

## Sheila Warren podcast audio final.wav

**Charles Miller** [00:00:00] Welcome to CoinGeek conversations, and my guest this week is Sheila Warren, who is head of Blockchain, Digital Currency and Data Policy at the World Economic Forum. She's a graduate of Harvard Law School and worked on Wall Street before turning to philanthropic enterprises more than 10 years ago. Since then, she's designed and launched NGO Sauce, which helps philanthropic organisations deal with the legal aspects of international projects more efficiently. And she works for Tech Soup, an international network of NGOs that provides technology and technical help for charities. So what can the World Economic Forum do to help Bitcoin and blockchain make the world a better place? That's what I'm hoping we'll find out. But, Sheila, thank you so much for joining me today.

**Sheila Warren** [00:00:45] Thank you for having me. It's a pleasure to be here.

**Voiceover** [00:00:49] You're listening to CoinGeek conversations with Charles Miller.

**Charles Miller** [00:00:55] I wanted to start by asking you about some of the practical work that the World Economic Forum does under your leadership, because people might think it's just a question of committees and sitting around and discussing things - which ...nothing wrong with that - but you actually get out there and are involved in practical projects. You've done the Mining and Metals Blockchain Initiative and more recently, something called the Transparency Project in Colombia, which is really interesting. Could you just tell us a little bit about what that is?

**Sheila Warren** [00:01:29] Absolutely. So our transparency project was designed to focus on corruption reduction. So looking at anti-corruption measures within the country of Colombia. Everything we build, we take into consideration other geographies as well. But in this case, the pilot was focussing in the country of Colombia and through a series of workshops there, we established that one of the major places where corruption was rampant was somewhat disappointingly in the school food programme. So the provision of food, nutrition to schoolchildren across the country.

**Charles Miller** [00:02:03] Getting contracts to provide that service.

**Sheila Warren** [00:02:05] That's right. Exactly. Exactly right. So we began by really problem scoping. We went in and assessed where was the actual issue. The bidding process was being run by a system, a computer based system, online system for this kind of collection of this kind of procurement of information on this kind of procurement model. And what we realised was that there was actually a potential role from blockchain to assist with more transparency in that process for the purpose of really highlighting areas where there might be corruption, setting off a flag, essentially, and ensuring that there was then appropriate accountability for that information. The premise of this project, though, I think is really, really interesting, which is, you know, there's a lot of talk in the blockchain space about transparency, as if it is in and of itself this good. You know, things are more transparent than they are necessarily better. And that is obviously nonsense when it's interrogated even briefly, because certainly if you don't have, as an accountability partner, any sort of idea what the information that is being made transparent is, if you can't reference the information, if you can't parse it or make sense of it, if it's not downloadable and accessible for these kinds of things, that it's really largely a useless exercise. And as a way of kind of washing, transparency, washing. Right, saying, 'oh, look, everything's

available'. But as a former lawyer, I know that, you know, data dump is a real thing. And if you can't sift through, it's meaningful. It's not actually helpful.

**Charles Miller** [00:03:35] So what kind of authorities were you having to get agreement from in Colombia? Because presumably, if they were so happy to take part, then they thought that there wasn't too much of a problem that was going to be solved by this?

**Sheila Warren** [00:03:50] Oh, I'd say it was actually quite the opposite. So we had two partners on this. One was the Inter-American Development Bank, who is a core partner on this. They were interested in looking at something in Colombia that could scale across Latin America in line with their interests across that region. And the other was the Inspector General's office in the country of Colombia. So they are basically tasked with doing audits and other things at other government departments to ensure that those departments are adhering to the law and are doing right by citizens, essentially. So we had full support from the government of Colombia.

**Charles Miller** [00:04:24] So just ...most people probably haven't thought about this. I certainly hadn't thought about this before. And one wonderful report I read about it said that you'd used blockchain technology "to better understand school meals". (laughs) But just see if you can get us one step better than that in understanding actually what was involved. So how does the blockchain stop corruption in principle?

