Eric: This week, I was pleased to have Uri Klarman, CEO of BloXroute on the podcast. Now, when I was in-house counsel for wall street firms in various automated markets, I dealt heavily with algorithmic trading and the issues associated with latency for much of trading on wall street, a millisecond, or even a picosecond could impact execution quality, and therefore firms use software, hardware, architecture, and even geography to try to compress this time.

It was an arms race in digital asset markets, miners, and validators produce blocks on the chain to reflect its change in state, and that production might represent a trade. In that way, the finale that they create on the chain is very similar to what an exchange does with regards to trade, it's an analogy. But Uri, in this episode, shows how they actually work.

And from this, we moved from how sophisticated traders can actually extract value by trying to influence the ordering of blocks on the chain, this is known as MEV. Phil Daian popularized this term in a paper he did in 2019 and has a company called flash bots that provide a lot of data on this, we referenced it in the podcast.

Lastly, we close up with a project that BloXroute is pursuing to make the settling of transaction costs on Ethereum, otherwise known as gas, more efficient. Uri is very knowledgeable and great at explaining. So, I hope you'll learn a lot from this podcast. I know I certainly did. Please give us feedback.

There's plenty of ways to do it. We're on Twitter, LinkedIn, we have a website. If you like the podcast, share it in your podcast app, and send it to one person you think might like it. Why not? Thanks so much. And now here's a podcast with Uri Klarman, CEO of BloXroute.

Welcome to The Encrypted Economy, a weekly podcast featuring discussions exploring the business, laws, regulation, security, and technologies relating to digital assets and data.

I am Eric Hess, founder of Hess Legal Counsel. I've spent decades representing regulated exchanges, broker-dealers, investment advisors, and all matter of FinTech companies for all things, touching electronic trading with a focus on new and developing technologies.

Eric: So, this is Eric Hess with The Encrypted Economy and today I'm super excited to have Uri Klarman, the CEO of BloXroute on the podcast. Uri, welcome.

Uri: Hi, Eric. Thank you so much for having me.

Eric: So, you have an interesting background. We always often start our podcast with that. Do you want to give us a little bit of the story?

You know, what brought you to where you are today here?

Uri: Sure. So, I was actually a software engineer back in Israel, doing, I was a developer doing the regular developer stuff. And I found it not the greatest experience to be, starting work very early in the morning and working very late.

So, I decided I went to Northwestern University, and I decided to do a Ph.D. and, I was very focused on being like, okay, I'm going to academia and professorship. So, I joined

there. I started my expertise is computer networks and specifically blockchain networks, and so I started my research with my then advisor, now co-founder, Professor Kuzmanovic, and we were doing all sorts of research, like on different aspects of networking. And we started to dive into blockchain networking, and when we did that, coming with our background as networking experts then if you things became apparent to us, possibly were not apparent, that appears, to other people. Specifically, how the network clear how in a blockchain, how blocks and transactions propagate, and how that is the single most important bottleneck into scaling blockchains.

And really the only thing that prevents us from scaling blockchains. And so, we really do, we dove really deep into that rabbit hole. And then we came up with BloXroute. Okay. Basically, like an infrastructure, which allows a doesn't matter, which protocol doesn't matter like product agnostic, proof of work, proof of stake, whatever.

And then I remember me and Alex, Professor Kuzmanovic, we're sitting in his room and we're outlining what it would look like and potentially what the business around it. And we said you're not what, this is like a billion-dollar idea, not a million-dollar idea, a billion-dollar idea.

And we have to do it, like you can't give it out. Like this is too valuable. This is too good. This is too innovative. This is too important not to do we started, like we started a company and I had zero intention of working in a startup, let alone, running a startup, starting a startup.

And so, we found ourselves, but we know what needs doing. And so that does that. And so, we started BloXroute, and we hired other people, and Yael, our co-founder joined us. And that was 2016, 2017, or so. And so, like my background, I wasn't even, I was very focused on going to academia, but they told us this great idea hit us and we'll talk about this in a second.

And then we realized we have to do it. And now I'm incapable of doing anything else. Once you do the startup route, I can't, like I used to be a software engineer. Like I can't even touch our product at this point. Nobody would allow me to touch the code. Uri, you'll make a mess out of it.

Like nobody, like not the research. Like I do, bringing the vision and stuff around that, but at some point, once you start doing a startup, it's very hard to do anything else.

Eric: Exciting. And, and where we're going to get into it a little bit. You know, we talked prior to the podcast about this notion of layer zero and there's obviously layer one, layer two on the podcast.

We've never actually broken down the different layers. I think a lot of listeners may understand, but in the context of layer zero, let's sketch out the-

Uri: Sure, you're absolutely, like people throw these words around, like layer one and layer two, and they're not really sure what that means.

And what's the stack off the blockchain. So, let's break it down for a second. So, when people say layer one, they mean the consensus of the blockchain itself. Okay. That could

be Ethereum or a Bitcoin, or I don't know, Polkadot, Solana or any of the other or Celo, whatever. That's the blockchain itself. When people say layer two, they're saying, "Can we build some system on top of it that uses the blockchain, but doesn't put every single transaction there."

So, layer one transaction is, I send you a Bitcoin, I create a transaction, it propagates, it gets into a block, and voila that's in the blockchain. Layer two is saying something like, "How about me and you create a joint account. I put five Bitcoins, you put five or five ETH, I put five ETH, and then that joint account has oh, it's when it closes.

it needs to bring you back in five ETH to me. And then after we do this initial step, now, If I want to pay you one ETH I can just sign you a message saying okay, now it's an update to the joint account. It should be six for you and four for me. And then you want to pay me in. So now it's you pay me two ETH.

So now it's six for me and four. And when you, we can upgrade it a million times, we're not actually updating the smart contract. We keep it to ourselves. And only when we decide a day from now, a month from now, a year from now, whenever that we want to close that account, maybe at the time will you got 9 ETH and I just deserve one because most of my payments were towards you,

then all these interactions don't really happen on the chain, you're just committed every so often. Let's say after a year or something like that. So that's layer two, layer one is the actual blockchain layer, two is on top of it. BloXroute is layer zero, it is operating underneath the blockchain, so we operate at the network layer.

What does that mean? You might run a node, and I run a node, and a bunch of people run nodes, and they send blocks and transactions to one another. We operate in propagating transaction, propagating blocks. We're faster internet for blockchains. Might be a good explanation for it. And let's break it down even further and even simpler.

The way blockchains have work is that let's say I want to send you one Bitcoin. I create the transaction say, oh, send one Bitcoin from my account to your account, and then I sign it so it's a cryptographic signature, which shows that I am in charge of where the money is coming from.

