

## Web3 and how we got here | Chris Dixon

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It's very exciting to have everybody here. We did this first three years ago and the original idea was that we just felt like in a lot of meetings we would just sort of, there was just a lot of information that wasn't kind of getting out to the entrepreneurial community and so we said why don't we kind of encapsulate all that information and do a program and frankly it just really kind of beat our expectations in terms of just the excitement level, the great companies that came out of it, the number, I think we had over a million views on the videos and so it was just great and so we said hey why don't we do it again and so that was sort of the origins of the program you're in now and as Jeff said like we were amazed at kind of the number of applications and so it's just really exciting to do and we're hoping for another great session and last time we had, we got hit with COVID and so we didn't get to do it all in person so hopefully this time we'll have a lot of in-person interactions and a lot of the value will come from the folks you meet, the other participants and all the people in our network so great. So I'm going to talk a little bit about the kind of the broad history of the internet, why this whole kind of crypto matters, blockchains matter, you know what's kind of the big picture in this, we're going to have a lot of follow-up, much more detailed talks from our partners and friends over the next few weeks so I'll skip some of the detail here and just kind of give you the big picture.

So basically what I'm going to talk about is the way I kind of view the history of the internet, there's three eras, three kind of broad histories, eras of the internet, there was kind of the pre, well the sort of pre-history which is you know the actual internet started in the late 60s and there was sort of government and academic kind of use cases but kind of really the modern internet began with the web 1989, then you had sort of the internet boom in the 90s, obviously you know today it's a sort of you know it permeates all of our lives, the importance is indisputed but for actually for a long time during my career that was actually quite controversial and there were a lot of ups and downs along the way but basically I kind of view it and I'll go into more detail as breaking down the three kind of core eras and I believe we're entering the third era now and then and kind of the way I view it is each era is has kind of is marked by having a key network architecture and I'll talk more about this but networks are kind of in my mind the killer app of the internet and the architecture there's a very interesting thing which is the architecture of how you build those networks has all sorts of downstream consequences in terms of the economics and the user experience and other kinds of things so there's kind of this nice symmetry where there's either way I view it is there's sort of three eras of the internet each one had it's had its kind of dominant network type each one also had kind of it's what I think of as its canonical computing primitive so the web came along and you know you had this idea imagine you had a product idea I'm gonna have

everybody in the world put information on a big repository and share it and it's not going to be total chaos right you need a simplifying principle right like how are you gonna make this not okay it's a it's it's a the web is sort of this massive multiplayer social game right and so like how are you gonna make this thing not cacophonous and the answer was a website it was a very we take it for granted now it's the oxygen we breathe we assume this is just how things are that was a very profound idea there's some great videos and you can look at from the 60s of people kind of inventing these ideas but the idea was you can take this information whatever you want to do code data anything else you want you can put it in a thing called a website and that website can link to other websites and this is a very important kind of what I call encapsulating mechanism simplifying mechanism to take this really profound idea of like all of humanity is going to have information that links to each other and make it something that you could that you could actually kind of work with right and give it a sort of a digestible unit and then in the right ear so I call it read write own sort of the read era is the we democratized in the in the first year of the internet roughly 1990 2005 democratize information consumption that was mostly what it was about the killer app of that era was Google and Wikipedia and things like well with Peter's a bit later but like you Google something and you find it that was a magical new experience as if someone said that the that the average user now has more information at his or her fingertips than the president states did 30 years ago right like it's it's kind of remarkable we obviously all take it for granted that's really what the first year I did but you know having lived through that I was a software developer back then it was still very much what I call skeuomorphic it was the web felt like you'd take magazines and you'd put them you know sort of as websites like brochures and it was it was sort of a one-way interaction there was some like you would submit a form or do something else but it wasn't like a really a social experience and then in the I'll just oops in the in the kind of 2000s I was there this is a really exciting time one of my favorite times in my career was in the early 2000s and we'd be sitting around rooms like this literally like this is kind of like a bunch of people we were all excited and we're like what if you could suddenly what if you could there were a little early inklings of it but like what if you could make the web really a genuinely two-way medium right where where it would democratize publishing the way that the first era democratize consumption right you know so that was there were sort of early precursors to a lot of it came out of blogging there was blogging was kind of this this kind of interesting fringe movement where people would post stuff in simple ways and you had software to do it and that that led to people like Mark Zuckerberg creating Facebook a lot of the ideas for social networking and things were taken from those early kind of communities of bloggers and other kinds of things and in fact you can kind of I look at blogging is kind of this primordial soup where you had all this kind of genetic mutation and things come out unless you had flicker and that flicker led to photo there was sort of photo blogging there was link blogging there was a whole bunch and each one each kind of genealogy genealogical tree led to like a whole set of interesting products and so that so that was sort of the right era and it and you know it's a wild success it was incredible right like it

like I think back to conversations we had kind of like this and 20 years ago and we were like what if someday you could anyone could publish something this and that and like it's kind of amazing how well it worked but there was and I'll talk more about this there was I think there was sort of this Faustian bargain where there was a downside to it which is the the thing that brought us there was a new network architecture called corporate network things on the next slide yeah so let me let me then step back for a second the the you know one of the kind of amazing accidents of his accident historical happy happen stances I guess is I said accident once and I and Tim Berners-Lee like said what accident like you know so anyway so I just a blog post so I should be careful it was a very great design decision early on and had to do with the history of the internet it came out of academia and government IP the actual kind of base layer of the internet was a DARPA project and basically what was at the time you sort of you're in the 80s and you want to build this global multiplayer social game called the web how do you architect it there were no Google's AWS data centers and this and that so you had to build it in this peer-to-peer way right and so what they did is they came up with what we can now call protocols which are just standards I mean there you can go and look at the HTP is the kind of HTTP is this is a standard for the web and SMTP is a standard for email and a protocol is kind of like a language like a language like English like it's like a set of things like if you want to send me something here's the rules for doing it right and and the idea was anyone could just and then what would happen is the protocol would get built into software someone build open send mail and mosaic and all these other kinds of tools that would that would then take that and codify that protocol and then you go download that software and you'd be you join email you join the web right but very importantly there was no central intermediary no one controlled it there's standard bodies and things but it's sort of like for we're all crypto here it's like you know people debating EIPs essentially like EIP you know for like it was sort of a community-led thing there was no one really in charge and very importantly it didn't charge you any money you could put a website you had to buy domain \$8 but like you put it up and if you built Amazon literally or Google literally you made a trillion dollars like and it was yours right or didn't make that the company's worth that you know so like the point was you built something and you own it and it's not just the the the big companies this was a very long tale of creative people you know artists and game designers and anyone who wanted to this is a very important idea anyone who wanted to could go up as long as it was legal and you could build a website and if it was valuable you could keep the money if you built your musician and artist or whatever and you built an audience you get to keep them same with email this is a very very important idea and by the way it didn't have to people kind of look at it like it's inevitable it's not if you go read the history of it there were like a lot of smart people who thought that actually this information superhighway if you go read the history that was not the web that was this corporate alternative to it run by Comcast and Disney and other things in fact it's quick anecdote Bill Gates wrote a book called the road ahead I think it was 1995 and it was two years after the browser came out so kind of you know things had started and he talks about all his predictions of the future and he

did not use the word the web in that book in fact later then bought all the copies and to get them off the market and put out a revised version and so like it was not obvious in 1995 like two years into like this is two years after the Netscape IPO you know so this is not it was it was already happening right but it was like there were two competing architectures there's like can companies own it or is it going to be this crazy kind of it was a pretty radical idea like anyone can add something on nobody owns it and and I I would argue it led to all of these incredible innovations in the 90s right because you had this sense of genuine ownership you had sort of property rights I won't go into the details but that a very important thing in that is DNS so DNS is the naming system of the you know domain name system so I own cdixon.org and that maps to an IP address and a very very important idea in the first year of the web is that I I control that mapping it's a very simple thing right it's this is this is a very important point I think it's lost a lot this one simple decision which is the user controls the mapping that shifted all the power of the network to the user right because what that means is I can build up my website I just did this recently I switched hosting provider for my website and when I switch host I don't like there they charge me too much they're slow whatever who cares I have the power I switched right I switch and I kept my network I kept my inbound links I kept my search results same with email although that you know email you could debate is now maybe getting kind of hijacked by Gmail it's so powerful but at least for 25 years email was the same thing you don't like it you can leave and that what that did is it forced the providers the Gmail providers the browsers all these people to play nice they can't go and they can't do all these things when we get to corporate networks we'll talk about where they play games and take the money and do all these things they can't because you can switch and you and it's not switch like fake switch like you know Facebook has some feature where you can download a CSV file and take it's that's it's fake because you don't take your audience with you if you build up a million follow I'm I have a lot of followers on Twitter I can't leave I can't I can download the follower list but I can't take my audience with me I don't want you know I want to opt out I want to use different software no you can't do it anyway so and that was a very very important thing and it you know sort of happened partly through I think the foresight of the designers partly because you just had no other way to kind of architect it back then you didn't have central intermediaries you know partly because it was government-funded there's a whole bunch of reasons but it was a great thing right so then the let me come back to this the so then so then in that was so do you had this rise of the kind of the right era networks in the 2000s and you know this has I guess fast-forward for a second this has led to you know today a few kind of quick stats you know going back to sort of you had this Faustian bargain so you have these new services which I'll talk more about the architecture of them in a second I call them corporate networks they had a lot of advantages things like YouTube and Twitter and Facebook they were better user experience you could subsidize hosting costs you could do all sorts of things and there's a bunch of reasons why the sort of next year of the internet was dominated by these corporate networks the downside I think today you fast forward and I think it's we've got

