

**Good Things Happen Podcast**  
**Season 2, Episode 1**  
**The Future of Finance**  
**Ronit Ghose & Sarah Hammer**

**Jorian Murray (00:09):**

Money: it's a gas. Grab that cash with both hands and make a stash." So said Pink Floyd. But it's easier said than done in a world of contactless payments, blockchain, digital assets, and crypto.

The world of finance is unrecognizable since the digital revolution. And change is certain to continue apace. Is this rate of change unusual? Is innovation in finance a good thing? And who benefits from these changes? Joining me today on Good Things Happen to help answer these questions and more, as we discuss the future of finance, are Sarah Hammer, managing director of the Stevens Center for Innovation in Finance at Wharton University of Pennsylvania; and Ronit Ghose, who is also an expert on the future of finance and part of the Citi Global Insights team.

**Jorian Murray (00:57):**

Sarah, as a trained attorney and former member of the U.S. Treasury, how did you become so engaged and involved with innovation in finance?

**Sarah Hammer (01:05):**

I became interested in financial innovation through my work in the financial sector. I started my career as a derivatives trader. And in trading credit default swaps, became very interested in the clearing and settlement process for trades.

You may know it takes two days, sometimes even longer, to finalize a trade transaction. And that creates risk in the financial system. So over time I became interested in how financial technology can improve that: shorten the time to clear and settle trades. And blockchain technology provides one potential very interesting solution there.

**Sarah Hammer (01:37):**

So, we're deeply engaged in FinTech and blockchain and crypto at the Stevens Center and really looking for partners who want to help us explore the opportunities to improve ways to increase efficiencies in the financial system.

**Jorian Murray (01:50):**

Interesting. Ronit, I know that you started life in a former British prime minister's office as a researcher. You went on to become a trader. Um, and now you're also fascinated with the changing world of finance. What drew you to that?

**Ronit Ghose (02:05):**

I'm a long career now. But I never planned to go into finance. You mentioned I worked-in the private office of a former prime minister. Because at age 21, I really had no idea or interest in finance.

One thing led to another, and about age 24, the day before my business school interview, I got a job offer at an investment bank that became part of what is now Citigroup. And I guess I talked my way into banking.

**Ronit Ghose (02:28):**

It was the time when building societies were IPOing in the UK. If you've grown up in the UK, you know about UK financial history. Building societies were these mutuals that came together largely in the 19th century to pool people's savings, ordinary working people, in typically industrial towns in the North. And it allowed ordinary folk to access co-ownership.

**Ronit Ghose (02:51):**

And that was really interesting, because I was basically hired by this investment bank that became Citi to be part of that IPO process, the flotation process of these formerly building societies. And in a way, that was quite an interesting moment in time because it kind of reminded us that back in the 19th century, finance had begun to shift. Begun to democratize. And it's a term we hear a lot in the last 10, 20 years about how technology democratizes finance, and gives us more access.

**Ronit Ghose (03:19):**

Because finance historically has been the preserve of kings, princes, wealthy people, often priests, religious elites. And what we've seen happen over the last couple of hundred years, through business model innovation, and technology innovation more recently, is opening up of finance to all people. Having everyone have access to regulated, efficient financial services creates significant value.

And it'll be really interesting in this discussion to get into with Sarah and yourself about how does technology help us take this further?

**Jorian Murray (03:52):**

Sarah, as someone who works for an academic institution, not a bank, would you agree with what Ronit just said? Is this democratization enabled by technology ... Is it good for everybody? Or is it just helping a few?

**Sarah Hammer (04:04):**

Great question, Jorian. And I agree with some of what Ronit said. I would say there's attention, at least in the crypto space, between the ideas around democratization and the regulatory framework. And that is something that for us in the United States, we have yet to iron out.

So, one thing that we are very interested in at the University of Pennsylvania is financial inclusion. And by inclusion, I mean access to affordable financial services; and using technology to reach folks in whether it's geographic areas or economic groups who otherwise would not have access. And I think in that respect, financial technology has a lot of potential.