And then I create this transaction and I send this transaction out there to the peer to peer network. Everybody hears it. And then after a while, if validator or a minor, depending on the blockchain would hear all the, they all hear these transaction would aggregate all these transactions it hears into a block, it's successful grid and add that to the blockchain.

So, every so often somebody would create a long list of transaction, a block of transactions, and the result is a chain of blocks, right? The blockchain, which contained all the transactions that ever happened. What do we do? And that's how blockchains work. That's the TLDR. But what do, is that we allow blocks and transactions to propagate faster.

So, we keep everybody in saying oh, here are new transactions here, a new transaction here on your transactions. So, everybody knows all the transactions waiting to be mined, waiting to be added to the blockchain and people call this in Ethereum, it would be as a mempool. There isn't really such a thing as the mempool , there isn't a single one because

at any given time, I might know a few transactions, other slightly different transact, like maybe I know one transaction you haven't heard about yet. And by the time we think you already know three transaction; I don't know when I know two other even. So, there isn't, I think, the mempool. Each one has a slightly different perspective.

And what BloXroute does is keeping everybody knowing the same mempool. So, if everybody knows the same transactions, when you mine a block and you want to send it to your peer, you don't actually need to say. The entire block, like a long list of transaction, you can just send themetadata. You can say, oh, I have this block,

it has transaction five thirty, seven, a hundred and three, four hundred and four, and when I received that, I know what these transaction thirteen forty seven, four hundred and four, et cetera. So, I can, the block can be compressed and decompress on the other side, you don't need to trust us. You don't need to trust anybody else.

You still validate the block. It just when the block propagates on the wire, right? When you send these packets over and again, I'm a networking guy. So, this is my angle. When you send the block on the wire, you're just saying, send smaller pieces of data, because if everybody knows the transactions, you don't actually need to send them.

these are the layers, right? You have the layer one is a chain itself, layer two is stuff on top of the chain, we operate underneath it, right?

The same way that if you run a node, your node has no idea whether the data he's receiving did that went over corporate buyers or optic fibers or through satellite or through a cellular. You have no idea he, or the note does it, like you just got to the data, that's the important piece. And because it's underneath it in the stack and we do the same, we operate at layer zero underneath the chain and before hopping and comparing it two other solutions out there, why are we doing it?

Why did we start blocks up to begin with? Because it turns out that the network layer is the most critical piece when it comes to scalability. And why is that? Because if we talked about how blockchains work um, three minutes ago, right? People create transactions, they propagate, and then somebody take all the trends can add to a block.

There is a prerequisite, there is a requirement. If you want to create a new block and if you valid block and that is, you must know off the previous one, right? You can't add the new block before hearing of the previous one. Because maybe some transactions are no longer valid. Maybe they're already being added in the previous block.

So, you can't add a new block of transactions unless, what's the current state, right? What is it which blocks had appeared? So, you can only create a new block if you've heard the previous one. And why does that matter? Why, what, why am I making such a big deal about it? Because it's, if you're trying to take a blockchain and scale, it let's say by a 100x, by the way, it's nothing like a 100x brings us to we're nowhere close to how big we need to be.

But if we scale it by a 100x, so some minor or some validators create a new one. And it's a hundred times bigger, right? You do a hundred times more transactions per second. As a

block is a hundred times bigger. If I created this block and I need to send it to you, my peer, I need to send a hundred times more data.

It takes me a hundred times longer to send it that data. It takes a hundred times longer time for everybody to hear this new book. And so, the time until the next block can be added, also increases by a factor of a hundred, right? So, you can make them a hundred times bigger, but then you'll have to space them out.

They'll have to come at a slower rate. They'll have to come a hundred times bigger, but the time between blocks would increase by a hundred times.

If we can compress them and send them super-fast to everybody else, then we can allow blockchains all blockchains proof of work, proof of stake, doesn't matter what the protocol is, it's about data propagation. If we can do that, then we can allow any blockchain to scale. And this one got us super excited and how we went about it. And this is why we're super excited about layer zero and like the infrastructure that allows blockchain to scale.

Uri:

Eric: Great. Now I've also heard you compare what you do to what Akamai did for the internet? Do you want to draw that analogy? I think it would also help to explain what BloXroute is.

Uri: Sure. Sure. So, Akamai is a company I knew. I really look up to, I actually am friendly with Johnson Dealey one of the co-founders. And Akamai really change the game coming from MIT in 96 or something like that, of the internet, what they did is in order for people who start surfing the web. And in order to get like you go to a website, there's a bunch of photos there and a bunch of articles.

Instead of you going to the server who runs that website, which might be on the other side of the world, and then get that picture and download it takes forever. So, you go to the website, and it loads, and slowly, slowly, they created the CDN, the content distribution network. What that means is that in any major CD, anywhere close to you nowadays, literally everywhere around the world, this data is stored.

So, all the pictures, if you go to I don't to Twitter or Twitter is a good example, then. You don't actually need to go to their servers in in California or something. And it brings the images there, the images seats I'm in Chicago, that you sit right here in Chicago. So, when I go to the website, it redirects me to grab items from very close to me and everything opened up in a snap.

And that really changed the game for the internet because they changed the experience. All of a sudden you can get everything fast and right. And that's what the concept of CDNs, right? Content distribution networks could just make sure that the data is close to you. BloXroute, we created the BDN, the blockchain distribution network, which allows it's not about static data, like images, rather, it allows for blocks to be propagated extremely fast, to improve the experience and to be able to produce larger blocks at a higher rate. And so, these are of like, like there, there are a lot of similarities. We can talk about the business side as well, but that's like the heart of it.

Like they allowed images and items instead of items to be broadcast. We allow for dynamic blocks, keep coming, et cetera, to be propagated extremely fast. And that's like the analogy. And also, they're an awesome company.

Okay.

Eric: So, we'll sorta take the other side of addressing the scalability, just to continue with the, I guess the educational, see, we have an aspiring professor here, so why wouldn't I take advantage of it? So, so, so. So, in many ways you're doing at the backend in what sharding is also trying to do on, on a layer to sharding or even para chains, or basically anything where you're collecting these transactions and trying to compress them, and then, reserving a reserving, a block or locking a block and then facilitating all this scalability off chain and then putting it on chain.

Uri: So, let's unpack that. So first of all, I would even argue that sharding isn't the layer two, it's a layer one. And we'll talk about this in a second, but these are like are composable um, um, um, methods. It's kind of like they're not mutually exclusive. The idea like Lockhart is completely compatible with power.

I literally spoke with Polkadot guys like yesterday. This is like BloXroute is completely compatible. We allow for blocks to propagate fast. So, let's talk for a second about what sharding is. Sharding is the idea that instead of having one chain, you'll have, let's say a hundred chains, but they're all meaning chains, right?

