PLEASE NOTE: This transcript has been auto-generated and has not been fully proofed by ISEOF. If you have any questions please reach out to us at info@thegreatsimplification.com.

[00:00:00] **Craig Tindale:** We need energy security. What's central to this is our central banking. We've created a situation where the short-term cost of capital is better suited to software, where you can invest a lot of capital and get a quick return. But things like mines and manufacturing and solar panels, a long-term investments, they cost a lot of capital upfront.

[00:00:22] We worked into a throwaway society that can no longer produce things. It can no longer defend itself. That can no longer battle the wars of whether they're military conflicts of the traditional variety, or whether they're the war of climate. We can no longer take actions to create a sustainable and resilient society.

[00:00:48] **Nate Hagens:** Today I am joined by private investor Craig Tindale, for a macro level discussion on how energy technology, geopolitics, and especially rare earth metals, are now actively shaping our world. Craig has spent nearly four decades working in software development, business strategy, and infrastructure planning, including in leadership positions at Oracle IBM, and Telstra.

[00:01:13] Additionally, he has direct experience working in east to West supply chains, including as the CEO and Asia Director for data direct technologies. He's now pivoted to investing in groundbreaking ideas such as drone reforestation, which we discussed briefly in this conversation, and uses his knowledge of Chinese industrial strategy and western tech demand to identify the choke points and possible investments in critical metals markets.

[00:01:41] In this episode, Craig shares his most up-to-date analysis of the ways that the West's increasing demand for energy supplies and rare earth metals are

clashing with the de-industrialized reality of our economic policy and investment. He also expands on how China is maneuvering within this situation through their massive industrial and refining base, and the geopolitical implications of the two global superpowers competing interest.

[00:02:10] This conversation was. Refreshing to me it was clear and a potent take on our increasingly complex and threatening global issues. And I hope you learn and made you think as much, uh uh, as it did me. Before we begin, if you enjoy this podcast, I invite you to subscribe to our substack newsletter where you can read more about the underlying factors of our human and more than human predicament and other content related to The Great Simplification.

[00:02:39] You can find the link to subscribe in the show description. With that, please welcome Craig Tindale. Craig Tindale, welcome to the platform.

[00:02:50] **Craig Tindale:** It's good to be.

[00:02:51] **Nate Hagens:** I'm a little nervous about this conversation because we met, uh, via a mutual friend. And the way that I view the world now is atoms, jewels, bits, dollars, and handshakes.

[00:03:05] Um, atoms are materials, jewels are energy, bits are information, dollars are money. And handshakes is my, uh, shorthand for geopolitics. You actually understand all of these things and how they interrelate, and I rarely have a guest, um, fluent in all those things. I'm just really keen to learn, uh, from you because when we first spoke, everything you said was kind of new to me.

[00:03:30] So let's start here on, on the Adams, uh, part of the conversation. Um, in some of your online writings that I've seen you, uh, have something you refer to as industrialization 2.0. Um, what, what is that, how do you define it and in your view, what is actually happening beneath all the buzzwords of AI and EVs and

renewables in terms of metals, materials, and what you refer to as the return of matter?

[00:04:00] **Craig Tindale:** Well, I think the return of matter, you know, we, we grew up in. A period, you know, both of us. Where with the assumption was that it was any, any number of things could be produced. And all we had to do was go up the value chain. We went up the value chain by, you know, you know, with IP and, and, and intellectualization and software and all those things.

[00:04:25] And we decided that we could, the material things of earth, the things that we needed, could be sourced in other places, you know, that could be sourced in China or other third world countries. And it really was an, I guess an aggregation, a wage aggregation play that we decided that the wages were too high in the Western and we could get things cheaper overseas.

[00:04:50] And that has opened us up over a period of time. It's, it's a, a long tail of consequence. And that long title of consequence was that, um, eventually we forgot how to make everything. Um, we decided that, you know, from a, an economic rationalist point of view that things were best and most efficiently produced.

