

Participant 20 Interview

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SPEAKERS

Nathalia Scherer, Participant 20

Participant 20 00:00

Connecting.

Nathalia Scherer 00:03

Madonna is a reminder. So this is a study to better explore the definitions around token engineering right now. And also the current practices needs and challenges of people working in the space. And also, as a reminder, you can withdraw from any of the questions at any point. Do you have

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also saved also just to say that it's common that I am on the drive, and during the drive, there will be about five minutes in the way that this signal will be? Low. So just so that, you know if I disappear for a couple of minutes, and coming back in a few

Nathalia Scherer 00:45

sounds good. And do you have any questions for me before we start? No. Okay. So we'll start with maybe Ken, can you share a little bit about your personal journey and how you got involved in your field of work?

Participant 20 01:03

Yeah, sure. Um, so

Nathalia Scherer 01:09

I guess I had two

Participant 20 01:11

paths, moving in parallel. And then they kind of like, got together. So one paths was, let's say, actually three paths. One path was the path, let's say scientific academic path. Since I remember myself, literally, I knew that I will be a physicist. Indeed, but I was 21. Cut free from the Israeli army. I went to study 22 Sorry, I went to study mathematics and physics, and continue to second semester and then PhD, and then continue and I had all my all intention to stay the academy. I loved it, loved it, love the research, theoretical research. I was researching theoretical physics and specifically unification theories. So everything, which is kind of like low level or high level, architectural, I guess design was was my kind of like my passion. So that's one path. The second path. I was very interested. Somewhere that started, I think, at least consciously that started around age 18. So 26 years ago, I started to think about cooperatives. And with the question, like with the question, How come we don't see more of them? Because back then, it seems to me, it seemed to me so much more efficient or effective or makes sense? Like kind of like why? It's, it was very clear that companies have misalignment between the interests of founders and the interest of the employees and the interest of customers. And it just seemed that so natural that if you align their interests with the customers, or also the employees, and the founders the same time, most likely everything will work better. And I was kind of like, staying with this question. Like, why? We don't see why don't we have more cooperatives. About seven years later, when I was 25, I started an organic food cooperative in Jerusalem, and managed, managed it for a while. And that also was like my firsthand experience of cooperatives. Which in which I experienced both the upside and downside, like experience, how powerful it was, as I as I imagined before, like, everyone was so enthusiastic and engaging and, and it was a true, truly true magic, what's happening, what's happened there. Yeah, like a beautiful community. But also the inefficiency of everyone taking decision together and like the upside and downside of the same thing. So this was the second path, let's say and so this whole path and then the third path was you could say like, inner development impacts kind of like more philosophical path. And at some point, when I was working on my postdoc at the Technion, in theoretical physics, I had an idea for an application for social \$name application. It just seemed to me it's so so powerful that I wait. Actually, what's happened is that after like a week, of thinking of the idea and deciding to start, start, like working on it in parallel to the research, I combined with a couple of friends and one Have them told me about this thing. Tokens are Bitcoin. And Aetherium Aetherium was just the white paper of metallic white paper was just published like a couple of weeks before. And, and yeah, and when I looked at it, when I looked at Aetherium, you get a theorem, that idea immediately resonated. And this resonate was resonance was so strong that I just started to work on this. During the \$name idea became instantly a decentralized \$name application. It was one of the first dissenters application in the world. We what happened is that we got

invited to participate in the first Bitcoin hackathon in Israel. And we won second place, and we got invitation to participate in the first hackathon Bitcoin in the world, I think, in a the US, was in Austin, Texas. And then we won. Third place and, and then the project became very famous, and a lot of people joined. And I mean, it was very naive. Like we were trying to build a decentralized \$name application on top of the Bitcoin Blockchain Aetherium was not alive yet. It was just an idea. Because it was super naive super early, but actually, we were doing token engineering, back then we were doing, it all started with the realization that the biggest problem for social \$name, which is still the problem today, is to reach into a critical mass of users. Like if there is not enough users, then the service doesn't work. But then if the service doesn't work, the users are not coming. So that's the regular network effect, or the regular critical