**Sheila Warren** [00:04:54] Yeah, you know, I would say it's not so much. Well, a couple things. So I think when we think about corruption, we're talking about human behaviour and there is no technology that is going to change human impulses or even human behaviour. We can only shape human behaviour. And how do we shape it? We either create carrots or sticks. And it's just this is basic human psychology. There's nothing that's really different. And what I think is interesting about blockchain is how do you create those carrots and sticks? How do you construct those incentives? So, again, this is where I get back to the idea that transparency in and of itself is not an incentive. Transparency that has accountability built into it. So in this case, the fact the Inspector General's office, which actually is empowered to go in and root out this corruption and assess penalties and fines and whatever it might be, criminal penalties in some cases, this kind of activity, that the weight of that was behind this is significant. That's an important thing to note. Number one. Number two, the idea that there are more checks in the system, there's more gating there, more opportunities to actually spot corruption is, I think, a deterrent. It does provide deterrent value and it incentivises better behaviour. The idea is it's easier to get caught. If you do get caught, the consequences are swifter, quicker and if this is up to the Colombian government, they can be even more robust because you can be more certain that the corruption is actually real.

**Charles Miller** [00:06:15] And those sort of checks are things like using time stamping, so that people can't change their proposal at a later date.

**Sheila Warren** [00:06:27] Exactly. Which was a rampant thing that was happening. There'd be almost a mock proposal, if you will, like a straw man submitted that would then get changed out with corrupt actors, with different motivations for that. So the idea here is the immutability of the record provided an opportunity to basically ensure that there wasn't that kind of change happening downstream or if there was some sort of change of the record kind of in a new input, you could see that. It would be recorded in a way that was very easy to spot.

**Charles Miller** [00:07:03] Now, if I was somebody who wanted to provide to get the school meals contract, how complicated was it for those people to use this system? It sounds pretty complicated.

**Sheila Warren** [00:07:16] Yeah. So that was a key part of this because there was an existing system, remember, it wasn't built from scratch. There was an existing system called Seekup (?) that was running. And so the idea was to mirror that UX as much as possible. And in some cases, to actually hook in to that existing system. So use, you know, certain parts of the rails of it that were actually fine, you know, and not provide too much diversion, both from the standpoint of the user could go in and put in that request to engage in the programme, but also on the back end from those staff people within the government who were actually having to learn new processes in order to engage with this. The idea was to take something that had a way of doing it that could be improved. So to some extent, you know, it was looking at systemic change from the standpoint of bringing more opportunity for more actors to have access to the information, adding immutability. But it was incremental from the standpoint of a process already existed. And we tried not to mess too much with that. So there wouldn't be this very dramatic change, which is, again, it's very similar to moving on a legacy system.

**Charles Miller** [00:08:22] So did the people who are making the bid have to be given some sort of basic instruction? 'This is what a blockchain is and this is how it works' and stuff or did they just not even have to engage with that?

**Sheila Warren** [00:08:34] The idea was to keep that is invisible as it could be. So there were some notifications from kind of more of a, you know, FYI sort of, you know, this idea. But the reality is that our whole view is that blockchain, you know, will have made it, we'll have arrived when it's invisible and you don't need an understanding of blockchain us to use most systems, I would argue. You can buy Bitcoin without understanding anything about how it works, so similar.

**Charles Miller** [00:09:02] I thought there was a sort of refreshing honesty in the report where you talk about some of the problems and this little bit: "it is also important to note blockchain technologies' inability to reduce corruption risk in certain human activities that can occur outside any electronic procurement system, most notably bribery or collusion amongst vendors or between vendors and tenderers". So that is very honest, but it is rather a major limitation, isn't it?

**Sheila Warren** [00:09:33] It is, and I think it's something that we have been very open about from the very beginning of our work, which is to say this is a technology, it's not a silver bullet. You're not actually changing human behaviour. Again, you're creating different incentives. You're shaping the path differently. You can create new carrots and sticks. But the fundamental impulses to cheat and lie are going to remain in people that have those impulses. All we can do is try to figure out ways to not just chase and root out that kind of activity, but to stop it because it becomes so costly to do it, the risk becomes so high and the chance of getting caught is so high. But yes, there's a lot of off-chain activity that a chain can never affect because literally the activity is happening off chain. So you can't really affect a lot of what's going on there.

**Charles Miller** [00:10:17] Right. But you found the results sufficiently encouraging to continue with the project. I mean, what would you say you learnt from this that you didn't realise before?

**Sheila Warren** [00:10:33] Well, number one, I think the realisation of just how persistent corruption really is. Now, that's certainly known. You know, it's not a surprise, but I think for us not necessarily having deep experience in that particular area, it was quite a revelation. And it's something that I think most people don't really realise just how endemic corruption is and just how comprehensive I would say is the right word, you know, corruption is.

