physical, cool piece of technology. We will see in our lifetimes in eight years in Australia, it has reached effectively 85 or 90% penetration.

Mark Pesce ([11:26](#)):

The smartphone was released in 2006, seven in America, just in America. In 2020, 80% of all adults on planet earth will use a smartphone. There has never been a technological revolution, anything like that in terms of speed and comprehensiveness. Since we came down from the trees. Now you can use yourself smartphone to pay for things and apple and Google and Samsung have cute little mechanisms that allow you to wave your phone. And of course, if we can get the banks to agree, we can use these with our phones, but all of these payment systems inevitably refer back to a credit card. They're always talking to a bank somewhere. They're always connected to your credit card account. So even though we

have smartphone in our hand, and to give you some sense of it, a modern iPhone has as much computer power as an entire year's worth of IBM mainframes from the 1960s.

Mark Pesce ([12:42](#)):

And of course, apple sells 150 million, 200 million of those a year. So the device in your hand has as much computer power as any bank, or at least as any bank did 30 years ago. And yet we still have to go. So to the bank, every time we want to do something with money because the banks are keeping track of the money. Well, there's an alternative. There's another way to do this on Halloween. In 2008, a paper was published. Research paper was published on the internet, sued anonymously. We actually don't know who wrote this paper. There have been claims. It described a new kind of ledger. So of course you had the original legends, which won cuneiform. You had double entry bookkeeping as a type of ledger. You now have this new kind of ledger. Now this ledger goes by a couple of different names. Some people call it the blockchain.

Mark Pesce ([13:49](#)):

Some people call it a distributed ledger for most people when they hear those words. And maybe this is the first time you've heard those words. Maybe it's not. It's basically saying magic pixie dust because no one has actually bothered to explain how it works. I'm going to explain to you how it works, because it's not hard. Just bear with me for the next three or four minutes. I'm going to use an example now of something that I need to keep track of. And it's something that other people will need to keep track of with me. Now, I travel a lot and I collect a lot of receipts, which I then turn over for payment when I do my travel. And of course, that's something that you want to be transparent about because you want to make sure that your clients know that you aren't bilking you for additional expenses.

Mark Pesce ([14:33](#)):

And you want to be sure that you're getting paid what you wrote. So what I'm going to do now, in this example, isn't going to show you some of my receipts. So I went to Brisbane last week and I had a receipt to take me to the airport and a receipt to take me from Brisbane airport, to the venue where I was talking and another receipt to take me back to Brisbane, airport and another receipt to take me back to my home from Sydney airport. So I have these four receipts and I've shared these receipts with the folks who are going to have to pay those receipts. And we've all agreed that these receipts are perfectly reasonable. And so what we're going to do is since we're in all agreement, that these receipts are perfectly good, reasonable, I'm now going to seal them. And I'm going to seal them with something that we'll call a signature, but that is mathematically known as a hash and all a hash is, is it's a way of turning all of that stuff that you see on the screen into a really big number.

Mark Pesce ([15:31](#)):

Now, the fun thing about that signature is if I changed so much as a pixel in any of these pictures or so much as a number on any of those receipts, that signature wouldn't just change a little bit. It would change completely. So that signature uniquely identifies those receipts fine. That's our first bundle of receipts. We're going to put that aside now. I've been traveling around a lot this week. I went to Melbourne. So I have some receipts trip to Melbourne, to the airport, back again to the venue back again. And then back to my home, this is my second bundle of receipts and the person who's going to be paying the receipts goes, yeah, that looks all right. So we're going to bundle these up as well, but, and here's the little magic bit before we bundle these receipts up, we're going to take the signature from the first bundle of receipts and pop it in.

Mark Pesce ([16:25](#)):

Why do we do this? Let's say I got the evil idea that I was going to fiddle with the receipts and the first bundle I fiddled with them. And I also changed the signature so that the signature and the bundle agree, but because I have the signature in the second bundle, they no longer agree on, you know, that the first bundle had been tampered with. So I put the signature from the first bundle in the second bundle. I signed the second bundle. I put this aside and now I have some receipts from my trip to Adelaide and I'm collecting these, I get another Bondo. And again, before I put a signature on this bundle, I put the signature from the second bundle in. So you see what we've done? The signature from the first bundle is in the second bundle. And the second bond was in the third bundle.