**Sarah Hammer (04:48):**

And as far as democratization goes in the regulatory framework, there is attention there. and we're seeing it really this year, with the crypto crash. And more recently with the conversations taking place around bridges in the decentralized finance space.

What that means is that on the blockchain side, there are many different types of assets and thousands of crypto currencies now. we had a crash earlier this year, that was-triggered in part by some of the activity around a stable-coin known as Terra LUNA. which is an algorithmic stable-coin, meaning it's not backed by any reserve assets. But rather, the stable-coin maintains its peg through an algorithm to another token. LUNA, the native token of the Terra network.

**Sarah Hammer (05:31):**

In that crash, more than 40 billion dollars of value was lost. And a lot of value was lost by individual consumers who were investing-in that stable-coin.

Now, I would say that stable-coins generally have a lot of potential to increase financial inclusion and improve the way our financial system works. There are different types of stable-coins. Some are backed by fiat currency, like U.S. dollars. Some are backed by commodities, like gold. Some are backed by other cryptos.

**Sarah Hammer (05:58):**

This particular cryptocurrency seemed to be pretty unstable and in losing its peg, all of the value was lost. And it certainly had very deep consumer protection implications. And so, the regulators are very focused on things like that. And the tension between having a decentralized network versus having a strong consumer protection.

In something like an algorithmic stable-coin, for example, you have a high level of decentralization. And a lower level of price stability. And so, the tradeoff there in this case was that, ultimately, consumers and investors lost.

**Sarah Hammer (06:34):**

More recently, we've had conversations around bridges in the crypto and DeFi space. And essentially a bridge allows folks to wrap a token from one network to another. There are deep concerns around anti-money laundering in that space, and the use the bridges for crimes.

So, regulators are cracking down on things like that. It brings to attention the idea of having a decentralized network and the value of that decentralization, versus keeping in place the protections, that we need around anti-money laundering, and consumer protection as well.

This space is very innovative. I truly believe that we have the human capital and the regulatory expertise to find solutions over time. But it's gonna be a sprint, for sure.

**Jorian Murray (07:20):**

Ronit, I guess with any change, there are teething problems. Hearing Sarah speak just now, it takes me back to 1988, and the big bang. Any of these changes are kind of disturbing at the time. But does it take time for things to settle down?

**Ronit Ghose (07:34):**

Absolutely. There's a long history of innovation technology, scans and bubbles all kind of happening together. I'm recording this from York in northern England. And the reason I'm in York is that the National Railway Museum is here, and my eight-year-old son's a big transport railway geek.

As we came off the train from London this morning, there's a big sign saying, "This was built between 1873 and '77." And it was the biggest railway station in the world. I mention this not to overshare my tourism, but railways unleashed a speculative mania in the UK and other parts of the world in the mid-19th century.

**Ronit Ghose (08:17):**

There were lots of booms and busts, and there's been significant academic literature on this topic. It also led to the creation of forms of capitalism that we now basically consider the norm or traditional: joint stock companies, the PLC, going to the stock exchange and raising capital from lots and lots of investors.

Now, it didn't start with the railways. It probably started with the Dutch East India Company and imperial or colonial trade out of Amsterdam in the 1700s. But in a way, the railways were the kind of big

phenomenon in recent or modern history that a lot of our capitalism is built on in the UK, and then in the U.S. and the rest of the world.

**Ronit Ghose (08:56):**

We're now in a similar type of disruptive period. And of course, because it's happening to us now, it feels more disruptive to us than the railways do or electricity. But if you'd lived through the railways or if you lived through the electrification of your town or your country, those would have been pretty big things as well.

And each of these cycles or these shifts; you know, technology shifts, business model shifts; comes with, lots of you know, innovation. But also speculation. Now, in this period, and Sarah's talked about it in talking about crypto and blockchain. What's gonna be interesting is what does money look like? And what does the corporate organization look like?

**Ronit Ghose (09:35):**

We've been used to having centralized money that was issued by a central bank. The U.S. came relatively late to this; the United Kingdom's had it for several hundred years. I think the Riksbank claims to be oldest central bank in the world.