**Charles Miller** [00:10:59] Are you saying then that even with this process in place, the result included some corruption?

**Sheila Warren** [00:11:08] Well, I would say that's almost certainly the case. You know, I would say that's kind of our note that there are so many opportunities in the current system. Now, remember, we were looking at a relatively narrow part of the process. So another area where there was a lot of corruption was in the delivery after the bid was received. We didn't address that at all. So someone might very fairly get the bid. And it might be that it's all done correctly. The bid goes to the right player. That's all handled in a very upfront manner. And I would say that that is what this system engenders. However, when it comes time for delivering on the contract, we're not policing that so we can prove what was supposed to happen. And all of the indicators are there, what was supposed to happen. But one of the reasons we chose this particular project is because a few months prior to our going down to this series of workshops, the first time there was this big exposé by an investigative journalist who found that in some cases, you know, the basket of greens delivered to the school had, you know, whatever it was, kale or whatever on the surface layer and rocks underneath to make weight. We can't address that, right? So no contract that you have is going to prevent that kind of blatant misuse of the system. So, again, is there corruption in the a school food programme that is operating this way? Almost certainly, yes. And a lot of it is something that we did not even attempt to address with this engagement. We were looking at a narrower problem.

**Charles Miller** [00:12:32] Now you were using the Ethereum blockchain. As you know, CoinGeek is a big supporter of Bitcoin SV. And one of the advantages of Bitcoin SV is its ability to scale. I'm wondering whether the success of the project did depend on the choice of blockchain and whether it has made you think that that is going to be a critical aspect in future, or whether it's made you think, 'well, all blockchains are kind of the same' and so that really wasn't the critical factor.

**Sheila Warren** [00:13:06] It's interesting question, and I think opinions on this differ even on the team. I think, you know, for me, I do think that every protocol is different and it has different strengths and weaknesses. I think that is a reality. I think it depends on the lens you're taking it and how closely you're looking. When you step back up, you know, a couple of levels, yes. I think fundamentally there is a huge similarity in the way that, you know, most of the major, I would say, blockchain protocols approach design and some of these questions. But those distinctions, I do think, are important. And I think they are important when you're thinking about legacy systems that you need to engage with. So if you're building from scratch, I'd be more inclined to say, you know, it's a more green field in some ways. When you're looking at connecting into an existing system, I think you then have to examine what are the on ramps and off ramps, what are the functionalities that are really needed? How developed is that application or that functionality on a particular protocol? Some of this is coincidence. It's where the focus has been of the developers on that protocol. It's not that another one couldn't do it, it's that it wasn't the focus. Right. But there is the reality that there's different attention paid on different protocols to different kinds of things. And some of those things are really important for particular use cases. And I would say that is just self-evident and kind of I would say incontrovertible.

**Charles Miller** [00:14:26] I think people supporting different protocols agree that there are trade-offs that you have to make. They just don't agree on which are the most important ones to prioritise.

**Sheila Warren** [00:14:37] Exactly. And I think when that's where it gets interesting to put in the vector of the use case because different use cases have different needs, obviously. I think that's again obvious and part of what we focus a lot on its problemification. So we'd start with the problem. And then we figure out what is the right thing. Now, in this particular case, it's a combination of what was actually really needed, the legacy system, these kinds of things that just made, from smart contracts, some of these things just be kind of an easier uptake for Ethereum for a variety of reasons. So, yeah, but we don't take any position, as I think is widely known, on any of the different protocols. We certainly don't. We think that it's kind of like how I feel about digital currencies. I think that there's room for a variety. I think it's important to have a variety. I actually want to see that for quite some time before we if we ever do see, like, full convergence onto one specific protocol. I think it's important to have a time of experimentation and to really stress test different of these trade-offs and stress test them in the real world to see what the consequences are.

**Charles Miller** [00:15:44] Yeah, I see that one of the other things you do at the World Economic Forum is that you've got a Digital Currency Governance Forum. And actually, also this week, the governor of the Bank of England has been talking about the idea of central bank digital currency. I'm wondering what your thoughts were about that. As the World Economic Forum, is that something you would be encouraging or just watching with interest, or what?