Each one of them does this thing. Like it's a chain, but. Think of it like a braid, they interleave with one another. Okay. So, you can transact here and transact there. And so, like you have a hundred chains, which interleave, so each one commits to another one. And the result of that is that their security properties are like joint.

So, think about it like if one chain can do 15 transaction per second, then a hundred chain can do 1500 transactions. That's very simple math. And but instead of using different, hundreds of different chains, these are connected to one another. So, they're secure the secure there, finality and security library.

That's an, all these kinds of like parameters are not divided among a hundred chains, rather they are combined among them. And this is the basic idea of sharding. Each is its own a chain and they like interleaving with one another. So, their securities joint Parachain is a very similar concept or also Ethereum and the beacon chain very similar.

But the idea is that they're not just interleaving with one another. And main chain, right? The relay chain in Polkadot or the beacon chain in Ethereum, which all the other chains interleave too. So, it's kind of think of it like 110 then every, so often they commit meet the block, the hash of their block into the relay network or whatever the main the beacon chain is.

And so, with this if we go back to what the definition of layer one and what's a layer two? So sharding, if you take the chain and break it into 100 chains and they interleave with one another, that's layer one. It's not a layer two. It's not on top of a different chain . If you talk about a beacon chain and a parachain, you could call it a layer one or you could say listen, no, the relay chain or the beacon chain, that's the layer one.

And the others are on top of it so the other layer two. So that's it's a game before. I don't think it matters significantly, but that's the principle. And so, blocks are out. How do we compare? If you do a hundred chains and you can successfully do it, then it's a lot easier said than done we'll scale each one of them.

And so, if you can make it that you run 64 or a hundred chains, then you get a 64 X or a 100x improvement. If we can improve that by another a 100x, then you get 10,000 X is great. So, the idea that we can allow. I said earlier that a hundred techs are nothing and we need that much more, a 100x us just to be able to do a quarter of what, what to be say is currently doing or whatnot.

And, nowadays, when you talk about defi, when you talk about all the interesting stuff um, um, blockchains are used. Decentralized exchanges will eat any amount of like throughput that you'll give them. You'll need layer two you'll need layer, one you'll need layer, zero you'll need Agra you'll need every, literally the bigger you can make it, the cheaper you can make it, the more it would be used and more professional and more value would be created.

So, these are not competing solutions. Composable solutions with the slight difference that BloXroute and layer zero is very simple. Like we just discuss it like how it works. We keep everybody in sync about the transaction and then it can compress it. There's no rocket science, math around how you make it work and just breaking the security and merging it again.

So, we're just a simpler solution. So, it's easier, but these are all composable and all or all compatible. Does that make sense?

Eric: It does. Just don't test me. So, so you know that we talked a bit about the benefits of the scalability but what are some of the implications of the network layer that people may not be as aware of?

Uri: From a networking background and, working on the network layer when we got into the fi deeper. Then we all of a sudden realized the defi game is very different from what people think. People think that I'm a defi trader. I go I see that you look at the prices on Uniswap or whatnot like that.

And I wait until the last I see it like a dip and say, okay, now is the perfect time I identify that this is the time I click buy or sell or whatever with that day four or the peak, whatever, or liquidity like liquidity. It doesn't really matter. And they think this is all like immediate, right?

Like you would, if you go to Coinbase or something like that, like you send an order, it just happened and et cetera. But even at Coinbase, let alone in defi, the game being played is actually very different than how you imagine it. So, let's say that you're sitting at home you're, your home trader trading in defi.

Let's say Uniswap.

The prices that you see are not the real prices. It's very similar to playing a game with a very high lag. Okay. And block was mined at a transaction, or somebody sold, let's say ether BTC, or that price has changed by the time you see it, you probably see it like a second later, two seconds later or something like that.

That means that in 15% of the cases and you block was mined, the prices are already there. And you don't even know it. You were seeing the prices as they used to be when the block was created. So, so for, for those who are less familiar, how units Whopper, people buy and sell, like any other trade and ideas that like if I sell ETH for BTC, then the price of BTC would increase.

The price of ETH would go down and there might be arbitrage opportunities and kind of every trade changes. The ratio between prices. Yeah. Thinking put on your, high-frequency trader hat for a second and think about it this way. If you're seeing a block, it takes you in the best case scenario, a hundred, sorry, 800 milliseconds that like 0.8 seconds.

Okay. Under a second, in the best case scenario, you take the 0.8 seconds to get the block. So, you see the prices. Click, oh, buy. I want to buy, if you send a transaction, that transaction is going to take something similar, like over half a second, just to reach the pools and the miners, which they need. Like they need to get the transaction.

They need to try to put it on the block. And then one of them would create a new block. So, during this time, until you hear of the block and by the time you send the transaction, and you block might be mined like a new block coming to Ethereum, every 30 days. On average, but that's the average, right? 8% are mined within a second, 16% or so are mined within two seconds and so on.

And so if it takes, you, let's say. It might take you six seconds until you see if you're using like something like outcome, like I say in fewer was like after a second and a half alchemy where like after six seconds, these are not companies that are optimized for speed. These are companies that we optimized for supporting a lot of users, but they're not there to make it as fast as possible.

So, you might be seeing prices, which are six seconds ago. Okay. Six seconds ago, is forever. It's 50% of the case and you block was mine. Prices are different, you just don't know it. And so, I really think. Think about it, like playing like temple run or something like that. You're trying to run, you're trying to captain gold or something like that, but you're not really playing that.

It's more like a block. You get like a friend texts. You should jump. A block wasn't mine. He takes you a while until you hear about it. And then like you yell to your brother upstairs. Oh, jump. Right. Because that's about your transaction until it's actually. Your chances of, actually hitting the gold are not that great because you're hearing about it slowly.

You're reacting slowly. So, these are things that to most people in defi are completely unaware of unless you're working at the network layer. So, we actually went with, with the defi boom June of 2020 last year, we found ourselves in this like super cool position. We

can give access to, he blocks very quickly, like not at the speed of light, but pretty close to the speed of light.

We propagate blocks and transactions. I don't know, 150 millisecond is our average, something like that. So, we're connected to most op 20 pools in Ethereum. Side note, like we work for all chains, but we focus strongly on Ethereum because that's where all the economic activity is happening. And all of a sudden we found ourselves in this like super unique position.

Um, think I don't know, flashboys for defi is how I like to call it. Like flashboys are the people who connected New York and Chicago. And if by being three milliseconds faster than everybody else, if prices crash in New York, they're the first one to sell in Chicago and, beat everybody else to it.

These are average, something like that. So, we're connected to most op 20 pools and Ethereum. Side note, like when you worked for all chains, but we focus strongly on Ethereum because that's where all the economic activity is happening. And all of a sudden we found ourselves in this like super unique position.