Mark Pesce ([17:19](#)):

So we've created a chain of bundles and that ladies and gentlemen is what a blockchain is. Now. It can get a lot more fancy than that, but this is what it is in its essence. It's just this idea that we've taken things and signed them and then put those signatures in other things so that we can tell that things are consistent. And really what it creates is almost like nested Russian dolls, where you have this idea that each blockchain block in the chain leaves an imprint on the next block, in the chain and the next block on the chain. Okay. So that's, that's how it works in theory. And that's a really simple example. What I want to do now is I actually want to give you a very practical example of how all this works. So there's a company called full profile. What full profile does is full profile actually solves a problem we have in the world.

Mark Pesce ([18:15](#)):

It turns out that when a farmer grows a crop, a grain in this country and they harvest it and they take it off to the weighing facility and it gets weighed and it's graded and it gets stored there. And someone comes along and buys that grain. The farmer does not get paid for it. Pharma might get paid for it 120 days out after it's been on sold a couple of times and it's being turned into bread. Cause then the payment will flow back to the farmer. And if there's a credit failure, anywhere along the way, because someone lied about the amount of money they actually have. All of that risk sits on the farmer and \$4 billion a year get lost to farmers this way, every single year. So what full profile has done is it's created a blockchain, a ledger, and when the farmer brings the grain in and weighs it and grades it, it goes into one side of the ledger and someone who wants to buy that grain has to provide proof in the ledger that they have credit to be able to buy it.

Mark Pesce ([19:07](#)):

And then when there's a sale, there's a transfer of value from one side of the ledger to the other. Now that sounds really simple, but it's actually really hard to do in a deregulated market. Like we have in Australia, we, you don't know the credentials of everyone who's buying and everyone who's selling. But as soon as you have a blockchain, you can affirm that these parties are who they say they are, and they have the, the resources they say they do second example WOA. Right now, there are a lot of folks who bought solar panels because the feed in tariffs were really high and now was run out of money and the feed tariffs had been cut down. And so they're trying to figure out a way to actually make more money than they're getting from their feet in prices. So what they're doing is they're selling power to their neighbors, but it's really hard to track all of that.

Mark Pesce ([19:55](#)):

So this little Perth startup called power ledger has come along to use the blockchain to record all of these little transactions so that everyone gets paid fairly for the energy that they're providing and pays fairly for the energy that they're using. You know, immediately following this solar citizens will be in here talking about what they're doing. Again, this can be a powerful, enabling technology for distributed production, which of course is going to be a big issue in Australia, in south Australia after what happened last month. Now, most everyone thinks about the blockchain in terms of Bitcoin. And I'm not really going to talk very much about Bitcoin here, except to say that when you have a distributed ledger like this, you can create fake money and move it from one side of the column to the other. And everyone who believes it's fake money will give you a lot of money for it.

Mark Pesce ([20:40](#)):

And a lot of people believe Bitcoin is real fake money because they will give you 650 us dollars for a Bitcoin. Right now, one of the things that they wanted to use Bitcoin for was to move money between countries to do this without any fees. Well, there's an organization that already moves money around. If you're a bank it's called swift. And if you've done an international bank transfer, you've probably had to fill out the swift details for this swift exists because you need to have anti money laundering laws. You can't move more than \$5,000 between countries, unless you fill out a lot of forms because governments want to know if you're funding terrorism. And one of the reasons bankers don't like Bitcoin is because it goes all around. All of these laws and Bitcoin has not been accepted by the banks, including the banks in this country.

Mark Pesce ([21:29](#)):

Because when they look at Bitcoin, they think they're going to go to jail. Because if a banker breaks anti money laundering laws, they go to jail. All right? So we come back. Now we live in a world where pretty much everyone in this audience has a smartphone. And every one of these smartphones is connected to the credit system, probably through your credit card. And that's not a bad thing, but it's also not that great because it turns out that to use a credit card and to have a credit card transaction, there's a significant amount of friction. A credit card transaction is always going to cost at least a quarter. You know, if you're doing something with apple on iTunes, apple is going to take 30%, pretty much of what you're charging, what someone on iTunes, they need. That there's a bit of profit in there, but a lot of that's just the overhead of dealing with a small credit card transaction.