And then we took all the centralized fiat monies, as it's called, online in the last 40-50 years, as computerization grew. Where we are now is, we're at 20-25 years into the consumer internet. And we're about 10-15 years into this bitcoin blockchain wave.

**Ronit Ghose (10:07):**

This is giving us whole new ways of managing money, dealing with money, even the concept of money. So crypto's different and blockchain-based money is different existing digital money. It's programmable. It's composable. I can build on it freely. And I can program that money to have features. It's not quote-unquote dumb money. And of course, because this is new, regulations aren't yet in place to deal with that.

Now, you can be sure that as large institutions get involved, and the regulators and, uh, we're gonna have much more of a formalized way of doing all this. If you're gonna have cryptocurrencies blockchain-based money that's publicly accessible for all, it's gonna be regulated.

**Ronit Ghose (10:55):**

And it'll be a journey, because some of these rules and regulations that are being proposed may not be suitable. It's gonna take a few years. It's not gonna happen this year.

**Jorian Murray (11:01):**

And Sarah, would you say this is an unusual rate of change in a cycle? Or is everything getting faster, and it's gonna increase and increase and accelerate? And change is gonna come in waves faster and faster as we go forward?

**Sarah Hammer (11:14):**

Ronit mentioned some of the regulatory challenges around money laundering, for example. And I believe that there are technology solutions to some of our regulatory challenges. Some of the unique attributes of crypto and blockchain, are that it can offer solutions to regulatory challenges in ways that other facets of our monetary system has not been able to.

So, for example, one of the issues around money laundering that we're dealing with currently is what I mentioned earlier around bridges. And the tension between having a decentralized entity that can wrap tokens and move tokens from one network to another. Versus being able to account for those entities that are cited for example, on OFAC sanctions lists. I believe that technologists will be able to innovate in this space to find solutions to some of these challenges.

**Sarah Hammer (12:07):**

I think that another really interesting thing about blockchain and crypto, is that there are legal attributes to the technology that, as an attorney, I find fascinating. Blockchain, for example, offers not only immutability, and potentially a high level of security and decentralization in the way that we don't have in traditional finance but it also can offer something called provenance.

And essentially what provenance is is chain of custody. So, everyone has probably heard of chain of custody in the criminal world. It's on TV shows. You have a piece of evidence and you need to have chain of custody for that piece of evidence. Meaning you track where it's been over time, and who's had it. And if you don't do that, then it's not an admissible piece of evidence.

**Sarah Hammer (12:55):**

Blockchain can actually offer provenance in a way that traditional fiat currency has not been able to. So for example, if I have a transaction on blockchain or, for example, if I mint a non-fungible token, every subsequent transaction for that asset will be tracked on blockchain. And that means date, time, I can program other things into the network that I want to track. And as an attorney, I think that's a very compelling, unique attribute of the technology that we just haven't had in the past.

**Jorian Murray (13:29):**

Fascinating. Ronit, talk to me about the benefits that you see from these changes. 'Cause I kind of sit on the sidelines as a non-financial person, wrapping my head around tokens and things that are not tangible-and I find it pretty scary. But, hearing what Sarah just said, is very compelling.

**Ronit Ghose (13:47):**

Sarah's outlined obviously the benefits of provenance and being able to track. You can do this with financial assets. But you can also do it for other forms of assets. So, for example, in food and wine. You want to know the provenance of what you're eating, what you're drinking. You can use blockchain technology for that.

In finance, another couple of areas that I would call out that's really interesting that a lot of us in the financial sector are doing work on, is the benefits of efficiency gains, benefits of fractionalization, and also creating liquidity into illiquid assets. Let me explain what I mean.

**Ronit Ghose (14:23):**

So, Sarah's talked about some of the inefficiencies in the back office or the middle office of financial institutions. Now, there are lots and lots of layers in these organizations, some of which are created by the fact that we are regulated. And there's a reason we're regulated as institutions, and those won't go away. They might get smarter or different or better, but they'll stay.

Then there's a lot of layers in these organizations. Imagine you're in a kind of archeological dig. And you get layer upon layer of history. Here's the 21st century. Here's the 20th century. Here's the 19th century, 18th century.