Think like, I don't know, flash boys for defy is how I like to call it. Right? Like flashpoints are the people who connected New York and Chicago. And if by being three milliseconds faster than everybody else, if prices crash in New York, they're the first one to sell in Chicago and, you know, beat everybody else to it.

And so, we do that to the same. We give fast, like faster connectivity, but in defy where you need to be connected to everyone because the transaction can come from everywhere at block would come from everywhere. And so, by operating the, at the network layer, we saw back to your question, like the game is very different than what you think.

And if you're like any, all the major trading firms, like, or most of them are using our services, those who don't. Should it be using our services. And so, because if you're moving a billion dollar a day or $10 billion a day, you should care. So that's kind of like one aspect, um, like just the speed and other aspects that does that.

Does that make sense?

Eric: It does. Does that feed into the ability for, uh, people who are like validators on the pool to extract value or you're getting?

Uri: so, it's exactly. So, a lot of people talk nowadays about MEV, miner extractable value or maximum.

Eric: these days.

Uri: So, true. But that just to make it sound better, it really is about like, the concept is why is it like it's miner or validated whoever construct the block?

Basically, the idea is that like, oh, if I see pro like I could be an arbitrage trader or whatnot like that, but do you know who would be the best one out, uh, trade, oh, sorry. The miner or the validator, whoever creates the block can order. He can pull to the sell orders to price

it, price down as much as possible, and then make a giant trade against them or the opposite.

All the buy orders. If there is a liquidation opportunity, he can drive the price down, create intentionally, create a liquidity. Right? Think about it. Oh, sorry. Illiquid agent. If you have a, like a loan or something like that week is close to being liquidated, you can just make, be able to push it enough in order to liquidate it and then, you know, return it back to, to normal.

So, whoever creates the blocks are actually in the most, in the best position to extract that value. Now miners in pools, actually, that's not their expertise. So, what we're seeing nowadays a lot, especially with flash spots is that they're called searchers, people would look for these opportunities.

Let's say, I can, I can capture 10 ETH from all these kinds of things. Like 10 ETH is a lot, usually it will be like half an ETH or one ETH or something like that. And then I create that like, oh, this transaction, then that transaction there's, we'll talk about front, running back running sandwiches. Like, what are these opportunities?

Exactly. But I can do that. And then I put a really high fee on that. I just like, I give it to the post, include these transaction in these order. And I would pay you 0.9 ETH. Right? So, it's kind of like there's one ETH to be extracted. The server might keep 1% or 5% or 10% or some like a small percentile. And most of it, it would give to the miner.

Why would it give most of the miner? Because somebody else, like there's going to be a bidding war. If I'm just offering him like half an Eve, then somebody else would see it. Exactly the same opportunity will offer him the same thing, but we'll bribe more. So, this is kind of like how the game is being played currently.

And this is why it's really miner, extractable value. It might be done by somebody else, but at the end of the day, the person or the entity extracting the most value is whoever construct the block. So that, I

Eric: suppose, I know, I suppose not all miners would take that. Right. I mean, if I'm giving you an order in the exact order, I want it to be in.

And I say, I want, I mean, it's not so much the order, I guess it's also the precedence, right? Like, Hey, I want to be, I want to be the first in line in this precedence and I'm going to pay you more so I can be first in line.

Uri: Right. So, so it's actually both like, I want to be like, I want to be first and I want this to happen.

Like this transaction, then that transaction, then my transaction, then somebody else's transaction, et cetera, et cetera. And nowadays it's very common in like most schools participate in this. Like, we can talk about further and flush like deeper, but let's break down. So, this is MEV at the high level and we can break it down into what people are saying, what is front running?

What is backgrounding, what is sandwiching, which is doing both and what is like liquidations and toxic liquidations. And so, so we, we can kind of like, I think it's worth maybe touching on this. If we said just a second ago, like I want, let's say this, somebody selling a thousand ETH for USB-C on Uniswap, there is a transaction.

It sells tons of Eve. The price of ETH would go down front running is saying, oh, I want a transaction to happen before that. I want to sell my ETH before the price crashes. Now Tron drowning is not only capturing value. I do this before this thing happened. It's also screwing over the transaction, whoever you're front running, he's your victim.

Because if I sell ETH before that, then I pushed down the price of Eve. And whoever's that send that transaction will get less money. He'll be selling ETH at the lower price. So front running is just, I want my transaction to happen before this. Back running is a similar concept. But if I, if that person sold ETH a thousand ETH on Uniswap, it drove the price down.

And now if you look on all the market arbitrage between like centralized exchanges, decentralized exchanges, et cetera, is the real price is somewhere in between, right? Like if once all the arbitrage is kind of like cleaned and done, then the units where price was pushed to like download too much compared to everybody else.

And the truth is in between. So back running. Oh, I see that the price of ETH went to down. It went down more than the actual price or what I perceived to be the actual price. So, I want to buy ETH immediately after that transaction. So back running is the same thing I want to buy after it happens, because I know the price would continue up until this like middle ground and back running ETH and doesn't screw over the transaction like that there is value to capture there, but nobody like otherwise it would go to the random person who tried to buy after that, but it doesn't hurt the people who created the transaction. So, these are front running and back running. And if you do both, it's called sandwiching. That transaction,

I want to buy before then I want to sell afterwards, and I want to capture all the value around it. So, these are when people kind of like kick, like, like you hear these terms like front running, backgrounding, and sandwiches. They're not, again, it's not rocket science either. I think very simple at the end of the day.

And I think one more term, I think worth exploring here is like liquidations and toxic liquidations, which is basically if I take a loan, like I put Ethan take USBC for that or something like that, I need to have a collateral. Right. I put like, uh, I borrowed 10 Ethan and I put quite a lot of USB-C instead of it.

But if the price of ETH crashes, then maybe my collateral is not enough or close to being not being enough. And there's a process called a liquidation. Is that somebody spots that and say, okay, let's close this thing do so. So, because it's not like the loan is unsafe at this point, let's close it. So, we're not losing out even further.

So, it's kind of like cutting our losses. Right. So, we've got like, okay, liquidate the entire thing. The collateral is not enough and whoever. Yeah. Or originate that and track that is

being rewarded with the bonus, right. It's kind of like, okay, he gets a piece of the pie because he found out there, there there's a loan.

The collateral is not enough and it's bad for the system. So, people are incentivized to notice this and act on it by being rewarded for finding it. So, this is what liquidation is, but if you're the miner and you see, oh, here I have like buy and sell, buy, and sell, buy, and sell. They kind of like balance one another.

But what if I just put like, sell, sell, sell, sell, sell, sell, like, oh, the sell orders after we went in other cruise the price really down so I can create, I can make sure that liquidation happens. It wouldn't have happened by itself, but if I play the right way, I can make it happen. Liquidated, capture the reward, and then put the buy, buy, buy, and everything.