we're in a really problematic situation right now where all of these wonderful things I was talking about earlier on the internet are basically I mean you still have those networks but they don't matter as nearly as much right if you go talk to I don't know a person down the street in LA who's an influencer they're not trying to build a website and or an email list for the most part someone that there is some backlash with sub stack and things but for the most part it's tick-tock it's Facebook it's Instagram etc right and so this has led to the top 1% of websites is it's 95% of web traffic 80 I think 85% of mobile apps the you know the economics are similar the Nasdaq 100 50% of Nasdaq 100 is the five big tech companies that's doubled over the last decade that will continue to double things like AI I think will accelerate those trends so we're basically like I don't know if this is a you can debate whether it's a good or bad thing I don't think it's a good thing but we're basically headed to a world where five companies control the internet and it's very very different than that kind of original vision so you know what is the internet like the internet we know what the internet is in a technical level but I see the internet as a system for creating networks so if you look at your phone and you think about the things you spend time on the internet most of what you interact with our networks emails a network the web's a network tick-tocks a network Instagram's network uber's a network eBay's a network like most of the things you do on the internet or networks and as I was describing before with things like DNS the way you build the network ends up having all of these very important downstream consequences around the economics and governance and and who can build I don't know I would say a quarter of our companies are rejected by Apple these days like you want to get in the App Store you got to get the permission that didn't happen on the web right the web as long as it was legal you could do it so who can build you know there's very famously this happened with there was a whole period probably all too young remember this but like a lot of my friends were building Twitter apps and Facebook apps 2010 ish that was like the thing to do why because that was sort of the new internet and you'd build on top of the new and all of those companies got wiped out because they change the API's they change the rules because they unilaterally control it so network architecture is destiny and as I was describing protocol networks have this sort of decentralized thing where there's no one in charge corporate networks you know there's there's this sort of trade-off you had which is on the one hand they can do a lot of stuff and I'll talk about that there are good things about I don't want to disparage it too much but but there's a there's a big negative which is essentially you're just saying this company behind it has complete power they have complete power of the economics they have complete power of the governance who has access all these other things and specifically the like so for example there's a very important and I'll talk more in detail about it in a bit but there's a very important concept in networks called take rate which is the percentage of the sort of the money think of it as like there's a river and there's money flowing through this river and how much does the does the network operator take of that river it's kind of shocking but in social networks it's basically outside of YouTube it's 100% right so they take a hundred percent so it's 150 billion dollars a year of last year and social networking

revenue all of it went to the networks you know I think you make a very strong case that if it were architected as a protocol net if social networking had if RSS specifically which I'll talk more about had one as an open protocol alternative social networking a huge part of that 150 billion would have gone to creators and users and software developers instead it goes to these central intermediaries maybe that's a good thing maybe that's a bad thing but that's the fact is that the architecture is destiny and if you build networks in this way that are corporate networks you end up with the economics and governance that we have today you know for me the you know the way I won't go too much into blockchains themselves because I know we have sessions on that I view blockchains as a there are new kind of sort of virtual computer built on a network of computers the key feature of blockchains is they invert so in a traditional computing architecture if I you know put put a if Google puts a server up and puts up a network ultimately they control that network as they control the hardware they can change the software they do it all the time imagine as a thought experiment of Google said we're gonna have Google coin and we promise we'll only have 21 million Google coins no one would believe it right because they would just change it at some point there'd be different management team or something else and founders leave and things change and you just if you give that power to one group it's just not it's not really credible blockchains invert that what blockchains do is they say we're handing the power over to software right the software is in charge right if you write a smart contract in aetherium this is assuming consensus works and I think the folks in this room understand that but like making certain assumptions and of course in the case of let's say aetherium these assumptions have held through the life of aetherium right the code has if you write code for aetherium you write something on chain that that you know that that is immutable code and so you can do a lot of things with immutable code I think the most important thing you can do with it is you can build new networks you can build networks on top of blockchains that give you the societal benefits of protocol networks but a lot of the competitive advantages of corporate networks I'm gonna talk about a little bit about this about protocol networks the the you know I think the key thing to think about is that you kind of divide kind of the features into two buckets I think of is economics and control so economics very importantly protocol networks took no money there was no take rate all the money flowed to the edges on a control as long as it's legal you can do it you know that allows for all sorts of interesting innovation they had a big weakness which is how do you fund them right so email on the web they funded through kind of government funding and everything else there's a there's a kind of a really interesting case study of in the 2000s there was a protocol people I know RSS but RSS was like a legitimate competitor to Facebook and Twitter I would say up until I think it's like 2010 or 11 if you look at Google Trends it dropped dramatically and so the idea with RSS is hey like all these great things we've done with with the web and an email and sort of all the advantages of protocols this new thing social networking is coming the Internet's going to be more for more than just reading information it's now going to be for publishing information let's build a protocol to do that right and so that was RSS I was a big RSS user it was sort of the

default early Twitter and Tumblr and all these Facebook even they had RSS interoperability that was just the assumption you had to have that and that was great the problem with it is you know Facebook is all these companies they raise many billions of dollars of venture capital they have they could hire all these developers very importantly they could subsidize so let me give you an example so YouTube came out in 2005 and I remember that it was like broadband broadband was just I think it had just hit like 40% or something like this a penetration believe it or not like everyone else saw dial-up and and so then entrepreneurs you know being smart entrepreneurs that they are light bulb went off and they said hey let's a bunch of friends of mine and people I knew or you know we're saying hey let now that you've got broadband you can have high quality video so let's go do video startups right so that was a big wave in like 2005 ish and then just like all these kind of startup waves you had different strategies so like some people would go and try to license content sports content and CBS content YouTube took us to actually YouTube stars a dating site but then they pivoted video dating site but they pivoted and they said let's take this view of kind of viral social videos you know anyone can upload anything right it's very controversial because when Google bought them is very controversial because they were seen as just for piracy and it's all the kind of stuff you hear like about crypto today like a lot of this stuff was very much more Wikipedia was banned on universities it was huge controversy but it's crazy now but anyway so YouTube said let's you know let's let anyone do that but the problem is YouTube had no traffic in the beginning all right and so like why would I go and post something on YouTube and so they did I call this strategy of a blog post about it come for the tool stay for the network and the idea is a strategy for kind of proliferating a network which is you give sort of you think of a network there's sort of a single player mode in the multiplayer mode like a video game and so you sort of come up with like what what's a single player use case until you have a big enough network and so what YouTube said here's the single player mode which is you get free you get free easy hosting so you're like I Chris Dixon have web traffic but it's all on my website I don't want to care about YouTube they have no traffic in the beginning and so but but they gave me free hosting so I went uploaded the video they hosted it they put it in a nice little you know widget and then I would embed it on my site that's actually how YouTube started right but it was free hosting now RSS what would I have to do at the time I'd have to go buy a domain which at the 2000s people like me were still the dominant Internet users like people that had domains that's not true today most people don't have domains it's still kind of a technical nerdy thing you get to go buy domain but then you had to pay for hosting costs it was expensive so like host video and everything else so YouTube subsidized it right so that that's a huge architectural advantage to corporate I would argue that's probably the main architectural advantage corporate networks had over protocol networks and why RSS lost to Facebook and Twitter and everything else is they could raise venture capital and fund it and by the way the other thing just mentioned is if you go back it's funny to think about but early 2000s eBay was probably the most respected like Wall Street respected internet company more than Google more than in

fact the stock was higher than Amazon you know Amazon was seen as kind of this really capex expense you know heavy you know they had to actually ship stuff eBay was this beautiful pure network the it was a pure network effect they just put up a website you had sellers you had buyers they didn't have to ship they'd have to handle payments that was outsourced they eventually about PayPal but like and and it was this beautiful network so and and the you know benchmark who had done there's a book about them like that was one probably one of the same I think was the best returning one of the best ring investments of the 90s and so VCS in the 2000s they understood networks right as being the biggest moneymaker right and so when YouTube and Twitter you had tons and tons of money come into that space and I think it just flooded over and ends up look if you look at the stats like it just crushed you know RSS and and you know and just all sort of there were a bunch of other attempts to do kind of protocol network alternatives and so that's why we had this rise of corporate networks so then what happens is and this was very interesting for me is you know I'd say like for me at first I would say I for me it didn't really the light bulb didn't go off like this is a problem until probably 2010 ish or something because at first is like okay so what so like you know you've got this these are subsidizing they're subsidizing the hosting costs you know they're still supporting RSS they're still supporting all these APIs this is a good thing right but then you had this moment in fact Twitter Twitter launch I believe 2006 they actually didn't have an app or a client until 2010 and they got it through an acquisition Tweety Tweety I think or some other Twitter client and then they actually deprecated but there's time around like 2011 and 12 if you go look at the news like all these services basically stopped supporting RSS deprecated all their API's there's very famously like Zynga and a bunch of other companies that were like cut off from Facebook's API Twitter had this I mean there were there was a literally a VC firm I knew it I knew the people there who that was focused on funding Twitter apps it was that big of a sector I mean there was like it was a big sector of startups it just like ended overnight and so and at some point it was like wait what's going on this is different like this is not like the web so webs changing this is for me the light bulb moment when I got into crypto and I you know I've thought about a lot over the years and this is kind of my analysis here which is what happens is you know you're early on your your Facebook basically this cycle and that over time the incentives this is nothing to do no one's malicious no bad I'm not impugning any one's motives here this is just like to me the logic of this network which is these types of networks is architecture which is when you start off look you start off your YouTube you're five people in a room you're doing everything you can to get creators on you're giving subsidies you're doing also you know you're just like because you have no network effect right but then eventually you scale up you have a big network effect and your incentives change I mean literally like I've been in these boardrooms where it's like hey now you got to focus on making money you know I mean so there's like the literal kind of embodiment of it but it's also like at that point like inner operating isn't as useful I'm the big guy like if you just if you kind of look at you know for you know sort of this Metcalfe's law which is this idea that which is roughly accurate which is the idea that networks kind of the value



