

The Great Simplification

Nate Hagens (00:00:02):

You're listening to The Great Simplification with Nate Hagens, that's me. On this show, we try to explore and simplify what's happening with energy, the economy, the environment and our society. Together with scientists, experts and leaders, this show is about understanding the bird's eye view of how everything fits together, where we go from here and what we can do about it as a society and as individuals.

(00:00:33):

Here is the long awaited fourth installment in a series with Daniel Schmachtenberger. We dive deeper into the nuances of humans with our relationship with energy, materials and technology. How does technology intensify the multipolar trap on a world order based on growth? Is there a way out or could global solutions just make the problem worse? We closed this fourth conversation queuing up what our eventual goal was, which is a what to do framework on bend and not break for society in coming decades. Once again, here is Daniel Schmachtenberger.

(00:01:20):

We got really sidetracked on the last conversation, and I'm going to try to be a taskmaster here to keep us on topic, but with you and me, who knows where this will go. So here is my intent for this conversation, this is part four of a series called Bend Not Break, which is the ultimate intent of framing our macroeconomic human predicament, understanding the game board of the constraints and challenges, which then inform the opportunities, so that we can navigate coming centuries and educate, inform and inspire more humans to play a role at various scales of the challenges we face.

(00:02:21):

So if you don't mind, I'm just going to briefly recap our first conversations. Our first conversation you kind of interviewed me and we talked about the energy, money, economic growth basis of modern early 21st century society and how we got here and our dependence on fossil hydrocarbons, how we paper over some of our limits with increased monetary claims and what are the drivers of growth. The second, you talked about the maximum power, which is that organisms and ecosystems in nature self-organize to access energy gradients and human societies are also very similar, you talked about hyper agents and some other fundamental aspects, kind of building blocks of your narrative. And the last conversation was intended to talk about different meta macroeconomic framings of how everything fits together, energy, materials, technology, money, human behavior, but instead we ended up going down a very interesting and personal track on why we prefer certainty, why being scared about the future leads us, hopefully, to a post tragic place where we can understand our difficult reality and still be inspired to play a role.

(00:04:04):

And we really had a beautiful and almost intimate conversation, but it wasn't what I had intended. So here we are today and what I would like to do today is the global economy is running into lots of risks and headwinds and we read things in the news every day about the Bank of England and the German energy situation. And I want to fly up high enough to explain what is happening because the standard story taught in macroeconomics in the world's business schools and colleges doesn't really have an

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explanatory story that makes sense of where we are and where we might go forward. Now, I've developed a story, which is that humans in aggregate are functioning as a kind of blind amoeba, or a super organism that self-organizes.

(00:05:16):

Because we use the market as the arbiter of our decisions that everything is outsourced to this exponentially growing system that individuals, families, small businesses, corporations, nation states, all make decisions to optimize growing profits, an accumulation of wealth. And if you aggregate that all, it's all tethered to using energy because GDP is historically and currently around 99% correlated with energy use and about a 100% correlated with material use like copper or lithium or plastics or concrete or wood, that all that together is growing at around the same rate that GDP is. And that we create monetary overlays on this whole system and that system is not being controlled by billionaires or by politicians, but it has kind of got its own emergent momentum and metabolism. And so we're in this like runaway train and we're shoveling fuel into the engine.

(00:06:35):

And so from that vantage point, we will keep growing until something breaks in the ecosystems of the world or we will stop growing and then we have a geopolitical social response to a smaller pie where everyone has less, or on average everyone has less, and so this is a blind super organism that none of us directly control. So that's kind of my overview, we could get into more detail there, but what I'd like to do today is have you unpack your version of that narrative. How does everything fit together? If you fly up high enough and look down at how humans arrived to this point, how do energy materials, money, behavior, technology fit together and how does that inform the possible choices and changes and governance and constraints of the future? That was a mouthful. Does that make sense?

Daniel Schmachtenberger (00:07:50):

Yeah. I think you and I got connected because a friend connected us who recognized that we were both trying to look at some of the dynamics that were underneath the various types of risks humanity faces. And not look at biodiversity loss and species extinction and ocean acidification and climate change and all the planetary boundaries and war and supply chain risks as separate issues, but see what they have in common that is driving them. You talked about this in terms of dynamics of the super organism and I talked about them as generator functions of catastrophic risk, but I think we're looking at the same thing using different lenses and at this point our lenses have inter-informed each other. I think it's pretty easy to see that of all the problems that we look at in the world, one of the lenses they have in common involves the system of macroeconomics that the world is working with. Meaning that there's a perverse incentive, that what generates profit for a company or a country or an individual often does so at the expense of another company or country or other individuals or the environment as a whole.

(00:09:04):

And so then when that profit equals not just security and survivability but also game theoretic advantage of their ability to influence their own fate in the world and whatever mechanisms they use to generate more profit than somebody else, i.e better technology, that that can be re-engineered and employed by others, so you get these kind of races. Whether it's a arms race militarily or just market

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wise, you can think of it as a kind of arms race to be able to convert the natural world into profit faster and increase relative game theory. The profit is... modern economic theory is that that profit is a measure of production, how much value we added to the raw resources and that we only profit if we produce goods and services that other people want to buy, which means that it benefits their life because we solve some legitimate problem, therefore, GDP equals good. Therefore, more total revenue means more problems solved for more people, and more total profit means that we were able to operate efficiently and the profit measure equals the amount of value that we added that is being monetized.

(00:10:21):

That's not totally untrue and we can see in the Pinker and Hans Rosling and other kind of narratives the true part of that, none of us want to go back to the pre-Novocaine pre-pain killer world, those parts are true. But it's also true that profit is not just a measure of added production but of extraction and externalization and that those profit numbers also have added extraction externalization and not just the profit but even the revenue numbers.

(00:10:50):

As you mentioned with oil, the way we price oil is how much does it cost us to extract it? It costs a certain amount to get a barrel out, now we have to sell it for more than that, but we can't sell it for a whole lot more because somebody else will undercut us price-wise and so it's a cost of extraction plus a tiny margin determined by competition. And that does not include the cost of what the environment took to make the oil if we were going to make it ourselves so we weren't using up a unrenewable resource. And it doesn't include the cost of the harm to the environment that happens in the burning of it, the manufacturer, the refinement, all the aspects of the pollution and the waste. And this is obviously true not just for oil but for every single aspect of the materials economy.

Nate Hagens (00:11:35):

An ecological economist would say that GDP counts the goods but doesn't include the bads.

Daniel Schmachtenberger (00:11:43):

Yeah, I think simplistically GDP is... actually, there's a really nice way to talk about this, which is there is a kind of meta perverse incentive that everybody has, economically and technologically and politically, but particularly economically, which is to overemphasize the opportunity and under-emphasize the risk of any new technology or new venture. And let's particularly look at new technologies. So let's say I'm going to develop AI for a particular purpose, or it could be biotech or whatever, any new technology, if I emphasize, for this AI, what the amazing opportunity is, it's going to allow us to do protein folding stuff that will solve cancer, then of course everybody wants us to move as fast as possible because people are going to have family members that have cancer and we're going to make a lot of profit associated with solving some real legitimate problems that people care about.

(00:12:48):

If we focus on the risk side too much, "But if we can apply this to protein folding that can solve cancer, is this also going to be used for bio weapons that intentionally, or even via lab leaks having created

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those monstrous things, end up wiping out everybody?" Or could it also be applied to developing better chemical weapons or a million other bad things? If I say, "All right, I don't want to advance this technology for its opportunity without really understanding the risk landscape well," because let's say that I'm developing it for this positive purpose, but now that I've developed it's out there, the barrier of entry for anyone else to use it for other purposes is way, way lower. So it's not just what purpose am I developing it for, but what purpose is this new easier capacity usable for by anyone who has any incentive to use it.

(00:13:35):

If I say "I want to do a really comprehensive risk assessment and ensure that the combination of how we move the technology forward with the regulatory landscape and the safety's put in place is actually net good for the world," then if someone else doesn't do that and they just say, "Oh, the risks aren't that bad, the opportunities are awesome," they race ahead, they get first mover advantage in the market and they will end up getting the network effects of whatever kind of Metcalfe law benefits happen. And so they just win economically, and they won't financially responsible for the harms that it causes protected by limited liability corporation type laws and things like that. So the corporations will get to privatize the benefits and socialize the losses and as a result, nobody is incented to do good thorough risk assessment. Everyone is incented to do some kind of plausible deniability box checking risk assessment that is not really a deep or honest risk assessment and then claim that they couldn't have predicted that bad thing could have happened or their hands were tied while they were following the perverse incentive associated with the profit metric.

Nate Hagens (00:14:45):

But if we did appropriate risk analysis for glyphosate or the examples you just said, if we did, if we tested everything, we would make no products at all pretty much.

Daniel Schmachtenberger (00:14:58):

We would make a lot less products, the world would be better comprehensively and we wouldn't be facing the break issues that you're focused on. It's just the game theory of how to do that's very hard. It's not just the game theory is hard. The game theory is hard because unless you can make sure that everybody does those risk assessments, then you don't... If you do the risk assessment, you just lose, and so what it actually means is the more ethical players have less influence. And so currently the multipolar trap is, "Well I think I'm more ethical than the other guy building the AI or building the CRISPR or whatever, and since there is a race and the first mover advantage is significant, I have to win the race to be able to steer the field. So I'm going to go ahead and cut corners on risk assessment because if I don't, an even less ethical actor will run everything.

Nate Hagens (00:15:47):

Well my view is the super organism doesn't include ethics and its decisions.

Daniel Schmachtenberger (00:15:52):

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So we'll get to the... so the super organism is like if you take this multipolar trap that has all of these different actors in a race with each other, you would say that's a property of the super organism. Now we're dropping down a layer to say that property of the super organism is what makes it to where all these players don't feel like they actually have the capability of doing the ethical thing because they will just be kind of priced out and-

Nate Hagens (00:16:18):

Even if they're ethical individual humans, their position within the economic hierarchy doesn't allow them to express their ethical view.