Go back to normal. And the poor guy who wasn't collateral, then I got screwed in the miner or the searcher, whoever initiated. Capture the liquidity. So that's kind of like a toxic liquidation. Does that make sense? Us?

Eric: It's it's similar. It's similar concepts to like, you know, what's regulated on in broker dealers.

You know, the distinction is, is that you almost have to think of the miner. Or the validators as being almost the exchange were, or the settlement where it's trading. Like, because, because today the exchanges can't do that. There's no, there, they, you know, they're heavily regulated at least in the us. And there's no way that you could, you could do that.

But then, you know, then you go down to the brokerage level, their order books are larger. They may be even running their own trading systems and there's games that are played even there, which is why I X has the, the, the magic, uh, the magic school box. Right.

Uri: And so, and this goes exactly to, you mentioned earlier about like, co-hosting like, or colo co-location.

This is basically, they did, like, if you sit at the rice night, so if you're the miner, or if you're a surgeon, like if you hear about all these things, what buy orders are, which sell order, like what's happening co-location is when you think about decentralized exchange, like you wanted to say, literally in their opposites connected.

To their computer directly. And you build your infrastructure to sell like nanosecond. Like every, like the faster you can make it, there, here you need to be faster than everybody else. And so like, if you hear my best and you can front run back or you can do all.

Eric: these that's actually that's no, that's a great point.

That's a great point because I was saying, yeah, it doesn't, it, it can occur at the exchange level per se, but you're spot on because you know, you have these co-lo centers, uh, you know, you have an advantage, you have a speed advantage, you pay more, but you get this great advantage. The difference is the exchange can't do it like in, in the way that the mind or the validator does it.

But in fact, they're actually doing it because they're facilitating it. Right? Yeah. It's kind.

Uri: of like, I hire somebody to do it that I hire means like, okay, somebody else is doing it. He's sitting at my office like connected to my building with it. So, and I charge them for it. So, I'm not doing that. I just captured the value of C Wheeler to miners and validator that like, like they're not, they're just accepting bundles of transaction, but they capture the value, which is again, why is a miner like MEV is the miner extractable value,

not really the maximum. It's not what the total value rather. What can, whoever construct the block and order the transaction. What can he achieve by adding transaction, removing transaction, where you're ordering them, et cetera, et cetera? So, this is exactly that-

Eric: There's a funny story. I'll just throw in while we're on the exchanges.

So, before they actually did all the, the colo facilities before they got into that game, they were actually shopping that would like buy retail space that was located across on the data center. I think it was like a restaurant or something where they are basically some training for him went in and just gutted it and just like, you know, built all the teleco lines so they could get that like immediate access at the top.

We didn't have much quicker so.

Uri: I, I think, I think it was called like the red building. I don't remember. There's like the red building in front of, I don't, I think it wasn't in front of the New York exchange. If I, if I remember the story correctly, everybody bought it because they're literally like the closest hop knew.

Without like being within the building and nowadays you just literally, within the building,

Eric: the stages of the red building was even that they went, and they gutted an existing, I think it was a restaurant or something basically. Yeah. So, so there's more behind that. Yeah.

Uri: Yeah. Yeah. Well, you have background with IEX.

Right. So, your kind of like, you know exactly.

Eric: Yeah. So, for the listeners, I was a, I X was, was a client of mine. And, uh, so I, I actually, um, right around the time that Michael Lewis was writing his book, so who knows, maybe I could have been in, in flash boys, but, uh, I, I chose

Uri: not to go that route. I ex is flash boys.

The people who connect in New York and Chicago. Slight advantage and beat everybody else in, in trading. And so, and, um,

Eric: it's, wasn't the one who got the advantage. I actually was the one who was, who put in the magic shoe box to equalize it. So,

Uri: yeah. So going back to your original question, if you're coming from the network layer, then all of a sudden you understand these games or speed games, or like everybody can participate, but you have a very big advantage.

If you hear all the transaction as they come faster, if you probably get your transaction faster and you can't colo, you can, co-locate like you could with an exchange with a centralized exchange because you need to be connected with everyone, right? You need to be connected with all the pools and all the miners and all the nodes who create the transaction.

To see as they happen. And so, our infrastructure, which is built to connect, everybody can like, okay, we, we level the plane, anybody can get connected and could be co-located right. Because located with everybody, else's, it's more important for the larger traders, just because they move bigger sums of money, but like, it's just as important for your personal trade.

You're just like, is it worth it for me to pay for it? Maybe not the same way that it's worked for somebody who moves like a billion dollar each day.

Eric: And so, and, and one question I have is like, you know, when I, when I hear MEV, my, my first instinct is to think this is bad, right? Because it's an unfair advantage, but I've also heard that there's a lot of arguments that it's not all bad, that there are some positive aspects for the community, uh, associated with them.

Uri: So, so definitely people say there are good to and bad MEV. Um, I'm not sure it's the right to say that there's a good MEV. Some MEV is what you want to happen, which is like, you want the arbitrage who happen, arbitrarily sound bad. But basically, if the prices are skewed, right, like one BTC is worth 10 E or something like that.

And the price of Ethan is so-and-so in us dollars, let's say 2000. And so there should be a ratio like the BTC price in us dollars month must meet that. You can't have like prices being wrong because there was an opportunity, right? If it's kind of, well, listen, the ratio of BTC and ETH is wrong. I see, I see their prices.

It's not really one to 10. It's one to 11. I'll buy it until it reaches one to one to the end. The good MEV. This is kind of like for the centralized exchanges to work for borrowing and lending for all these kinds of things, you actually do want this to happen. You want arbitrage to happen and kind of like make sure all the prices eventually kind of like equal to the where they should be.

The bad MEV is when people get screwed there. The bad MEV is I made a trade and instead of that trading, you're going through somebody's front run me and captured my value. And I got less value because he saw that then background. So, when you sandwich me, et cetera, et cetera, et cetera. So that's that bed MEV that people try to minimize and democratize and do to reduce it.

So MEV in general, like some of it needs needed in most of it, what people talk about is actually a bad thing, but to be completely fair, If you look, it's not good for your trades, but it also wasn't that group great for you when using a theory of cost, like $50 or a hundred dollars to make a transaction.

And the reason that fees were so high. So that takes us to, I think like, uh, like to the next point maybe fees were super high. What, what are the fees like? How are they determined

or something like that? Well, you have like the blocks, how big blocks are the guests limit off of Ethereum? So, in Bitcoin, the block size is determined by bytes.

How many bytes can be in a block in Ethereum? Ethereum is a series off instructions, right? Like store this value, read that value, add this number to that number. And like, by yourself there, and each operation costs, what is called gas. And so, it's the same measurement, but it measured it like what's the, how many gas can be in each block.