**Ronit Ghose (14:55):**

And then, we get to the Roman times, you're like four or five meters deep. A big bank or a big institution, is like that. You can go meters deep, if you like, into it. It's hard to do, but if you could replace that, rip that out, put in... whether it's blockchain or current technology, the amount of people you would need; the speed of which transactions happen, are the cost of doing business. All of these would dramatically improve and would become more efficient.

So, there's gonna be, without going into too many details, efficiency gained there. There's also benefit ... And this is partly about inclusion, but it doesn't have to be about inclusion. But there's a point around fractionalization. Oftentimes, particularly in the U.S., a stock will have a very large share price

**Ronit Ghose (15:36):**

So, if you're a young person, or not a particularly high income person, you're able to buy one share, or two shares. You can't get a large number of companies in your portfolio. Or if you're dealing with corporate bonds, where the base is hundred thousand dollars or more, you can't really as a quote-unquote normal individual get access to that.

Now, you can through unit trusts and ETFs and so on. But tokens actually allow ordinary people, not just big institutions, to get similar type of access. Because by having a token, you can fractionalize some of these oftentimes illiquid assets, particularly private securities such as pre-IPO equity, or corporate bonds that are public but maybe are illiquid and don't trade.

**Ronit Ghose (16:19):**

So, there's lots of areas that people are exploring right now, in terms of fractionalization efficiency gains, that are probably gonna come down the pipe in the next two-three-four years. Some of these are already out there, which are gonna be quite beneficial for the end user.

**Jorian Murray (16:35):**

And that speaks to the democratization that you spoke about earlier. Sarah, I'm fascinated to know from an academic point of view, how does one teach when so much is changing so fast? Tell us more about the Stevens Center for Innovation and the work that you do there.

**Sarah Hammer (16:51):**

There are several things that I'm engaged in at the University of Pennsylvania. One of our very visible efforts is I lead our blockchain accelerator, Cypher Accelerator. And, this is a global accelerator that accepts applications through the fall and into January from any company, anywhere in the world. It does not have to be Penn-affiliated.

And last year, we had our applications open-to, an honest-age agnostic basis. Meaning, a startup through to serious E or F. we accepted 10 leading companies, from around the world-and worked to scale these companies. Or, in a couple of cases, they were more mature companies, series E, for example, that were working to build crypto divisions or to tokenize parts of their business in the same fashion that Ronit referred to.

**Sarah Hammer (17:38):**

So, this was really fun. And I have several managers that I work with in this space, and we have some incredible partners who are supporting us in this effort. We run 60 workshops over a multiple-month period. And then we coach the companies one-on-one, and bring them to a demo day, where they have the opportunity to present-their product and their approach. Or in the case of tokenizing a business, how they're doing that, to a large group of advisors that we work with.

We'll be running it again this fall, and I hope that your listeners will apply, or their potential partners, that they'll partner with us. Because it's a really great visible effort, and students work directly with us. In fact, our logo was designed by students. And many aspects of the accelerator are run directly by our incredibly capable student managers.

**Sarah Hammer (18:26):**

I think some of the best thinking-and the best ideas and the best management in this space is coming from students and young people. Because they're the ones that are deep in the decentralized space. They know what's happening in the startup world. They're the entrepreneurs and the CEOs of the future. And so it's really exciting. And I'm grateful for the chance to be able to work with them.

We also run a blockchain laboratory, which is a joint effort that I lead with a professor from the University of Pennsylvania School of Engineering with research assistants from Penn Engineering, Wharton, and the University of Pennsylvania Law School, where I'm also a member of the adjunct faculty.

**Sarah Hammer (19:03):**

And then we lead curriculum. We actually have the world's leading fintech and blockchain online course through Coursera. I'm leading a global Business Week trek with executives in our MBA program who want to learn more about financial technology in New York. So that's also a very hands-on experience where we meet with companies directly. It's a combination of workshops and lectures and networking events with others.

It's really a full-faceted, 360-degree, hands-on approach that runs the gamut with different types of companies. It's very dynamic and I'm really grateful to have the chance to be able to work with these folks.