Daniel Schmachtenberger (00:16:29):

Yeah. In general, I think we talked about this once, that if we look at China's taking of Tibet or colonialist taking of Native American territories via genocide in the founding of the US, it wasn't based on who the more ethical actor was. It wasn't based on which civilization should be in terms of some philosophical true, good and beautiful, it was based on effective dominance, which is a combination of violence and economic productive capacity. And so given that what ends up winning in a very Darwinian sense and what is good in an ethical or philosophical sense or even in a long-term viability sense aren't the same thing, that's at the core of something we have to address. Is that where you have a scenario that what wins in the short term forces everybody to race towards that thing, even if everyone racing towards that thing makes an entire system self-terminate in the long term.

(00:17:40):

And that's what we call the multipolar trap. It's expressed in the tragedy of the commons, the military arms race, the market race to the bottom, and you could define it as a property of the super organism to exploit all the energy in its environment and then hit a cliff. And we know that typically you have the peak number of cancer cells in a person's body right before they die and then all the cancer cells die when they kill a host. So the cancer cells individually are utilizing metabolic resource faster than the other cells and reproducing faster than the other cells. So it seems like they're winning at a very short-term game, but they are actually then killing the host that they depend upon. And so lots of people have drawn the analogy that human presence on the biosphere looks a lot like a cancer where it is maximizing its extraction from that which it depends upon in a way that is actually breaking the substrated depends upon.

Nate Hagens (00:18:40):

So is the purpose of this conversation to educate and influence cancer cells to become self-aware, to change their behaviors?

Daniel Schmachtenberger (00:18:51):

Well I think one of the things we're also talking about that's tricky is where it seems like the cancer cell behavior is actually following rational self-interest defined by the game theoretics of, "If I stop being a cancer cell, the body's still going to die because I can't stop everybody else from doing it and so unless I can stop a certain critical mass from doing it," and this gets down to the, "If we don't cut the trees down

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but we don't have some rule of law that makes sure nobody does, then all it means is the other tribe that's in competition with us cuts all the trees down, we still don't get to protect the forest and they'll use that economic advantage against us in the next tribal warfare and we're fucked. So not only are we going to cut the trees down faster than we need, we're going to race to cut them down faster than the other guy because we can't get everyone to agree not to."

Nate Hagens (00:19:49):

Which is why, at least at first, hearing about the ecological biophysical narrative of the super organism and you're, going to tell me where yours fits in here, at least at first feels to someone that they don't have any agency because what is one person's change due to this larger dynamic that you're describing?

Daniel Schmachtenberger (00:20:18):

So if we take an example, if we try to get hopeful and we say, "But let's look at where we did change really bad things because some small number of one persons really did stand up for something, they got other one persons to stand up, they got a critical mass and we shifted it." Let's take a couple examples that are often given. Let's take cigarettes or mothers against drunk driving and seat belts or HFCs CFCs in ozone, we could give plenty of examples, but it's true that we have not... that we don't have a history where we've never solved anything that matters, ecologically or socially. There are some times where people out of concern for the commons have went against some profit stream and actually won a thing, but they are different in kind than what we're facing now and I want to point out where they're different in kind.

Nate Hagens (00:21:15):

And different in scale, but go on.

Daniel Schmachtenberger (00:21:18):

They're different in scale and different in kind in a way that's connected. So if we look at cigarettes, and four out of five doctors choose camel cigarettes, we obviously haven't gotten rid of cigarettes, but we've made it to where you have to be 18 to buy them and they have to have a surgeon general's warning that this will kill you before you use it and we've definitely decreased a total number of people that use cigarettes and they can't use them in the buildings and stuff. That took a lot of work. A lot of people died of lung cancer and secondhand lung cancer first, et cetera for a vested interest profit stream that knew it was wrong from well before it was regulated.

(00:21:57):

But the sale of tobacco, as big a deal as it was, was not at... it was not the engine of creation for the economy as a whole. It was one sector of the economy, it was one product. When we're talking about climate change, as you focus on, there are no industries that don't need energy. There is no such thing as even the possibility of any good or service that doesn't need energy. So when we're trying to deal with something that is the byproduct of using energy itself, it is connected to the machine of creation

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rather than one little area, in the same way that it's like HFCs and CFCs, not every single industry was based on aerosol propellants. And so you were able to change that without having to change macroeconomics. You really only had to change an industry and so you could get enough force to do it.

(00:22:50):

When you're trying to change something that is at the heart of macroeconomics itself, the vested interests that are against it is everything. And it's not only that every industry and thus every single business requires it, it's that also every nation states geopolitical position requires it. So literally power itself is bound to it. So the entire machinery of power will resist anything that would decrease its relative power capacity. And this is why from backing out of the Kyoto Treaty to whatever the whole history of the thing, why has it been so hard is because if any... so there the market can get us to organize based on incentive, but if incentive isn't adequate and we actually have to use a anti incentive, we have to use a deterrent, the market doesn't really do deterrents well. So you have a state that does that, which is you make it illegal and someone will get arrested if they break the law or their business will stop being able to operate.

(00:23:54):

So this multipolar trap that we talk about where there is some near term incentive where if any agent does that, they win in the short term and it creates a race for everybody to do that, we've figured out how to solve multipolar traps inside of a nation state by rule of law and monopoly of force and enforcement. So we can say, "No, we're not going to cut down all the trees, we're going to have a national park, we're going to keep trees in the national park and no logger is allowed to cut there." And what that means is a monopoly of violence will forcibly stop you if you're cutting there and take you to jail to protect the rule of law. And so inside of a nation state, we're able to prevent most multipolar traps, but we do not have international governance to deal with global ones.

(00:24:44):

And so then we end up getting the various nation states competing with each other and this is both... this is why there is a desire for something like global governance is because the global oceans or the global atmosphere or the global biodiversity or global commons that we depend upon can't have a situation where each country, if they make the right choice, gets disadvantaged so that nobody makes the right choice. The reason we don't want a one world government is because how do you have something that has that much power that doesn't become corrupt and how do you ensure that there are checks and balances on it? So we do need something like effective global governance, which does not have to be a government, it can be a decentralized process, but that still allows us to solve the multipolar traps.

Nate Hagens (00:25:36):

I'll push back a little bit on that because even within countries, the pressure to continue economic growth even understanding, and deeply caring about some of the negative impacts of decisions, these countries are powerless to do it. Look at Germany right now, they're importing train loads of coal and they're taking down old growth forests for trees. This has nothing to do with the global situation, they are compelled to get energy to keep their industries going. Of course it's a externally imposed

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emergency thing because of Ukraine and Russia, but there's lots of examples like this that to keep the mouths fed, we make populist... Well look at Brazil, that's not a global thing. They continue to tear down the rainforest to grow more soybeans for beef and that's an economic decision within the country of Brazil. But go on.

Daniel Schmachtenberger (00:26:35):

Of course it's a global thing, is if any country does not grow its GDP relative to other countries that are, it's overall geopolitical position is going to decrease. And so a country does not have total sovereignty and last time you and I were together with Samo, he was asking the question of how many countries are there actually in terms of entities that can make real strategic decisions, and he's like-

Nate Hagens (00:27:04):

And there's not 195, there's like 10 or something like that he said

Daniel Schmachtenberger (00:27:08):

One hypothesis is only countries that have nukes, the other hypothesis is only countries that have nukes and or some critical control of an aspect of the global supply chain that everybody needs, but basically has some play on power that is fundamental and everybody else is to some degree a vassal nation. It's an interesting conversation. But you're right, it's not like a country has total sovereignty within it because it also has to do with external pressures and in a global media world it has to do with internal pressures. And so the external pressures do force everybody to keep up with growth, it's kind of the nation state keeping up with the Joneses in the most kind of destructive way. But the point is, if you have rule of law and a monopoly of violence, you can bind a multipolar trap. It doesn't necessarily mean you will, it doesn't necessarily mean they'll be very politically feasible, which is why there are no nations that have done that for oil because they just couldn't. They couldn't because there is no way that they would maintain economic viability within the overall global system that exists.

(00:28:20):

So what we were mentioning is no country is going to take the lead on properly pricing oil and say, "We're going to price oil at the actual cost that it would take us to produce it renewably in terms of how we manufacture those hydrocarbons and how we process the externalities," and the price is 10 or a thousand dollars a barrel, depending upon how you price it, but it's... I mean a gallon, but it's a fuck ton up from where it currently is, they would be so radically disadvantaged GDP-wise relative to every other country in their ability to build militaries or keep up with trade or whatever. And particularly, the leading nations aren't going to do that. So the US isn't going to do it if China doesn't, China's not going to do it if the West doesn't. And as a result, you have this situation where any nation has an anti-incentive to lead.

Nate Hagens (00:29:17):

Except paradoxically, given my worldview, and I'm not sure you agree with this, a country that chose to do that or was forced to do that, to simplify first and beat the rush would have major economic and

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social pain now, but would self-organize in a way while the rest of the global system is still intact, that they may be more resilient 20, 30, 40 years from now based on what they were forced to do. Now

Daniel Schmachtenberger (00:29:49):

The challenge is always the gap between when you start to do the thing and how much advantage everyone else gets in that time and what they do relative to you in that time before your thing pays off. There's a time to ROI on it. It's the same with getting into-

Nate Hagens (00:30:07):

Well it's power. It's energy per unit time, it's power, which we talked about before. So you... I'm sorry to interrupt, but implicit in what you're saying is something I fully agree with, which we are in this rapidly rushing river and we can't swim upstream, we're compelled to go downstream with everyone else until there's a waterfall or the river calms or whatever. It's an economic compulsion globally, at least for the near term.

Daniel Schmachtenberger (00:30:45):

Yeah. So the competitive interests do force us to keep up with the game or lose as a result of not keeping up in that game, lose in ways that are intolerable before the ROI of our new investment happens. The answer to that, why the name of this whole thing is Bend Not Break is if the major players can come to an agreement to all recognize that future state and decide to be willing to accept constraints on their own behavior knowing that the other ones will also accept constraints on their behavior, some kind of voluntary agreement, because unlike in the nation state example I gave where you can have a monopoly of force, there is no international monopoly of force because how do you enforce a deterrent on countries that have nukes in critical parts of your supply chain? It's very hard. The cost of implementing the deterrents is oftentimes worse in the short-term than whatever you were trying to avoid so you just leave it alone. So, "Okay, we don't get off fossil fuels or we have a nuclear war." It's like or

Daniel Schmachtenberger (00:32:03):

our entire economy breaks because we can't do import with China or they can't do export with us or whatever. So the cost of deterrent is a very real thing to have to factor. So you can't force that thing. You have to somehow reach agreements with agents that are hopefully capable of being rational enough to see that in a time period that is not so far out that it's unreasonable to think about, the alternative is much worse. And this is I think the whole reason you have a podcast and the reason I podcast with you and like that is to try to show the inexorable world situation if we continue on the path that we're on, such that those who are in the positions of power could come to make the kinds of agreements that make those choices possible for each other that bring about a different, better, long-term world situation.