[00:05:13] Um, you know, in at being price being the denominator, but price being the deciding factor. So if we could produce, uh, you know, metals overseas or if we could produce, um, the iPhones, um, that's what we would do. And we've left ourselves in an extraordinary position because. We no longer can produce much at all.

[00:05:38] We can produce a few things.

[00:05:40] **Nate Hagens:** When you say we, you, you mean the industrialized west mostly?

[00:05:44] **Craig Tindale:** Well, yeah, the west. The west, yeah. We've left everything to China and we'll talk about, about, about that, but the cost of, you know, the. The weighted cost of capital in the west to produce a mine, for instance, is, you know, 12 15%.

[00:06:00] You know, in China it's 2%. So we've, we've given up producing metals because it's easy for, for China to do it.

[00:06:08] **Nate Hagens:** So, uh, we're gonna, we're gonna talk about this. There's so many threads, um, that I expect are gonna come up. But what you're really saying is we assumed that the market would provide growth would continue.

[00:06:22] There wouldn't be any ecological departure from the stability of the Holocene and therefore all the proforma analyses into the future If we need this or that metal or ma material or mineral. Um, if the price is high enough, the world economic system will provide it and we can take our share. And so this all assumed kind of a stability in geopolitics and global supply chain and trade.

[00:06:51] Um. Perhaps

[00:06:54] **Craig Tindale:** extraordinary naively because what it eventually did was, uh, hollowed out our economies. So, you know. The, the West assumed through the central banks, the Fed, et cetera, that, you know, all we had to do was expand asset prices and through the wealth effect people would consume that that expanded, inflated asset price, um, as consumption.

[00:07:21] And that consumption was primarily coming from. Goods that were produced overseas. So we could basically offshore everything and we could borrow and consume our way into an economy. And when you think, when you look back on it, it was extraordinarily naive that we think we can do that. It's naive, you know, from two points of view.

[00:07:40] It's naive from the west security because if we can't produce the other thing, we can't defend ourselves, but also from a renewable energy perspective, because if we can't defend ourselves and we can't produce the renewable energy components ourselves to, to, you know, impact climate change. Um, we we're, we're, we're, we're left stranded.

[00:08:03] We're, we're basically left in a position where all we can do is consume. So we've worked, we've worked into a throwaway society that can no longer produce things. It can no longer defend itself. That can no longer battle, you know, the wars of whether they're military conflicts of the traditional variety or whether they're the war of of climate.

[00:08:25] We can no longer take actions to create a sustainable and resilient society. We can no longer, um, provide the things that we need to do to operate as a proper culture. What's central to this is our central banking. What, you know, and not a lot of people look at this as the cause, but the cause is that we've created a situation where the short term cost of capital, um, is better suited to software where you can, I, uh, you can invest, invest a lot of capital and get a quick return.

[00:09:01] But things like mines and manufacturing and, and solar panels, et cetera, um. A, a, a long-term investments, they cost a lot of capital upfront.

[00:09:13] **Nate Hagens:** Back when I was at Salomon Brothers, we could do the, um, the duration or uh, a, a weighted, um, NPV of when the, the interest and the principle of a bond would pay off.

[00:09:26] And what you're saying is the long duration physical assets, some of which you just mentioned, are not chosen when we have really low interest rates, we choose this fancy tech and software instead, and therefore we're kind of hollowing out the productive core of, uh, future economies.

[00:09:48] **Craig Tindale:** Yes. So what effectively happens is we choose the things that will give us immediate returns.

[00:09:58] You know, implementing a, a solar array or solar panels has a 10 year return. Uh, building a mine has got, sometimes got a 20 or 30 year return. Um, and the ROI can be as much as 10 years. There's extraordinary amount of capital is needed, but as soon as the feds inflation, consumer fi prices rising, it raises interest rates and that that ra raising of interest rates cuts off all the things that we need to do.