increases exponentially as the number of nodes the network goes up if you just think about that like if you're if you're a telecom company that has 95% market share in the country and you're another telecom company has 5% you know the 95% person doesn't really need to interoperate with the 5% they can have a good business most people will use a service 5% needs to right so there's just a core logic to kind of these corporate networks where the big the bigger you get the less incentive you have to interoperate to support kind of other networks to allow creators on and you get into I say called the attract extract cycle you start off trying to attract all these different people around your network and then at some point you start squeezing them and you try to take the money out and to me this comes out of again it's not like the problem of and people try to mitigate it you know Google's famously don't be evil like hey we promise we're not going to do it but the reality is founders leave and you know and eventually the sort of logic of the model takes over and like the profit maximizing strategy of a corporate of a net of a company that owns a network is to eventually start extracting if you don't do it your competitors will do it and you'll go out of business so like that's just the way these markets work so this is the challenge with them and then I mentioned earlier the take rates you know I think for me the two kind of people can debate I mean you see in the headlines there's also it's a controversy the platforming there's politics there's how do they rank the algorithms like I'm not gonna get into that stuff that's not my kind of main interest my main interest is I'd say it's twofold the economics they take 100% and generally it makes it really really hard for the ecosystem to make money and then the stifling innovation competition so you know epic is suing is suing Apple as an example you know maker of fortnight like you know if you tried to buy a Kindle I always think it's funny when you try to buy a Kindle book on your iPhone you have to go to their website it's because they're getting around the payment thing they charge 30% on payments like the normal fees on payments is like 2% this is crazy so anyways that's corporate networks so like I talked a little about this like look it's you know I the funny thing about being in the space we're in is like that I sort of see that the world is there's people who agree with a lot of the stuff I've said like Jack Dorsey and I don't know a bunch of other kind of people who seem to think okay there is a problem with corporate networks I think that's sort of decision point one a bunch of friends of mine who are open source developers like decision point one is do you think there's a problem today and then this and then this decision point two is what's the solution and you'll see a lot of people try to go back to protocol networks I would love it if we could do that I've been trying to do it for you know involved in this stuff for 20 something years and like literally if you go back the only protocol networks that ever gotten to scale were the web and email and they were both sort of incubated in this hatchery fish environment before they had competition it's been 30 years since you had a new protocol network that's seeded and like RSS you know I've a lot of friends is like you see they'll try to build new things on RSS like I'd love for a succeed but like let's just be real like it's just not working and let's go figure out what the problem is diagnose it and come up with a better network architecture okay there's just a slide around the take rates these are the left side is the

scale of these companies the right side is the take rate I'll come later on to blockchain network take rates you know Zingo was a famous example where they stifled innovation so the question is is there a better way so like you know so for me like I've been now involved in this space for over 10 years for me like I started to sort of sense that there were like real issues here and and you know when blockchains came along it took me a while to kind of articulate it the way I am but I think that to me the exciting part was that this was a new way that you could build networks that have the societal benefits of protocol networks and all the good things I sort of the best of both worlds the side will benefit protocol networks but they can actually get funding and features to compete with corporate networks so you know I think folks here know this and we'll talk more about blockchains later but you know this doesn't really come out on the slide but the essentially a blockchain you still have a core right you have a blockchain network so let's take you know something like Uniswap as an example there is core of smart contract code running right but the idea is that core two couple things one is immutable code right so like Uniswap's a good example where they can't even even the community can't change that code right there's no upgrade mechanism nothing it's just that code is that code if they release new versions it's literally a new set of code it's immutable code it's instead of don't be evil it's can't be evil they can't change the rules they can't screw you later on that kind of attract extract cycle they just can't do it it's in the code and so you can decide as a developer as a user you know or like take a social net I think some some folks here building on Farcaster like you have a new social network built on a blockchain right the rules are going to be baked in there they're in the smart contract and you can decide if you're a developer do you want to build on that you can shop around and you know what you're getting right that's very important so you have competition and you have you know you have people you have choice and so you know what you should think of here is the core is much much smaller than in a corporate network you're building the way I think about the analogy I like to think about blockchain networks is as much more like building a city than building like a theme park a corporate networks like a theme park in the sense that the corporate owner you know Facebook they every single feature of Facebook and Twitter is built by a Facebook or Twitter or tick-tock whatever pick your network it's built by an employee of that company at this point essentially right because they kind of killed off all the innovation around it and so that's why they have Google has 180,000 employees Facebook has 50 that whatever those people build all the features right and so if you want to if you're Twitter and you want to solve the spam problem they've got to go figure out how to solve the spam problem with email on the web that you know email spam was a huge issue late 90s early 2000s what happened what solved it it's not solved but it's a lot better market solved it there were a hundred you know to early 2000s there were 50 venture-backed anti-spam companies Gmail uses Postini which they acquired the startup so you create use markets to do it so blockchains are very similar and that you have the goal would be like a city you would sort of like you if you're building a blockchain network here you want to go build the core of the network you know the mayor's the town hall and the fire

department of police are sort of the basic rules and governance really the minimum you can kind of build and then you want to create incentives for people to build around it and those incentives can be both like the can't be evil incentives like hey if you build this you get to keep it they can also be token incentives and there's a whole bunch of mechanisms very rich design space to do all sorts of interesting kind of incentive design and also by the way to accrue capital and fund developers and all these other things that RSS couldn't do right this is when I say it's sort of the best of both worlds right so you get this open ecosystem these cities these digital cities it's kind of substrate upon which you build the applications and networks of the future and and all these kinds of wonderful things around protocol networks but you also get funding and then you and then I features it's a little more technical here but like essentially and I think there's speaking some folks who are doing a theorem you know new naming systems on top of the NS East ID the and and I think there's a bunch of interesting ideas there you can also solve a lot of the issues with that I was describing before with things like domain names and just sort of making it a modern user experience I mean ideally what we want right I think in 2023 if you don't have feature parity with corporate networks you're probably not going to make it like people have very high bar users have very high bar you need to have a very good experience you can't charge \$8 and buy go buy domain name and go daddy pay dollars and come back and visit me like dude it's not gonna work okay like you gotta have feature parity with corporate networks you've got to have you know whatever it is five screen login and all this other create account and all these other kinds of things and and having a central logically centralized organizationally decentralized blockchain core right so meaning logically centralized like ENS there's one place that keeps that database is one canonical state but it's not controlled by one person or one organization it's controlled by a community right that's that's a that's a brand new thing that blockchains introduced right so you get the benefit there's a huge bet I could go on about this but if you compare something like a far caster to a mastodon what are called federated networks federated networks are kind of I think of them as a subtype of protocol networks there's still protocol networks and the basic idea is I will talk about this important I think the basic idea of federated networks is you sort of saying this is massive on folks probably know about this right so as you're basically saying I agree with you Chris that there's a problem with you know one person owning our global micro messaging services and social networks and all these other things right some people don't agree so they agree with that my solution for solving it is to take this one big giant dictatorship and chop it up into a lot of smaller dictatorships right that's what federated networks are so each server is a little mini dictatorship but the idea is if they get small enough that people can choose and play off the little mini dictatorships against each other and they keeps them in check and that's the way to keep the power kind of decentralized right and that and that look I view that as an experiment we already ran if Twitter Tumblr all these services in the 2000s they were all marketed as RSS servers and what happens is eventually one of one or a couple of the sir either it doesn't work and no one uses the thing or whatever or it does work and everyone congregates around a

single server especially in the federated architecture because you don't have canonical state so you don't have a central place to keep a namespace and everything else and so you have all of these like funky cross-server you know activity I don't go all the details but it's just not going to work in an elegant way and you're gonna have this you're essentially gonna have a sharded system and then you're gonna have certain if it works certain servers get powerful and we're just gonna run the same thing we ran before I believe so I think you need a canonical central core to have a system with feature parity with modern corporate networks I'm happy I'll take this questions if you guys want to dig into this more I've this is something I've thought a lot about but and go long down a long rabbit hole so then Lana you picked the best picture of Disney World it's kind of undermines like we should have picked the worst one but the idea here was she picked such a good picture the point was of this is that we cities are better than theme parks although that looks like a good theme park the the like the idea sort of the way I view it is like like it's a really beautiful thing if you think about the web and email the fact that particularly the web like the fact that you just had this one kind of simple idea and then you have these I think of it like a city you know you have a city you know you think about something like New York and a great you know great cities right they're very organic they're very kind of bottoms up in the way they develop and they really and it's a very important feature is the the interaction between the private ownership and public ownership right so if I own a pizza shop you know I depend on the fact that there's free traffic anyone can walk on the sidewalk right so I depend on the roads and all the public services right and then I pay taxes back to the public services and then in turn what does the private sector do for the public sector the private sector in my view adds creative entrepreneurship right it's just very hard for central bodies to think of like people really want whatever some type of yoga or pizza shop or whatever it might be right so in a well-designed city you get this really nice diversity between kind of the public thing the parks the infrastructure that you know that give people this sort of feeling of an open shared city but also enable entrepreneurship but then you also harness the power of free market creativity right and I think the web to me the web is the is the canonical example of that embodying in a network right there's a really kind of you have for-profit things like Google and everything else and then you have lots of interesting nonprofits Wikipedia is an amazing thing you know there's just a whole kind of wide range of it and so you had this really nice kind of interplay and sort of bottoms-up organic thing that you kind of see in a great city as opposed to a carefully managed curated you know kind of controlled kind of theme park like thing okay so so you know let's jump in then to sort of why would one want to you know see a world with we're blockchain networks proliferate because that's you know that the hope here right is it is it all of you and other folks working on this will be at the forefront of a new era where we you know this is the new network architecture that combines the best of the both worlds the previous architectures the first is community ownership and this is similar to the kind of protocol networks we you have community ownership I mean the sense of like we're all part of the web and everything else but it's not like in a strict kind of economic sense