Nate Hagens (00:32:58):

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And it would by definition have to be people in those 10 real countries that hold the reigns; US, China, Russia, France, Germany, UK and a couple others.

Daniel Schmachtenberger (00:33:12):

Probably. The US and China agreeing by themselves would be enough to move the entire world that way, but probably it would require both of them and that's hard.

Nate Hagens (00:33:25):

Yeah. Let me just ask you a sidetrack question and I have a note here to myself "do not ask Daniel sidetrack questions on this episode," but it's only a partial sidetrack. So you just described the logic of how nations are compelled to continue to grow so that they don't get behind. What about individuals listening to this? Can they get out of that trap in their own behaviors and plans?

Daniel Schmachtenberger (00:34:06):

Yeah, it's an interesting one. Can individuals change their behaviors in certain ways that are important to do regarding their consideration of, did this meat come from a factory farm? Did this product come from a sweat shop? How much total shit do I actually need? Is this packaging ever going to break down in the environment? Can they start to be considerate of those things and should they be? Yes. Should they be because that choice will make much difference to the whole? No, it's not going to. Should they be because if they do and communicate about that and all the people who are compelled to do, that it can change the nature of culture and status enough that enough people do that the cumulative effects are meaningful? Yes, that's true.

(00:35:00):

Is there a lot of tricky stuff to consider like then everyone's incentive to virtue signal in the hope that, that compels other people to do things in a way that oftentimes actually produces more backlash than anything, there's sensitive things there. I think a lot of people who are smart and caring get hopeless around their own personal behavior for a couple reasons. One, you and I are both talking on a computer right now so that we can do this, where we know for sure that the mining of the rare earths needed to make these semiconductors were in mines that employ slave labor and in supply chains that put toxic mining tailings into freshwater and that use fuck tons of energy and on and on. The alternative green laptop doesn't exist because there's not a completely separate supply chain for cobalt somewhere or for lithium or for semiconductor manufacturing.

Nate Hagens (00:36:08):

Well, the green laptop is you and I living in the same community and meeting in a forest glen instead of on the computer. But we are trying to maximize our impact, not minimize our impact.

Daniel Schmachtenberger (00:36:20):

So that's the point is that, a lot of people will start to realize, "Okay, every single product I can find, for the most part, has some input from global supply chains," even if the materials to do it were

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transported across roads that were paid for by nation states that were backed up by militaries and taxes that go to those things, whatever it is. And so then you're, "All right, well, I'm going to live in the forest and only use shit that I make by hand that I find on the forest floor." The chance that I'm going to radically influence the world is pretty low and my decreased consumption is not going to affect the overall story.

(00:36:59):

So there's almost a way in which that's more of a "I want to wash my hands clean of being part of our species at this time, but I'm actually not taking responsibility for what I do to meaningfully affect it." And I think that there is an ethics of action and inaction. I'm ethically responsible for what I could do and don't as well as what I do.

Nate Hagens (00:37:21):

I like that. There's also the positive externality of using less and all that, making you personally more flexible on the bumpy road to come.

Daniel Schmachtenberger (00:37:32):

Well, so I think people should be thoughtful about this, though I don't think they should try to be perfect about it because if they try to be perfect, they will be in the forest using-

Nate Hagens (00:37:42):

You can never be perfect.

Daniel Schmachtenberger (00:37:43):

Nothing. Yeah. But I think one of the things that's important is to get... I am complicit with the world system every time I use my phone. I'm complicit with the world system every time I use money itself as an exchange for anything. Every time I drive on a road I'm complicit with the world system. As such, I can't think of myself as an individual separate from the whole. There is this Ubuntu, I am because we are and this is the way the human world is right now and so I can't make myself in perfect ethical alignment, independent of helping the species as a whole to move. And there's something actually more humble and interconnecting and important about getting that.

(00:38:29):

And now that doesn't mean, okay, well because I'm complicit with those things, fuck it, I'll just buy everything that I want with no consideration. One should absolutely endeavor to do the best they can on a number of areas and also say... I know how environmentally bad it is when I use planes, but you and I both go to places, whether we're interacting with governments or major corporations to try to help them do better, where the impact of the fuel on that plane makes sense relative to the possible impact we can have on those institutions. And it's hard because it's so easy, once you accept that it's both, it's so easy to bullshit yourself.

(00:39:12):

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So all there is, is earnest consideration of this. So I think some people can get a little hopeless when they try to be perfect with it. I think the other place people can be hopeless is when they recognize that most of the harm is on a parade or distribution that is not the result of just consumer behavior. It's the result of military behavior, major corporations, things that aren't going to change not just based on my behavior but my behavior plus the voluntary movement I try to create. And that all of that doesn't converge to adequate in time.

(00:39:45):

And so that's why there is also this other thing got a factor of, okay, it's not just about being less bad on the environment, it's about transforming the human techno sphere, social sphere complex to actually be compatible with the biosphere that it depends upon. So not just how do I use less of this one that is incompatible, but what is my role to play in the transition of the human presence on earth to one that actually works with earth long term?

Nate Hagens (00:40:16):

Well, that's the going to be, I hope the topic of our next conversation, is what are the pathways at the various scales on what we can do once we understand this meta overview.

Daniel Schmachtenberger (00:40:30):

So we didn't get to yet... We just started to touch on the fact that the economy as we understand it, is incompatible with the biosphere, that the production of goods and services, that profit is both a measure of production but also a measure of extraction and externalization, that until the economy does not have extraction and internalization as realities within it, then it's accounting is wrong. It's basically just got messed up books because it's unrenowably taking from the balance sheet of nature and it's unrenowably taking assets from the balance sheet of nature and unrenowably putting costs into the balance sheet of nature, not accounting for it in a way that breaks that if you just even get the accounting right, then you start to have an economy that makes sense. But that does require changes that would look nothing like capitalism, socialism or any type of system we've had to date.

Nate Hagens (00:41:27):

Well, for one reason, because if you to use ecological economics terms, if you internalize all the externalities, most industries on the planet would be unprofitable. So if you try to close loop this stuff, who bears the cost of that? Because the closed loop stuff is going to be a lot more costly and so either the governments bear that cost or consumers bear it with much higher prices or using less stuff and we're not going to voluntarily on mass choose that.

Daniel Schmachtenberger (00:42:03):

Yeah. That's another way of stating the multipolar trap, which is that this system where the cost is externalized to the environment and the commons does seem to short term benefit us and whether us means corporation, country or person. And even though the aggregate effect of that system does self terminate for everybody. And so we do have to voluntarily at a minimum adequate scale, create a new system that doesn't self terminate or we get the plausible deniability of saying we couldn't have done

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anything else while being chained to and part of a system that is on a self termination path, which is why understanding what the alternatives look like is key.

Nate Hagens (00:43:01):

How did we get here? How does everything fit together? Energy, materials, human behavior, technology, bird's eye view.

Daniel Schmachtenberger (00:43:13):

So I think the key insight that I want to emphasize has to do with what is unique about humans relative to the rest of the species as best we can observe. And when I say humans right now, I mean homosapien relative to everything else, but it probably started with earlier hominids that had early tool making. So somewhere between Australopithecus and homo habiles... Obviously all those other hominids are not with us. But that's important for the early part of this story because we're talking about a curve that's maybe 2 million years old rather than just 200,000 years old.

Nate Hagens (00:44:00):

As you brought up pre-hominid species, it made me think that what you were just describing between nation states today that there's not going to be a nation that's going to voluntarily give up power and reduce GDP, you could maybe apply that to pre-hominid species too. And that's why we are here and the Neanderthals are not.

Daniel Schmachtenberger (00:44:22):

Yeah, there are obviously arguments between scholars on how this happened but one of the hypotheses definitely is that the reason the other hominids aren't here is inter-species inter-tribal warfare and that sapiens dominance at various aspects of technology and coordination had them win that game. Could be seen as the beginning of this whole trajectory that we've been facing since.

(00:44:54):

But I do want to emphasize a distinction between humans and everything else in nature. This is always tricky because there's an old story of the difference between humans and the rest of nature that looks like man's dominion over nature because we want to rise above our animal nature to some angel, godly over self and that makes us separate enough that we have dominion over. And then there's kind of an environmental movement that wants us to say men are not the web of life, we're merely a strand within it. Whatever we do to the web, we do to ourselves and see our unity with nature and our dependence on it more. And wanting to offer something that has elements of both but is kind of distinct, which is humans don't exist without the rest of nature so we have to be stewards for it.

(00:45:44):

But what is different about us allows us to destroy all of nature in a way that nothing else in nature can. Therefore, we have to be stewards or we don't continue to exist. And the key distinction is that the adaptive advantage that every other animal has is the result of genetics that result from evolutionary process. And the evolutionary process is, genetic mutation occurs, most of those mutations are not

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adaptive. Some tiny set of them are adaptive and that increases survival and reproduction and if it increases survival and/or reproduction, it gets selected for.

(00:46:23):

The process by which a genetic mutation occurs is, some copying error because a gamma ray hits the thing or oxidative stress or a virus or something like that. And those mutation pressures are pretty evenly distributed across the ecosystem. There's a million minutia that we could get into here and of which there are some differences, but I want to kind of stay at the high level topology of the thing, that I think is relatively easy to agree on. So you don't get a situation where you have a mutation that creates a radical difference. The total amount of change that occurs in a mutation is going to be relatively small.

(00:47:05):

So major speciation changes occur through lots of compounding mutations over a long period of time. And then you have this because co-selective process that if you have a mutation that makes say a predator slightly faster, it's going to be slightly better at hunting the prey animal. Well, it's going to catch more of the slower prey animals. And so the faster prey animals that still continue to avoid it in breeding with each other because there was already some natural distribution in their genetics create faster prey animals.