Nathalia Scherer 06:52

mass. But problem, but

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in this case, it was much more severe here. Because of users, which is both synchronous, like at the same time, like opening the app at the same time, and geographical at the same place, this is like way above anything that has been solved. Actually, this problem hasn't been solved. Up until today, even Google tried Waze, which was purchased by Google, they tried to do that. And they tried to do it in Israel, the pilot was in Israel in Tel Aviv, which had very high density of for his users, and they failed. So it was a serious problem that, of course, happened many years after, but what we did, so we realized that problem early on, and already, then we said, Okay, this solution is just distributing tokens, we call them, we call the tokens, we call them those. Those is a name of an ancient biblical token. But it's also the meaning of Zeus in in ancient Hebrew is moves. So, actually, the origin, the origin of the name was moved, because it was believed that tokens should move between hands, but but for your case, it was perfect, because we it was the move moving token. And what we did with that was basically saying, Okay, if you operate with the application, while the service is there is no critical mass and the service is not working, it's not functional, then you're getting tokens for every mile that you're passing with, with a working but non functional app. So we call it proof of movement. And kind of like, like, paraphrasing, on proof of work, proof of stake. And, and the idea was that once the network effect is being achieved, then instantly the functionality is turned on in the app. And then those early pioneers, who, you know, who made an effort to work with something doesn't work, they actually they actually the owners of their network, they actually the beneficiaries, they actually the stakeholders of the network, because they actually the ones creating most of the value, which wasn't solved up until today. And then this, this, the same tokens will be used in the network. So this was actually, I think, one of the first stock engineering designs ever. And yeah, and they got a lot of traction. And I remember seven, yeah, there was a lot of traction around it globally. And some, at some point, I quit, I've quit that. And decided that I want to focus on because actually what we've done, we've done two things that are saying that I was most excited by the idea of Dows vector it was just an idea. And and we both tried to develop decentralized application for fried chicken but also we tried to work as a doll from the big from the very beginning. And it was very, very messy. Of course we didn't have any technology and any understand Think of data governance back then. I think we still, we still have limited limited study today. And so it was very, very messy. It was a lot of traction with no technology. Hundreds of people were involved in the project. But it was very messy at some point with the project. And started a company together with a couple of friends and in Israel and Cuba and France. And that was called \$name, in which we design decided to start building technology protocols took engineering for governance for \$name. So we did that for a couple of years. With the funding that we raised, and after we ended, we wind it down. And like six months later, I started \$name together with it with other partners. And and I'm still working on \$name. In the past six and a half years, we've developed quite a bunch of products and technology and protocols. For sort, which maybe we can talk about. And yeah, I mean, that's I just now fast forward about eight years of development around the Dow space or some somewhat more broadly around the blockchain space. Mostly indoors, not only maybe third, or I don't know, maybe third or half. Yeah. Third off, it was about protocols and token engineers, engineering, maybe two thirds about products. That's roughly.

Nathalia Scherer 11:41

Thank you. I really appreciate how much ground you've covered, I think over the years. That's right, rare to find people with that, that much experience with it. And one of the main questions that we are exploring in this study is around definitions in the field. So yeah, I'm wondering how you would define token engineering.

Participant 20 12:15

Right. It's somewhat related to the question of how to define what I mean. Another another related meme or terminology is crypto economics.

Nathalia Scherer 12:29

And, again, I

Participant 20 12:31

think different people define differently. And I think that these are these terms are related, somewhat related. So the idea is that I say something about crypto economics, and then maybe talk say society in terms of talk engineering, it's almost the same. But I would say that with crypto economics, the idea is that are we talking to you? The idea is that you're looking to you know that in game theory, you end game theory you are you're receiving a game, right? Which is rules of playing of

rational players, usually. And then you're analyzing that game and analyzing what will be the outcome of that game, like what will be the rational behaviors of the of the agency of the actors in the game, and the collective phenomena appearing from them. And usually do it with very little number of factors with crypto economics is kind of like the opposite. So firstly, you do it with many actors. So basically infinite number of actors in and like the opposite limit. But also, rather than receiving a game and analyzing the outcome, you're doing backward engineering, you're you're you're wishing to have some collective outcome. Usually, you start from the outcome that you want to achieve. And then you're designing the game that will you design your your, your your seat, your starting point is the macroscopic collective phenomena, collective behavior, and then your design, the microscopic the individual game design, that will achieve the macroscopic behavior that you're wishing to achieve. And usually the the, in the token engineering is there.

Nathalia Scherer 14:22

Is there

Participant 20 14:24

like you're using tokens and my microtransactions and, and rolls around them to basically design the game that you wish that will maybe some people may define, I mean, this is more like Okay, so this is the definition of crypto economics. That's that is that's my definition of economics. In token engineering is maybe somewhat wider. So you can you can you can use token engineering in that sense. You can also use to engineering in more purely economic sense, like kind of like economies designing economies, not necessarily game theories. They're all related because any economy is to some degree Game Theory, in any game theory of the crypto economic style has some annoying parts to that. So I think that's kind of like the same thing, but maybe engineering slightly wider scope? How's it

Nathalia Scherer 15:20

be able to explore it a bit more that that wider scope? Or even would you say the difference between crypto economics and token engineering for you?