And so, fees are determined by. How much the gas limit exists because everybody wants to participate. Right? Everybody wants to send their transaction, but only the most valuable one will be there. So, people like, if you are just willing to pay 0.01 cent for your transaction, and I'm willing to pay 3 cents for my transaction, then my transaction will get like, as a fee, my transaction will get Dean with similar, higher value, higher paying transactions, and your transactions will be pushed out.

So, so the chain is being used for the most valuable transactions. And that makes sense as he tried being. Right. So, think of it as like, as a demand and supply, right? The supply is the gas limit. How much room is in there? And the demand is like, people want to make transactions, but they're not necessarily willing to pay that too much on it.

So, the most valuable ones will get the end of that would be the fee based on like the lower one among them. And everybody else would be priced out. Um, which sounds bad, but it isn't necessarily bad, but. That's in theory, in reality, something very, very different happened. What happened was not people bidding fees in order to be in the next block that they tried to bid fee to put fees in order to be the first in the next box.

So, it's not about being in the next book. It's about the order in that block. So, prior to flash bots and MEV and the current structure, everybody just like, I would beat one another, which drove the fees through the roof. Like even with the gas increasing from 8 million to 10 million to 12 and a half million to 15 million.

So, we like, we can talk about this and the Eagle project and all that in a second. But basically, as somebody who has a lot of books, I'm very well aware of the networking issues, the gas limit and what can be done in which transaction, how many transactions can get there. Even though the supply, the room for fees grew drastically fees actually went up because people were out to beating one another, not to be in the next block, but where in the next block.

And that's drove everybody's fees through the roof now, which the common state of MEV and flashlights. So, people try to create these bundles and try, well, I captured one Eve, I'll try to pay 0.9 of that through the miner, et cetera. This all happens outside of the regular fee payments happening. So regular fees went down by 10 X or, or more than that.

So, with everything bad regarding MEV and about like any should be mitigated and it should be minimized. Tried to be democratized and to the best of our efforts, but let's not take it away. And I was very skeptical and concerned regarding MEV flash bots when they came out, but let's not take the credit from them about being able to drastically reduce the fees for all the users of Ethereum, which is fantastic and great.

And so now we went from this hyper high fees, weird situation into what we expected, the demand and the supply, and kind of like, okay, how would that be being set and how the fees are being are like, depending on the willingness of people to pay fees, to be in the next block, and not where in the next block. So that's going to flash boys and flash bots and MEV, I think, and kind of like all that.

Does that make sense?

Eric: That seems more equitable because if, if you're, if that speed isn't important and you know, I mean, and you're, as you know, you're trading into a market where you don't think there's going to be that kind of variation that makes your execution be, um, negatively impacted by that then, then why not?

In the U S there's a lot of the there was a lot of discussion about even when you have these large firms providing all this liquidity and having a speed advantage, they also provided that incentivize them to provide a more liquid market. And there were liquidity providers. So, they normalize the market, even though you could argue, well, you know, do the speed.

And certainly, there is, there's a spectrum, right? It's, you know, there's, there's abuses, but there's just also normal market economics. So, before we actually moved to some of the work you're doing on, on managing gas limits and block size, I'm just going to like double click a little bit more. On, on this notion of, of, of MEV and how it relates specifically to what block blocks rad is doing, how does the networking component, you know, if you're all working off of the same mem pool, then arguably, I guess it reduces the arbitrage across different pools and thus it, it facilitates sort of a more orderly way of, of managing these blocks.

At least everybody can see what everybody else is doing. And it's not just attributed to sort of some sort of noise that occurs between different men pools. I mean, I'm summarizing it and I'm sure you have a better answer than I do professor. So first of all,

Uri: first of all, I'm not a pro, like I got a PhD.

Eric: I know, I know, I know, I know I'm just playing into it. He's like nervous. He's like I came onto your podcast as a CEO. I'm not going to let people come out of here thinking that I'm a professor and I pointed. He is not a professor. He had-

Uri: Do not believe a word he's saying,

Eric: do not believe a word. I say, yes, that's number one for this podcast.

So

Uri: I think what MEV and flash bot does is kind of like siloing all these games happening from normal usage, which is a good thing. Okay. So, it kind of dividing between what I said about the fees and whatnot, et cetera. Like you want to send your friends some ETH you don't super care where it is like, like it's not buying, it's not selling, like you shouldn't be paying super high fees for doing something like that.

Then for that use cases and a bunch of others it's really, really helpful. Like, so like, you're like, let, whoever played the MEV game, play the MEV game. So MEB kind of like silos all these games now within that again, but going back into what we're doing, if you hear about transactions propagating faster than you have an advantage, you want to hear about all the opportunity you am.

I am being front is like, should I find somebody, somebody else like all the things around that. So that's one thing that, is it an advantage? Well, it starts as an advantage, but once everybody has it, it just like, you know, no trading firm will use like a, like a dial-up modem from like 97, or something like that in order to send their trades because it would be stupid, right.

Everybody is using like one terabit per second, like wire, like in a very well-connected office space or whatnot like that. And it's not liked an advantage. It just like not doing it would be madness. And so, we are kind of like around that position, hearing about blocks later, when you have the opportunity to view about them faster, just like seems dumb.

But so, so to that, we're just allowing to, for, for the actors. To be like, this is the professional grade thing to do. But in addition to that, a lot of like, some people are really not high-frequency traders. They're, all they want is, is not to try and make like front run somebody else. But some firms are doing like two trades a day, but when they do them, you move millions of dollars.

And so, they want to have the front running protection. Okay. They want to be not to be front running by others. So, we, we included this concept of private transactions or front fronting protection where give me a transaction. I love broadcasted to everybody else to be front. Right. And I'll just give it directly to the pools because they won't broadcast it.

They'll just try to mine it. If you pay them in a feeble minded, if you don't pay them in a fee, they won't mind it, but it prevents you from being front drawn and being attacked by the ecosystem. It's not just providing like offensive weapons here. It's providing the armor as well. You don't want to be fronted.

Well, if you're a big it, like if it's a small, like, you know, the daily trader, like you don't move enough money to be very, very important and worth front running, but if you're moving millions of dollars, you don't want to be front. And so, the current set of the peer to peer network is inefficient.

It propagates stuff slowly, and everybody can, it's visible for others who might not Dan Robinson, like hold it as the dark forest over the sci-fi novel, there are monsters in the dark forest. Then you need to be very, very quiet because they'll eat. You don't make a sound really. So, we did every single thing that you'll make a transaction.

It has value. Boom, you're a bit like if you saw an opportunity that you will see your opportunity on just like reach that faster than you. And so basically the idea is not to broadcast through that, but like having like other ways. To kind of like divide the network rather than have everything visible for everyone.