here we add on this is the read write own kind of this ownership idea that you can actually own a piece of the network which is a very powerful new primitive and that's what a token is I was talking earlier about how websites encapsulate you know information consumption this nice little bundle to me the token is kind of the key one of the key concepts of the of this era where it encapsulates ownership right so token is can be anything it can be something in the physical world it can be something a digital world it can be code it can be a game it can be art it can be whatever it might be it could be fungible it could be something money like a lot of the public impression of tokens is around the kind of money like characteristics that's a very kind of I think narrow view of what tokens can be but to me tokens like a website they're a way to take ownership and encapsulate it but you can put anything in it it's like a container you can put anything into it including you know in a good in a well-designed blockchain network you can put things like the ability to vote the ability to own part of the network to have a share of the economics that's what I think something like ether is or or like uni or something like that the next major benefit is lower take rates this is just empirically we have a slide on this but the take rates of all of the blockchain networks are vastly lower than corporate networks is this because they're all great people no it's because of the I mean they are all great people but it's it's uh most mostly great people or whatever but the um look I but the but the main thing is it's an architectural thing right like you can't if you if you charge too much people will switch the the architecture is different where you can the switching costs are much lower you can fork a network there's a whole bunch of reasons why you can't go and charge 90 if you said I'm going to build you know a lending protocol and charge 90 like good luck no one's going to use it right um and so you know it's the fact that it's open source it's the fact that um the switching costs are low that I like to say the network effect accrues to the community and not to a single company there's not one person you can sort of like go and do all this kind of stuff uh the ability to fork like all these things keep take rates lower which means like it's sort of a zero-sum game like that money's going to flow somewhere um and so do you want it flowing to the network operator do you want it flowing to the participants of the network I think it's better for everybody to have presence the network and by the way this is not just like all you know altruistic this is also a competitive advantage you can go to creators you can go to musicians you can go to all these people and say hey would you like to keep zero percent or 95 this is one of the very powerful things that I think is going to propel this movement to success is the fact that the economic proposition for all these participants is a much better economic proposition um incentive to innovate whatever you build you own um if you uh um uh you know the rules are baked into the code like you we're not going to capriciously whimsically change them and um and kill you off and then funding parity with corporate networks um and so I'll go we have a slide on this but essentially you know the numbers you see around sort of blockchain uh networks and just the amount of funding is it is on par with those you know the example I like to use is the there's a bug called the heartbleed bug a few years ago it was a bug in SSL you know SSL is the core encryption uh code standard for uh you know all encryption on the

internet and it came out in that process with this this is a really dangerous bug that could have threatened all encryption on the internet it was like half a developer was working on SSL like it was no funding that kind of got fixed a little bit um you might say well hey look at all these open source linux is well funded it's complicated like linux if you look at the top contributor linux is intel and intel has a very strategic reason to support linux because their main competitor is windows and for you know for the when you sell a pc if you buy windows they make a lot more money on linux pc than windows pc so there's a whole kind of you have to go analyze all the political alliances and things networks have not had natural corporate allies and so you just did not have people funding things like rss because all the corporate alternatives were like I want to own that I don't want to give fund that that network and so networks need their own native form of funding to have any chance of success and that's what blockchain is providing okay so let me talk a little about tokens you know you see a lot of mainstream discussion of tokens is like magic money magic beans warren buffett calls it rat poison they don't like tokens I think a lot of them when you read the analysis I don't know what they're I think they're talking about bitcoin or dogecoin or something I don't think they've actually dug into it the you know the tokens I see tokens as in the tradition of video games so video games pioneered virtual economy so games like eve online the dominant you know league of legends fortnight like the dominant business model video it's very interesting side story I won't go too long into it but the video game industry you know 30 years ago made their money selling games for 50 bucks like today basically all the modern game companies give the game away for free and make money in a virtual economy okay it's not theoretical all these critics who talk about magic beans this is a big part of the economy that they just apparently aren't aware of the so what you want to do in the right kind of blockchain you know kind of network design is you want to design a virtual economy and you have in a very simple way this comes from video games they use these language faucets and sinks this is a metaphor imagine the tokens flowing like like water in a in a house or something and so you have places that tokens flow out of and things that where they flow into and those are sinks and so for example staking rewards are one form of faucet airdrops other kinds of incentives and then sinks are things like on aetherium you pay an access fee you pay gas fees right and it takes those and it burns those and that's a sink and it's something that eats up tokens it's like a sink it takes them in right and so what you want to do when you're designing a blockchain network is you want to do a couple things but one is you want to balance the network and I believe we're gonna have a few sessions that go into much more detail here so I'm just giving you the big picture but you want to balance it so you don't have sort of too much supply or too much demand and then the the prices go crazy in one way or the other so you want to so you want to get a good balance but the faucets you want to incentivize good behaviors this is very very powerful and this is goes back to like how can blockchain networks win right how can they fix the the shortcomings of things like RSS incentives are a very important thing here you can use incentives to fund developers you can use incentives remember I described the YouTube hosting example to fund like hosting come

for the tool stay for the network like blockchains version of them are faucets and then the sink sinks are very important for like ideally a sink will align the sink with a useful application in the network you want to align it with the network's utility okay so a good sink for like a theorem has a great sink which is a theorem is a global shared supercomputer in the cloud that nobody owns and anyone can access that's what a theorem is it's like old mainframe computers and that you you you know it's got limited resources it's a shared resource and so the way it solves that is it charges you to use the to use the computer and it charges you in ether and that's the sink of ether and what's great about that sink is it should the demand for ether should go up as people build more applications for a theorem and it becomes a more popular network right I think a lot of those fees by the way as an aside will probably be paid for by the application developers and hidden from the users in the same way that I don't pay my AWS fees when I go to gmail I think it'll be similar to that but like the point is like it's tied to the utility of the economy right so if somebody creates a game that's a hit game built on a theorem that will make demand for ether go up and so it's a really beautifully nicely designed economy right it's not magic beans this is just all economics this is the same economics that economists have talked about for hundreds of years for some reason when it comes to the internet they don't want to like do the analysis but this is just economics supply and demand if you build a network that's popular and you tie the token of the network to the utility of the network that creates fundamental sustainable demand not speculative demand sustainable demand there is speculation involved in token prices today as there is speculation involved in every tech market going back to the railroad boom of the 1830s the dot-com move the 90s of course there's speculation if the point were speculation that would not be a sustainable thing wouldn't be interested in it like the point is to create fundamental value to create new networks that have the benefits of protocol networks better manager of corporate networks and that create new virtual economies using tokens and incentives to gain adoption to align behaviors and do all these other kinds of nice things I talked about take rates these are the actual take raise Darren here did this analysis for us so like a theorem is a effective take rate if you go do the math on the gas 0.06 percent just orders of magnitude different you know if anything like open C there's pressure to go down on the take rates so like I think of anything we're being conservative like I think there will be downward pressure is my guess over time and a lot of these take rates because of the competitive nature of these markets because so for example with open seed like they don't own the NFTs they they don't have lock-in they can't force you to stay on there like these are much more the networks have to compete right competition lowers prices take rates of prices of networks it's the it's the tax you pay so you know if anything I would think to go down you know we'll see but and then you know I mentioned this before with the kind of city analogy you know what a very important idea in blockchains is composability composability is the idea that you can it's idea that software can be like Lego bricks that you can build a one person can build to be a software and somebody else can build on top of it this is you know like going back to blockchain social networks personally I'm the

thing I'm most excited about and seeing these proliferate is seeing the composability seeing I'll have like 20 different people will create different client front ends to forecaster and these other kinds of you know lens and etc and there'll be a big diversity there'll be all this innovation people create different ranking algorithms people will create you know different analytics tools people will create also you know some I'm sure all sorts of crazy stuff this is the this means is a really fun part of software is that it's all of the creativity unlocks and that I'm just find myself personally like consistently surprised with how innovative and creative people are and so I think you know creating these new systems on the blockchain networks where the network designer creates the core and then the ecosystem builds all these things around it is a very exciting thing and by the way you know I talked about this with some of my tech friends who aren't in crypto and they're like oh it sounds weird I'm like it's literally if you go back in history of tech like it's there's a long history of composability okay so specifically the web and open-source software which are two of the most important the internet and open-source software they were all built in this way there was a famous essay and then I remember the 90s I've been into all this communities like I was into Linux in the 90s and I had Linux it was very niche then I remember it was it was it's very it's hard to remember it's very radical idea in the 90s to have so open-source came from really the 80s Richard Stallman MIT it was a radical political movement it was not a tech movement right it was the idea that if you read Richard Stallman it was that no one should own software he was basically against property rights period and like digital property rights you know he's you know had this whole kind of group of people and they had the movement they created GNU and all the kind of a lot of really important software and Linux was you know Linus's kind of fork of that that ran on the on the x86 architecture but this idea that like you'd have a community of people create an operating system and then people would use it like it you know hobbyists would use it but no serious people use it right there's a very famous essay in the 90s called the Cathedral in the Bazaar by the software developer named Eric Raymond and he basically said look there's two there's sort of Cathedral it's like the priesthood this is Microsoft you know was the Google of that era right the big dominant company or Apple or whatever and that the Cathedral it had sort of you know it was this centralized priesthood the product managers would decide on the changes the operating system and it would all kind of flow downward and the Bazaar was this babbling Bazaar of like chaos of people building open-source software and you know I and so you know that was and by the way fast-forward today I don't know what the exact status but certainly the vast majority of operating systems in the world or Linux your Android phone is Linux you know I'd say like something like half the software on your Apple phone is open-source all the data centers all the IOT devices are all Linux so it like won completely and it just turned out that having a group of people hacking away on the internet was just a much better way to build software than having it done within the Cathedral like the Bazaar is a better way the web is another example Wikipedia is another example I have a blog post about this is funny like people I the revisionism drives me crazy because I was there I swear I wrote a blog post I went and cited all these