Participant 20 15:34

For me, token engineering is just eclipsed crypto economics is some, I mean, kind of like the same for me. And again, I don't think there are formal definitions. It's like people made those definitions. So you can define whatever you want. But usually, for me, when I say good economics, I really think about this game theory design, with the use of tokens as incentives. Although it doesn't have to be just transferable tokens, it could also be reputation score, non transferable could be other things. But usually, when I say crypto economics, I mean, in that sense in that game theory, design space, and mechanism design also called but when I say token engineering, often, I would also use it in the same meaning. But sometimes, for example, let's say that you have an organization and you understand its economy to set up its economy, like how many tokens to me, and how to distribute them, etc. So this, this would also fall down under token engineering, but I really think that this is, these are related topics, because when you start asking yourself, How do you meet this? Okay, if you if you want another way, let me give you another definition. Maybe it's it's slightly more intuitive to talk engineering, but it's all it's all. It's important for me to say, it's all saying the same story from a different angle. So another story to say token engineering is your engineering economies. And economies are mean, ideally, particularly circular economies, which create some sort of value. So circular economies have some sort of value creation. And when you're talking about circular economy of some sort of value creation, you have two opposite flows, which are forming a circle, or circular. So basically, how do you distribute tokens into the market? And then how do you sync them in? In some sense? How do you consume our what is consumed with those tokens? So if one of them is hot, the answer to how they consume the tokens? Or are the how the tokens are consumed, being consumed? This is the question of that is related to what makes those tokens valuable? And the other question, how do you distribute them to the market? Is the ease there? Is the answer the question, who creates the value that should be rewarded back with that value? So who creates the value and then how that value is consumed? And from that the tokens become valuable, and then you're distributing those? And this has to be circular? If it's not circular, then I think that there you're talking design is not, or ideally, it should be circular. Circular means that you distribute value in terms of tokens, exactly to the sources of the value creation, those people are bought from machine or whatever, usually people who creates the value, which is then consumed, and then you get a circle. And that's for me, that's what's what's token engineering about. But it's all the same thing. Same group economics, it's all saying the same thing from a different angle. And I'm happy to expand the features a particular topic, you'll see that the next expansion.

Nathalia Scherer 19:04

Thank you. Thank you. Maybe could we explore step by step process for token engineering? Would you say that there is one? And yeah, if so, what would be those steps when, when designing these circular economies and tokens?

Participant 20 19:31

Um, yeah, so I actually, that's a good question. I must say that, although I think that there is yes, there. Is there my step I'll try. I'll try to I try to formalize it. I never thought about it in that language. I think it's very useful. It should be formalized that language. So I think you should start from the question, what is the value that you want to create? For example, if we talk about I mean, I'm tempted to take, I don't know, maybe the lawsuits example. But I'm also tempted to take another design that I've been working on is called holographic consensus. Because there it's very, very vivid. I don't know if you have it, or

some other famous example. But if you have preference, maybe it's easier to talk, step two, to describe the step by step process with an example. And

Nathalia Scherer 20:26

it could be with consensus or like, generally speaking,

Participant 20 20:32

okay. So you know, graphic consensus, for example, the value is actually it's actually, maybe it's having values quite abstract. The idea there is that you're, when you're, when you're folding, is a very wide container Tao. In principle, you may be needing to vote on many, many agendas. So imagine that each person in and out, let's say you have a million people, or 1000 people, and every person not only has the power to vote, but on agendas, but also has the power to propose agendas. So the problem is, I call that the governance scalability problem is that you, you may have too many agendas on the table, and not a good mechanism to decide which agendas or how to how to, you cannot just just, you can't just implement the quorum. Because when when the organization grows, if the quorum is too high, no decision will be made if it's too low, to be very easy to attack. So there is a there is a core tension between in the governance area there is a core tension between scalability or efficiency, and resilience or alignment. And, of course, decentralization. So there is there's tension between those two, three, by the way, this this tension is is is completely universal. Wherever you look, it's a physical tension. And the blockchain scalability problem is exactly the same tension is just in the different framework. But it's exactly the same problem in different contexts. So then, what you devalue is what so what's the what's the value that you're you're you're looking for, you're looking for the ability to expand over that tension, the ability to expand over the attention. And basically, because the limit is the limit of attention, that the the ability for people to attend many things at the same time. And what you would like, you start with what you would like to have, like, what's the value created, the you would like to see. So in this case, the value created is that you want to somehow magically, you know, for sure that each agenda will be looked at and voted with, with attention with human attention will be voted on by a very few number of people, like a very small percentage of the organization. But you want to be sure that whatever they decide about is actually aligned with what the majority of the organization would be voting on, if they would attend it. Right? That's what that's the magic, you want to you want to take what you want to find out. So the you're starting with value. So that's the first step. So the first step is, is is defining formalizing what is the value, the outcome? So even the value source, the source of value, it's not the microscopic value, but it's the macroscopic. Okay, and then the second step you need to do to define to formalize what is the microscopic action that leads to those that macroscopic value creation. So in our case, let's say that, in our case, we want to I'll be doing probably some shortcuts, but or simplifications, but we want to have some sort of signal right, we need to we want to have like some external market that signals someone a decision when a local family name when local decision is a decision that is made by very few number of people and a global decision or global awareness or global choice is the is the choice that would have been made by you know everyone or macroscopic portion of everyone. So, you would like the market to provide you with the signal for for for discrepancies, so, if, if a local decision is being trucked made or tried to be made

Nathalia Scherer 24:51

locally,

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but the market let's say things or anyone, a We go back to the source of value creation by a person that thinks that that local decision is in the extremity with the global consciousness with the global intention with the global decision, or at least what he, he would think that the decision was made. And then that person would signal against that discrepancy. And more. So we'll see, though with his money. So if you'd like to install, you'd like people to stake over such discrepancies. So that's the that's how value, that's how the emergent phenomena that we're looking for. That's how it's created by individual people staking engage discrepancies of that sort. So that's step number two. Let's stop number three.