**Jorian Murray (19:39):**

Sounds like you're shaping the future, rather than teaching the process of innovation. Because that would be impossible, I would guess.

**Sarah Hammer (19:46):**

We are, absolutely. We're actually also launching a digital asset incubator this fall, to run in advance of our accelerators. The incubator will be focused not only on digital assets and non-fungible tokens, but also on infrastructure around blockchain, like security, for example. Our launch event for that incubator it's gonna be focused on the recent launch of the University of Pennsylvania's own first digital asset which we auctioned through Christie's last month. Which is a memorialization of the mRNA invention, that was led by two scientists from Penn Medicine.

**Sarah Hammer (20:20):**

So, there's lots going on. And, it's a real privilege to be able to work with all the incredibly talented people that I'm able to work with.

**Jorian Murray (20:26):**

You really have got a lot going on. Ronit, you demonstrated to me a couple of times now, you're a great student of history. How do you apply that sort of curiosity for the future and things that are changing? How do you navigate research in this world?

**Ronit Ghose (20:40):**

I think a lot of us today, particularly in finance, but in general, tend to be very ahistorical. And I think we tend to over exaggerate some of the change that we're going through. Some of this change is mind blowing, it's huge. But, I go back to, again, prosaic things like railways and cars and modern medicine. Those were huge changes. And we as a society, there's a time lag. It takes us, I don't know, 20, 30 years before society catches up.

**Ronit Ghose (21:09):**

And so, when you take that lense and you apply it to what's happening today; one of the things you hear a lot, including on crypto twitter or anti crypto Twitter, is stuff's been around now. You know, it's 10, 15 years old. It's not really delivered much yet. By this stuff, I mean blockchain and crypto and you could say more generally, digital innovation. Some people say, "It's just experience has improved."

And there's some type of dismissiveness about it. And it's become fashionable or smart to say that, because prices went down this year. Technology, equity prices, but also specific crypto assets. And some of these higher-risk crypto assets, some of which were fraud, some of which were just badly managed. Some of them went to zero.

**Ronit Ghose (21:51):**

But if you go back in history and look at these changes, they generally take time. Between, the steam engine being invented or, um, and then factories becoming more efficient; I'm not saying it's gonna be a 30-year time lag between locomotives, whitepaper (laughs) and us sort of instrumentalizing all of this.

Even if we're just better at dealing with change and speed and so on, we've gotta stop saying, "Nothing's happened, so as a result, nothing will happen." The other thing that history teaches that everything changes and at the same time, it's all the same. And when I first heard that said by a very senior regulator, I groaned inwardly

**Ronit Ghose (22:25):**

And actually, he had partially got it spot on. Because the core of finance, the core of banking for the last 5,000 years or whenever civilization began, whatever the date is, has been safekeeping, custody. You have something; I look after it. Deposits, custody, whatever you want to call it.

You need to invest. You need money. Whether it's you're looking for spices, whether you're building railways, whether it's just buying your family's first house, I'll give you credit. I'll pool savings and give you credit. So, custody and safekeeping deposits, credit, and payments.

**Ronit Ghose (22:57):**

I'm going down the Silk Road. I need a way to pay. You know what? Let's have a bank note. Why do we need to take gold down the Silk Road? And if you don't accept the bank note on my trade route, because I'm the Great Khan, and it was kind of the origin of fiat money.

Politics and money have always been connected. And so everyone on the Great Silk Road would say, "Okay, I'll accept the Great Khan's money, because if I don't accept it, he's got his face on it. He might, you know, I might end up (laughs) have a very bloody end."

**Ronit Ghose (23:21):**

So, everything changes, and at the same time, the cause of principle basics of finance doesn't change. Safekeeping, custody, deposit taking, lending, credit, and payments. And there's huge value to this. And this is the key thing. Whether we do it through blockchain, whether we do it through simple Web 2 apps, how we deliver this, there's a lot of value to it.



Imagine a world where we didn't have this. Where we didn't have the ability to have maturish transformation of credit. Where we didn't have the ability to use technology to power finance. What would our world look like? Would that be a better world? Do you want to live in that world? That's kind of where I'd leave it.