(00:47:41):

So as the predator animal gets a little bit faster from a mutation, the co-selective forces make the prey animal get faster or vice versa. So the change occurs through these micro changes and co-selective pressures and then not just the prey animal but the prey animal's relationship with the plants that it eats and the adaptive changes that occur there, you end up getting that the competitive forces end up leading to meta stability of the whole system and upregulation, slow but kind of systemic upregulation of the whole.

(00:48:16):

With humans and like I said, this started with earlier humans, we started with being able to increase our adaptive capacity not through genetic mutation. We started by being able to increase our adaptive capacity through abstraction, through tool making and through abstract coordination mechanisms. People start to get into, yeah, but animals make tools. You can see even crows will use tools to break things open and chimpanzees will use tools and the beaver will make a dam and the birds make nests. These are extracorporeal adaptations that they use. Yes, but bird's nest for any species are about the same as they were 10,000 or 100,000 or 500,000 years ago for that species. They're not evolving their tool set and adaptation occurred for them that involved them engaging with their environment in a particular way. But they're not recursively making changes on how they do that tooling.

(00:49:14):

The same with beavers, the same with chimpanzees. And so you can see that a chimpanzee will use a sharp rock to cut something. It'll experiment with the rocks around to see which one experientially cuts faster. And if you give it a knife, it'll use the knife but it doesn't design a knife, it doesn't design the beginning of stone tools because the design of it requires this kind of recursive abstraction that says,

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this rock is sharp, this rock is sharper or could I make one that is sharper yet? In order to do that, I have to understand the abstract principle of sharpness and say what mediates sharpness.

(00:49:47):

So it has to do with the hardness of one material relative to another and it has to do with the angle of the edge. And so the ability for the recursive abstraction that allows us to make a better tool and then see how to make it again and again, that occurred with some degree of complexity of recursive abstraction process where probably chimpanzee was right here and just on the other side of a line of neural development was homo habilis and they had that ability.

(00:50:16):

Then, it got doubled down with sapiens. And so you can see that we take an abstraction and then we do abstractions on top of it. We don't just see how do we make a sharper thing, but then how do we attach it to a bow and arrow. Go ahead.

Nate Hagens (00:50:32):

So I and my colleagues, like John Gowdy, attribute the origin of the super organism to around 10,000 years when we found agriculture and started to optimize for surplus. And you're saying that the origins of the super organism was much earlier than that?

Daniel Schmachtenberger (00:50:52):

Yeah. When you look at an exponential curve that can be fairly flat for a long time and then start to verticalize, roughly 10,000 years ago, agrarian revolution was a major jump, but I am going to go back and look much earlier. Because already before that happened, you had humans behaving as apex predators in almost every single environment in the world 10,000 years ago. And there's no other animal at all that is like that. And that's already a critical thing to understand. It goes along with your extincting of the other hominids.

(00:51:27):

So as amazingly well adapted as the cheetah is to the Savannah or the polar bear is to the Arctic, neither of them survived in the other environment. And yet we were able to because of tool making put on clothes, create shelters and go become the apex predator of every single environment. That was already really different because it wasn't just that we could over-optimize a single environment and then come back into check. We had the ability to go become not only adaptive but apex predators in every environment. After we over hunted an environment-

Nate Hagens (00:52:01):

It's not only the recursive ability to imagine abstractions and to invent technology, but it's also because we're ultra social. We're not a solitary species. Jonathan Haidt, who's going to be on this show soon, in his book, *The Righteous Mind*, says that humans are 95% ape and 5% bee. Like we have a lot of behavioral attributes of the social insects so that we copy and we coordinate and we collaborate in ways that other species don't.

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Daniel Schmachtenberger (00:52:38):

Chimpanzees are pretty social, they're not solitary and bonobos are very social. I wouldn't say that it's about us being more social than them, I would say it's about us applying our abstractions recursively to our coordination mechanisms. So language allows a type of sociality and then written language and formal hierarchies and those are all basically technologies, techne, of social coordination. And so obviously a wolf pack that coordinates is able to take down a bison that a lone wolf never could.

(00:53:17):

So we're not just looking at the adaptive capacity of an animal but of its coordination. Our recursive abstraction gave us the ability to keep making our coordination mechanisms change so we could go from the coordination that happens in a band to a tribe to much larger tribes to early cities. And so you can see that we're able to change our coordination based on tech that allows more specialization and division of labor and whatever and able to change our coordination mechanism based on the size of the number of people that are cooperating in the thing.

(00:53:59):

I would say somewhere around 10,000 years ago is when we started to regularly pass the Dunbar number and where formalized methods of animal husbandry and agrarian revolution made a massive jump. But before that, stone tools, language and fire were massive jumps that distinguished us from everything else. And you can see that stone tools was us applying recursive abstraction to the domain of atoms and we could extend our body's capacity. Rather than the genetic time it takes to grow a longer fang, we could just make a spear that's longer than any fang.

(00:54:39):

And then we could keep making longer, harder, sharper ones. And we are able to increase our predative capacity through a different mechanism. It's not genetic selection anymore, it's tool making. We're able to increase our predative capacity, that's our capacity for violence and extraction faster than anything else in nature can increase its resilience. So co-selection breaks and it's no longer that as the lion gets a little bit faster, the gazelle's get faster, it's that we get faster and we can over hunt an entire ecosystem faster than genetic mutation can take up and then we can go move to another ecosystem, over hunt it until we start farming ecosystems.

(00:55:20):

And so this is really different. So you can see that the stone tool was our recursive abstraction applied to the domain of atoms to extend our corporeal capacity, our physical body's capacity into instruments. Fire was abstraction applied to the domain of energy. We could now generate warmth and move ourselves to environments that we wouldn't have been fit and get calories from things that wouldn't have been calorically available for us via cooking.

(00:55:51):

And in doing so, though of course we're converting the environment in the form of trees or whatever into entropy, into fire for our utility and language was us applying our abstraction to the domain of bits or information processing so that we could have more complex signaling and memory. And the memory was so that we could take everything that we had learned and pass it on via memorization of songs

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and like that before the written word. Because if you and I had to learn math from scratch, we wouldn't get to Roman numerals but we get to learn what the entire history-

Nate Hagens (00:56:26):

Well, you probably could.

Daniel Schmachtenberger (00:56:29):

If I was really ambitious, I might get as far as Roman numerals, right? But if you think about we're able to, by the time we're kids in grade school, get the cumulative effect of the smartest people throughout history, thousands of years of their compressed knowledge.

Nate Hagens (00:56:44):

So language accelerated entropy on planet earth.

Daniel Schmachtenberger (00:56:50):

It accelerated localized centropy and systemic entropy and profit is localized centropy and systemic entropy which goes along with privatized gain and socialized losses. And so I would say with the capacity for recursive abstraction and the ability to increase our adaptive capacity through a different process and a faster and more recursively fast process than the rest of nature, began the beginning of this thing we call the human super organism and the beginning of a process that is ultimately self terminating unless it changes process.

(00:57:33):

And so then of course the agrarian revolution was a massive jump and it wasn't one jump, it was like three or four or five jumps that we kind of stick together because before the plow, goat herding already started desertification, right? Our ability to steward a whole herd of goats and protect them from predators meant that we could again change the environment pretty radically where because we could predict them from predators, the goats could decimate an ecosystem of its plant life and yet it could convert a bunch of plants that we can't eat into a bunch of goat milk or goat meat that we can eat.

(00:58:09):

So I would say that was already an ability for us to maximize caloric extraction at the cost of ecosystems. Then, the plow and animal husbandry was the single biggest massive step, corresponding with mechanisms of storage. So that grains became really a thing and we've talked about that before. And then irrigation and hydrological systems became a massive thing. So there were a few jumps in the thing that we call the agrarian revolution, but they were all jumps in techne, all jumps in our capacity to convert the rest of the environment into things useful for us, faster than the rest of the environment could deal with the adaptive pressures we were putting on it.

Nate Hagens (00:58:55):

And then we found the turbo booster in the 18th century and 19th century with fossil carbon and hydrocarbons.

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Daniel Schmachtenberger (00:59:04):

And I would say you could look at all along before we used fire to after we used fire, we started getting those extra somatic or extracorporeal calories you're talking about, right? There's a lot of energy being burnt up in that fire to be able to make food that I couldn't eat raw, food that I could eat when cooked, right? So now the total amount of calorie per capita is going up beyond the amount that people are eating, that is being used to warm the homes and cook the food and all like that.

(00:59:44):

So a few things happened. One was the population started growing and two was the amount of resource per capita growth. So we're on an exponential resource curve, both because of an exponential population curve and a resource per capita curve simultaneously. And each new technological innovation increased this. Either allowed us to increase the population faster or the resource per capita or both. And of course again, if you have a tribe that says we're not going to use the plow, we think that's fucked. We don't want to yoke an animal and beat it all day long because the spirit of the animal, we're going to keep our animistic ideas and live in harmony with nature, then they're not going to grow their population. The one who does yolk it and beat it will grow their population. They'll win in tribal warfare, wipe the other ones out.

(01:00:33):

And so the memes, the value systems, man's dominion over whatever, that corresponds with the tool used, will be the ones that proliferate. And that means nothing about them being more true or good or beautiful, it means them being more adaptive in short term zero sum type games.

Nate Hagens (01:00:52):

And it also doesn't mean that they were happier. The tribe that remained animist might have had happy, healthy lives, they just died out because they weren't competitive versus the other tribe.

Daniel Schmachtenberger (01:01:05):

Now I have to come to, because since I just mentioned zero sum. If you look at a book like Nonzero by Robert Wright that argues that the long arc of history is that humans have been more and more positive-some in their dynamics via moving from tiny bands to tribes to much larger groups that have division of labor across the larger group where each person, rather than have to do everything they would need to survive by themselves, is able to do specialty roles because of trade where they can depend on others so that you get more specialization, so you get more total goodness.

(01:01:41):

And that inside of the group, you get fundamentally positive sum behaviors getting selected for cause. The group that does more positive some behaviors gets through. This is partly true, and it's key to underlying the kind of Pinker-Rosling narrative on the things that are getting better. But it's of course also true that the group that does more coordination or positive sum type of behavior within that in group does better in a war with an out group. And the war is zero sum or even negative sum. And the pressure of the war forces that other thing to happen. And so there is a relationship between positive sum things and zero sum things that has to be factored together.