Mark Pesce ([22:21](#)):

So we have credit cards that are guaranteed by the banks, but there's a lot of friction around the way we use them. And what this means is that the smartphones that you have, that we're all carrying with us, they aren't really carrying our money around. They're carrying a connection to our credit card and our bank, your wallet has physical money inside of it, but your smartphone doesn't. And this is what's about to change somewhere in the next five years. I'm a futurist I'm allowed to make predictions like that somewhere in the next five years what's going to happen is you're going to see money made for smartphones. What do I mean by that? I don't mean Bitcoin. What we already see is some of the larger central banks in the world, and this, this article is quite old. Now some of the largest central banks in the world have started fooling around with distributed ledgers.

Mark Pesce ([23:24](#)):

So the federal reserve is one, the bank of England is the other one, another small bank called the people's bank of China. And they're all starting to look at how they can use distributed ledgers to create

fully digital money. The nickname for this is something called a fed coin because it's a central bank backed digital currency. So it wouldn't be notes. It wouldn't be bills, but it would still be real money. And it would still be issued by and backed by the central bank of the country, which means bankers would love it because bankers would not go to jail for dealing in it. And because we actually have an entire system of tax code and laws and everything else that knows how to deal with this sort of money. All right. So what would this mean in practice? Well, let's just take a very simple example.

Mark Pesce ([24:15](#)):

Let's say you're going to order an Uber to take you somewhere. And right now Uber has to have all of your credit card details because when you step out of the Uber, they issue a credit card transaction. But what would happen in this case is you'd have a wallet in your smartphone that would have this digital money in it. And when you ordered up your Uber and you left it out, the wallet would actually transfer money. That's inside your smartphone from one app to the other. And that's the magic bit here, because this is the thing we can't do. We have all of these apps on our smartphones and they all want to do trading with one another, but they can't because they all have to go through banks. And there's a lot of friction around that. So you have to think now about the place the smartphone is going, looks a lot more like a fair where there's a lot of booths and you might be running around between the booths and buying things slightly more complicated example.

Mark Pesce ([25:10](#)):

Let's say you're ordering dinner from your favorite restaurant and you want it delivered, but they don't offer a delivery service, but you're going to pay the restaurant through the app. And that app is then going to order up an Uber X and for it through the app. So yeah, there's actually no human beings involved there. It's apps talking to other apps as apps, talk to other apps, they're going to build new value chains. And these are very simple examples. Imagine if you had a real business in manufacturing or something like this, you could do your ordering, you could do your delivery. It would all be happening through your smartphone through apps that are connected together. What's happening is your smartphone is turning into your bank.

Mark Pesce ([26:01](#)):

This should not worry the banks, because if the bank banks are smart, all of those apps on your smartphone, or at least a lot of them that are doing fun things with the money on your smartphone have been written by an or run by your bank. So what kinds of apps am I talking about? Well, some of the apps might be doing investing for you. So that until the moment you actually spend the money on your phone, your money is busy in its investing app earning as much as it can for you. So your money is never sitting idle because it would never have to sit idle. What else you might be retailing. You might be buying things, your phone, be sitting there looking for the best possible price on something that's on sale. And then at the moment that it's their purchases. It, and again, does this without any intervention, you have to think now about the fact that you're not just buying things, but perhaps you're selling things.

Mark Pesce ([26:57](#)):

You're also trading. And so this again, can be happening through the app. And so you can both, you can both spend with the retailing app and you can also receive funds through the trading app. We don't really know exactly what that looks like, but you can think of how Gumtree and eBay work right now. It will be very easy to do apps that replicate that same functionality, but that will run inside your

smartphone. And finally, of course, you'll be able to give to charity. You already have organizations now that will hook into your bank account. And that will round up every payment that you make. If it's 99 cents, they'll take a penny of it's 95 cents. They'll take 5 cents. And that will go into a charity account. You already have those kinds of things happening, but you cannot probably dedicate a pool of money, throw it into the charity, let the charity invest it.

Mark Pesce ([27:41](#)):

You don't lose the money, but the charity gets all of the investment. They get on that and all of this. Well, there'll be an app for that. We don't exactly know when we're going to have the penny drop moment for a fed coin, but I promise you because there's such a disconnect between the smartphone and money right now, because smartphones have to go through this proxy of credit cards to get to the money system. And because there are so many really interesting and also really profitable ways to use digital money on a smartphone, it will happen last year. I actually went to New Zealand and tried to talk the QEs into it. What did they have to lose? Okay. Because we never leave. Well, well, enough alone, even with all of this stuff, that's going on in the next five years, there's something else that I want to really close with these two 19 year olds back in 2014, decided that while the blockchain was good, they could make it better by sticking lots of computer code in it because what could possibly go wrong.