**Sheila Warren** [00:16:17] So, again, you know, I certainly think that there is room in the world for multiple instances of a CBDC. Similarly, I think there's room for a stablecoin. And similarly, I think there's always going to be room for crypto called it 'pure crypto', if you will. So I think they serve different needs at this time and they will continue to serve different needs as they are developed and as the attention of those communities begins to focus on particular use cases. So for CBDC, we issued a CBDC policymaker's toolkit in Davos this year. And part of it we tried to walk through was some of the considerations, give a kind of holistic overview of what should you be thinking about if you're contemplating the launch of the CBDC? What are the pros and cons? Where is it needed? And one of the things that we say pretty illicitly is that you don't necessarily need to have a blockchain-backed CBDC. You could actually do this issuance without a blockchain. And there are reasons why that might be something that is a more easily accessible pilot, for example, or easily accessible experiment. So there are a variety of things where we try to always be very pragmatic in our approach. And I think our general view on both digital currency and on the technology itself is that of, you know, practical optimism. Like we definitely think that there is a need for this. We also think that there is a tendency still to overhype it. Do most countries need a CBDC? Probably not. Is the world trending towards more digitisation of money? Of course, that has hopefully been incredibly obvious in the past decade. So is CBDC kind of the latest example of that? Possibly. If you're not thinking about CBDC, exploring it, that's not a good thing. Everyone should be thinking about this. And really everyone is when they're saying it publicly or not. Who's going to issue first? Probably China. And so these things are just kind of known. Right. So I think the question is, are our countries really prepared to not be fully reactive to whatever China does do. But to have a strategy that makes sense to their jurisdiction. And that is where we kind of give the guidance, where we say 'make sure you are ready. You understand your citizens' need to understand your currency. You understand your place in the world economy. You understand your

ambitions and goals like make your monetary policy. Make sure you really thoroughly understand that.' Because the tendency is going to be when the big thing happens, whether out of China or wherever else, for everyone else to scramble around and react. And that in my mind, this is not something you should be doing lightly or quickly or in response. It should be a strategic decision that an economy makes because there are reasons to kind of move in that direction. Now, at the same time, I think it is important to be forward thinking. And so I certainly know that most economies, most central banks are quite familiar with the technology, so that when the time comes, when that transition to a blockchain backed financial system happens, they're not going to be caught unawares. But is that something to experiment with and put money into invest in right now? That is a very case by case, you know, custom analysis.

**Charles Miller** [00:19:28] I mean, one other dimension of this that could be important is the trans-national. I'm thinking of Libra and other projects like that where your national currency potentially will have new rivals in these company-owned currencies. I think I saw you generally making a positive comment about Libra. But do you see that as a good thing? And that we hope that all comes to pass?

**Sheila Warren** [00:20:03] I mean, so, again, I sit in a privileged position because I am not actually building any of these things, like, my role is just to kind of observe and comment on their value as experiments. And I think it's a hugely important experiment. And I'm very excited about seeing what happens with Libra. What is the adoption rate that they think they're going to get because of the backing they have of certain companies and others? Is that a thing that could help us scale to mass adoption which we have not yet seen? Is that the ticket to doing that? And what could we learn from that adoption model in other areas that have nothing to do with currency?

**Charles Miller** [00:20:39] Bt when you're talking to governments, I would imagine they're not as enthusiastic about that as you are.

**Sheila Warren** [00:20:48] You know, in general, it kind of depends, as usual. I think one's comfort level with a potential rival depends entirely on how secure one is in oneself. I would say, you know, for many countries, it's not really a threat necessarily. They're watching the experiment to see, again, what they can learn. I think for some countries it's quite welcome because it might be an option for them to not have to do certain kinds of, you know, builds that they may not necessarily want to do. And I think for some, it is a very real threat. Yeah, absolutely. So I think it really again, it just depends on who you are. I would say there's diversity of opinions in every single economy as well. The politicians might have a different view from the bankers, from the you know, the regulators, you know, this kind of thing.

**Charles Miller** [00:21:35] In general is it more of a threat to the big, strong currencies or the smaller, weaker ones?

