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TRANSCRIPT

NFTs and Gamers and Bitcoin? Oh My!

Featuring:

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Adam Bass (00:03):

This is MSCI Perspectives, your source for insights, for global investors and access to research and expertise from across the investment industry. I'm your host, Adam Bass. And today is April 15th, 2021. Today, it's been noted before that investors need to try and see around corners. And in many ways, that's what thematic investing is all about. It's identifying global trends that have the potential to change the way we live, the way we work and the way we play. And this of course, has a direct effect on the companies we invest in and how we evaluate them. What we saw when we sat down with our guests to put together this episode is that we are on the cusp of truly creating a virtual world. Well, thousands of them, really, all of them coexisting and interacting in one cohesive metaverse, it's similar to the millions of websites each with their own domain that are accessed through a shared internet, but it's far more immersive.

Adam Bass (01:05):

It's a true integration of our on and offline lives. There's a shared currency, Bitcoin as well as unique digital identifier. So the much puzzled over Non Fungible Tokens or NFT, and there's also a cost to the metaverse that links right back with our physical reality, and that is the energy needed to run it. And the ecological impact the use of that energy may or may not have, we'll get there. Our conversations on this topic were exciting, a little startling, and to be honest, a little hard for my gen X brain to wrap itself around at times. But like I said, we will get to all of that. Let's enter the matrix now and see where the conversations lead.

Nicholas Grous (01:54):

I think we're in the early stages of these virtual worlds and really the end point and end goal being the metaverse, which is when these virtual worlds that start to begin to pop up, especially in the online gaming space, when those become interoperable. And you're able to

jump from game to game seamlessly and bring all of your digital goods and assets from one game to the next. And at that point they won't really be games, they'll be something completely different. There'll be shared spaces that are always on, always present that humans far and wide use to communicate, play, socialize.

Adam Bass (02:34):

That's our first guest.

Nicholas Grous (02:36):

My name is Nicholas Grous. I'm an analyst at ARK Invest. I work on the next generation internet theme and I cover digital entertainment.

Adam Bass (02:43):

Let's start with something I'm willing to bet you're all familiar with, streaming movies and TV into your home on demand.

Nicholas Grous (02:51):

What used to happen in the physical world is now all being shifted online. And with streaming, the progression there was just allowing consumers to get the convenience of going to the movie theater or paying for linear pay TV, right there at their home on demand.

Adam Bass (03:10):

Now, that seems like a pretty simple if disruptive idea, let people watch what they want to, when they want to, at home. But streaming itself is evolving. Today, some services have created shared spaces where people can gather to watch movies together. Sure, you might say it's called a theater, right? Yeah. You're right wise guy. But these aren't physical theaters we're talking about, we're talking about shared digital spaces.

Nicholas Grous (03:39):

Yeah. That's great. I've actually used it before. And it is really, it does enhance the viewing experience because what you do lose when you bring most of this online and this, I think spreads across the majority of categories. E-commerce streaming, you do lose that social interaction. When you were to go to a mall and shop, you didn't typically go alone, you went

with someone else. And now that it's online, it's not social, but I think we're starting to see a shift.

Adam Bass (04:10):

Basically.

Nicholas Grous (04:11):

Humans want to interact with other humans, it's human nature.

Adam Bass (04:15):

While that might seem an easy thing to dismiss, consider this, the video game industry as a whole is a $175 billion a year, industry. Billion with a B. That includes game sellers, as well as people like Travis Scott, or Valkyrae who are professional gamers, ask your kids, don't know the names. Anyway, we were talking about our collective need to connect.

Nicholas Grous (04:45):

I think as we begin to map out what the metaverse and what these virtual worlds will look like, we have to first start with understanding online gaming and what's happening there. Because what used to just be gaming is now turning into, again, these virtual worlds where you're spending time, not only just playing the game that they were originally meant for, but also just to spend time socializing and hanging out with friends. I think Fortnite is a great example of this. They have dedicated gameplay happening on their Battle Royale Island in their virtual world. But then they've also recently built out what they call Party Island, which is actually just a space to go hang out, watch concerts. I'm sure many of those listening have heard about bringing in some of these huge artists to do virtual concerts. Well, that's happening now, not just on Fortnite, but other online gaming spaces as well. And it's not just concerts, it's more than that. It's really just a robust ecosystem.

Nicholas Grous (05:45):

There is this social transition, there is this new consumer behavior happening within games. And again, it all gears towards social, a kid today is not running home to message and text their friends. They're actually hopping into Fortnite or one of these other games to interact with them on a more real time experience. They're spending their weekends watching Travis Scott and Fortnite do a virtual concert.