**Jorian Murray (24:00):**

Sarah, what do you have to say about that?

**Sarah Hammer (24:01):**

Well, I'm not as versed in history, as Ronit (laughs) is. My view is that as far as technology and finance goes, I think that there's no turning back. That technology is an integral part of finance.

And, that it has a lot of potential: not only to improve the kinds of efficiencies that we've talked about today, but to increase access to financial services. That's an issue that we haven't yet really dug into. But globally, I think it's a deep concern, as well.

**Sarah Hammer (24:28):**

One thing we've been very focused on in addition is social impact. This is something that a lot of our students care about. They care about the planet. They care about access. They care about inclusion. And I think the technology has the potential to make a lot of really important improvements there.

So not only increasing access to affordable financial services through things like decreasing costs, and increasing accessibility, but also through things like digital identity, that has the potential to make it easier for us to access services that we couldn't otherwise have access to.

**Sarah Hammer (25:03):**

There are actually millions of people around the world who don't have identity. They don't have traditional identity in the way that you and I are fortunate to enjoy. And that means they can't get a loan. Or they can't access a bank account. And they're really essentially locked out of the system. And that's a perpetuating cycle-that we can fix in some ways through technology.

I also think technology really has the opportunity to make things work in a more equal way that they couldn't in the past. Take for example, this podcast. Or our ability to meet remotely during the pandemic. And the pandemic really accelerated technology in a way that may have taken years otherwise. But we now know that you can work remotely. You can have a team around the world. You don't need to go into physical headquarters.

**Sarah Hammer (25:51):**

And for many, many millions of people around the world and women especially, or those who are taking care of others in their family, this is a really important thing to be able to access. And I truly believe that technology will continue to make possible improvements like that, that will make our lives better.

**Jorian Murray (26:09):**

Well, I'm a fan of high-level and listening to you both, I find it enormously reassuring. Because I agree things don't change in terms of how systems work. But it seems that technology, being able to produce a gold bar or a bank note or a credit card; and now, blockchain and crypto. It's just, it's making things faster, more efficient, more accessible, less costly.

I've got memories of writing-traveler's checks when I first left university. I mean, that seems so antiquated, doesn't it? (laughs)

**Jorian Murray (26:39):**

These things are here to stay. Give us some predictions. I'm sure you're asked this all the time, and it's a terrible question. But, where do you see things bottoming out?

'Cause, back to your railway analogy, the reason it takes time is, people will be arguing over how- how wide the tracks were. And it's all those refinements. And I guess there must be a lot of refinements going on in the work that you're doing, Sarah, and the research that you're doing, Ronit.

**Jorian Murray (27:04):**

Paint us a picture. If we met in 10 years' time, what do you think is here to stay? And what's gonna be the most influential technologies that are gonna inform the future of finance?

**Ronit Ghose (27:15):**

So, it's 2032, and we're doing this all over again. And we're chatting. How would it look different? And so, Sarah talked about how we communicate how we work has already changed, because of the pandemic. We're in this hybrid world. It's a combination of remote and in-person. And it needed the pandemic to basically break existing human conventions, which is the physical office is the best.

Now, there's still things where meeting physically cannot be replaced. It's just better to hang out with your friends, your loved ones in person. Now, sometimes you can't do that. And it's great that we have these technologies.

**Ronit Ghose (27:56):**

40-50 years ago, if you needed to communicate, you'd have to go to a pay phone, put coins into a machine, spend a huge amount of money to have a pretty average quality call, intercontinental. Whereas now, you can just pick this thing up, sometimes free of charge, and do a call. Almost anywhere in the world. Sometimes even a video call.

And I think that's just gonna get accelerated. And you can call it the metaverse, you can call it whatever you want to. It's already too late in this conversation to drop that clanger in, right, the metaverse. But if you think about that as 3D internet, 'cause we're basically in a 2D internet world. Even this conversation that we're having, we're doing this as audio and visual, It's- 2D.