[00:10:29] The fed is almost acting like a super hyper, uh, lobby group. It's lo it's lobbying, it's it's measuring the consumer prices of bread and milk, but it's not re, it's not measuring in an inflation catch the asset prices of. Stocks and real estate and things like that. And so it favors a, a, uh, wages flowing into debt and into the financialization economy, not the material economy.

[00:10:59] **Nate Hagens:** So just hypothetically, what if the Fed had taken a different path and short rates were five or 6%, um, and we didn't borrow quite as much. How, how would Cter as parBI, can you give me an example of how that would've helped metals and mining and rare earth production, uh, or anything?

[00:11:18] **Craig Tindale:** Well, we have to improve the, the.

[00:11:22] The return of investments capital at the moment is smart. As you know from your background, the capital is gonna seek a return on investment. So we have the, the, the, the interest rates should be relatively low for the construction economy, from the industrial economy, for the mining economy, and they need to be higher.

[00:11:43] And we all, you know, almost need to regulate it, um, in order to stop folks borrowing to, to, to, to. Participate in the consumption ACOs, me and the speculative economy.

[00:11:54] **Nate Hagens:** So you're, you're arguing kind of for a tiered, um, interest rate for different parts of the economy?

[00:12:02] **Craig Tindale:** Yeah. Well, when we go back in, in time when we, when we had tariffs before, you know, when we looked at the production of the production economy, with the consumption economy, we did have regulation in this, you know, we had limits to the amount that the, um, the domestic economy could borrow.

[00:12:21] We had, we, we severely limited the ability for the, the government to borrow as well. We had a more, I guess, um, thoughtful, uh, way of looking at the production economy and the, uh, and the consumption economy and what happened with Bernanke, chiefly and, and. Probably, uh, 10 years before that was that they started to look at the consumption economy as the only economy.

[00:12:49] **Nate Hagens:** Mm-hmm.

[00:12:49] **Craig Tindale:** And the neoclassical bankers decided, or the neoclassical economists decided that, uh, uh, things were better produced, where the price was the cheapest. And so we've ended up in a situation where we're, we're like a turtle on its back. We can't do anything about anything. Um, because we've got an economy that is, is, is naively set up to, um.

[00:13:15] To address consumption and, and debt and, and, and, and triggers people to borrow money in order to participate in the, in the speculative economy, we've got forgotten how to do anything

[00:13:29] **Nate Hagens:** Well. People, people and governments. Right. And I think probably the last 20 years, the reason that we've responded with these, um, bazookas of financial stimulus and guarantees and low interest rates, and too big to fail guarantees and all the Monte Hall campaign giveaways is because they didn't wanna collapse.

[00:13:49] They didn't wanna collapse financial system, so they had to do these things. So I think what you're saying might have been really good advice 20 years ago, but it might be too late because the, the, the mini avalanche moment is passed now. There's the, the big one on the horizon.

[00:14:05] **Craig Tindale:** Well, the, it, it, it could easily be too late.

[00:14:09] It could easily be too late. But you can see the US government at the moment has started to open its eyes and, and, and started to fund at Chinese rates, you know, the types of mines in the type of mid-level, uh, processing and refining and smelting that they need to do. Um, but it's only just begun and it's not happening at a scale that is gonna close that gap.

[00:14:34] It's, you know, it's, it's done at a, at a level that is almost patchwork.

[00:14:42] **Nate Hagens:** So, uh, let's come back to finance, because I, I do think there, there's still more to, uh, unpack there, but on your, um, return of matter, um, that we are going to need Adams, uh. Help on any realistic future. Can you give us an overview on which metals and rare earths are, are most critical to the global supply chain right now?

[00:15:09] And what major products or, or, uh, processes like data centers, EVs, defense, do they underpin?

[00:15:16] **Craig Tindale:** Let's go back in time, and I'll give you an example of what happened. Just be, just before World War I, right? There was a German company called, um, and I might, um, muck up the, the sa the saying of this, it was me, metal gazelle pushed.