Mark Pesce ([28:44](#)):

And so they created a new kind of blockchain known as a theory them. So it has registers of value, but it also has little bits of computer code. I'm going to give you a very simple example of what that means. So for example, there's a thing called an escrow where there are two parties who are going to exchange value, but they're going to do it when certain conditions have been satisfied. And normally there's a lawyer or a banker who will test to see when those conditions have been satisfied and will affect the exchange of value. In this case, there's no third party. There's a piece of computer code that runs every once in a while and checks to see if those conditions have been satisfied. And when the conditions have been satisfied, moves the money in the ledger. That's a very simple example.

Mark Pesce ([29:31](#)):

Those examples can get very, very complicated, but here's the thing, all of the smart money that's sitting in your digital wallets in 20 years, every last bit of it will have some kind of code attached to it, helping it, understand your needs and respond to your needs and respond to the world around. So it's a way of almost thinking that your money is almost going to be like a squirming pile of worms in your smartphones, sitting there thinking about things to do, talking to itself, talking to the apps, talking to other things in the world, figuring out how to make the most of itself for you. You'll establish the guidelines for this. This is how I like to live. This is how I like to spend. These are my values. These are my concerns. Your money will be able to implement that for you at this point. This is where we run off the map, because I actually don't know what this future looks like. Other than to say it is really, really different than the way we think about the way money works. My closing thought for you. Remember how I mentioned that coins were invented three places in the world at roughly the same moment in time? Well, we've had this happen again because 2007, we got the first smartphone and in 2008, we got the first blockchain. I don't think this is really an accident. I think these are two sides of the same coin and that coin is smart money. Thank you.

Darryl Gobbert ([31:26](#)):

Okay. We know we didn't have time for questions. There should be a microphone moving around. First question. Yeah.

Audience member ([31:32](#)):

Sorry. if I'm reading it right, it means that governments are big losers because why would you authorize what is effectively a completely separate currency over which you have no control?

Mark Pesce ([31:46](#)):

You know? No, no, no. These are state back. These are issued by the central bank. So they will be issued by the reserve bank. It will be issued by the federal reserve. It'll be issued by the bank of England issued by the bank of China. So they will be issued by them - so that they will still control the money supply.

Audience member ([31:59](#)):

Why would they stop at one lot of Bitcoins? Why wouldn't they just keep issuing?

Mark Pesce ([32:04](#)):

But that's, what's, that's what governments do. Yeah, no, but that's what governments do. Governments control the money supply by printing money. That's what they do. That's called macro economics. Right? So so I'm, I guess I'm not quite sure what the question is then. I mean, Bitcoin is it's limited, it's artificial scarcity and is a deflationary currency, which when you tell that to an economist, they, their eyes tend to roll up in their forehead because it breaks all of the established rules of economics and how macro economics should work. The state currencies will probably work exactly like our printed currencies do today.

Audience member ([32:37](#)):

So they actually can maintain control over them?

Mark Pesce ([32:40](#)):

Well, you can't. Okay. So the interesting thing is because it's on a blockchain, you can't just counterfeit. All right. Because the way a blockchain works when it comes to money is you actually record that as an entry in the ledger. And if someone tries to spend money, that's already been spent, you can't because you actually check the blockchain and there is a record of that transfer happening. And so that, that Tran that spend is not allowed. So, yes. So it's just when you issue digital currency, because it's on the blockchain, it doesn't have the same infinite copy capabilities that other digital items like music files do. Okay. All right. So I was not clear on that and thank you for making me make that point. Thank you. Yep.

Audience member ([33:21](#)):

This could be a bit of a follow on to that. I'm aware that I think at least one country is looking at eliminating paper currency because they view it as a basically an opportunity to fund crime and to move to digital currencies. What safety checks are there for blockchain type technologies, blockchain currencies w how do you mean by safety checks? Well how are you going to, how, how are governments happy with the with people using blockchain technology to pay for things? Who's keeping an eye on it.

Mark Pesce ([33:58](#)):

So do you mean, like who's keeping an eye on the tax office? I'm not sure what you're asking.