Adam Bass (06:13):

Nick went on to say that these digital worlds may not be so different from the world we know, and they will mostly be distinguished by the things that we don't bring with us. Like food for example, since your digital avatars, unlike the real physical you don't need to eat, or as Joe pointed out during the interviews, mosquitoes. Mosquitoes will be left behind because why on earth would anyone voluntarily want mosquitoes around? But I digress. There are some things we will need, we'll need money, we'll need a financial system. One that like the internet is borderless, but that's secure enough that people are willing to use.

Yassine Elmandjra (06:52):

Bitcoin gives individuals the ability to participate in a politically neutral realm of economic activity, where coordination transcends borders, locations, jurisdictions. Because instead of relying now on centralized intermediaries to enforce its rules, like a Facebook mediating conversation or an Amazon mediating logistics of goods and services, Bitcoin relies on a distributed network of computers. And that architecture is what enables it to function outside the purview of these traditional systems and even challenge them altogether. So I think as we're migrating from the physical to the digital world, having this borderless, non-state monetary commodity is going to have profound implications.

Adam Bass (07:39):

Allow me to introduce you to our next guest.

Yassine Elmandjra (07:42):

My name is Yassine Elmandjra, I cover crypto assets, Bitcoin and blockchain at ARK Invest.

Adam Bass (07:51):

What was it about Bitcoin that led you down the rabbit hole?

Yassine Elmandjra (07:55):

So I studied systems engineering and finance, and so that marriage between management and technology or economics and technology was already something that resonated with me. And it seemed like something like Bitcoin was just the perfect manifestation of that interest. At its core, it's a technology, but when you take a step back and look at the implications and the evolution of economic organization, more broadly, the thing that really struck a chord was more my philosophical line with Bitcoin rather than the idea of this being a potentially appreciating asset with generational returns.

Adam Bass (08:37):

A lot of the conversations people have about Bitcoin tend to center around its price and the volatility of that price, but to understand its role in the building of a virtual world and the value it brings beyond what it's priced at. We first need to talk about Bitcoin mining.

Yassine Elmandjra (08:55):

The innovation in Bitcoin lies in its ability to coordinate trust and facilitate the transfer of value without relying on a centralized authority. So a centralized authority in the case of coordinating trust or transferring value, we see that with a PayPal or Visa, for example. A PayPal is a centralized entity and basically mediates all flows of transactions from one entity to another. Bitcoin has no such thing like that. And instead the enabler to coordinate trust without relying on that centralized authority is what's called proof of work mining or Bitcoin mining. And at a high level, it's a mechanism that adds new Bitcoin to the money supply. And also, and more importantly, protects the network against nefarious actors who are attempting to spend the same Bitcoin more than once or break the network more broadly. So through economic incentives, you have these miners that are voluntarily securing the network by verifying transactions, and then appending them to Bitcoin's public ledger.

Yassine Elmandjra (10:02):

And in order to do that, you have specialized, dedicated hardware that performs a function that proves that a miner has executed this costly computation. And so in exchange for providing that processing power and securing the network, which is critical to the security of the network, the processing power, miners are then rewarded with these newly minted Bitcoin and transaction fees. And so mining more broadly is critical to achieving consensus without a central trusted authority. And that's what a lot of people miss. Trustworthiness in Bitcoin is protected by computation.

Adam Bass (10:39):

All that computational power uses a lot of energy.

Siyu Liu (10:44):

My name is Siyu Liu. I am one of the ESG analyst, sits in New York, with our ESG research team.

Adam Bass (10:49):

The ESG research team at MSCI.

Siyu Liu (10:53):

I focus on researching the ESG risks related to technology sector broadly, ranging from telecom, media and entertainment companies to Symantec topics such as privacy, data security, corporate behavior, and to trust, and also ethics around technology in general. Some of our listeners may already be aware that Bitcoin has a huge energy consumption profile, which is equivalent, or even now probably more than the total energy consumption for a country like Argentina. So that is a huge footprint. A lot of the mainstream institutional investors concern is that when they contemplate about whether they should invest in Bitcoin or invest in technology infrastructure related to Bitcoin, they, at the same time, they also have a climate change mandate. They have, for example, there's the use sustainable financial disclosure requirements, which they need to comply to, for being investors. Having those mandates, at the same time, but also contemplating the value of investing Bitcoin. The practical hurdle for them comes in when they have to report the emission profile of their portfolio. So the emissions associated with Bitcoin is still, even if it's already emitted, it's still a practical concern for mainstream investors.