**Sheila Warren** [00:21:43] You know, it's such an interesting question, right, because you think the answer would be obvious. And it really isn't. And again, the answers vary depending on who you're talking to within a strong or weak currency system. Right. So in some cases, the politicians in the strong countries are opposed because they see it as a political threat to, you know, political soft power and this kind of thing. But sometimes in the weak countries, this is an area where they could actually be an innovator. So they actually see it as a threat because they want their jurisdiction to be the one that is like doing this innovative thing. And, you know, maybe something like this comes across and

they don't have the same cache, you know, whatever. Sometimes it's the reverse. Like in some cases you've got people that almost say 'better, this kind of corporate, you know, backed basket situation than whatever we're doing, whatever China's going to do. Maybe China is a bigger threat, you know? So it all depends on your perspective. A lot of this is caught up, of course, in soft power. And, you know, currency as sovereignty, like all these kinds of concepts. You can't divorce any of this from those considerations. But in my mind, I think that my view is, feel what you want to feel about it, there's a reality to this. And the reality is, like they're there you know, they're doing stuff. So it behoves everyone to pay attention and to glean from that experiment what we can. And in my mind, again, as I've said before, I think that a multitude of experiments is what I am very excited to see, because I think that we are still, despite what some claim, we are still very much in the learning phase of this technology, even when it comes to money, which is the original, you know, obviously application here, but we've a long way to go. So I'm all for it.

**Charles Miller** [00:23:23] As you say, that money was the original application. But you also put a lot of work into the blockchain side of things - data and so on - and supply chain. You had a group of experts in the Global Blockchain Council who were working on something that was at one point called the Blockchain Bill of Rights, I think.

**Sheila Warren** [00:23:47] Some still call it that.

**Charles Miller** [00:23:47] It's also called the Presidio Principles. And I just wanted to ask you a bit about that. So, just for people who haven't come across this, it's basically a statement of good practice in blockchain development and it's things like this: that users "should be able to grant or deny permission for their data to be accessed, manipulated or destroyed in its entirety". So things that you would hope that entrepreneurs will sign up to and then they get a sort of stamp of approval. Is that right?

**Sheila Warren** [00:24:25] Yeah, I wouldn't say it's so much a stamp of approval, it's kind of a self-certification in a sense. And I should note that the Presidio Principles are aspirational in nature. So there are 16 principles and we don't actually think that most applications will currently meet all 16. They're meant to be a bit of a north star. What is the direction we should be moving? And the real impetus behind this... so I'll back up a bit: the Global Blockchain Council is comprised of people with very, very strong opinions that cover the spectrum. Bitcoin maximalists to sceptics about blockchain to begin with, people who are not even convinced it has legs. And then we've got enterprises, governments, you know, other start-ups others, some funders, et cetera. So the idea was, the immediate notion of this group when we first met, was this is something that's missing. There's something like this that is missing. And part of what is happening or what happened took me during the ICO craze was that we saw really fake projects that didn't leverage the blockchain in any meaningful way. That no characteristics of blockchain were relevant to the project. They just kind of shoved the name in there and moved on. So how do we guard against that happening again? Because certainly we're going to enter - I think all of us who are bullish on the space agree - there'll be another hype cycle phase that comes up at some point, you know, etc., as people really understand the real root of the technology and what it can do. And as we start seeing more proof of that in the world in real use cases. So how do we then say 'if you're not actually leveraging the blockchain, first of all, you should really stop and think about whether you need to be building on a blockchain, hooking into a protocol or whether you can build your thing, you know, in some other way'. And secondly, you really shouldn't be using that to market your application. So it's focussed at the application layer. It's specifically not focus on the protocol layer, it's the application layer. And the idea is to really say 'here are principles that we think should be

used as gating. As part of your in your design sprints or whatever it might be, if you're a fundraiser or criteria for your portfolio companies, just think about these things regularly. And if you're not meeting them, we're not saying that's bad. We're saying there needs to be a good reason why you are claiming to be a blockchain-backed application if you're not meeting these'.

**Charles Miller** [00:26:39] One question that struck me when I was reading those principles is that it would be great if you could get a lot of Internet companies to adopt them because some of the promise of blockchain is to liberate us from surveillance capitalism, where our data is used often without our knowledge sometimes even without our permission. And I mean, are you optimistic about the prospects for that? And how much do you think that is going to depend on people's awareness of these issues? Because to some extent it will. If if nobody cares, then, you know, business as usual will carry on.