people it was so controversial Wikipedia it was like it's gonna destroy children's minds kids and that was literally banned from a lot of schools it was this crazy thing and it was just like how could you allow you know if you want if you Google it you'll see I wrote a blog I quoted all of them because I'm the revisionism drives me crazy but it was a very very controversial thing again like it turns out just like having enough people kind of collaborate you can create amazing things right and so I kind of think of it I like to say composability software is compounding interest as a finance there's you know this old phrase compounding interest is the eighth wonder of the world or something is this amazing thing when you sort of layer on whatever it is 6% a year and you compound it and I think it's the same thing in software so the beautiful thing with software right as you build you write a piece of code you put it on github and you write a math function you know whatever Python math function and that's it it's you know if it's assuming it's good code like it's done no one ever has to write that code again right and so you have this incredible thing where this global knowledge repository is sort of building up and you're just getting kind of more and more powerful and blockchains harness this power like we've just lost it with corporate networks for me personally it's probably the most depressing part of the current corporate network architecture it's just like all of the innovation has been siphoned into these priesthoods product managers PowerPoints and whatever they do and I just think all of the kind of heart and soul of software has been sucked dry by them I think that but I think that this is like it's a pendulum I it's been it's been happening for 70 years is pendulum it swings back and forth and it's gonna swing back and I think once people really start to see how powerful composability is once you have a choice hey I could have a social network where I can choose all this stuff I can I think it's gonna be a big kind of light bulb moment for a lot you know you are all on the frontier but I think there will be like a whole following wave of technologists who when they see that and realize the power reminded of the power of it right it's not a new idea it's not my idea this is a very old powerful force in technology it's just been kind of dormant as we live in this kind of dark era of corporate network dominance my view but so funding parity this is just to make the point like you have you know nouns Dow Lido like these are orders of magnitude more than RSS ever had and this is money that can be used directly to fund development so this is when I went back to saying blockchain networks have the side benefits of protocol networks with the competitive advantages of corporate networks the funding parts a very important part okay I'll stop on the blockchain stuff I'm going to give a little survey of like where we are now and then I'm going to take questions okay so this is I think this is a Lee and our team did this slide which is kind of just a you know so so what are you going to actually build like talk about all stuff the you know the very high level just always in software the way I think about it is you have applications and infrastructure right so infrastructure can be blockchains it can be wallets it can be etc basically the simple distinction is infrastructure your customers or developers applications your customers or end-users we kind of we divide our team between that this is how it plays out in every computing cycle and mobile it played out this way on the web it played out this way and PC's it played out this way you

know you had Apple creating the first Steve Jobs and Wozniak creating the first PC you had other people building the spreadsheet and the word processor you know it's one of the funny things I've observed in the history of this is that often the people even people as genius as Steve Jobs who of course is like the greatest innovator you know maybe of the century or whatever you know incredible but even they can't they don't predict all the things people will do with their devices he was he was Steve Jobs against having the app store you know he had to get like convinced of it and before that you know the spreadsheet and the word processor and desktop publishing this all came from third parties random people and so you know so it's very important to have this kind of interplay because then then what happens is the applications make it more popular right the spreadsheet made the PC more popular that means you sold more PCs you sold more chips you sold more hard drives that then led to you know the kind of Moore's law phenomenon where you had everything got better and cheaper you had investment in making it better you know you think about your phone today that you hold right it's the phone itself is significantly better than the first iPhone in 2008 battery screen everything but the applications are also much better right and it's both and the applications fed the phone I remember a lot of friends of mine like they were like I don't know if I want to know touchscreen this and that like what finally tipped them right is the networks like you had to be on there because it was whatsapp and Instagram and you just couldn't get that stuff on the Blackberry and other kinds of prior phones and so there's an interplay right but then the apps being popular that were created by third parties that gave Apple more money to invest to go make the phones better and so you need both so we think of it as sort of you always need both here we have just kind of you know loose categories for you know for different categories of applications and infrastructure you know ideally there's like we're not at all sort of doctrinaire about the dogmatic about it like we hope people will come up with stuff that doesn't fit into a category and but this is just sort of loosely how we kind of think about the world and then this comes from our team Eddie and Darren you know one thing we were a couple years ago we were kind of thinking about is what it feels so chaotic the crypto winters the summers but is there like an underlying logic to it and our theory was that there's sort of this thing that happens where you have prices go up and just sort of more excitement around the space like you did in these various kind of periods and that leads more people to say hey I'm gonna go read their theorem white paper I'm gonna go like learn about it and then they actually kind of get hooked on the real thing on the stuff I'm talking about like the technology and the and that kind of stuff and some portion of them do some portion of speculators but some portion get really hooked by the real thing and get involved and join maybe some of you I don't know when all of you joined but like you know and then and then they they join they start a company they contribute to open source code and then you know a couple years later typically it takes for those sort of seeds to fully kind of bloom and then you see kind of a new wave of excitement so that was our theory and we said let's go see if that's true and so we did this data analysis project and you know we did it was very interesting anyway so we went did this and we think we think that it's it's hard

to measure all the causality you know with data like this but we think there's a pretty clear kind of causal link and what you see is this sort of steady growth now it is chaotic you know it's not steady growth like you're used to if you're making accounting software where like every quarter you're growing consistently or something like this so crypto is a very kind of chaotic thing reminds me a little bit of AI and AI company I started 2008 I sold to eBay in 2011 AI went through if you go read about it there's they actually use the word AI winter and AI summer it's like a whole history of it it was a long long history I mean it looks like it's finally eternal summer now I think but AI like it's it's not going to be another winter but but for 70 Alan Turing's paper in 1950 73 years there were summers or winters so the bigger technologies have more I think more chaotic kind of cycles like this because because it's a sentiment and funding and just as all these other kind of factors that play into it as opposed to kind of the more incremental software it's just you know if you familiar with the s-curve it's like the technology adoption curve it's kind of where are you playing on the s-curve are you at the top of the s-curve you know like the internet like SAS software is more it's very innovative I'm not just saying the negative but it's at the top of the s-curve it's more about adding new features taking this and applying it to new vertical you know we're all at the bottom of the s-curve you know lastly I I'm a big fan of history I think I've read every book that's out there on computing history technology history I try to and I just love this story I was once an entrepreneur and I just love those stories of like people in the room and it's just an incredible thing to see like you know like just three people sitting around having a beer and talking about an idea and then I've seen this now like and I was an early investor in a lot of the things that became really big and it's just such an amazingly kind of high-impact thing you can do in the world to like create software and be part of these early movements and it always you know it's interesting because it it's very easy when you read the history to think well it must have been obvious to do like a PC in the 80s and things like this it's sort of history rhymes and doesn't repeat like there's always a different set like crypto has it's all this critics and negative things and everything else but PCs had their own you know at the time it was like why like the idea that like Bill Gates is big revolutionary idea was there'll be a piece of computer in every home that was literally the motto and it was like whoa you know you know everyone will own part of a network whoa like these kinds of things like there's always so anyway so you kind of think back and like you know for my favorite stories you know I actually I wrote a future like I think actually the whole history of computing in the 1930s is super interesting with like logicians and everything else the story of Fairchild Semiconductor Robert Noyce and folks like that who then really created Silicon Valley and Intel I encourage you to read about that you know that obviously Jobs and Wozniak and I but I love the thing I love about the PC story is it was a homebrew computer club which is literally like a hippie kind of thing like it wasn't you know like it was literally like this it was kind of like a hackathon type thing where they were just like let's go and build PCs for the home why would you want them they didn't have applications I didn't know why you use them but that would be cool the original Apple was but today's dollars \$5,000 and you could do like very little on it you know so