Yassine Elmandjra (12:09):

The unique ability to provide what Bitcoin provides in a trust minimized manner is because you have this specialized dedicated hardware. What critics might deem computationally, inefficient and unscalable, advocates are going to consider it to not only be an intended trade-off, but a fundamental feature. You actually need prolific resource consumption and what's deemed poor computational scalability to unlock the security necessary for independent seamlessly, global and automated integrity. With that as a backdrop, the critique against Bitcoin energy consumption is then presented as follows, Bitcoin consumes more energy than the country of Argentina, and then settles only a fraction of transactions that a traditional payment system like Visa might settle. And so what they end up asserting is that on an energy cost per transaction basis, Bitcoin is extremely inefficient. If you were to linearly extrapolate the metric, Bitcoin would basically need more energy than exists on earth to satisfy the world's transactions.

Yassine Elmandjra (13:14):

Now, what's wrong with that argument? Well, the idea of a per transaction energy cost metric is very misleading because Bitcoin transactions themselves don't actually cost energy, nor does Bitcoin CO2 footprint scale with transactional count. What costs energy is securing the network, and proving there was a costly computation to mine new Bitcoin in the same way that it costs energy to mine gold.

Adam Bass (13:41):

To some extent, what this means is that the value of Bitcoin is a reflection of the energy needed to mine it and like gold, once the Bitcoin's been mined, it takes far less energy to pass it around. Let's go back to Yassine.

Yassine Elmandjra (13:55):

So it's very hard to compare, which a lot of these energy critics compare, Bitcoin transactions to Visa transactions. They're just not equivalent. Bitcoin is a complete self-contained monetary settlement system. Visa transactions are non final credit transactions that rely on underlying settlement rails, like the ACH, the Fedwire, the Swift, the global banking system, the federal reserve. And then you can even argue, Visa relies on the military and diplomatic strength of the US government to ensure all of the above are working smoothly. So in reality, if you think about it, any energy comparison would technically need to take the above into account. But the difference is that Bitcoin and Bitcoin's energy footprint is highly transparent. And so that's what makes it much easier for critics to target. If we were to conduct an apples to apples comparison of energy expenditure and make a comparison between gold and traditional banking, we think that Bitcoin is about half as much energy as gold and about a 10th, as much as the traditional banking system.

Adam Bass (15:02):

We took this point back to Siyu. And while she wasn't as convinced about Yassine's overall conclusions, she did agree with the point that you have to look at what you're getting in exchange for the energy use, as well as Bitcoins, greater transparency.

Siyu Liu (15:17):

That's why Bitcoin is actually not that difficult to calculate Bitcoin's carbon emission. From that point of view, I guess it's a good thing that we understand our digital footprint better. It is certainly more complex to account for the carbon emissions in the physical world, because it just involves so many different stages of supply chain and so many different players coming to play. The inefficiency or the intensity really have to take into account the value, the real life use cases of what we're talking about. And in Bitcoin's case, it's unsettled argument, it's unsettled topic. And if we compare the energy consumption of Bitcoin with the energy consumption or the carbon emissions associated with the traditional financial system, there is no consensus how we account for the total carbon emissions associated with our traditional financial system. Therefore, it's hard to compare energy consumption without talking about what value or what use cases.

Adam Bass (16:23):

But miners of any kind are business people, they'll look to pay the lowest price possible for everything, including energy. And here's where the two perspectives start to intersect.

Siyu Liu (16:33):

This is where the energy market comes into play. It depends on where the cheapest energy stores are. When we talk about the energy consumption in the footprint, the emission footprint, the Bitcoin mining, it's really the same as anything else in the world. Aligning the incentives of energy costs basically because cost is a function of miners profits. That's why miners relocate themselves to chase the cheapest energy source, whether to China or to Mongolia or to parts of Russia. The intensity of that footprint really depends on what you compare it with. And also just to lay all the facts on the table, there is research quoting from Cambridge University about 40% of the total Bitcoin mining is powered by renewable energy and primarily hydroelectric in some of the Bitcoin community.

Yassine Elmandjra (17:28):

Energy consumption doesn't necessarily equate to pollution. And that's a very important point as well because Bitcoin miners are in perfect competition with each other. That means that they exclusively seek access to the cheapest source of electricity. And in many instances, those sources are renewables based. So I'm certainly not going to come out and say that Bitcoin is a hundred percent renewables. That's definitely not the case. But what I can say is that there seems to be a growing trend towards renewables as a primary source of electricity, first. And more than that, that in some cases, Bitcoin can actually unlock energy assets that otherwise would have been dumped or stranded.