**Sheila Warren** [00:27:29] You know, that is such a great question. Am I optimistic about it? No, I would not say I'm optimistic about it. I'll just answer that question bluntly. However, that does not mean I don't think it is very much worth paying attention to and even fighting for. And the reason I'm not optimistic is because, you know, despite the attention paid to things like facial recognition and other things this pandemic has brought about. Right. There's more understanding and a sort of response to say, 'hey, it's not OK'. And despite even the movement towards freeing our data, like free data, that kind of thing. There's no question those movements have momentum and they're very important. I think I just see a little more what happens behind the scenes and not just by companies who are often the bad guy, but by governments, you know, and the way that data is ...the sheer volume and flow of that data. And so I am sceptical that that tide can be appropriately stemmed. What I think we can do - and I also lead the data policy team here at the Forum - what I think we can do is start to articulate what are appropriate uses for that data. So not so much that we're stemming the tide of flow because it's just very, very hard to do that. And not just that we're saying X kind of data PII, you know, that data can never be shared because it just doesn't make sense. Like, there are cases where I don't care about my PII and there are cases where other data is more sensitive to me. I actually care far more about other kinds of things I do about some arbitrarily defined data. Now, I don't want to say that the whole concept should be thrown out. But I think that there is definitely an over-emphasis on the notion that you can classify data and say that this kind of data should always be private, this data should never be private. No, it just doesn't really make sense to me.

**Charles Miller** [00:29:20] Isn't that part of the premise of blockchain, that you will own your data and you can say yes to this part and no... This person could look at this bit and this person could look at that bit. You're saying that you're saying there's not really a desire for that?

**Sheila Warren** [00:29:37] That's what I was saying. I don't necessarily feel like the vast majority of people really care. And the reason I feel that way is because I think we've all seen how quickly people are willing to sign away their rights, you know, for not just, the pandemic is often used. And that's an extreme example, which is a general matter. I mean, I'm a lawyer, right? When I'm in a rush, I will still click on whatever acceptance to get what I need to get to go where you to go. And I am one of the more highly educated people on the consequences of doing that. Now, I, unlike most, will go back and then amend the thing later. But like, the damage has already been done, right? Like I already sent, it's in the stream. So, you've got to do it at the very beginning. Going back and editing it later



doesn't really make ...that's not how it works. And I just know that from just even anecdotally, people just don't do that. They say they care but their actions speak a lot louder than their words. So all that is a long winded way of saying until I think there is some actually enforceable regulation in this area and more accountability that comes from an authority that is actually considered scary by those who seek to kind of abuse this free flow data, I think we're going to be in the same situation that we are currently in, despite the fact that we do have a technology that every day gets closer to helping us create a better system. So I guess I'll end that kind of dark analysis by saying that that's that's really kind of a short to medium term pessimism. I do think in the long term, clearer minds will prevail. You know, I think that there is a generation coming up that thinks this way by default. And so the things that they build, the things that we're seeing kind of come up are not entrenched in older notions of how data should be treated. And so I think we're going to see a lot more openness and demand for these kinds of systems. So what I think about the blockchain and data kind of space, I think that's like a 10 years out, 20 years out, you know, kind of thing where we see a cultural transformation that allows us to really take advantage of the elements of the blockchain that make this possible, to do this in a different and better way. But we're gonna be mired in this thing for a while. That's what I think that's what I think.

**Charles Miller** [00:32:01] Well, Sheila thank you so much. It's been really, really interesting and fantastic that you are doing this work out in the field. And it seems to me that, you know, if we're going to get to that more optimistic place that you're talking about, it'll be because you've demonstrated things that are practically useful for people and that they work.

**Sheila Warren** [00:32:20] Well, thank you. I appreciate that. And our goal really is to normalise this technology and take away any fear around it and get people to understand that really it's like any other technology. It's got significant benefits and new benefits. It also has some challenges. And those are being addressed. But our hope is that over time, people will stop talking about blockchain, they'll just be using it without even knowing it.

**Charles Miller** [00:32:43] Exactly. Well, thank you so much. It's been a great pleasure talking to you.

**Sheila Warren** [00:32:46] Thank you.

**Charles Miller** [00:32:56] Many thanks to Sheila Warren of the World Economic Forum. Well, this is in fact, the twenty sixth and final episode in series three of CoinGeek Conversations. It started back in January this year in those happy days when you could shake hands and hug strangers without a second thought. We'll be back with a new series in September, but don't go away, because until then, every week my colleague Natalie Mason will be introducing some of our greatest hits from the CoinGeek Conversations archive. So do please listen out for them. But for me, Charles Miller, thanks so much for listening. And I look forward to bringing you another collection of amazing speakers in September. Bye for now.