like it was not obvious that that was gonna be like the big thing anyway so I think about that a lot and I think about you know what's exciting to me why I'm here why I think you should be excited is it's you know I think these are very special kind of moments when you have new computing movements come they're very high leverage moments I think this is the most important computing moment I think there's other important ones AI VR etc and there'll be a lot of different things in it but but to me this because of the things I discussed earlier because this one really affects the kind of the future of the internet like we have to decide do we want an internet that's like Disneyland or something like five Pete five companies own it or do we want an internet that's open and decentralized and innovative I don't see any other plot maybe you could regulate it I don't see a good regulatory scheme for doing that to keeping it open maybe maybe protocol networks make a comeback in 30 years I don't you know like we'll see to me this is by far the most credible kind of way to you know return the internet to its roots and and I think it's the reason you're here I think it's a great entrepreneurial opportunity and you can really build a big important stuff so I think we have time for questions yeah it seems like there's a fundamental conflict between startups trying to get traction and having having it decentralized could you tell us a little bit more about like how to negotiate that pathway of having that centralized driving force to build awareness and get users versus having a decentralized platform I think it's so I would I would just say it's a very different go the way I would describe it as a very different go to market motion so on the one hand so like it's basically on the one it's the top-down versus bottom-up okay and I think them I think it's harder if you look at it through the lens of the top-down so what people are used to for the last 15 years with startups is you go raise money and you hire an army okay with what we're doing in crypto it's a different motion which is you're going to go build the town hall but then you're going to ideally inspire a community right so it's very different way to think about that you know I think about look I mean but they're very powerful tools there's tokens there's ownership there's composability so I think it was a very different kind of go-to-market motion so we sorry that's a bit that's a business lingo we use for like how to there's two things you do at a startup you build a product and you make it popular making it popular is go-to-market okay go-to-market motion is the method by which you make it popular right and so you know I look there's there is actually a long try and this is one of things we try to do when we work with companies is like we've worked a lot of companies that have done a what I would call a bottoms-up developer go-to-market and it's a different set of things you do you focus on obviously great product great code this is a very discerning you know smart audience you know hackathons evangelizing documentation you know funding grants token incentives potentially like just a bunch of different things like this it's a different set of tools but I think just as important I think like the two things again the two things you do at a startup are those two things and startup should really invest in both the number one mistake we see in crypto is sort of this build it they will come mentality that you know you can just go and that happens occasionally I think it probably kind of happened with Bitcoin it's to some extent with aetherium it generally doesn't happen and and so you need to go and

evangelize and explain and people just misunderstand what you're doing and all these other kinds of things so I think it's sort of I think of it as like strengths there's like it's a different I guess I would say not necessarily weaker than you and one other thing I would say is like look it's sort of pick your poison like in so you know our firm does non crypto and I still kind of pay so I mostly crypto but I do pay attention to the rest of the tech world and you know if you look at a lot of companies that went public for example that were started in last 15 years non crypto regular kind of companies the big challenge a lot of them is customer acquisition costs so you know e-commerce companies an example DTC brands like they spend all their money on Facebook it's a take rates I was talking about before right those companies are very good at extracting all the money out of the network so you know so they so they have a band that's their big kind of Achilles heel and whereas like look Bitcoin aetherium like I think most crypto ads are banned on Facebook and everything they're all word-of-mouth everything encrypt does word-of-mouth and it's you know think about all the blog posts and think pieces and you have things like Dogecoin I think those coins very interesting because for like a long time Dogecoin I was like this is you know it's obviously a dumb it's a silly cryptocurrency meme coin it's silly and it annoyed me because it's like you know and then at one point I was like you know maybe I should flip it around instead of annoying me take a lesson and now I kind of think a Doge coin is like this kind of clinical science experiment where if you took the dumbest possible application you know coin does it like it not the technical design but just like there's no point of it there's no use cases but it's a clinical experiment because you're saying you basically have all these people on the internet in my view who feel left out of ownership of networks and the thing that does coin does do for them is it gives them a feeling of ownership if you go read I spend time reading that's when I had a switch I'm like I'm gonna go like learn about this community and go read their stuff and it was a sense of like if you go read it like the 2 million reddit subscribers in the Dogecoin subreddit it's like just people that like this is finally an internet service that I own a piece of right that was a very powerful thing now I'm not bullish on Dogecoin and meme coins generally but what if you take that evangelical inspirational power and combine it with a great product that's a very powerful force but it's a very different way to go to market then like what you people you know they have if you go hire a marketing person who ran a web 2 company they'll have a different playbook right hey Chris thank you I'm trying to get a better understanding of the regulatory environment and how to contextualize that could you maybe touch a little bit on some of the similarities and differences across web 1 web 2 and web 3 with the regulatory environment yeah and what are the the key things as entrepreneurs should we be thinking about yeah it's a great question I mean I'd say it's a couple I just macro points first of all the regulation was very important in the first year of the web there were some very for there was the I forget what it's called like the Internet Commerce Act of 94 commerce is illegal until that act on the web that made it legal that was very important that was very forward-thinking there was generally a view of what we describe as regulate the applications not the protocols and so the idea was you don't regulate SMTP HTTP you regulate the

applications but you know if your gmail you have to follow the road if you have a website you know you have to follow law right and that was very smart because the protocols are meant to be global and they're meant to create a global interoperation standard if you start regulating the protocols it's going to kill the protocol because every jurisdiction has different rules right so you need these sort of it was a very smart approach because you had this the protocols could do what they're good at which is sort of the the roads that connect everybody in a common standard and then if you run a website you got to follow whatever you u.s. whatever pick your you know jurisdiction and that was very forward-thinking there was a huge debate in the 90s over cryptography if you go Google like Clipper chip and always that you'll see there was this huge battle and it was a very credible story of sorry a very formidable side wanted to ban cryptography they actually I was talking about a dinner with some of my colleagues last night there were we used to have t-shirts that actually there were illegal t-shirts because they printed some of the cryptographic code and it was like ban this shirt or whatever you know because because I mean they were trying to ban math and eventually they figured out like you can't ban math like once the formula is out there like you're literally trying to ban ideas but that was a serious debate in fact Ben Horowitz and Marc Andreessen my partners they didn't forget this but that's their company Netscape actually invented SSL and then to JavaScript like cookies this all came from Netscape and SSL in particular was extremely controversial because think about it like I think I don't forget what I think was like 94 or something at the time there's no internet commerce right and so like what are you gonna do they were literally like getting called in front of Congress or some government bodies or something I forget exactly what but um and they ask you okay so well why do you have encryption in your browser and they say well someday people are gonna buy things on the internet okay what are they doing with it today it's probably just criminals and terrorists right and you know maybe the critics in 1994 maybe that like they're just there weren't that much positive use cases right you had to believe in this future and like thankfully that didn't get banned but it came very close to it and in fact Netscape the 128-bit version of Netscape I think until late 90s was classified as munitions by the US government same classification as cruise missiles you could not you cannot download it outside the US I remember when I was young downloading software you're always getting these things like are you in the US you can't download this it's like so you know I think thankfully DMCA there's a bunch of very I think good regulation in the end my colleague Colin likes to say the US does it tries every form of bad regulation before they figured out you know like and so like there were all these sort of different things but I think it actually was done very very well and look that led to the internet a lot of internet activity being in the US this is it was a great it was very forward-thinking I think a lot of people sometimes people in industry I think don't give regular smart regulators enough credit because I think the good ones see this and find a good balancing act and look and you want regulation like we we we spend most of our times believe it or not is not always popular in the crypto community but like we spend most of time trying to get more guidance and regulation because what happens when you don't have it is you have an

incentive you have a incentive to act badly right this is why you have these FTXs and things the incentive is to go offshore to offer 100x derivatives to do all these things because you get because they spend all their time going after the good actors like the US based companies that are following the rules and they ignore those actors and so you you create these very perverse incentives right so like it's a very active state like we have spent a lot of time on it we're trying to make the case that there's the you know that that there's a balance between innovation and you know we obviously want all these it's bad for everybody it's bad for the world it's bad for the industry to have the FTXs and you know consumers hurt and we think that we've published very detailed proposals here we think there are ways to do that and to sort of navigate across like it's very hard like there's not only is there the US there's other countries within the US there's probably five major regulatory agencies that are involved so it's the actual specifics would be like talk to legal teams I'm not going to give legal advice but that's kind of the meta policy view thank you yeah well thank you on the second question is you mentioned about how gaming creates a virtual economy and I recently have also a podcast related to like how copyright pushes a freemium games and also like right now mobile games like half of the market share for the whole like gaming economy I'm curious on your thoughts on the point of view of what's currently what's a web3 gaming are at and how it will impact the whole like web3 economy so where's web3 gaming at and how will impact the economy yeah a good question so I think there's this is a big topic I think so I think there's sort of so I like to use it so I guess for every one of these technologies there's kind of a light version and a heavy-duty version and so the light version of web3 gaming which we've already seen some of and we're gonna see more we funded probably 15 web3 game companies most of which haven't launched their products yet so like you're gonna see like in the next 12 months some really high quality these are teams out of very top game companies launch web3 games so to your question look games just take a long time they can take I mean Grand Theft Auto how long it's like the most anticipated games like what 12 years or something I mean they just take it's really not not that everything is that elaborate but games take a long time so it's gonna take some time but there's to me there's sort of the lightweight versions of web3 game which is like a game that's like a normal game but you have NFTs you have virtual goods you can take take from one game to another create secondary markets you know kind of like build an economy around a more robust economy around the goods but then to me they're really more sort of ambitious idea is kind of like the fully on-chain games where everything is the whole back end is a shared composable service and like and then this gets into the topic of like metaverse you know which is kind of a buzzword but I think I think a real thing which is we're gonna just sort of you look at the extrapolate from the trends and like gaming is going to continue to be more and more important people's lives virtual reality is gonna eventually happen people gonna spend more time on the internet more jobs on the internet more virtual worlds like all this sort of trends we've seen in the last ten years they'll continue and that's sort of the metaverse is like people just spending a ton of time meeting their spouses doing their