And in some cases, it's valuable. And so, does that answer your question about the network? I

Eric: see how BloXroute can sort of level the playing field for the people on the network and also provide some defensive capabilities and,

Uri: and, and maybe it's worth mentioning like these, these defenses are not just for high, like big trading firms or something like that.

They were not the very consumer facing company. That's not our expertise. Our expertise is infrastructure, but we partner with wallets, and we partner with the decentralized exchanges and with project. So, when they create the transaction, that is being broadcast through us. So, we're like partnering with them, we're providing it.

So, it is available for the, you know, the small day trader or something like that, and anybody could have benefit from hiding from the monsters of the dark forest, it would just be probably through like your decentralized exchange or your wallet rather than through us. Like it would be through us, but we won't talk with you directly because we w we're not a consumer facing company.

We're not. So, we don't have a sneaky why and, and walked out and the giant sales team trying and like giant ads trying to get like all the people out there to use us. Rather, we work with the infrastructure and the aggregators provided us to the, like the best user.

Eric: And then on the security layer or the ability to see the mempool yourself,

I know you've spoken about that, as well. You want to touch on that?

Uri: Sure. So

I don't want people to get the impression will listen locks or can now sensor everybody, and only they get no whereabouts speed. Everybody will see these transactions. Everybody will see these blocks. We can prevent them from propagating, which we give it as a speed advantage.

Okay. You'll hear about that block from somebody else, but we'll tell you about it faster. You don't need to trust us, validated yourself. The way it works is like if you're running a node, your notice coordinated to a bunch of random peers around the world, we're just another peer connect to us. Your node doesn't know, like it won't trust us.

It will receive blocks from us. We'll validate in the same way. Only we would be much faster than everybody else. And if you're not running a node, if you're just like running a trading company, You're already like using in fewer or alchemy or change stack. We've been partnering with Shane sack for a really long time.

So, their speed is actually good for you using one of them. We'll give you an API, like we'll stream your block, we'll stream your transactions, and it will just give you like a speed advantage. We don't really affect the security, right? We're not, we don't have the ability to sensor. We won't give you things which are invalid.

We can't prevent stuff from it. We'll just, but if you're trying to have an edging trading here, but then speed is what matters you want to be as well, connected to everybody as possible. And you know, we spend a few years, like four years now, almost building such an infrastructure for people to.

Eric: Great.

Great. So now to kind of circle back to that, your project on gas limits, which you started to touch on before I brought you back.

Uri: So as somebody who's working on the network layer and who scalability matters really, really strongly, then I am deeper in the world off gas limit than books. And we found that the current reality isn't great.

So, the way it works is that miners and mining pools specifically those who kind of like organize the miners. When do they mind a block, every time they mine any block, they can either increase or decrease the gas limit from the previous one by 0.1%? So, the result is that each mining pool or the processes at each mining bull said, oh, I think it should be.

15 million guests. And this one says, oh, I think it should be 12 million guests. And this one sets like, oh, I think it should be 10. And each one, when it's mining a new block, try to push it in the direction. We think if it's too big, it will push it downward. If it's too low, it will push it upward. And the result is that majority of the hash power in Ethereum kind of drives the gas limit towards like it's jittery, but it hovers around what the miner is thinking.

And that's how we worked in Ethereum, or at least in theory, what happens in reality is that 40% of the hash powers, all the small miners don't even participate in this game. Why? I like to say it's, it's kinda like the American voter it's going to grab my Mo doesn't mind, like, who cares? What I vote.

Like there are so many people out there, um, to insubstantial, to, to affect it in any way. So, it, to our surprise, we found some of them didn't even know that they affect the gas. I mean, it's not a problem. They just follow what the top three mining pools are doing. So Ethermine, Sparkpool, F2pool, and to some extent like pool four and five kind of like affect that as well.

But basically, they decide, like you have leader three people deciding what the gas limit, and that is a gas saving for the entire ecosystem. And even worse than that, they actually have a veto power. Okay. Like if you have these actors and then it's enough for one of them to say, I'm not changing, I'm keeping it at this level.

And if the other two, try to push it in the direction that they think it would stay, where they are, because the other two are like 40% or 30, 40% of that. They're not big enough. In order to push at the end that, and so, because 40% don't even participate, they're just voting for yeah. Whatever we're doing right now, then the three top pools actually decided on the gas statement and it's not a pretty sight.

That is not what decentralization look like. But more than that, it's not just that it's centralized or too centralized because centralization and decentralization is a spectrum. If they're not necessarily incentivized to push it in the right direction. Like if they say, oh, we think it's safe, we think it's good.

We could totally increase the gas limit. Right. Then we actually believe the gas, they would, should be higher. That would actually drive fees down. At least in the short-term they might go up like maybe a year from now. We'll be at the same spot though, actually

make more money. But immediately they're probably looking at a downward, like turn off the fees because people would be able to like, again, supply and demand, you increase the supply prices drop.

And so, they're not incentivized actually doing. To the highest level, which is safe. So that's point number two and point number three, even forgetting about centralization, even forgetting about misalignment of incentives, let's say they want to do what the community. Who the hell knows what the community wants?

Like different coordinators have different opinions, not even to talk about these different users who have very different opinions. You have these pools, which we talk with. And I said like, I dunno on Twitter. And we see what people argue. So, people are shouting on Twitter, but yeah, I can't really know.

What's the actual, it looked like the fact somebody is super loud on Twitter. It doesn't make it the majority, like I know what the gift team thinks about the gas limit. Like what does the tuber gift like? Are we going, what do they think? That's a different client? What does Nethermine think about? Like, there are a lot of like, nobody knows.

So, there is really a lack of transparency for the minder who decided this. They have no idea what the community actually wants, and it actually gets worse when you move to ETH 2.0, right. You run a value that it's even further decentralized. What Eric, you run in east to validator you now sit the guests.

What do you set it to? You have no idea. Like at least the big mining pools, they can pick up the phone and talk with retaliatory. Well, they can ask him, they can actually have access to at least the more prominent. Therefore, it's not a great situation, but it's something, the more decentralized is like the smaller pools don't have that access, et cetera, et cetera.

And so, this is the current situation, which kind of like makes it that the gas limit arguments resurface every six months, every six months usability increases. And then people say, oh, we should increase it. And somebody was like, oh, we should increase it. And people argue and argue, but it's all pointless because they're not the one deciding it's the pools who decide and the pools, aren't really sure what they should be doing and what the community wants.

Does that make sense? It's kind of like, what's a problem that we're trying to solve.

Eric: Yes.

Uri: And maybe, maybe one more point on this. Why is that important? Because. Every 2 million of gas limits. So right now, it's like it was last year. It was like a 10, if you increase it to 12 million gas, that means revenues of something like a hundred million dollars per year of value for users.