[00:15:32] Um, and that company basically went round the world, um, and cornered the market on 10 or so metals. Um, they went to Australia and they took, you know, they didn't talk, call 'em off, take agreements. In those days, they called them supply agreements and they took all the zinc from BHP and, you know, a Tasmanian mine had to.

[00:15:55] Ship the zinc to Germany to get processed. And this happened. There was American Metals Corp, there was a European Metals Corp, there's Australian Metals Corp. And these were all started by German companies. Then at the start of World War I, um, we had, we made the extraordinary, um, uh, observation that we needed these medals to fight a war.

[00:16:18] And what happened in, in, in 1914 was this realization that they didn't have the materials to fight the war. And then in 1915, they actually, the battle of Ur, I think it was, they actually lost a few battles. It became the, the, the great shell, uh, crisis of 1915 where we could, the British couldn't defend themselves at, at UR because they didn't have enough shells.

[00:16:44] Um, and Lloyd George, who was a future prime minister at the time, was my minister of Shells, um, basically to, to minister of armaments that basically had to, to fix the problem. Now we've done that the same thing across 23, 24 different critical metals. And I'll give you some examples. Um, you know, 60% of our copper is refined in China.

[00:17:09] All that, um, uh, those minerals that were mined in Chile or, or need to be moved over to, to China to get refined. Um, now in order for, uh, China to let

go of those minerals, they're putting in a regulatory regime that says, okay, we're gonna ship these refined minerals out, but what are they for? We're not gonna ship them out to an ments manufacturer, McDonald Douglas, or anything like that.

[00:17:38] We're only gonna ship them out for, you know, renewable energy projects and things like that. We may not ship them out for, uh, you know, uh, an AI data center. We may not ship them out for the things that we actually plan to build. So in the Western, um. Lens, we've stopped them getting these extraordinarily powerful chips.

[00:18:02] In the Chinese lens, they're saying, well, you can't build the dataset without our copper. Now that go, it goes down a level 80, uh, 70, I think 72% of silver comes from copper melting it. It comes as silver slag.

[00:18:20] **Nate Hagens:** Silver is a byproduct of of copper,

[00:18:22] **Craig Tindale:** copper, zinc, and um, lead. So all this refining they're doing, 72% of the silver, um, is coming from is, is coming from that refining.

[00:18:35] So we may have the, the last mole refining for silver in the west, in Switzerland and, and, and, and Mexico. But we haven't got the 72% of the silver slack that the Chinese have been sending us. Now they've decided not to send it to us anymore. Okay. There's a number of developments that says that they're gonna limit the supply of silver slack.

[00:18:56] Now silver goes into everything, um, um, pv, uh, uh, solar cells. It goes into everything we're building as far as, uh, data says and ai, it goes into almost every part of the economy that we plan to, to put into industrial silver, um, consumption. Over the last three years has gone from 43% to 48% to 53% to 58% this year.

[00:19:29] So we're no longer producing enough silver to satisfy the, the industrial demand because we're, we're, we're now starting to, to drag on investment, silver and, and, and other sources of silver. Jewelry and outbid them. Now this goes right across, you know, all of the rare earth metals, some of which we can't produce shells.

[00:19:54] Like one of the things that in the Ukraine war is the Russians have achieved the production of, you know, 4 million shells a year. And we're, we're, we're struggling to do 10% of that.

[00:20:06] **Nate Hagens:** Yeah. And I've, I'm familiar with those numbers. It's, it's amazing. Really.

[00:20:11] **Craig Tindale:** Yeah. And that's because of a, of a rare earth called, uh, an anatomy, which is, is, is, is crucial to building these shells.

[00:20:21] And what's happening is, is the world's changing too. You know, with these p combat drones, 20, um, we used to build a, a, a. An F 35 using, um, yeah, I guess the, the, the GForce of a G nine, I think it is the maximum a human being can put up with, um, GForce. A combat drone goes between 22 and 30 G forces. So we need extraordinary new amounts of these materials in order to build the things that we want to build.