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(01:02:33):

And it's also true that what was positive some for the humans within the group, was negative sum for nature. It was those humans coordinating with more diversity and specialization, which meant more people able to extract more stuff from nature and turn it into useful stuff from humans at the cost of the ecosystems. And then the zero sum dynamics with other groups, meaning they had to race to do it faster than the other groups. Thus, the net effect of the total human social activity was debasing the ecosystem that it depended upon.

(01:03:06):

And so that's the other key thing we have to get is that when we're talking zero sum or positive sum, it's always the pressure between the two of those and that all of them, including the positive sum ones are positive sum between humans, which is still externalizing the cost to nature. And that's a really critical thing to get as we're getting near the planetary boundaries now.

Nate Hagens (01:03:27):

So our anthropocentric bias has started long ago.

Daniel Schmachtenberger (01:03:39):

When we talk about the agricultural revolution, we start moving from Dunbar size tribes to early city states of a hundred thousand and then a million people. And with them, you get the earliest kind of formalized religions and you get massive class systems, hierarchy, different kinds of division on gender roles.

Daniel Schmachtenberger (01:04:03):

So the social systems and the cultures change correspondingly. Once you get a whole lot of grain that is better storable calorie than the meat of the vegetable stuff earlier, you start to also get way more class system because who owns that starts to be very unevenly provisioned and then with the class system emerges all the aspects of social hierarchy and all that, you also now get more incentive to get raided for all your surplus. And so you have more incentive for the tribal warfare. So now you have to make more defenses around it and on and on.

(01:04:40):

Before we get to oil, we get lots of innovations during that time that have from obviously the water wheels being used to the on and on. But we do get a pretty massive jump at oil and people talk about the fourth industrial revolution that we're in now. The first industrial revolution being oil, the second being electricity, the third being computation, the fourth, now being AI and all the Kurzweil exponential tech. That's a roughly good model. We could, some people talk about six industrial revolutions but basically we can look at that. There's like a step function in tech and then a whole bunch of evolution within that epoch and then another step function and then evolution within the epoch.

Nate Hagens (01:05:26):

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So I would put an asterisk on that. That those revolutions all happened while the total scale and quality of energy for the human enterprise was increasing every single year other than the 1930s, 2020, 2009. And at some point the depletion part of the story for coal oil and natural gas, of which we get a hundred billion barrel of oil equivalents per year, which is 500 billion human labor equivalent worth. Although you once told me that was a gibberish number, but plus or minus, even if it's a hundred billion, it's a lot what happens with those revolutions. The tech revolutions, the industrial revolutions as we have fewer of those exogenous laborers, fossil laborers added to our economy is a question I think about a lot.

Daniel Schmachtenberger (01:06:26):

Yeah. When you demonstrate, in the animation you made the carbon pulse, and how significant the step function that was and it really corresponds to population well, right, from the agricultural revolution until the industrial revolution, the population stayed under a half a billion give or take. And to go from a half a billion to eight billion in 300 years, given 10,000 years under a half a billion, you're like, "Whoa, that's huge."

(01:06:58):

And we hit the first billion at 1815 and that the other technologies that sit on top of that, the electrification, the computer-ification of everything, sit on top of and used at underlying energy substrate that as soon as we hit the point of diminishing energy return on energy investment of that energy substrate, the story starts to change. We hit an inflection point in the story and this is what I think is so important about, I mean, one of the things I think is so important about your work is that it's kind of obvious when you zoom back that the exponential growth requirements of the economy and the finite planetary boundaries of earth are incompatible. That thing doesn't get to go forever and that's-

Nate Hagens (01:07:54):

It is kind of obvious, but I really don't know if more than a quarter percent, I mean 25% of the population sees that, maybe intuitively or in their gut they do. But that sentence you just said should be understood by a first grader.

Daniel Schmachtenberger (01:08:12):

Yes. And it is, I think it's a fair thing to say. Let's get everybody to understand that and start to wrestle with it. So let's say it again. So originally the financial, what does originally mean with the financial system? We can go back to shell's mediating barter, the idea of having a currency that was not the value itself but was an accepted mediation for things that have value for goods and services, it's supposed to be that money equals access to an ability to exchange goods and services. What we're ultimately interested in is goods and services. But of course as soon as you start getting banking and you start getting the concept of interest, because if I loan you some money, I stop having access to be creative with it. And if I was creative and I was growing stuff, I'd be growing it during that time.

(01:09:19):

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So when you pay me back, you pay me back with some interest. That represents the growth that I would've had had I kept it, which all seems reasonable. Now we get a situation where the financial system has its own physics, right? There is a compounding interest of you're going to make whatever percent return you get and then if you leave it in there the next year you're going to make compounding return on that much. Again, compounding return curves give you exponential growth rate. So the whole global financial system has an embedded growth obligation that is exponential, meaning there has to be exponentially more total currency in the system every year than previous. And then to not debase the value of the currency, that means there has to be exponentially more goods and services that it's related to. Otherwise you debase the value of the currency and the financial system collapses.

(01:10:12):

So now the physics of the financial system, rather than the financial system being indexed to the real goods and services now the real goods and services are indexed to the financial system where the embedded growth obligation, just to keep up with interest let alone the many other aspects of the financial system that create embedded growth obligation, mean that there is a demand for exponential extraction and exponential energy moving through the materials economy turning into waste and pollution. You cannot run exponentially more of a finite planet through a linear materials economy that has limits on both the front and backside of that linear materials economy forever. So you hit limits of growth or planetary boundaries.

Nate Hagens (01:11:01):

And since our last conversation there's been a wellspring of media and research and Twitter comments and TED talks not so much about the energy side because that's been known but about the material limits, because lithium is 900% more costly than it was a few years ago. A woman named Olivia Lazard is going to be on this show soon and she has a pithy phrase which I like, which is in an attempt to decouple our economy from carbon, we will recouple our economy to materials. So there's an exponential driver there on materials needed for any energy infrastructure scaling.

Daniel Schmachtenberger (01:12:00):

Right. So as you point out so well, the hydrocarbons are a very energy dense source of energy. And for transportation in particular, this is very useful, the storage dynamic. So either if we want to get off them, you need a lot of batteries or you need to make hydrogen fuel safe or something like that. And if you want to move to renewables for the grid, you still need a lot of storage because of intermittency and you need all the materials necessary to make the windmills, the solar panels, whatever other physical technology. Go ahead.

Nate Hagens (01:12:49):

I just had a thought. Is that trade off or that choice or that path, similar to what you said earlier in this conversation about a nation choosing to not grow? So a nation that chooses to live differently using renewable flows is giving up some of the other attributes. There's a lot of nations that try to do a hundred percent or a large percentage of renewable energy in their electricity sector, which globally is

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only around 20% of our energy. But look at Germany right now. They were the poster child of let's do the right thing environmentally and let's build a low carbon economy. But now energy security is taking front seat over low carbon transition and look at what's happening to Germany economically.

Daniel Schmachtenberger (01:13:47):

Yeah. You were seeing... so they were focused on building a low carbon economy in terms of their domestic production of energy, but obviously their carbon demands were imported when they stopped being able to import it.

Nate Hagens (01:14:00):

Right.

Daniel Schmachtenberger (01:14:00):

Now they have to make up for it. This is a point that you and I mentioned in the first or second one, which is that the sustainability metrics we look at have to be global, not national because otherwise you just export your shitty environmental metrics somewhere else. So it's easy to say, "Look, we produce more dollars per joule than other countries. So we're beating the Garrett Relation because we don't do any mining or infrastructure in our country. We do software, but in order to meet all of our needs, we're using money to import that stuff from countries that do that." And if you balance it out, the energy and joule dynamic is 99% coupled or our Gini coefficient is better, meaning our poorest people relative to our wealthiest people, there's less of a gap but it's because we import all the stuff from countries that have slave labor. And so if you really want to see how good a country's doing, you also have to factor its import export dynamics and figure out how to do attribution on that.

Nate Hagens (01:15:05):

So real quick, ten second stat. The average American, meaning you take all of our energy and divide by 330 million people uses 57 barrel of oil equivalents of fossil fuels per year. And we use another 17 that are burned in other countries in the finished products that we buy.

Daniel Schmachtenberger (01:15:25):

Yeah. There's also the very good, there's an online slave calculator where you put in the how many plane flights you use and how many kilowatts your house uses and how much stuff you buy, how many people in your household. And it says how many people are in the third world in slave like or indentured servitude positions to make your life work. That's another-

Nate Hagens (01:15:51):

Oh god, I've never seen that.

Daniel Schmachtenberger (01:15:51):

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Yeah, it's another eye-opening one because again the Gini coefficient in my country might be really nice, but the Gini coefficient in the supply chain that my life depends upon is probably not very nice. And so again, this is where we have global dependency, global effects. So you have to have global governance otherwise everybody just does, "not in my backyard" and sends the messed up stuff to countries that don't really have much of a choice and then has plausible deniability on their own metrics. But it's like that's not real.

Nate Hagens (01:16:25):

Well I sure am looking forward, probably not on this episode, but I'm really keen to hear your insights and wisdom on the possibility and the pathway towards global governance because boy what's going on in the world right now seems like we're moving further away from that than towards it-

Daniel Schmachtenberger (01:16:43):

And I want to say just because it's such an easy knee-jerk reaction to have that when I say global governance, what I mean is global government that this is some new world order, one world government agenda for top down total control in the debasement of good nationalism and checks and balances on power and blah blah blah. No of course I don't want that. No thinking person wants that unless they assume they're the one who runs the thing, in which case they probably do. And that's important because... but this is the trade off we have to deal with.

Nate Hagens (01:17:24):

I think there's a good... there's a reasonable percentage of the environmental movement that wants that, some sort of environmental authoritarianism...

Daniel Schmachtenberger (01:17:31):

Unfortunately they probably have over focused on the environment and under focused on other critical aspects of what makes the world not suck or suck to that they're not realizing how dystopic a system that has no checks and balances on power would be. Humans don't have a good track record at stewarding power well. Noblesse Oblige. The obligation of the nobility class to be noble does not have a good statistical track record, right? That power is abused pretty universally has a better track record.