Nathalia Scherer 25:58

Yeah, and just know, we're sorry to interrupt you, but just being aware of the time. And also, I want to make sure to cover a few other areas. So what I'm gonna do is also include the, maybe the holographic consensus article, as well, in the as, as an attachment to the, to the interview. And I wonder if, yeah, if we look at the at the example now, and think more generally, about the step by step. So, yeah,

Participant 20 26:38

it's the same steps, it's steps. Number one is what is the outcome, the collective outcome you're looking for? Step number two is what is the individual action that you're seeking to incentivize the individual action that will trigger the collective phenomena value creation,

Nathalia Scherer 26:53

and then the

Participant 20 26:58

then the incentive for that incentive for that individual action. And then after, after all these, there is a, there is a very tedious work to see that this because most likely, these designs that you're coming up with are not are not resilient to manipulations. So now you need to fine tune them, and could be many iterate many, many iterations of refining, to ensure that there is no

manipulate manipulability ability. Another way to look at these steps is to like who are creating the value and how you can distribute tokens to value creators, and then who are consuming the value and how they're broadly paying with tokens to consume that value, again, broadly, not always expanding, and not always, maybe a bit simplifying. So that's kind of like the step by step like what is the value creation? Collectively? What is the value source of value creation locally? mechanism then to distribute tokens to incentivize that local value creation? And then and then refining see there is no attack vectors, kind of like it's somewhat simplified, but that's what I can come up with.

Nathalia Scherer 28:23

Yeah. Thank you. Thank you. Oh, that's super. That's super clear. And yeah, well elaborated. And I think I'm wondering also, if there are any specific tools that you might use specially for the art of making sure that they're resilient to manipulation? Yeah, any specific tools around? Yeah.

Participant 20 28:48

Actually not aware of tools that I found useful? I mean, there is no mathematical formulation, like systematic formulation that I am aware of. Maybe there is but there is no one that I'm aware of. Sometimes I faiz, some tools like kind of like game theoretical incentive metrics says stuff, but I rarely that I found that actually they are useful sometimes. Maybe, yes, I saw some articles that were these were utilized, but not always. And yeah, for the resiliency checks, it's actually it's pretty, I'm pretty sure that there should be there should be a tool or mechanism for that. But another word for such then that's why it's so tedious because he kind of like need to. It's very hard to come to the point that you're saying there is no manipulation, because I'm not aware of formulation that formally checks that maybe there isn't another word for it. Maybe there isn't. We haven't discovered it yet. But I do. I did. Find out that after you look at things for so many things, so many time, in so many directions, at some point, you just have this feeling. But that's not very satisfactory. But you have this feeling that yeah, obviously there is no further attack vectors here. But again, it's like, it's not a good answer. So

Nathalia Scherer 30:24

Martin, what would you say that are important areas of knowledge for the token engineering field that we're practicing it?

Participant 20 30:36

So yeah, actually, there are many, that that's one reason I really like it. It's, the convergence may have very different topics. Of course, mathematics is very useful. I think economics is quite useful. I found physics I'm biased, because I'm physics. But I found physics indirectly very useful. For like architecture, architecture in models. Computer science is somewhat useful. Of course, mechanism design, social choice theory on the verge of mathematics, economics and computer science. I think it's very also useful. What else? Yeah, all these even even complexity science, I think, is somewhat related. So I think it's very interesting to see that many people came to this area, because it was very, very new, can see in some magazines, still, from very different angles, that you would find physicists or mathematicians and computer scientists, and even just regular people, I mean, just people with interest and curiosity. So yeah, so all these fields, I think, are converging to this, say, this field and are useful to for that field. And also, and also, I would say that I was always enjoying to see that different kinds of people, are we different background, education background? We tackle the same question somewhat differently. But not in a competitive way, it actually in a complementary way. So it's actually the best working on the same question with people of different backgrounds.