Adam Bass (18:19):

What do you mean by that?

Yassine Elmandjra (18:20):

Bitcoin is actually the buyer of last resort for energy assets that are otherwise stranded. So for example, stranded gas, which is the natural gas byproduct that oil drilling produces, but which can't be used, accounts for somewhere between 40 and 60% of all the world's proven gas reserves, which is enough to power every home in Chicago for an entire year. And for a long time, there was simply a lack of utility for the stranded gas and solutions to harness it. And now you have these companies that instead of exhausting the gas on site or fumbling with the suck and cost of transporting it, they're using it to power Bitcoin mining rigs. So this as a use case, it's just a very interesting to just see the dynamics of how it can in a lot of

ways, make the energy grid much more efficient, which has positive long-term implications, with just how we consume energy more broadly.

Yassine Elmandjra (19:18):

So the idea is that Bitcoin mining becomes normalized as an energy buyer of last resort. And so by what that can extend is it creates incentives for existing plants, whether it be solar or wind on the grid, to incorporate Bitcoin mining into their own operations. So we're actually currently working on a model that will hopefully be out in the next few weeks. That takes a look at what would happen if you were to bake in Bitcoin mining into a solar system. The takeaway is that by having an additional component of Bitcoin mining, you can actually supply more demand to the grid by incorporating a Bitcoin mining component, which again allows for the entire energy grid to converge more towards renewables while also making the energy mix in Bitcoin mining skewed more towards renewables as well. So it's like this very interesting positive feedback loop.

Adam Bass (20:24):

As mentioned earlier, one reason Bitcoin has value for miners and others is scarcity. There is a finite amount of Bitcoin to be mined, 21 million Bitcoin to be precise. And once that's gone, that's it. Incidentally, that scarcity combined with demand for Bitcoin is essentially what's behind those massive spikes in price everyone talks about. Right now, we've mined nearly 90% of all the available Bitcoin. And I asked Yassine what happens to all of these positive contributions to the grid once mining operations stop, does it all just go away?

Yassine Elmandjra (21:01):

It's a good question. And it's important to understand and clarify that, but miner revenue consists of two things. The first thing to your point is newly issued supply. So the block reward. Every 10 minutes today, a miner is rewarded or miners who find that block are rewarded with 6.25 Bitcoin, that issuance haves every four years. And so eventually when you have the 21 million cap, there are going to be no more Bitcoin to mine. And so that's where the second revenue stream for miners comes, which is through transaction fees. So miner revenue is a combination of the block reward and transaction fees. And I think over the long-term as the blocker world subsides, transaction fees are going to take up a much more sizable portion of miner revenue. And you're going to see the Bitcoin based layer converge towards being a settlement layer for extremely high value transactions, amongst financial intermediaries and large entities.

Yassine Elmandjra (22:12):

And so you can imagine a scenario where the Bitcoin network is facilitating billions of dollars worth of settlement in single transactions that would require maybe hundreds of thousands of dollars of transaction fees, but would still be a relatively small fraction compared to traditional rails of global settlement. So miners will still have an incentive to continue to secure the network. So as long as fees are being paid to transact, and the real only requirement to transact is paying fees.

Adam Bass (22:46):

What we heard from our guests essentially is that while exact amounts of energy used and how to compare that with the output of other commodities differ, there does seem to be consensus that Bitcoin miners are searching for the cheapest sources of energy, renewable where possible. And that the environmental cost for our "real world" may be worth what we get in the long run in the "virtual world".

Nicholas Grous (23:10):

I think that balance success, and I think it will continue to persist. I think hopefully, as we continue to build out and build towards the metaverse, these online experiences become so engaging, so enticing to be involved in that maybe you don't hop in a car and travel across the country to visit a theme park in California. What are the environmental costs of that trip versus staying inside and taking a virtual experience instead? When it comes to the environmental costs, I think, you have to understand when someone spends time watching Netflix or playing video games, that's time they could be spending doing something more disastrous for the environment. Yes, there are energy costs to playing video games, to watching Netflix. But I would have to imagine that they're less so than what someone could be doing instead of those activities.