(01:18:05):

And so we talk about the third attractor where there's currently two attractor states for the future, meaning states that are most likely based on the kind of general dynamics we're on. There's an attractor state of increasing catastrophes and there's an attractor state of increasing dystopias. The catastrophes largely result from not having more coordinated governance. And so everybody, all the countries racing to grow their GDP to grow their military presence and things like that, equals passing planetary boundaries and the destruction of the environment and that leads to cascading catastrophes of lots of types.

(01:18:45):

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Climate change leads to extreme weather events, leads to human migration, leads to resource wars, leads to large scale wars, leads to breakdown of infrastructure and supply chain, leads to more resource wars, blah blah blah. Right? So that's the catastrophe model and there's a million different ways that can go. To avoid that model, you have to be able to prevent those bad things from happening. You have to prevent people in the age of cheaper and cheaper gene synthesis capabilities, from building pandemic weapons in their basements in the next few years. You have to prevent all the countries from racing forward on using up all the resources as fast as they can in competition with each other. You have to prevent them from military escalation and whatever. In order to do that you have to have some powerful control systems because incentives alone won't do it. You will need deterrents and we can do some proofs of why incentives alone don't do it.

(01:19:39):

Well if you create powerful enough control systems to check all the exponential tech and to check all of the externalities, how does that not become dystopic? How do you have checks and balances on something that has that much asymmetry of power on everything else? So one attractor is increasing catastrophes, the other is that the answer to the increasing catastrophes is control mechanisms with no checks and balances that become top down dystopic forces.

(01:20:09):

And even if we say, "No, no, no, they won't be because we will make sure that there is some good process of jurisprudence bound to the collective will of the people somehow and transparency and checks and balances," If you make a system that's centralized, even if the initial governance of it is good, isn't it capturable by negative forces eventually? So how do you make a system that has that much power that is not capturable or corruptible? That's the other big question. So the third attractor we're looking for is able to prevent all the catastrophes and have the coordination system that does that not be corruptible or capturable and that is threading the eye of a needle. And I don't think it is impossible and it's also not easy.

Nate Hagens (01:21:05):

Yeah, I've heard you say that many times or some version of that and it sounds great. I agree. So let's thread the needle and I may be naive, probably am naive, but I still believe that people listening to this program and people meeting each other that are developing and understanding and a vocabulary and an awareness of the time and place that we are all on this planet together. Roughly eight to 10% of homo sapiens of all time are alive right now. That this is, we have to recognize how we got here in order to change where we're going.

(01:21:54):

And I'm hopeful that something emergent happens, but I just don't know, I think we're going to have to use less materially and we're not going to choose to do that. And there are dangers on both sides, like you said, oppression and catastrophe. So I really am keen to get to the point of this conversation where we frame out possible responses at the international level, at the national level and you're probably less interested, but I also want to talk about responses at the community and individual levels. So what else would you like to cover on the macro overview before we get to that point?

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Daniel Schmachtenberger (01:22:42):

Yeah, you were talking about some percentage of homo sapiens coming to understand how we got here. I want to come back to the argument we had at the beginning of what is unique about homo sapiens, to say let's have some percentage of homo sapiens understand what is unique about them that then also says what must become true of them, factoring that because we haven't said that quite clearly enough.

(01:23:16):

We were obviously the result of evolutionary process but we were the result of evolutionary process that gave us the ability to increase our adaptive capacity relative to everything else in a way that is different than the rest of evolutionary process. It is no longer genetic mutation that is determining our adaptive capacity. So if you want to understand the adaptive capacity of humans first it wasn't individual humans that were selected for.

(01:23:43):

There were very few places where they were individual, solo humans, it was groups of humans and it was groups of humans with their coordination mechanisms that were themselves the result of our capacity for abstraction where we did language and we left markers for each other and we started to do early things and then obviously written language and whatever. But it was also those early humans with our tools. It wasn't a group of humans with their bare hands that could take down a mammoth and it wasn't an individual human with a spear that could take down a mammoth. It was a group of humans with spears and coordination that could do that. And obviously-

Nate Hagens (01:24:21):

So coordination and technology were both required?

Daniel Schmachtenberger (01:24:25):

Yeah, we talked before about Marvin Harris's model, that a civilization can be modeled in terms of its infrastructure, its social structure and its super structure. Its infrastructure is the physical tooling that it mediates meeting its physical needs with, its social structure is the collective agreement field law, basically, law governance and its super structure is its shared values that are hopefully the basis of its law and its coordination, what it's coordinating in service to. So it might be its religion, its clan identity, it's national identity, whatever.

(01:25:03):

So we can say that from early on humans, what was being selected for was groups of humans with their infrastructure, social structure and super structure. So it was groups of humans with their entire tech stack because also it wasn't like, it's not the spear, it's also the hammer that we used to make the spear and the ability to latch it onto... with leathers to the base. And it was also the fact that we were able to feed ourselves with previously stored stuff because of the capacity to dry meats and store them in storage vessels. It was that whole interrelated tech stack. Right?

(01:25:43):

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And so what was selected for was the group of humans, their coordination mechanisms, which included their social structure and their super structure and their tech stack. And then groups of humans relative to each other were in inter tribal coordination. They would trade but also conflict. They would war, which drove them to up-regulate relative to each other. But all of them were up-regulating relative to nature on vastly faster time scales, meaning able to convert more of nature into human useful stuff.

(01:26:18):

And so given our capacity, so the first thing I want to say is you can't think about sapiens without thinking about the group of sapiens. It's coordination mechanisms and it's tooling. Like implicit in us is all of that. Because we were not selected for based on what's in our genome, it's our genome plus the extension of that. That was actually what was selected for. So when you think about sapiens, you actually have to think about the tech stack, the coordination, you have to think about all of that as a thing that's being selected for. And then to say, because we have the ability to build these adaptive abstractions on top of each other, recursively faster than nature can build resilience to that we have the ability to advantage ourselves at the expense of each other and at the expense of nature. But in so far as at the expense of each other drives us both up, it's all at the expense of nature.

(01:27:17):

We have the ability to destroy whole ecosystems in a way that no other animal can. We have the ability now to genetically engineer new creatures. We have the ability to... it's so easy to see that we are not apex predators. When you think about a polar bear on a rampage, how much destruction it could do versus what's the video of the Tsar bomb when we detonated a large nuclear weapon, it's like we just are not apex predators. We're a totally different creature. Because we have the capacity to ruin the biosphere upon which we depend, we have the necessity to steward it.

(01:27:56):

But no other animal has to consciously steward all of the ecosystem because they don't have the capacity to destroy it. The ecosystem as a whole stewards itself because of the relative symmetries of power of everything with everything because we broke those relative symmetries of power and we have so much power relative to everything else. Either we use that power in service of everything or in service of our own short term interests, we debase our long term existence. That's the new super structure that we have to get.

(01:28:26):

I am because we are, and the we extends to not just our in group but all people. Because otherwise our in group is in an arms race with others that eventually is too destructive for anybody to make it through. But I am because we are, where the we means everything that we depend upon, which means all the other inhabitants of the biosphere that make it bio-inhabitable for us. So what I'm saying is actually really simple because our adaptive capacity has surpassed the process by which evolution usually creates adaptive capacity, our motive also has to transcend normal evolutionary motive.

Nate Hagens (01:29:07):

So does that come from education or gut realization or cultural evolution and emergence or awareness by elites? I don't know.

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Daniel Schmachtenberger (01:29:25):

Yeah, all the above. There's obviously a disproportionate amount of influence that some people have relative to other people. If you run a major financial institution or you run a military or a nation state, so-

Nate Hagens (01:29:42):

But all those people that you... those are hyper agents and they are going to try to optimize their surplus to get more power in the game that you said earlier. So unless they recognize that they're going to lose all that or they're going to lose their excess versus the rest of humans or they're going to lose their planet or life because of a nuclear bomb or a runaway climate change or something, they're still part of the rushing river going downstream with no incentive to change.

Daniel Schmachtenberger (01:30:17):

Yeah, obviously the overall system disposition is kind of pulling everybody along with it. We do though, this same capacity for abstraction that allows us to build whole built worlds that are different than the ones that we evolved to fit into, this same capacity for abstraction can allow us to see this whole conversation that you and I are having and say, "Oh we actually have to get off of the current trajectory. What would it take to do that? What are minimum thresholds that it would take to do that? And how do we go about bringing that about?" Popular support absolutely does put real pressure on economic and political lever pullers. So do you need a popular zeitgeist to change? Yes. Do you need people in key decision making to change their understanding? Also yes. Those inter-inform each other. Both.

(01:31:26):

And it's... what we're talking about is definitely a cultural enlightenment of a particular type, a cultural enlightenment, meaning distributively, everyone coming to understand the nature of the world they live in differently and better, more clearly in a way that leads to different types of coordination and where the default is, if I don't they're going to, therefore I have to. If that remains the default, we don't make it for very long as a species or at least we have enough catastrophe that whoever makes it through makes it through on a biosphere nobody wants to be on. And so we have to get off of the, if I don't they're going to, so I have to, which means we have to get the capacity for coordination that does not maximize short term self-interest. But that is absolutely aligned with both longer term self-interest and a different definition of self-interest. Because as you were mentioning before, the culture that did the plow might have been less happy overall, and we're not saying it was, we're just saying might have been less happy or fulfilled than an animistic one. But that wasn't what mattered. The definition of best self-interest game theoretically and the definition of best self interest in any other meaningful way are not the same. And that's another really critical thing when we talk about profit and what's fundamentally wrong with it. We enjoy breathing, we value breathing a lot. We don't pay for breathing because we all just have access to an atmosphere. If I cut some trees down, is there less CO₂ sequestered and less oxygen produced? So a worse atmosphere, yes, but so marginally so that it affects my breathing, seemingly none at all. But I immediately get the value of that lumber. And so for me it

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makes total sense to cut down these trees, get the immediate benefit, and still get the benefit of the atmosphere.

(01:33:31):

Does everybody running that calculus threaten the atmosphere as a whole? Yes, but unless we all agree to do something different, I don't want to be relatively disadvantaged and I notice the advantage of the trees more than I notice the disadvantage of the decreased atmosphere. So none of us pay for the atmosphere even though every other thing that we value isn't worth shit if we lose our atmosphere. And so if something is abundant, we don't bother putting it in the accounting system at all. Therefore we end up damaging and debasing it. We all want to watch the sunset and the sunrise and to hear birds chirp, but we don't have to pay for that. And so what we end up putting our money into is not things that we value, but the subset of things that we value that we can extract that we wouldn't have access to without the money and that we can extract and exchange for other type of game theoretical things.