Nathalia Scherer 32:28

Indeed, and also, so now, I'm gonna direct us more towards needs and challenges, both of the field but also of practitioners. And I wonder if you can share a bit of what challenges you faced in your work in the field? And also maybe pass when practicing it? Yeah,

Participant 20 32:59

I think the biggest challenge that I've seen in the field, but I'm also admitting that I'm not following and not keeping up to date. So I may be completely wrong by now. But the biggest challenge that I found was that lack of basic slacker formulations, lack of textbooks, lack of like people will, often people would come and say, I want to start studying political economics or talk engineering. And I will just have no sense, no, even slight sense of how to direct like, what links to share with them to start studying. I mean, so I think, organized body of knowledge formulation, I think what happened is that this field, grew, not in the academy, it grew in the industry. And that's great. I think that's exciting. And a lot of good things came from that. But I think now it's very, very, it's lacking rigour. It's lacking, it's lacking the power that usually you find out in the academy. And I'm not sure to what degree the academy is keeping up, or I think, I think to some degree, yes, but I'm not, not again, I'm not following enough to know, to what degree. So that's what I feel is most likely, at least for me, that was the most lucky more for me more for like meeting new people that are interested to enter the field, like, that's the challenge I met. And often, the best recommendation would be just just, you know, the best way to enter the village is to work to read a lot of a lot of blog posts, a lot of posts and white papers and designs, mechanisms designs, and, and to work with people that will be working in the field for a long time that but I think that we are now in the stage like 10 years, 10 years later. I think we're at a stage where we should really have textbooks. And I think Yeah, I think there's no reason not to. So that's that's the giant pitfalls. I guess pitfalls is is, is likewise, when you have when you have textbooks, usually you also start having from an educational point of view, you start having standards. Like usually in academic academia, when you enter a field, not only

you have books, books about the textbooks, but you also have the standard textbook, like, you know that you just need to read this, this and that, and you pretty much in the field. And right now, if you enter the field, the pitfall is that you can be completely scattered around and read too many things. Maybe too many irrelevant things, too outdated things like this. So I think the pitfall is getting lost, basically.

Nathalia Scherer 35:52

Yeah. Thank you, thank you for the perspective. And would you add anything else in terms of pressing needs for the token engineering field to address either in relationship to like, the field itself, but maybe also, specific token engineering? Probably problems or, or anything in that direction?

Participant 20 36:23

I mean, I would read, obviously, it's actually not just about textbooks. I mean, I would do that too. But I would really like to see much more formulation. Like, it feels to me that like, even even 10 years, after 10 years, of, of working in the field, it's somewhere else. On the one hand, it feels to me natural. And I always when I start a new problem, I kind of like feel it, I know how to move to next step. But still, even today, it somewhat feels like black magic. Like, it's hard for me to explain why this is the next step. And I just feel that there has to be much more formulation, systematic, systematic formulation. And I think that we as a community, we need to really do drive that direction. But the problem is that it's not the incentives, not the immediate incentive of any individual in the industry. And that's why it's not happening. So either it's driven from the academia, but then we need to ensure that academia is up to up to speed and an audit, or that we as a community, need to devise our own academia, in some sense, like our own research, joint research arm, where we are driving that bigger wave together, although it's so hard, because always everyone in the industry are always, not always not everyone, not always, but most people most of the time, most companies, most startups most of the time, they need to take care for the daily pressure. So it's much much harder to invest long term investments. I'm not here to talk about money, I'm talking about time, precious time of researchers. And still I think that's, that's a, that's a big need. I think it's a big need to formalize the field and introduction, it could either be from happening from the academia, or from kind of like a joint, kind of like what's happening in toggle engineering columns, right? It's kind of like this. But then maybe it's already happening, that I'm just not updating. But also, maybe there needs to be more connection to academia, more connection to existing knowledge, because there's a lot of knowledge that needs to be combined. I don't know, maybe it's already again, maybe it's already happening.

Nathalia Scherer 38:50

Yeah, thank you. And how would you describe the role of ethics and token engineering? I mean, I think it's the same

Participant 20 39:06

as I would describe it in anywhere else when you're developing technology or maybe slightly more, because you're developing economies like it's something that basically, it's also true for, for, you know, for for network effect technologies. For example, when you're developing broadly defined technology, that is going to impact a very large number of people. And it's true for Facebook as much as it's true for Bitcoin or for anything else. I mean, you just need to remember that you're developing a little technology that is that may be impacting a very large number of people. And your design space is huge. Your choices are linear, but outcomes are complex. So some some Thank you. Yeah, it's very hard to predict, you know, outcome of things, as we see in, you know, in social networking, for example, and, and, you know, how manipulations are coming about, not the way that thing people thought about when they started it. So it's not, I don't think there is a I don't think there is a, you know, there's nothing to say about it much more than just being you know, I think owning some, some owning some humbled humbleness in some sense. I don't know, maybe there's a better word, but I think he's useful. That's what I can say. But it's not particularly clear, but I think it's also very, very true. Yeah.

Nathalia Scherer 40:53

And how about in terms of diversity? Do you have any thoughts on how to increase diversity and inclusivity within the field?