jobs like it's this virtual world and to me there's a very important question which is is this metaverse you know kind of ready player one style owned by what was the company I don't know whatever Evil Corp if it's it owned by Evil Corp or is it you know is it a sort of shared decentralized network right like to me that's a very important question which actually this is probably the right time if you just look at history like the right time to really think about RSS and fix it would have been like 2006 or something because then you had the iPhone that was what happens in that you have these catalysts right and the catalyst kind of entrench like you'll have the horses are kind of racing RSS and Facebook and Facebook was a little bit ahead and then the iPhone came out and boom it just sort of like and it's all backed up if you look at the stats like so you have these catalysts so maybe there's a catalyst the next year that may be AI maybe VR who knows something may happen to catalyze and make this whole metaverse thing that sounds kind of futuristic actually be a real thing in five years and I think they're like right now it's time to think about the architecture for that and I think games are kind of a wedge into that like you know like the stuff the 0x park stuff for those are into this stuff like there's a bunch of you know the dark forest like there's a bunch of sort of really interesting ideas there the idea that you have a shared back and like what's cool about like something like a dark forest right is the back end is fully on chain and then somebody else can create like a different front end they can fork it they can add stuff onto it so it sort of takes what's a very powerful force in already in gaming like modding and things but it puts it on steroids so I think it's a very exciting area look also games just historically have always been a very good kind of beachhead category for new computing platforms well early mobile a lot of it was driven but it's a way to just get a lot of people on boarded used to it using wallets I think the most likely thing in the next couple years that will get us to 100 million active crypto users is probably a game I don't so someone building a game but but like but that's not like to me that's part of it right like the point of the I like I'm not I like games but the point of the iPhone is not games right the point the games will help drive it and we're kind of the wedge thank you yeah I Chris thanks for the talk Brandon I completely agree with your characterization of federated networks versus kind of truly decentralized social networks I'm curious about your thoughts of the fundamental value that grounds the meaning of ownership in a decentralized social network because it sounds like to compete with traditional corporate networks you need to offer feature parity and also some sense of ownership that kind of offsets the network effects that the corporate networks already have but what does that ownership mean because the corporate networks have done a pretty good job of creating the economic value in the existing networks well I think specifically with blockchain social networks that we're talking about so like so so you know one way to think so any network there's generally like most networks the networks we're talking about are two-sided networks meaning there's two set those users and what I would call like creators and developers right the sort of the sellers and the buyers if you will they're not buyers but like the people that consume the you know people that create the videos on YouTube and people that watch the videos right and whenever you have a two-sided market like the first go-



to-market question will be which side you go after right because like so like and this is true of like uber when uber decided the drivers for the hard part you know like there's always a hard side and an easier side I would argue with crypto social networks you want to go after the sell side you want to go after you want to go to the musician who's currently getting you know whatever pennies for thousands of streams and so like essentially there's a whole economy of creators who are all about working around the hundred percent take rates they don't use this word language because it's been so successfully obfuscated from them that they pay this because they just think of it just like that's how social networks work doesn't have to be that way that's like an accident history but you know so they what do they do they go and they sell merch they you know there's a huge industry around that there's they go and they you know they have a Shopify thing they try to kind of get people over to it they do offline stuff they do pay this with patreon and sub stack exists there essentially sub stack is a way to get around Twitter take rates patreon is a way to get on YouTube right you get them over to your patreon you get direct money and you still pay but it's 5% because it's on the web and the web there's real competition and like and so so I think with social networks like I think it'll be it's nuanced because you got to get both sides and you can't like it's not like I'm just saying you go magically get these musicians and go to market you got to cultivate both sides but I think the really really strong value proposition is the economic side to the creators who just like it's dramatically better economics and that's that will play out at some point because if you just if you're offered a system where you can have the same thing and get 100% or get or not 100% but 90% 95% whatever it is or you know 0% like is to me no question right I agree thank you yeah thanks how do you think about defensibility in web 3 for protocols like you know when Uniswap gets forked or something like that yeah I mean I mean to me this all kind of boils down to all sorts of the take rates right like like like like Uniswap I think has remained you know I think most people would agree has remained quite successful despite the forks and things like this if they charge 90% take rate they would not be successful like they you know so like you know so part of it is like the defensibility is just simply much lower and that that plays in that's why the take rates are lower that's why a lot of the benefits flow to consumers and not to the companies so that's just a fact of this space and I think one of the reasons it's better for the world but you know defensibility in the end comes down to pricing power and pricing power and networks is take rates so I think as a result you'll expect much lower take rates but but I look I think I'm the way I view it is you know there's an old kind of venture capital meme zero was a zero billion dollar market or something like there was this old for a long time people in the who are internet investors would talk about this like the goal is to kind of build they like think of Craigslist where Craigslist is actually it's just owned by I think you know Craig and his friends or whatever but it's it's this wildly profitable hundred million dollar plus profit a year business right what they did is they took this giant market the classified market which was previously a much larger by revenue industry than it is today and they basically deflated it is deflationary a lot of technologies deflationary right you shrink the market but you know but they were also

you know they just run a website they don't to run all the printing machines and everything else and so I think with a lot of these decentralized networks it'll probably a similar thing which is like you also don't fund you know you have much lower take rates but you also don't have to have a sushi set chef and 50,000 employees and like all you know it's a decentralized network right like it's just like you know real estate like so the costs are much lower too so it'll be kind of that Craigslist effect I think that makes sense yeah awesome thank you so much I'm Lucas from Thurgood and my question is which critiques of web 3 and its assumptions do you think are the most valid well I think there's like a I mean like I mean saying it's early like or that it hasn't gone mainstream yet rather it's not early but it hasn't like you know it's not at a billion you know the Internet's 5 billion users and you know probably like the stuff that we like to use is you know 10 like metamask is like 10 million or something so a fraction of the size so that's legitimate I mean to me my response would be okay like that's what we do in venture capital and like a lot of the markets are early and that's why there's opportunity for an entrepreneur like I'd see that as I flip that around and see that as an opportunity what else I think a lot of the other critiques I find it just are literally straw man arguments like they're just talking about like the the rat poison magic beans like tokens are all made up like okay that's just it's virtual economies it's very easy I can explain it it's not any kind of fancy economics I think a lot of people don't even you know they haven't done the frankly done the work to go understand the history of the Internet how networks work network architecture I think until you've had that discussion and understood those things like it's very hard to critique blockchain networks if you don't understand the history of the Internet and the other network architectures and how network architectures influence network economics it's just I find most of conversations are just very hard to have because they haven't had done that prior work but I look I don't know what do you what do you think of the good critiques I mean going back to saying it's early you said earlier that we're at the beginning of the s-curve so how do we figure out where we're like what would be the web to analog of like where we are Eddie and I here we're talking about this at dinner last night Eddie Lazar is back there I'm sure you'll meet but I'm like I think I think kind of what you're saying is like what's the inflection point yeah and like Eddie Eddie's view is it's just all gonna come down to and he may be right like block space cost like when you have L two's four eight four four all this other stuff where you have you know sub penny anyone Kevin Kelly has a great blog post he's a founder of wired and kind of this blogger thinker it's like you don't have innovation until you have waste so like until you can take a thousand photos and throw them away you don't have insert until you have do a thousand searches and throw them away and like we don't have waste yet like you need to have like a thought like web 3 gaming the earlier question it shouldn't be just 15 companies funded by a 16 Z it should be 10 lines of code a kid in wherever India Indiana you name it create some cool thing it's so easy it's so cheap it's it's not like that today you've got to be like a pretty deep smart contract engineer you got to learn all this stuff you got to pay money like you know I it's funny like I one argument is just it's just all about like AI you know AI you go back and read

stuff I used to talk them right about AI and like you have this long history of people debating when will I happen everything else if you look at an app you believe like this is it and it's really hitting it really just came down to GPUs and neural networks and like how much scale you had on those things like all the other kind of complicated analysis was probably unnecessary and had you just sort of gone and said you know look look at Moore's law look at NVIDIA's GPU density how many nodes in a neural network at what point will it start to approximate a human brain like that's and people did that like you know Ray Kurzweil and others but like that's kind of the thing that mattered and I think it's probably the similar here like look I mean there's other things we need I think the infrastructure I think some people bit here building wallets and other kinds of the tooling is not there yet quite there were all these there's a whole section in the 90s at Barnes and Noble of how to get on the internet literally you would go because you had to go and download this is all these crazy PPOE I remember it's like these crazy protocols and windows and like download how do you download so like the big innovation literally go read the history go read there's some good books on AOL was send everyone a CD because it was this chicken egg how do you gonna download the protocol if you don't the internet right so they sent them all CDs that was a big breakthrough it sounds ridiculous but that's that's that was that was 1998 you know so I mean a couple years into it answer your question I think some people would say that there is this waste in terms of like the noise in terms of hacks in terms of like the centralized yeah I mean I meant waste in the sense of experimentation right as opposed yes that's that's a different sense of waste yeah thank you thanks for the talk I'm Nico from Skylab so we're building mechanism that allow developers and gamers to interact with so we have been thinking a lot about incentive design so what do you think of like compared to say the corporate network right there's a center party that can make decisions of like how to incentivize the community based on their first of all their their incentives and also come considering other people's incentives right but for for web 3 incentives are more decentralized so and that opens to a lot of exploits so how do you what do you think of like what to balance how to balance that and yeah so you're saying like particularly with like exploits like yeah so for example like when you for example like noun style they have to consider how to prevent people from exploiting the treachery so things like that I see like kind of like a selfish bribery attack and like yeah yeah because everything's yeah well great question so like let's talk about go I didn't talk about governance yet so the way I think about governance so prior to blockchains like what is what is the governance of protocol networks the governance of protocol networks basically is we're gonna create a spec and you could deviate another way to think about governance is what happens if a bunch of nodes go evil okay so like what happens if a bunch of SMTP of email protocol what if some of the nodes decide you know what I'm gonna start charging everybody send an email okay the protocol networks you basically you basically protect against that because you have so many different nodes that if you do that everyone's gonna be like well I'm not gonna use you your crap right because you've got such decentralization that you've basically have checked the power of bad actors right corporate networks we kind