(01:34:36):

So this is, it's not just that we get the value calculus wrong of we're not pricing in the real cost of the environmental externalities of the thing and what it would cost to produce a thing. It's also that what we put dollars into and what we value don't equal each other because there's a lot of things we value that we don't have to put dollars into. And if I did put some of my dollars into protecting those things, then I'm not maximizing my return on agency. Because someone else who just takes those things for granted and puts all their dollars into making more dollars ends up winning in a war.

(01:35:08):

And so what that means is what seems most game theoretically beneficial and what actually optimizes for real value aren't the same thing. Game theoretical value and real value have a major delta. So the thing that we're saying we have to do does not equal a decrease in quality of life. It does equal a decrease in immediate game theoretic capacity relative to someone else, but could be not only more sustainable long term, but higher quality of life for everybody simultaneously. So long as we get off of that coordination failure calculus.

Nate Hagens (01:35:41):

But by the time we recognize the loss of the birds or the inability to breathe oxygen, A, it'll be too late and we'll just miss them or not be around, and B, I guess the opportunity is to currently use our ability to-

Nate Hagens (01:36:03):

The opportunity is to currently use our ability to have abstractions and coordination to imagine those costs and have that imagination influence our current behavior and governance, et cetera.

Daniel Schmachtenberger (01:36:16):

That or bust.

Nate Hagens (01:36:18):

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That or bust.

Daniel Schmachtenberger (01:36:19):

Mm-hmm. Which I think maps to bend or break.

Nate Hagens (01:36:25):

We have to queue up our next episode, which is going to be, what do we do? What is the framework, what is these four introductions to the main course of how do we bend and not break? Let me first give you a chance to summarize. You talked a lot about homo sapiens history of coordination, atoms, tools, inventions, fire. How does that correlate to our current macroeconomic overlay? How do those things all fit together? If you want to give a few minutes summary that we can close on and then queue up the next episode.

Daniel Schmachtenberger (01:37:13):

You and I talked before about how the super organism perspective that you've shared, that I think is really important and good, has put energy at the center of the consideration and said the global human super organism is increasing its ability to use available energy in the environment and convert everything in the environment to available energy. And that with the agricultural revolution, it made a pretty big leap in its ability for caloric surplus. The ability to convert whole areas of ecosystem into grazing land or monocrop land and be able to then convert that to storable grain was a huge jump in how much calorie we could extract from nature. Obviously, we were mentioning that fire was a pretty big one even before that and agriculture's quite a few steps. And that the ability to extract hydrocarbon energy and then turn that into tractors and everything was a massive step. And the way you visualized the hydrocarbon pulse I think is really illuminating for people.

(01:38:28):

But what we're looking at is thinking about the maximum power principle from the point of view of a super organism, from the point of view of energy return on energy investment. Even if we are already at the point of diminishing energy return on energy investment, as long as there is positive return at all, meaning we get back a little bit more energy than we put in, we'll continue to use energy to do so. On a system purely of incentive, it takes deterrent to do something other than that. And that we've continued to innovate on methods of extracting energy. We've figured out how to take it from rock that has uranium in it, when we hadn't realized that before. After figuring out how to take it from fossil fuels, it seemed like a totally useless thing before and et cetera.

(01:39:18):

What do we use the energy for? We use the energy to move stuff around and to configure stuff into different forms that are useful for us. So the use of the energy and the movement of atoms are correlated. We use the energy to mine atoms, to refine them, to manufacture stuff out of them, to process the waste of them, move the waste out of our area and it takes information processing to be able to do all of this well. So there's this pretty tight coupling between the utility associated with atoms, the utility of energy and the utility of the bits or information. And as we mentioned in terms of early

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humans, stone tools were beginning of recursive abstraction in the domain of atoms. Fire was one of the important leaps in the domain of energy, but even the ability to use tools like clothing to maintain body heat energy as opposed to dissipating it faster to make us adaptive in other environments could already be thought of as innovations in energy and atoms intersecting each other. That language was this recursive abstraction applied to information processing.

(01:40:42):

And so right now we can see that with, what some people call, the third industrial revolution computation, there's been this radical growth and information processing and a lot of new types of services and value and change in the manufacturer of goods that come from that. And a lot of people have this hope that the information processing gives us the ability to produce more value per unit of energy and per unit of physical goods. And therefore, we can keep growing GDP without putting all of that as demand on the environment because we can just do it through growing the value of software. And I think you and I-

Nate Hagens (01:41:20):

Which will require materials and atoms.

Daniel Schmachtenberger (01:41:22):

... You and I would both say yes and no. Yes, software might have less energy and material demand per dollar worth of output, but that's not an exponential curve, it's another S-curve. Where eventually, you have a limit on human attention and it doesn't matter how many movies there are or how much new software there is, you get diminishing return on the value of the digital stuff limited to human attention seconds. And then when what you're competing for, is as you do more in the domain of software, you're either applying software to human attention or you're applying it to the materials' economy, because what else is there? So if you're applying it to the materials' economy, the innovation and software equals more efficiency at extracting atoms and energy, extracting, converting whatever. Or it equals human attention seconds for engagement, whether it's Netflix or Facebook or TikTok or whatever.

(01:42:24):

And if you do that, then the competition against groups doing that is a competition for human attention, which ends up being, as our friend Tristan Harris and so many others point out, a pretty bad race to the bottom of the brain stem for making maximally limbic hijacking stuff. And so it's not like the software proliferation just solves all the problems. The software creates a whole new set of attention hijacking, belief hijacking capabilities which are problematic, that can drive polarization, addiction, low attention spans, all those things. Or it's simply adding efficiencies to the materials economy, where if you don't have some law or deterrents that limit the upper boundary, you have Jevon's paradox that, when you increase the efficiency you just end up using more total stuff because more new markets open up. And so what we can say, is that sustained competitive advantage of a nation or whatever is not their energy or their atoms or their information processing, it's the binding of all three of those together and their coordination of the humans within that.

(01:43:38):

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And that those are fundamentally all tightly coupled to each other. And that from a purely incentive standpoint, there will always be an incentive to pursue whatever the maximum area of return is, but to still pursue things that have any return on at all, which ends up meaning you extract everything. And that doesn't work long term viability wise so we do end up having to get something that is not just incentives but deterrents. The only reason you can have a national park is because the incentive for logging is stopped by a deterrent called the rule of law that says, we're not going to cut these trees down. And yet the problem is, if we're trying to prevent dead zones in oceans from where no one country's putting all of the nitrogen there, it's coming from lots of areas or putting all of the trash or forever chemicals or whatever it is. And in order to stop someone else from doing it and it's another country, you actually have to have war, not just law because you don't have monopoly of violence. How do you solve those types of things?

(01:44:51):

This is where we realized that the global issues that we face, the global market, we have a global market, we don't have national markets, we have a global market and it's important to say that, of course, we have national markets but not really because the laptop that we're both speaking on required global supply chain. So without global trade we actually can't make anything. And so we have global markets but we don't have global governance. The incentive alone system is fundamentally incompatible with the biosphere, it will continue to extract and externalize. And so you have to have some system of deterrents. No, we're not allowed to do that at a global system. How do we create that and how do we create that is both enforceable and non dystopic? I think that's some of the tee up of where we go next.

Nate Hagens (01:45:46):

And the other constraint that I will just add there is, the biosphere limits as severe as they are, are not what's going to get us first because your concept of the third or fourth industrial revolution using technology or in the modern 2020s case AI, what that does do, is it allows us to increase enough productivity to pay back prior financial claims. The moment we're not able to service existing financial claims, there is a musical chairs moment which may be getting closer because of what happened in Russia and Ukraine and in the UK. And so that is an additional constraint on top of all the other ones that you look at. But do you agree with that?

Daniel Schmachtenberger (01:46:35):

All of the various domains are interacting with each other, so global finance is interacting with the environment, is interacting with tech, is interacting with regulation. And so you can't look at them in isolation and say, do we get the catastrophe in this one first or in this one first?

(01:46:56):

When we talk about planetary boundaries with climate change, before we hit the planetary boundary of runaway climate change from albedo effect or whatever it is that would mean we can never fix it, or before we hit the point of venus-ification, well before then, we will hit the point at which extreme weather events start causing human migration that will cause-

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Nate Hagens (01:47:25):

That's already locked in, we've already passed that point.

Daniel Schmachtenberger (01:47:29):

... On small scale, so far, Syria was relatively small population and Australia was low population density. But as soon as you have Australia scale things in high population density areas, then you start getting world changing effects from that. And so that's a place where we've already passed a planetary tipping point, not in terms of the habitability of the planet biosphere wise, but the habitability of some areas for short periods of time that are enough to cause migrations of people that cause resource pressures that cause wars, that cause supply chain issues.

(01:48:09):

There's a lot of very near term things that can start to cause breakdown of the world systems that meet people's needs that happen at the interface of a lot of these areas, not just one of them going catastrophic on its own.

Nate Hagens (01:48:27):

How would you like to lay some breadcrumbs and a teaser for our next episode? Do you have an outline for how we should approach the bend versus break possible interventions for humans listening to this show, thinking about it and maximizing their impact on the human predicament as opposed to minimizing it?

Daniel Schmachtenberger (01:48:59):

Yeah, there's a few things that we might talk about next time. We could talk about, what are some of the nearest term risks that are quite possibly catastrophic enough that we really want to prevent them, otherwise we lose a lot of possibility if we don't.

Nate Hagens (01:49:16):

Well, nuclear war is all the elephants in the room as of October 3rd when this conversation is being recorded, in my opinion.

Daniel Schmachtenberger (01:49:26):

I would say large scale war, not including nuclear, is a big issue, nuclear war is one. Nuclear war is not only at Ukraine, between Russia and NATO forces, but since that has happened and the whole world has got pulled into various aspects or taken advantage of conflict, Israel and Iran, Armenia, Azerbaijan, India, Pakistan, China, Taiwan, there's a lot of places where the conflict has escalated in terms of the possibility of kinetic conflict. And a number of those places are nuclear equipped places so meaningful war that was not possible during Pax Americana is definitely possible now.