Participant 20 41:05

I mean, why diversity? Or how diversity? How? How? Firstly, yeah, I mean, firstly, which diversity so diversity, I mentioned, one diversity, which I think is very useful, which is diversity of backgrounds, I think it's very, very useful to have the stock engineering field. Again, formalize unify. In some sense, I would even dare to say the word. I'm joking, but like in stood institutionalized, institutionalized. Kind of like we are very executional in our nature, but I think also some institutionalization could get support. In there, I think, diversity of backgrounds, I think, is very useful. And clearly, I mean, how to do that. I think, if you, for example, I mean, people know how to like interdisciplinary Institute, something that a lot of people are making in other fields and shouldn't be made also here. And there's, there is a very, very, very different diversity. I'm not sure if that's what you mean, but referring to but, of course, when you're when you're, you're building an economy when you're when you're engineering economy, for you know, for, for a whole sector for whole community, it's important that you're taking into account the interests of all stakeholders conduct community. So there is diversity from that, like the intake of interests. When you're designing economy, you want to make have an intake of interests of all stakeholders relevant to that economy? So that's a very different sense of diversity. And I guess they're you want to involve in the process? If not, as engineers as least as index, as much as possible, different stakeholders. Yeah, I'm not sure if I'm not sure if I'm referring to the kind of diversity that you're thinking of.

Nathalia Scherer 43:25

We kept it broad. And can even go in the direction of no diversity of backgrounds, but also no diversity in general, in terms of location, and other other kinds of diversity. But yeah, we kept the question broad, and there is no right answer. Oh, good. Yeah. And do you have any anything else to add about that? No, I think that's that's, that's what comes to my mind right now. And now we're going to look very quickly into the areas of in terms of incentives and finances. So for you, what would you say that are the incentives to be a practicing token engineer

Participant 20 44:25

I think that's easy. I think that's firstly, I think it's very fun. Very enjoyable, and intellectually challenging. I think it's a extremely innovative way I think it's a huge opportunity to working on a field which I which doesn't have textbooks, because meet me that you actually can write them. And I also think there is a huge demand. I think that's like, I believe that that's one of the most sought after perfect professionals right now in so many places. I mean, it if you remember that also these go come with wave of the industry, because since token engineering is very much rooted in web three, so when web three as, as the as the market goes up, token engineering is almost the most sought after professional, even more than developers, web developers. And when the market goes down, you'd feel that on the other side on either side, but shouldn't be excited too much, because the market will come up again, soon, you know, at some point, and we've witnessed again, again, again, and so from all Yeah, from from intellectual curiosity, from from, you know, from an economic perspective, from a fun from opportunity, and also from, of course, from impact, like, I think there is like, huge, like maybe the most possible impact through a good design. So, yeah, I think I think it's one of the coolest professions I think young people can take. And also, you know, what I would say, if I felt, I felt that, again, it's about the interdisciplinarity. I think that I think it's very rare to find a good

Nathalia Scherer 46:28

again, like having wider horizons, like why background like, for example, having someone both understanding technology and code, and mathematics, and top engineering and like, having a wide perspective, I think is very, very useful in this field. Like, yeah, thank you. Thank you for that. And also something. So we talked, you touched briefly on standards. And something that we've been finding is that a lot of people struggle to find also financial standards in terms of how much to charge for the work. So this is something we're asking everyone, if you have any idea of what an average salary would be for a token engineer?

Participant 20 47:24

Well, yeah, I don't know how I can say, I can say that, that if you're really good, you can charge incredibly. Again, like even much more than web developers, and if you're really good, and when the market is high, I've seen Yeah, incredible, insane salaries for really good book engineers. But it's, yeah, I don't know. I don't know. I don't, I don't feel I don't feel like I can come up with a number. I don't know, maybe I don't feel comfortable with coming up with number but but I think it depends on the quality of the engineer, and the, and the, and the need the paying customer and and in the way of the market, but it can range from, you know, from from a regular salary of, I don't know, \$7,000, all the way up to 40 \$50,000. a month. Think you know, everything when. But I don't want to I don't want to create the wrong expectation, because it's also not I'm not saying that \$40,000 is something that you can easily get, or it's the average definitely, definitely on the average. I don't know, what's the average, but I think you can range quite wildly between those numbers.

Nathalia Scherer 48:58

Yeah, ya know, we've definitely been hearing a huge spectrum. In our interviews, so. Yeah. And it's it's hard, right? It's it's something that I think a lot of people struggle with. So yeah, thanks for that.

Participant 20 49:17

But, but you know, what, when you have a very, very varying market, it's exactly the signal for what I was trying to say, when you have a market market, which is very illiquid, you get this high very variability. And I think the market of token Jang is very illiquid. illiquid means that it's very, it's very hard to find really good token engineers still today. And, and when and when large gusta clients are are finding such I think they're willing to pay a lot of money. Which means that there is a huge opportunity, but still it's not. The gap is still not closed easily because because of the fact that there's no standardization so It's very hard to how do you become a really master into engineering? Like, if it was physics you okay, maybe do PhD in Harvard, you know that you're really good. But there is no such thing, at least I'm not aware of maybe maybe there is a reasonably there is no paved paths that it took to work on. So. So this gap, I think, is still open after so many years. And it's quite surprising, but it's still. Yeah. And that's why that's why in some circumstances, you will, you'll find very, very, very high variability

Nathalia Scherer 50:38

in payments. Yeah. Yeah, totally. Now, Participant 20, we're coming to the final questions. And I'd love to explore with you. What are some of your wishes for the future of token engineering? And also, how do you see the field in the next three years?