**Ronit Ghose (28:34):**

We're 3D people. 3D internet will be great for collaboration, how we work, whether it's in universities, banks, social. I think the internet will become even more immersive. Hopefully it'll reconnect us to the physical, as well.

Where we have this hybrid world where we're just staring at screens, tiny screens or big screens. We're actually using this 3D internet to go back and experience the world out there. Be it railways or old historical churches or whatever it is.

**Ronit Ghose (29:05):**

But we talked specifically about blockchain technology and cryptocurrency and digital finance in general. The point about railways or steam I was talking about is, it takes time before we work out, as humans, how to apply it.

And to the issue we're having, or gonna have now, is the technology is developing. But we've got all this- call it legacy, for want of a better word. The legacy is just what we have now. i.e. it works.

**Ronit Ghose (29:28):**

But we have to look at how to combine or replace that with the new technology. And that's a coordination problem as much as a technology problem. You need a lot of people, a lot of institutions to come together.

It's almost like going from driving on the left to driving on the right. This is one person or one institution kind of saying, "I'm gonna go from driving on the left to driving on the right." It's just chaos. So, this is why blockchain technology takes time. You have this coordination problem.

**Ronit Ghose (29:53):**

I made that hopefully not flippant comment about the Great Khan before, and the origin of fiat money. But money is inherently tied into whatever you call it: politics and regulation. And that's the whole point: we're regulated institutions.

We can't just say, "I'm gonna do something." It has to be permission; there has to be a reg allowed by whichever country we're in. Whether it's in the UK, or in the U.S., which is obviously our home market. All the other hundred-plus countries around, if it's not legal and regulated in their country, we can't do it. And that takes time. Laws take time to catch up with technology.

**Jorian Murray (30:24):**

So, it sounds from what you're saying, the- the- the future is right in front of us. But it's just gonna take some time to settle down. Last word from Sarah. What are your observations on where we might be in 10 years' time?

**Sarah Hammer (30:34):**

Well, first I think I'm gonna frame Ronit's comment about things being permissioned. Because as an attorney, that's something that I'm always emphasizing (laughs) with the many, many folks who work with in the decentralized space. I agree: I think, uh, there's quite a lot of potential for the technology. But it will take time. I do think that the regulatory framework will have a very large impact on what happens in this space.

You may know President-Biden issued an executive order on digital assets back earlier this year. And the regulators are currently working on what the recommended policies will be in the U.S. Which is certainly a very fragmented system, and ripe for rationalization. And global regulators are as well.

**Sarah Hammer (31:16):**

The EU recently issued rules around stable-coins. We also have rules forthcoming in Singapore; Hong Kong Monetary Authority is working on these issues. I am partnering with the World Economic Forum to make recommendations in the digital currency space. So all of those decisions will be very impactful for what happens.

And I think that we'll continue to see a very fast pace of progress. I think it will take time. And I do agree there should be some combination of technologies. The metaverse, as Ronit referred to is a very significant technological advancement: not only for finance, but for other industries as well.

**Sarah Hammer (31:57):**

I've actually published on this issue. I think there's a lot of potential around AR and VR technology to improve the way we do things in education and healthcare.

I can also use technology to do things like simulate a lab experiment in the healthcare space, or to improve training, uh, for physicians. And so I think that technology will continue to improve not only the financial sector but other industries as well.

**Sarah Hammer (32:21):**

I'm an optimist, so I think that we'll make steady progress forward. And I think the innovators will continue to run at light speed. And that's one of the things that I absolutely love about working in innovation: is that it's really the intersection of so many other disciplines. Not only finance, technology, and law but really many other industries as well. And people are just running as fast as they can to find better ways to do things.

**Jorian Murray (32:43):**

Well, I have to say-speaking with you both, you've turned something that seemed quite abstract to me to something that's far more tangible. I'm sure our listeners, like me, are super relieved that we have wise, measured people like yourself who are helping land all of these technologies. Thank you so much for joining us today on Good Things Happen. I've really enjoyed this conversation.

**Sarah Hammer (33:06):**

Thank you. Thank you so much.

**Ronit Ghose (33:09):**

Thanks for having us.

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