Okay. So, if you think in 2020 uni swap LPs earned $175 million. Okay. That's low, like in fees for, for providing us a gas limit. And now we're at 50 million guests. So, we already increased that. If, if the gasoline had, had been increased earlier, they'll make another, at least 35 million, 35, $40 million 11, they could have made.

35 $40 million last year, but they didn't right. We increased it afterwards. If we think it's safe for the gas statement to be a 15 mil may, maybe we should have done it. So, the LPs lost $40 million in revenues. The traders who use Uniswap arguably captured the same amount of value as the LPs. Maybe more, but we'll be conservative.

So, let's say traders lost $40 million off trades or of value capturing there. So, it's $80 million that the Uniswap users lost on the current gas limit. The rest of defy is probably like Uniswap is almost like half of the first. And like I said, we're talking like 160 million per year that they lost.

And I'm not even talking about fees that potentially talk about another a hundred, $200 million of saving. I'm not even, I'm talking about the usage, the value that is not lost there. So, the gas debit is actually very, very important. It defines how many trades can happen, annuity swap, and how many borrowing and how many lending go to happen like on maker and all these kind of things.

It really defines how much usage can work and it's tons of money for the user. So, it really should be. It's not something where, well, I keep it at 10, It doesn't matter. It matters. It matters a lot. And so, we came up with the Ethereum gas limit project or Eagle, which become like the name and the Eagle project.

I EGL Eagle. The Eagle project is a project that aims to solve this. And the way we created it, as we created the token, it's simple, it has three components, which we had the token. Anybody with ETH can stake it and get three Eagles. So, this is how people get Eagles, or you could, I don't know, buy them or whatever.

People with Eagles can vote on their desired gas limit so I can vote. I want it to be 17 and somebody else could vote it, like put it at 13. And there is, it's a collaborative tool. Everybody can kind of work together. And every week there is a tally vote. So, like, it's going to go. We want to gas limit. If we look at everybody and do a POS right.

Proof of stake on I fake, well, I have a lot of Eagles, so my vote carries more. You have less Eagles, so maybe carries less. But if you lock it in a longer period of time, so if you're a long-term actor, then your vote carries more weight. But every week there is like, oh wait, desired gas limit there, tally for vote.

And this is what the community. Now, this doesn't force the pools and the miners to do anything. Like it just tells them this is what we want, but pools in miners. When they mine in new block, they can sweep free Eagles. When you bind a block, you can get for Eagles and how many free Eagles you get, depending on how closely you follow the desired gas limit,

like what the community wanted. If you're a million or something, you're not getting any Eagles. If you're very close, you'll get quite a lot of people. And so, these are kind of like the pieces around it. And maybe the last piece, which is worth mentioning, we're actually giving quite a lot of Eagles to core devs of Ethereum, because for them to vote because it's important, but more important for them to signal.

So, Cordell. We want them to signal to the community. Oh, Vitalik, think this Peter from GIF. Think that, okay. He thinks it should be 10. And I'll say from, are we going to think that

we'll be 20? And I dunno, so each one can vote. And now you, Eric, if you run a validator or if you have Eagles and you want me to kind of grew up, I don't know what he's the answer, but here are the other answers.

It'll be important people. And what they're thinking. So, we give insight, you have like a hundred core different core devs, they have different perspective and thoughts, and Eagle allows you to see what they're doing. And then maybe you have your own intent. Maybe you're not every cast. Maybe, maybe, maybe you're a 16 Z.

Okay. Maybe you're 86 in Z. And you're betting billions of dollars on Ethereum success and tokens on top of it that you really want ETH to succeed. So, you see what others are thinking. You hire your own experts; you study it very deeply and you come to a conclusion. I think the current, like the gasoline.

I dunno, maybe it's, maybe it should be 15, maybe 15 is fine, but we should really aim to be at, at the highest level, which is, which is. And that's kinda like the Eagle idea and we're super excited about it.

Eric: So, let me take a, a different take on it and just to put you on the spot. So do you think this could be used as a tool to sort of coordinate a price, pressure up a gas pressure up, uh,

price you mean price off, like

yeah.

To increase fees. So

Uri: short answer is no, there are two. And again, I gave like a high level overview first. You can't really, it doesn't change the gas steam make significantly. Oh, like we changed it from 12 and a half to 15 million on a day. So, like, it doesn't change by two and a half million. It can only change by up to 1 million gas per week.

So, it's a slow moving system intentionally, but more important than that, that we get usually a slightly different quote, like a similar question. Can it be misused can scammers or, or hustlers or whatever, try to use it to push. And kinda like they have a strong incentive and kind of can make some value out of that.

And the answer is, is that the system rewards long-term participation much more strongly than short-term participation. So, if you buy 10,000 Eagles and you vote with them and you're trying to make somebody and you lock them up for a week, if I vote, if I lock mine for eight weeks, my vote counts eight times more than you.

So, it was a starting point though, to our long term. And that means you'll have to hold this for eight weeks. So, if you miss the behaving in a way, then you're saying like, you can't make a quick, like arbitrage on that day because you're being blocked for a serious period of time. So first of all, we reward long-term participation by, by carrying higher weight.

The second is that the traders and the arbitrage and all those tried to make them, they have value, and they have money. Like they're not small, but they're, I'm substantial

compared to let's say all the Uniswap holders. Okay. Or. Coinbase are a $50 billion company, Binance, probably something similar and et cetera.

Again, these are companies that have. A lot of interest in the success of Ethereum, right? They're better. Like they want to see a few of them succeeding because their entire business is about crypto, ETH and others, and they want, whatever is good for that same goes for, I dunno, consensus and poly chain and Pantera and whoever, so the money.

And I'm not even talking about all the ETH holders out there. And so, then money held in both decentralized, like LP holder, like Uniswap users, Unisource, LPs, et cetera, and centralized like VCs and Coinbase and buying like large actors, et cetera. The bags, the money, the, the, the, the leverage that these people have is so much bigger is let's say differently.

Their stake is so much bigger, and they can act that they can definitely lock it up for eight week, like it's in for them. So, all these games that you're like, oh, can people play with it this way? And that. Like those who can play these games are a much, much smaller group. They don't have carry the same resources.

They're much more like short-term actors. So, the fact like thinking of locking up your wealth for 10 for eight weeks is unconceivable for somebody trying to get like quick arm opportunities and in these kinds of operations. And so, this is like, this is what, that's the long answer to the short answer.

No, it's, it's not, it's not a real concern. We shouldn't be, we should be aware of it, but it's like all the incentives and mechanisms are built against it.

Eric: So, Uri, this has been great. I really appreciate it. I'm up against my next meeting, but, it's been fantastic having you on the show.

Thanks so much for joining.

Uri: Eric. Thank you so much for having me. This was great fun. I hope listeners found it interesting and fun too. .