Participant 20 51:03

I mean, I personally would love to continue working on it. I mean, it's not my it's not anymore. My main focus, I mean, again, like on average, I would say I've been doing for 30% of my time doing that for the past decade. I would really hope to continue dedicating maybe 30% of my time to that, because just because I enjoy it. But my wish for the field is yet to mature, I feel that I feel it, I kind of say the same thing from different angles, but I feel this field hasn't hasn't matured enough. Like for example, the web three technology field has matured much more than the total engineering field. Although they start at the same time, I think one matured more than the others. So I would really like to see if this field maturing up and maturing up means I think much more formalization, systematization paths, paved paths, connection with academia. Like doing a PhD in in tech engineering, or PhD in political economics, that's something that I think you, you would, you would see much more, and I would like to see much more. And I think there is totally possible possibility for that. But you need people you need, you know, supposedly to happen for that. So maybe it takes goes slower than I wanted or slower than I would anticipate. But I think that that's what I would wish for the field and also, and also for more for a lot of our community to evolve around the people working together. I mean, it would be really cool if this if this maturing process will come up from the community in some sense, like, kind of like, you know? And again, maybe it's already happening. I'm just out of loop. It's totally possible that that's the case. And what I see the field in the next three years, I don't know, I think that I think that we haven't yet seen what we have seen. I would like to see it more in the real in the real world. I think what's happened is that so far, we mostly seen talk engineering in more, you know, from the average person point of view, I would say more esoteric protocols. So proof of stake, photographic consensus, defy protocols. economies that serve more of the defy world, mostly. And I think there's a paternity of much more than that. I mean, firstly, there is opportunity for such protocols to impact the governance and Tao world. But even more so the the impact of communities, and also different kinds of decentralized application, which again, are non non Defy. And all of these are related to the real world. I think, real world hasn't seen much, much yet. Of talk engineering. And I really, yeah, I can't wait. I look forward to seeing Doug and Jane penetrate the real world. I'm not sure if it's gonna happen in three years, but it might, because I think that I think that the next wave of blockchain Dow's blockchain in Dallas, I think the next wave shouldn't be the wave that where they finally the blockchain Dow specifically does connect with the real world with social network. works and real world and? And yeah, and I hope to see, I must say that I must say there is also a challenge another challenge there, which is regulation. I think another reason why it's I think much of the this field was slowed down by regulation, I think it was accelerating much, much faster, around the 70 2070s 80s, maybe even 90s. But then regulation started to crack down on tokens so hard, that people are now much more afraid to design, I think it's really, it's really pretty, I think, good token engineering design could could impact so dramatically, the world so widely. And, and I think it's slowed down, I don't know, maybe 10x, just because of regulation. And then I'm not sure, maybe it could even be the thing that really kills it to some degree or kills much of its potential. So maybe I go back to what we need, we need to have the industry educating regulators about this, and somehow finding jurisdiction, that or can experiment with that in a healthy manner. It's also of course, another side of it is because regulations, our regulators are back reacting on, on on, on scams, they're back reacting on maybe irresponsible, you know, economies, maybe they're back reacting on, you know, defy totally open markets, and also just over back reacting and killing everything. So, I think that's, that's, that's a big problem. And it's like, it's like, why should you work on a token design if nobody's daring to issue a token? Right. These days? And but then again, I'm a bit exaggerating my I do think that it's slowed down the industry quite a lot. And at some point, I think, yeah, I don't I don't know where you're gonna get where you're gonna go. But at some point, if we want to revive that I think we need, we would need to somehow also collectively managed to Yeah, in fact, or somehow being able to bypass that, that that bottleneck, something with with the regulators without the regulators? I don't know.

Nathalia Scherer 57:43

Yeah, thank you so much for bringing that up. Like that's something that we, we've heard a few times, but not I wouldn't say that it's broadly explored in the in the responses. So, yeah, I appreciate that.

Participant 20 58:00

I think I think it's also under undervalued, I think it's undervalued, because it's not, it's not binary. Like, it's not that clear. But I think below things, if you look at it, you see that people stopped. A lot of people stop dealing with that field because it's just too, too, too. Too risky. It's not that it's like yes or no, it's not. It's like, I think that's because of that it's somewhat unspoken or underappreciated, the impact of the regulation on on the decay of the industry.

Nathalia Scherer 58:42

Indeed, now, Participant 20, also speaking about the evolution of the field, and the ability to explore with it. Now, of course, we see AI as a technology that continues to advance and there is a potential for it to significantly impact the development of total engineering. So in your opinion, how do you see AI affecting the field and also your own role in the in the landscape?