[00:20:55] Like it's all very well to say and oral's gonna build a whole bunch of cat combat drones and they're gonna accompany F 30 fives. And so you've got a whole squadron of combat drones and, and. And, and, and think we're an optimistic society. We're a Tony Robbins society. You know, we're, we're, we're gonna, we're hyper positivity that all the things that we're gonna do are gonna work out.

[00:21:19] But the reality is these people are building things much more cheaply than us.

[00:21:23] **Nate Hagens:** There's tons of implications. Uh, and I have a lot of questions for you, Craig, but as you were just unpacking those last little bits, the, the aerial view from the stratosphere made me wonder the whole global economic system with complex letters of credit and global supply chains.

[00:21:48] Has to continue to some degree. Otherwise, everything collapses except maybe Russia who has done pretty well insulating themselves and they have a Archy more than other countries. But we are truly connected at the hip. Like for instance, where there's a lot of, uh, metal production in the United States, but like you say, it's gotta go, uh, from Chile.

[00:22:12] The copper has to go to China to be processed. And I imagine there's a thousand other examples like that too.

[00:22:17] **Craig Tindale:** Well, it's also contractual. Um, uh, I guess spaghetti I call it is that, you know, for instance. Australia might have a tin mine. This is an actual example in, in Tasmania. Okay. The tin mine's 50% run by a company called Yan, which is in a Chinese company and 50% by an Australian company.

[00:22:39] The total offtake of that co of that tin mine is committed to Chinese smelters so that they've contractually, um, obligated that mine, even though it's Australian, to send all of its tin to, um, to the. To China for smelting. Yeah. Tin is the lifeblood of the new age. It's robots, it's ai, it's everything. Now we may think the tin mine is in Australia, and it's actually an a Western asset, but really it's just a quarry for the Chinese.

[00:23:13] We, we've been reduced to a quarry stage. Now they've done this right across, there was a report the other day. They've financed 144 mines right across

the world. And those 144 mines, um, have, have, have committed their ca their, their output to Chinese smelters to, to the extraordinary Chinese smelting, um, uh, capacity in every category.

[00:23:39] **Nate Hagens:** If China collapsed because of internal strife or chaos or, or whatever, uh, I mean much of the rest of the world would, would follow suit because of these, uh, interdependencies. Yes,

[00:23:51] **Craig Tindale:** yes. Because they're interdependencies, both in a, a, a kinetic sense and their, and their interdependencies in a passive sense.

[00:24:01] Because if, if China collapsed, they've put these dependencies in place by extraordinary subsidization. So nobody in the west has been able, been able to compete, and this is kind of the fold that, that, that needs to be understood. In the West, if you wanted to open a tint smelter, you could, you could propose it, you could borrow the money, but the Chinese will likely, uh, lower the cost to put you outta business.

[00:24:29] So there's an extraordinary line of old, um, efforts by different companies. You know, Linus for instance, spent a lot of time trying to open this rare earth processing plants, but China kept lowering the price for the output so that it wasn't financially viable. So what, what they've done using, um, I guess pricing as a weapon has and is to monopolize the entire, uh, critical metals and even, even the, the non, what we think of as the non-critical metal metals, you know, for instance, BHP Rare Tinto, um.

[00:25:07] FMG, they've all committed their future pipeline of iron ore to Chinese steel. Make it if you take that away, because they have also financed other mines right around the world for iron ore. Eventually, um, you know, a, a mine without a plan to smelt. Is a stranded asset. It, you know, if you can't, if you can't make oil

steel out of iron ore you, you've, all you've got is a quarry that they may use to choose to use or not.

[00:25:39] **Nate Hagens:** So I understand, um, your broader investment thesis and your intellectual argument about the return of matter. Uh, atoms, you haven't mentioned energy yet, and I know you understand the importance of energy, uh, but China doesn't, other than coal, I mean, they have to import a lot of oil. Um, you know, energy also plays a role in these, uh, remote factories and quarries and, and and things.