Adam Bass (24:09):

As intriguing as it is to talk all day about Bitcoin. And as much as I'm trying to avoid delving into the world of non fungible tokens NFTs, I did promise at the top of the show that we would talk about them. And like Bitcoin, they are an integral part of building the metaverse that allows us to take things we buy in one world with us into other sections of the metaverse because they create ownership, they are unique. But like video games and Bitcoin NFTs seem to hold a special place in our hearts as something we be little but secretly wish we knew more about. I recently read an article in the New York Times that said NFTs went from that thing you never heard of to the thing you're tired of hearing about. And most likely without your ever having figured out what they actually are in the brief time in between.

Adam Bass (25:02):

We're in the experimentation phase to be sure, one where millionaire dreamers dip their toes in by paying $600,000 for an NFT of a cat with a pop tart body that leaves a trail of rainbows or nearly $3 million for Jack Dorsey's first tweet. Laugh at how they're being used, if you will, but as Nick explained, NFTs can be understood as can the role they'll play in building our new digital realm.

Nicholas Grous (25:30):

Let's just break out the term, non fungible. So non fungible versus fungible. A fungible asset, or good is something that you can take one for one and exchange with someone and there's no difference. So the example is the US dollar. So if you were to take $1 bill and I have one and Adam, you have one and we exchange those, we both still have $1 bill. There's no uniqueness in those $1 bills. When you talk about non fungible assets or in this case, non fungible tokens, if you were to exchange an asset like that, a non fungible asset, there is uniqueness, you will know the difference. So the example that most people give, and I think most people that have understood or are looking in the NFT space, they see a lot of this digital art.

Nicholas Grous (26:15):

So a non fungible asset outside of NFTs would be the Mona Lisa, that's a non fungible asset. There's only one Mona Lisa in the world. The painting, there's only one of those. You can't exchange it for anything else out there because it is unique. So when you talk about non fungible tokens, what the technology really allows for is to represent digital uniqueness. And again, to give another example, a Bitcoin, if we were to exchange Bitcoins, they're still the same, there's no uniqueness, but when you were to exchange an NFT, you would understand that there is uniqueness. So if you have someone creates an NFT, and again, we'll go back to the digital art example, and there's a hundred different, or a hundred different prints of this one piece of digital art or NFT, each one of those is going to be unique because they will be numbered, they will be issued on the blockchain. So even though we exchange them and at face value, they look the same, because they're the same piece of artwork, actually, there is uniqueness in each one of those.

Adam Bass (27:21):

And much like the world we know, and some of the value of Bitcoin, we return again to the idea of scarcity.

Nicholas Grous (27:29):

It really does get back to the idea that you're not reinventing the wheel in terms of what NFTs provide. It's just replicating this scarcity that we are used to in the physical world now in the digital world. And something that couldn't be done before, because in the virtual and digital world, it's infinity times as much resources as you can imagine. There is no limit in the virtual and digital world. While with NFTs, you can set the limit, as the creator of a piece of digital art, you set how many are going to be issued. Just like in the real world, you decide how many prints are going to be made, how many paintings you're going to paint of a given piece of work. It's now just allowing again for the physical world to be represented in the virtual sense.

Adam Bass (28:22):

That's pretty much what this comes down to. It's the blending of physical and virtual worlds. Now, there's still a lot of work to be done in terms of the technology, the hardware, the software, and the adoption of the notion that this is all a good idea. But once you break through the fear of the unknown, once you get that you've already taken more steps than you know in the direction of the metaverse, you come to understand its inevitability, as well as its possibilities. And that the energy needed to create this new world is neither created, destroyed or wasted. We are not sacrificing one world for another. We're building new possibilities as citizens, consumers, and investors. And as Nick said, when I asked him when we could meet up at Fortnite's Party Island.

Nicholas Grous (29:09):

Yeah, we can meet in Party Island, anytime you want. We can meet in Roblox. There's so many different worlds to explore together Adam. It's not just Fortnite. I know we've talked about it, because I think it's the best example, but we can meet any time, anywhere you want, in one of these virtual worlds. Minecraft, that's another great example. There are communities building out worlds on a daily basis, and you can find me there on most weekends, most week nights, I'm usually playing video games. I'm usually doing something within the video game community. I love it. I really do think it's an opportunity, but yeah, happy, anytime, we can meet anywhere you want.

Adam Bass (29:47):

That's all for this week. A big thank you from co-producer Joe Collevecchio and me, to Nick, Yassine, and Siyu, and to all of you for listening. For more insights into thematic investing and the digital carbon footprint visit msci.com. And for those looking for ways to access this podcast, we're now available on YouTube. Tell your friends. Next up on perspectives, we have a special off schedule episode for earth day next week. Could it be about climate? Until then, I'm your host, Adam Bass. And this is MSCI Perspectives. Stay safe everyone.

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