Participant 20 59:15

I mean, AI definitely is impacting anything, any field right now. And will continue to impact even more, even faster. In the next few years. There is no doubt and, and also specifically talking to me, I mean, I've I can describe in different in several different ways that AI can and will impact to engineering. One is that, for example, for graphic consensus, from the very beginning, actually, we engineer you're going away. We actually imagine I mean, we, we design a protocol for people to make predictions and staking. But from the beginning, from the very beginning, we said, and we even worked on it. We said

that at the in the future, AI bots will do most of the predictions. And now it's like, if I said it three years ago, people would say, you know, what makes you think that AIS would make good predictions? And actually, I already there then had good answers, because we showed that even stupid non ni non AI algorithms can make relatively useful predictions. But now, if now, it's completely obvious, like now. So basically, what I'm saying is that, in within protocols, AI bots will start to participate as agents as economical agents. And that will accelerate the adoption of such protocols. But again, if the problem is regulatory and regulatory problem, but technology wise, it's, it's gonna accelerate a lot. The adoption, or the utilization of such protocols. You can even use AI to research protocols I've been I've been using AI, in my research protocols quite successfully from the beginning, or from the beginning of charge up before. I found out that AI is a good companion for my research, I could advise with it. Questions actually get very deep answers. Yeah, I think there's a lot of it's not sure. I'm not sure. I don't have right now. Example. Another example. But I think that there is a lot of intersection between AI Dow stock engineering. Again, the problem right now, I think the biggest problem is regulation. That's the biggest problem right now, it's very hard to come up with an A of a token design that is not somehow risking to me, you know, to confront the regulation. And it's very discouraging to start such a path right now. And that's very unfortunate.

Nathalia Scherer 1:02:26

Yeah, absolutely. And Participant 20, just wrap up now the interview. Do you have people that you admire in the space? Either it can be people or protocols, projects, but anyone worth mentioning for you, that you admire?

Participant 20 1:02:53

I mean, I really admire anyone that's from the beginning, saw the potential and you know, and enjoy the ride. I remember in the early years, I would really enjoy conversations with \$name, for example. I really appreciated the approach the talks and the materials that I've seen from \$name. I hope the city's name right. I don't know, I don't know him personally, I really appreciated conversation with \$name. Which I had a lot of talks with a, of course, I admired the people I've been working with, in \$name and in \$name. There were a lot of beautiful works, it's hard to think for example, I think Aetherium not a specific person, I think if your proof of steak is is huge, is like a huge endeavor. And I think it's really admirable, admirable. It took so many years and I think for a reason for a good reason. And I also think layer two, again, it's it's very low level, but layer two is also like, there were so many work done so much work done in so many years. On layer two, I remember the early days, and I also was involved in that. And now kind of like it's funny, but it's it's kind of like obvious that yeah, we know how to do skill, scalability over there too. But it's so it took years many years of many people to get to reach that I think all those people are really, and it's the funny thing is it's like there are probably 10s if not hundreds of heroes that took part in that bigger challenge, but eventually there is one protocol. For example, not one On one protocol of Aetherium POS, but there is, you know, a few protocols of layer two. But this is a result of 10s and probably hundreds of engineers of tokenomics engineers that work in working on this, you know, protocols. Finally, they are not working, doing another iteration finding out, it's not working. I remember that every year, every year, the people here would say, this time, we figured out where to every year, I feel like someone's day No, no, no, there was a there was a, there was a problem, there was a bug there was a mistake. And, again, again, eventually, eventually, it worked. And so I think these I think this is really I really admire this is this path is huge.

Nathalia Scherer 1:05:53

Thank you. Thank you so much, my friend for for other perspectives you brought up before we close, is there anything else that you would like to share?

Participant 20 1:06:04

No, thank you for this nice conversation. Yeah, I mean, I feel but not awkward, but I feel kind of like nowadays, my focus is not there. So I kind of like feel like a bit. I do some self I do some work, actually, for others. But I yeah, my focus is not there. So I kind of like feel I know, like outsider a bit. I feel that that there is so many things that I'm not not following enough. So yes, I can't wait to know find out the result of the survey and learn and learn more about it.

Nathalia Scherer 1:07:00

Thank you, thank you. And in your, your contribution has been super, super valuable. As someone who has experience with it in the past to and of course, as a participant, you're going to be one of the first ones to receive the the insights and what we come up with within the study. And then of course, one of our goals, you mentioned standardization and also more more, more work being done fundamentally, from the community connection to academia, etc. And of course, one of our goals with this study is also to to generate some movement in that direction. So yeah, thank you again. And thank you. Yeah, we've been touched to send you the, the results.

Participant 20 1:07:58

Super. Thank you, Natalia.

Nathalia Scherer 1:08:03

Yeah, so taxis and mutton take great. Have a good evening chatter.