Nate Hagens (01:50:13):

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Well, you and I talk about this a lot off camera, so this would be completely another episode, but let me just add one more thing to that. I can't believe today there's this gleeful narrative on Twitter, Francis Fukuyama and others today are tweeting that Russia collapse is not far away and the next few days are going to be a enormous retreat for Russia.

(01:50:41):

And I'm just thinking to myself, are they that naive that if Russia were to collapse, that would be one of the worst possible scenarios? Because they have thousands and thousands of nuclear bombs, who would be in control of those? Why would they not want to sell them to other countries? The mind boggles at the risk there, but that's digressing from our conversation.

Daniel Schmachtenberger (01:51:13):

I won't get into the specific content of that, but what I will say is, as you were mentioning earlier, that some people, for environmental concerns, want to one world government because they don't think anything else will be able to address the environmental issues in time. But they might be under factoring how bad a one world government would be from any type of government we've ever had so far, as far as class system dynamics and oppression goes.

(01:51:39):

Most people are much more aware of the parts of the world system that they look at than the other parts and so they're able to see something that looks like a win within that domain without factoring how much that can actually be a loss in other domains. And this is the problem of siloing and hyper specialization in a radically interconnected world. And I would argue that one of the deepest generator functions of all of the issues that we face is that our primary processes for solving problems externalize problems somewhere else. Because we define the problem too narrowly and then we look for a solution to that narrowly defined problem that interacts with complex systems where the externalities go somewhere else and then either someone notices those externalities says, no way, and you get polarization or nobody notices it happens and you actually get the externality.

Nate Hagens (01:52:31):

That's half of it. I think the other half is that we use social sorting mechanisms to solve physical world problems. And the higher status person that you meet with, people defer to that person whether or not they actually have the technical or wisdom to carry out the risk analysis or the intervention. It's just amazing to me at conferences and other places that we defer to the highest status person to make the decisions, which in our trial ancestral world made sense.

Daniel Schmachtenberger (01:53:07):

If we think about 1776 and the ideas of representative democracy at that time, it was, one, coming out of modernity, you had this idea of the renaissance man, polymath individual who had a classical education who could actually understand the science of government as George Washington called it, meaning the politics, history, economics, sociology, as well as all of the areas of industry and infrastructure that were relevant well enough to represent for their local needs.

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(01:53:45):

And because the complexity of the overall tech stack did not require that level of specialization, obviously today, that's utter nonsense. You couldn't have a representative understand the issues of nuclear deterrents and the electrical grid and dead zones in the ocean and manufacturing chemicals and all those things. So you're supposed to have subcommittees that figure that out. But we could identify lengthily the problems in that system, but there is a place where the total complexity of the decision making stack does require different decision making processes.

Nate Hagens (01:54:20):

Exactly.

Daniel Schmachtenberger (01:54:22):

And if you don't ... and the status thing often was, what it takes to actually politically actuate or make something happen is a different set of skills than what it takes to figure out what the right thing that should happen is. And so the people who have the capability to navigate the status hierarchies and prestige hierarchies and influence and whatever it is to make sure it happens given those positions, they're supposed to, of course, be advised by groups of specialists, but they're also advised by vested interest groups that want particular things to go through and that has all the problems that it does.

(01:55:07):

If we don't take the current system of governance, any aspect of it as a given, that we will have representatives at the level of states that are called congressmen and senators and that we'll vote on propositions made by special interest groups. And we just said if we were going to rebuild governance from scratch using all the 21st century technologies and factoring the types of problems that we have, the speed at which they occur, the complexity, how would we do it? We would do it in a way that doesn't look like how any nation state in the world runs today.

Nate Hagens (01:55:39):

Exactly.

Daniel Schmachtenberger (01:55:41):

And ultimately, that is one of the things that we have to do. So now we were leaving breadcrumbs-

Nate Hagens (01:55:45):

That is the we have to do.

Daniel Schmachtenberger (01:55:49):

We were leaving breadcrumbs, so let me come back to breadcrumbs. There are some very near term risks, you mentioned nuclear, and I think there are very near term risks in AI, in bio weapons, in planetary boundaries, in supply chains and quite a few things. Meaning, there are certain problems that the existing NGOs and nation states and corporations and IGOs collectively are not on course to solve

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in time. That if some additional action doesn't take place, catastrophic problems will occur. And so those of us who are thinking about what to do are like, well, there's a delta between what is on track to happen and what needs to happen, how do we close that delta? And anything that is on track to probably happen, awesome, be very grateful that people are tending to that. Look at the stuff that is not probably going to happen that needs to if you're looking at putting new energy under the system somewhere.

(01:56:47):

I think there's a bunch of near term stuff, where we're not going to be talking about fundamental change of the systems, we're just talking about, how do we avoid this bad thing from happening? And maybe we do it through existing mechanisms like legislation or getting the right people in the right elite positions to change their mind about something or whatever. So I think of that as triage. There's all of the things that we have to do to simply buy time to get to keep working on deeper things and there's a lot in that category unfortunately. Then I think of transitional things, which is how do we work with the existing systems that run the world? So capitalism as it currently exists, nation states, corporations as they exist, and how do we make changes to them that are intelligible to them, that vector to them in the right direction?

(01:57:36):

When you look at whatever the work that Larry Lessig and so many folks are looking at regarding rank choice voting that would decrease radicalization on both sides and getting off of just two-party system and fixing gerrymandering and public campaign finance and things like that, those are not building totally new systems. They're things that are intelligible to the current system that would make it less terrible and they're worth doing. And there's a lot of things like that, that you can do to change nation state behavior or corporation behavior or things like that. The B Corp type change in legislation that says, the directors are not fiduciary obligated to maximize profitability for shareholders, but they are fiduciary obligated to maximize movement on stated mission while maintaining profitability, being able to get those types of little legal changes that would affect corporations. There's a bunch of stuff that is like, it's not triage, meaning it's not preventing one immediate problem and it's not rethinking the fundamental logic of the system, it's moving the logic of the system in a hackable direction forward.

(01:58:47):

And then there's the long term stuff. If we were going to rethink it all from scratch, we might not have nation states at all. We might have networks of city states because that makes more sense. Or we might have, how would we redo it from scratch? Factoring not just did all of our issues involve global supply chain so there have to be global dynamics involved. Factoring that, if regulation moves slower than the speed of tech, then it's not going to be able to regulate the thing that is moving much faster than it. So if tech is moving on compounding curves with exponential tech, how do we make a system of regulation that can keep up with that? Now that we're in a new era where open publishing had always been good for science, but open publishing of the pandemic viral gene sequences that are found through gain of function equals increasing everybody's ability to make decentralized catastrophe weapons, in the age of gene synthesizers, we have to rethink info sharing.

(01:59:43):

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There's a lot of places where it's like, the problem space of the world and the affordances of the new tech mean that we have to rethink long term governance from scratch. And so triage transition and long term are three time horizons in which I think about moving forward. That's one model. I'll just add this before you comment because I'll put these two together and then I think ... and then the infrastructure, the social structure and the super structure is another model. What do we have to change in culture in our collective values and what the definition of the good life and what's meaningful is? What do we have to change in our governance and coordination systems? And what do we have to change in our fundamental technology, governance, coordination and economics? What do we have to change in our fundamental technologies and how do those affect each other? And what are necessary activities in each that lead to necessary and sufficient collectively across those time horizons? That's one way of thinking about what we might want to cover next.

Nate Hagens (02:00:49):

Would that be a three by three grid?

Daniel Schmachtenberger (02:00:51):

Yeah, there are some other threes that we might add in there to dimensionalize the grid.

Nate Hagens (02:00:57):

Three by three by three grid?

Daniel Schmachtenberger (02:01:01):

If we added that the agents that are playing are hyper agents, egregores and institutions, then we could add that as a Z axis.

Nate Hagens (02:01:11):

This is a good place to stop. So let us promise our listeners and viewers that we will try to fill out that grid with ideas, directions, hypotheticals to pass the baton to more humans to engage on this. Because a lot of people are the walking worried, they know something is horribly wrong, that something is on the horizon and are willing to play a role in this. So let's try to really, both of us, think about that grid and come up with some suggestions and directions in a live creative conversation between the two of us.

Daniel Schmachtenberger (02:01:56):

Good, I look forward to it. I have really enjoyed the way that this series has progressed so far. There's one last thing I would share this time. It's a little bit weird, might seem off topic, but I've had a busy last week and was under slept and so I slept long last night. And I had one recurring dream all night long and it's just relevant as we're coming into this podcast, which I knew I would be doing today. And the dream that I had all night long was, this movement the world had that people had at scale, it started with recognizing water as sacred and rather than seeing how much water we could divert for irrigation and agriculture or for industry and the power associated with hydrological warfare and domination and that, there was a sense of the sacredness of the cleanness and the aliveness of all the water that was

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deep enough that it changed the motive, where everyone was really trying to steward the cleanness and the availability of water.

(02:03:13):

And then of course, that also moved from water to all of the flows of life. And so a movement from the utility value of nature is a natural resource, which is, of course, an inherently commodifying term for life to the sacredness of it and the honor of getting to be in a stewardship role of the sacred. And it was just interesting, as we were about to have this podcast today, that I had 12 hours of just that dream on repeat all night.

Nate Hagens (02:03:48):

I love that. But given the framing that you just said, we are approaching a life or growth choice. But to recognize that water and other life is sacred would be outcompeted by people and nations and egregores that choose growth over life until something else happens. And that is one of the questions.

Daniel Schmachtenberger (02:04:15):

Life or growth, unless we talk about growth on a different dimension, we just talked about the Z axis. I would say that in the next phase, we don't stop having a evolutionary imperative or a growth imperative, but it moves dimension and it requires increasing the dimensionality of our reason for being, of our calculus. That the increase of the quality of life personally, interpersonally, transpersonally, the sacredness is actually the domain in which growth starts to happen. And that there is a way to coordinate towards that, that actually isn't outcompeted by the existing violence domination, extraction profit stack. And that can both remove the pathological competition mindset from itself while not being outcompeted by it. And maybe hopefully, we get some color on what that could look like next time.

Nate Hagens (02:05:27):

I look forward to your human porcupine tree hypnotic explanation of that. To be continued, my friend, thank you so much.

Daniel Schmachtenberger (02:05:39):

Likewise brother, thank you.

Nate Hagens (02:05:42):

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