Audience member ([34:04](#)):

Yeah, it's a bit of a vague question, but are there opportunities to manipulate blockchain currencies for evil?

Mark Pesce ([34:14](#)):

Okay, so this, this, this brings up an excellent point and the answer is with Bitcoin, the manipulations are subtle, but they're being done. So it's possible to control a large network of computers and influence Bitcoin that way with a theory in which I touched on, because there's computer code involved and code is always buggy. There was a large project called the digital autonomous organization, which you should Google because it's an interesting story. That went live was a 6,000 line piece of code that was supposed to function as a venture capital fund. Someone found a bug in that code and managed to spirit away a hundred million dollars before the bug was found. What they did was actually the Ethereum community decided to delete all of the blockchain records, where the thief had actually transferred the funds. So they basically reset the clock in order to fix that, but that's a social fix to it.

Mark Pesce ([35:12](#)):

So the answer is none of these systems are perfect. I don't think there's any guarantee that they're going to be more perfect than the systems that we have today. But what they're going to have is some flexibility with the way we use devices now, but you're always going to have people who will go my God, there's money on that smartphone, how do I steal it? How do I spurt it away? And what you'll probably see in fact is a generation of apps that will effectively function as con artists, right? And so there becomes all sorts of issues of you don't run away from issues of trust when you get to digital money, even when you're using a blockchain to assure that you can't spend something twice, because there's always going to be people who are trying to lure that money away from you. So it's a good question, but the answer is we're, we don't have that. It doesn't fix that problem.

Audience member ([35:57](#)):

Just moving away from money, it listening to you, it seemed to me that you use blockchain to keep personal identifying information over your lifetime, like health records.

Mark Pesce ([36:09](#)):

Yes, very much. So there's a bunch of interesting projects that are going on around that. So identity is one that they're trying to work on. So you basically have affiliated identity where you have for instance, all of the state governments, and maybe all the retailers would affiliate and helping to identify that you are who you say you are, as well as you. So there's no single point where your identity can be hacked and stolen. So that's one medical records is another medical records involved, both authenticity. This is the person's real record and security making sure that unauthorized people can't read those records. So you don't just use the blockchain. You use other techniques of cryptography to be able to do that. We've seen a number of examples. So you probably want to take a look, Google Astonia Astonia has an entire system that they're building around both, not so much the blockchain, but around cryptography, to be able to provide access nationally to medical records, but to do it in such a way that only the patient releases those records to the doctor, because they only have the keys to that data. And so we can see these projects happening around the world. Right now. I actually had someone come up after a talk I gave yesterday, said he's collecting Fitbit data, and he's putting that Fitbit data on the blockchain, and he wants to be able to secure it so only the doctors can do it. And there are ways to do it.

Darryl Gobbert ([37:28](#)):

Excuse me, sir. Can you just wait, the other truck was there first. Sorry.

Audience member ([37:34](#)):

Thanks mark. That was a terrific, terrific explanation of a difficult thing to explain. I, I guess I want to engage you on the question of the extent to which central banks have to cooperate and help engineer the kind of world that you've imagined, because there has been available to central banks since the internet existed. And certainly since the worldwide web existed, the capacity to run the payment system, I've in fact written a paper on this called central banking for all, which would enable us to do what we do with physical money with electronic money. So I can, sorry, please finish. So I can take I can take an IOU from what was Glen Stevens and is now the new governor, Phillip Lowe, out of my pocket and I give it to you. And that IOU is transferred directly, but the 97% of money that is created by commercial banks and sits in their balance, sheets cannot be transferred. I can't transfer from my account at Westpac to yours at ANZ, except through the banks, the banks and the central bank has been in a position where it could have cooperated with an arrangement, which was much more efficient.

Mark Pesce ([39:08](#)):

No, you make an excellent point. So I was one of the 300 people who were a researcher who was at the very first conference on the worldwide web. This is in Geneva in may of 1994. So Tim Berners-Lee the father of the web. It put this conference together. I was, I was invited to show some of my work at the time Tim organized the program, the very first speaker he had speak, he came to the podium, just said, hello. And then he invited the first speaker was a man named Dr. David Chaum, who had done all of this work and what he called digit cash. And the very first thing that he showed at the very first web conference was a transfer of value between parties that didn't need a bank. And I'm sitting here in the audience going, why would people want money on the web?