of said screw it let's just have a dictatorship and hope they don't turn evil don't be evil you can judge yourself whether that work but there's no governance it's just like it's literally corporate governance it's the CEO is the board to me the big innovation with blockchain networks is this now you can now write it's not that we've solved governance I don't think that's solved yet and maybe it will never be it's like humans don't solve governance I don't know if they ever do maybe they just come to like an equilibrium point it doesn't it's not awful or something right like but um the the the big thing of blockchain networks is we can now we can now encode governance into software right and software is you know as expressive as human thought it's the software is the you know computational embodiment of human thought and so anything it's sort of like we've now invented a constitution you can now write down the rules for the first time instead of relying on the network topology in the case of protocol networks or the goodwill of a management team in the case of corporate networks so we can now write it down okay and that's a very to me that that's the big innovation the blockchain governance is we can now create kind of a formal constitution I just I'm going to say it this way so I want to care for like we're not to not oversell it like we haven't solved governance but we can now at least start to have like a really mature interesting debate around it and an ideal world if like we've got a few people but like governance people to think about governance would get more interested in this area and start working on it like we have Andy Hall at Stanford who's gotten who's works with us and there's like a few other kind of governance experts and I think more and more getting in there again I don't think we're gonna solve it but I think we can come up with good equilibrium states that are kind of that work well but that's the big innovation to me at blockchain right is that you can now put into software the governance system and like what nouns I was doing I think it's super interesting right like they're there a lot of this stuff will have to come through experimentation right and they're running some really interesting experiments specifically to bribery attacks or like selfish attacks you know I think the probably the number one mitigants against that is a diverse community you simply don't have single actors with that you know I think other mechanisms like slashing and other kinds of punitive mechanisms can be helpful so I think there's a bunch of tools there but you know and how do you balance that against all the other thing it's these are complicated questions so thank you thank you Nikita from chain patrol I had a question around you know MMOs and you know the economies that you talked about you know right now even just managing like something like the economy in RuneScape is difficult like you tweak one spawn rate or something and like all the markets change do you think one do you think any of these MMOs will open up their economy to like this global crypto like economy because now they have to deal with like external like external things maybe outside of their control yeah well if you ask me specifically like will existing games kind of add this I think some some will but it won't be generally the way these tech movements work is there's a new cohort like if you look at gaming free-to-play gaming a mobile what happened was that free-to-play started around 2010 ish when IAP started in an app store and you know the usual kind of thing where the incumbents sort

of like NFCs they kind of dismissed it and then there was a new set of startups including supercells most probably most prominent success and that those new starters all became more 10 billion and sort of you know it's a circle of life and startups right big companies say this is you know they there's usually some mixture some of them dismiss it some do it but do it half-heartedly a few of them may be going all in that's typically what happened and then and then but most of the opportunity is taken by startups that's kind of the historical pattern and let me my default assumption here a few a few cutting-edge ones will do it some won't like the problem these companies existing big companies like unless your founder led it's just very hard for them to do kind of new things there's a whole bunch as long as those who've worked a big it's very complicated even if the CEO is visionary and wants to do it like they have a board they have people on the team you know I think the idea like I think in a lot of ways it's a blessing for us that this NFT contra it's the craziest thing in the world to me that and if that letting people own if something is controversial like it's better to have the company on it like it's upside down world but the fact that it is is probably an opportunity because you have these revolts and other things and it's like okay if you want a big company wants to not do this you know we'll just see startups do it so I'd say I don't know we'll see it'll be interesting to see right and how do you think you know when you're designing a game economy is there any like approaches you've seen or things you'd recommend when you know to balance your economy when it's like connected to this wider system it's not a closed economy yeah I mean like this is you know you know the Federal Reserve is a you know giant organization of people to tune one parameter right so like it's unsolved problems these are very hard problems no one solved these things and I expect I think one would be you got to keep it flexible like governance systems parameter tuning needs to be something it's gonna get you're gonna get it wrong so it needs to be something you've kind of fine-tuned I mean specifically to protocol design like Eddie and other folks on our team like that's what they do and they have a whole I think he's giving a whole talk on it so I won't try to try to you know so take all the all the specific kind of stuff I would say you know I kind of what I was saying before like the key thing to me with faucets is I guess three things I would say one is balance like what you don't want to do I think people have made this mistake where you get too much demand you get a speculative run and then you get a bunch of unhappy users right like so you want to balance supply and demand and have like a healthy sustainable growing economy same thing you want to do in a regular economy right like you don't want to have stocks go too high or too low you want to have just like stuff grow hopefully it never actually works that way but like an ideal world everything would just grow 3% you know GP or whatever and then you want faucets that incentivize constructive behavior that they're actually helping to build the network doing building software doing good stuff you know not like the bad case is like all the you know like the some of the farming stuff that happens and like you don't want just like bought farming and things so how do you kind of figure that out and then on the sinks I think aligning it with like like getting more true players to play the game they spend money I think like with gaming specifically like probably you

know you need games that are fundamentally fun and then people come for that and then there's there's sort of an economic flywheel built on top of it so you're also I think of that as kind of buffering the economic side the fact that you have this sort of fundamental economy right I mean why is the commodities exchange CBOE in Chicago why is the New York Stock Exchange in New York and because the commodities derivatives and futures and all the other things because because they they came out of agriculture so you had soybeans and need to hedge it and so you had this pairing of kind of the fundamental economy and the kind of the you know the economic side of it and so I think of the same thing in a game is like you want to have this sort of core thing people are maybe literally like you know building their Stardew Valley farm or whatever but then you layer on like an economy on top of it right so I think that's another kind of buffering thing but it's a great question and it's a deep topic and I won't try to like cover it all now okay hey JP from friends so I have a question around just like consumer products and how in web 3 a lot of consumer products are built on desktop because there's no gatekeepers you're not dealing with iOS Android you're talking earlier about gatekeeping around like Kindle how you can't buy a Kindle book without going to the website so recently like Uniswap they just created a wallet right and even they couldn't navigate this particular like app store approval process my question is like if we're gonna get products out to the devices that people actually use like what how do we navigate this how do we navigate like mobile gatekeepers platforms and what how does this environment have to evolve in order for crypto to be able to be like actually viable products for mobile users yeah I mean as you know like the workarounds include desktop they include web mobile but it's an issue like particularly the power of Apple and Google right I mean this is the first time we've had a computing platform like a device layer computing platform that was just a duopoly and they are very aggressive on that you know and I don't have it honestly don't have a great solution there except for at some point you would expect there to be regulatory pressure due to the fact that it's clearly stifling competition but that takes a while so I don't know I mean I wish I had a better answer there you know I look I think use case I think having a hit games and other kinds of popular use cases that clearly are not speculative that show true fundamental value will help change the narrative around some of this stuff and that will also help so that's kind of on you know hopefully some folks in here help with that by creating popular stuff you talked a lot earlier from the adoption perspective you know block space wallet really from the build side of the app layer when it comes to end user adoption so think consumer from a product perspective let's say what's what's the most important behavior to educate people on and to really feel comfortable with to engaging with companies that live within the blockchain space or building in that layer yeah that's a great question I mean I think I guess embedded in that question like I'm not sure we software gets an opportunity to edge like ultimately you know when you're talking about the marginal billionth user like it's got to be probably a lot simpler than something that educates them so like a lot of it has to be just baked into the software experience and there has to be so you know I think there's a lot of things we can do to improve but I my

suspicion is that sort of what I was talking about earlier like feature parity like we just have to have feature parity like it has to be as easy as onboarding it has to be like totally modern experience I don't think we're quite there yet there's you know things I do these are all solvable problems but things like key management you know has to all be kind of just seamless and behind the scenes I think a lot of people doing good work there and that just takes time and it'll happen and then I think ultimately like look it'll be I think this a lot of this would be an economic proposition like it's just a very low-hanging fruit how bad the economics are in corporate networks so I think it'll like and say take social networks I think it'll be creator led creators will say I'm tired of paying 100% and I want a different solution we're already seeing that with things like substack people moving over there and I think if we can provide the right solutions people will move over to better social networks and then the user the end user might just come because their favorite musicians there right like it's simple as that right like that to me is a more plausible path for example for a social network then like the end user is not going to care about decentralization not going to care about all these kind of high-minded things but essentially should plays into these things they do care a lot about especially the supply side of like do you want to pay 100% of your money to this company like it's just a that's the that's the thing is really reassuring especially on the social networking side it's just really really bad right now the economics for most of the network network participants and so you know if we were competing against this like you know lean mean you know thing that like they had 5% take rates and like honestly like I think it's harder on payments that's that the payment take rates are 2% like should 2% of the economy go to payments moving some bits around probably not but it's harder to go after a 2% target than a 90 100% are a lot harder because okay it's 1% and they subsidize and they give you points and all these other things and like you know so that I think that could be one of the sort of mistakes people have made in history of crypto is they're going after some industries that actually you know are much more resilient because the lower take rates I feel like once you see the world through the network economics lens I don't know well I that's how I just view everything now it's like what are the economics of this and like because in the end like that I believe a lot of the economics drives these behaviors great thank you