Mark Pesce ([39:48](#)):

Because I was a little deem. And so we'd had the technology on the web since the beginning of the web. That's not really what's driving it. It's not technology possibility that's driving. It is need. So we see the coins come from the need for traders to be able to trade. We see paper, money coming from the fact that people are now falling over because they've got so many coins on them and so on and so on. And so on, the forcing function now is the smartphone. So the disconnect between the money system and the smartphone is the thing that will force the trading system into this because trading systems are inherently conservative. They do not like novelty because novelty is not, it's not good. It's leads you to unknowns. And so the trading system is now being forced in this direction because you now have a planet of everyone with smartphones. And in fact, it may be led more in the developing world where people are unbanked and don't have credit cards, but we'll have smartphones. So it's just as likely that we'll start to see this out of India before we see it out of America or China before we see it out of America or Australia. But the forcing function is that combination of smartphone plus a technology that is now secure enough, the blockchain that it can be used on those smartphones. It's a good question.

Darryl Gobbert ([41:02](#)):

Can someone get ready for the next question is there's one more question.

Audience member ([41:05](#)):

I think my next question is a bit more simple bit churn. All those digital technologies seem to be very good at stopping you from spending money that you don't have. Most of the money I spend, I don't have. So how have digital currencies dealt with the issue of credit?

Mark Pesce ([41:27](#)):

That's a, that's a really good question. And I think the answer is that's one of the big roles that banks are going to be playing forward. All right. The banks, so you'll have cash and you'll have your smartphone bank, whatever it is, your apps doing all this stuff on there, but you'll also be backstopped by a line of credit because your mortgage is a line of credit, your credit cards or lines of credit. And so the banks will be very much deeply involved in that because there'll be able to credit hedge this. Now the question is whether it needs to be a bank that's in this big building, or whether that's a bank, that's more in an app, you look at Niebank right. Which is basically all run online. They don't really have any branches they're already sort of halfway there. So the question is not, does it connect to the credit system because clearly it will. It's what does the bank look like in 20 years when it's in an app and not a building filled with people?

Darryl Gobbert ([42:17](#)):

Can you, you got a minute left, can you talk quickly about that electricity issue in Western Australia? Cause I think that's really well.

Mark Pesce ([42:26](#)):

Yeah, that's right. Okay. So power ledger. You want to go Google them, power ledger.io is, is the company. By the way, I will be posting the entire text of this talk to medium this afternoon. And that will go out on Twitter. So if you follow the festival Twitter, you'll see all of that and I'll have all the links. But power ledger is the company that is doing this NWA right now. And they're dealing with bunches of retirees who are basically living in sort of small communities, I think on the south coast who have put solar panels in and make more money if they sell to their neighbors. Then if they sell to the grid because the grid is just not even paying them very much money anymore. And so what powerlifter has come up with is a way to do the accounting because the accounting is the hard carry bit there. And so if you have a system to do accounting, you've effectively removed all of the friction from that. And so, so as citizens, as a project, to be able to get more people, to buy panels and install panels and to trade power and to trade battery power, they do all of these things now has a core technology that they can use as an enabler to make that easier and cheaper for people.

Audience member ([43:34](#)):

Thanks, mark. In Australia, the new payments platform is coming next year. So that's a step by the reserve bank. One of the main drivers is that for instantaneous payments using an alias things like a mobile number, email address, do you see that as a step towards this in the future, or it has a lot of similarities in a way that...

Mark Pesce ([43:53](#)):

I think that the NPP will be able to support both credit transfers sort of stuff that goes between the banks and digital currency. So I think that that's the, that's the question around that, but the NPP is really around things that go through what we think of as the payment system. So the things that are going to a bank or going to a retailer through a bank, the way we use money right now. So what we're going to see as a hybrid, which will be NPP, which is when stuff goes into the banking system and stuff,

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still going to the banking system. I mean, I don't think you're going to keep your life savings in a smartphone app. No, no, no, you, you may, if one of those apps is a bank, that's again, NPP, that's sort of keeping it safe for you, but there's going to be, we don't really know how all that's going to be, but it's going to be very much a hybrid around this. NPP has sort of been designed for a lowest common denominator right now. And so it's really going to be up to the bright young people to be able to build really interesting apps on that. And some of those apps will start to sort of push the envelope between what we can do with digital currencies and payment systems. Excellent. Last question. Thank you all very much. [inaudible].