[00:26:09] Yes,

[00:26:10] **Craig Tindale:** yes. Well, and that's part of the whole thing is China capacity to produce the energy At the moment, I heard somebody say the other day it was doubled out of the us. So they're producing twice as much electricity with, with, you know, two thirds the, the economic activity. And, you know, for us to, you know, everything we, we see at the moment, whether it's ai, whether it, whatever the subject, we've decided we need more energy.

[00:26:37] Um, and in order to build all that energy, we have to go back to the Chinese for copper smelting. And, and, you know, 65 tons of copper goes into an ai, um, data center, 65 tons,

[00:26:51] **Nate Hagens:** one AI data center, 65 tons,

[00:26:54] **Craig Tindale:** one a one gigawatt data center is 65 tons. So they've got 14 planned at the, in the United States at the moment, right?

[00:27:04] So that's 14 times 65.

[00:27:07] **Nate Hagens:** That's 800 tons of copper.

[00:27:10] **Craig Tindale:** 800 tons of copper,

[00:27:12] **Nate Hagens:** 800 times 2000 pounds. Holy crap. I didn't know that. So, so, um. So on ai, how, how do you say, a AI and, and broader technological development intersecting with these physical realities of mining. Um, like or grades and number of locations of mines and, and trade relations.

[00:27:34] Because I've, I've also read, and I think some of the stuff that you've said is that AI is making mining, uh, more efficient, easier, uh, and there's different things that AI is gonna improve the productivity and access to more, uh, minerals and, and metals.

[00:27:52] **Craig Tindale:** AI is gonna extraordinarily improve the return of, of, of mining.

[00:27:56] You know, first from an exploration point of view, the new AI engines they've got is, you know, we used to drill, um, holes everywhere and then take samples of core samples and work out what was below from there. We can do things extraordinarily more efficient now, so we'll be able to decide where the, where the minerals are at, we'll be able to sort the minerals.

[00:28:17] **Nate Hagens:** Is that proven or is that like on the come that we expect that, or is this actually happening?

[00:28:23] **Craig Tindale:** There's projects all over the world already happening. Okay. But the whole, um, exploration to, uh, production of mining is gonna be extraordinarily changed. You know, look at the upside just from autonomous trucks.

[00:28:38] Okay, so they, they're mines that are improving, um, autonomous truck output or machinery output from, you know, they're gone from 80% uptime to 99%, 98% uptime.

[00:28:50] **Nate Hagens:** What, what, what does that mean? Uh, uptime?

[00:28:52] **Craig Tindale:** Well, they, they, they're not spending, they can tell when the trucks needs to be serviced. They can tell, for instance, if a truck is going up too stronger, uh, ramp and there, there's a problem with the ramp.

[00:29:06] They, they, i, it's almost like a sentient mind. Everything's gonna become sentient or, or, or intelligent. So the mind becomes, you know, dynamically intelligent as, uh, as, as it, as it continues.

[00:29:19] **Nate Hagens:** Getting back to, uh, AI and mining, are there now realistic plans on the table in the United States and in the West to open new mines and refineries at the scale implied by the, for instance, copper demand that AI and EV and data center projections are gonna require?

[00:29:38] Is that happening?

[00:29:39] **Craig Tindale:** It's happening to some extent. So at the moment, the Chinese are financing, um, mines, et cetera, right across the world to ensure there's supply of things. And the American government and the, um, I guess the western governments as well, I've, I've, I've in a small way, financing what is, uh, what they believe to be their core, uh, inadequacies, you know, for instance, rare earth and heavy, rare earth and, um, copper and things like that.

[00:30:08] But they're not, they're, they're picking winners. They're basically saying, okay, we're gonna, we're gonna pick this winner for this. For this category. So what it's meant for the other miners is if you can't, if you can't agree to sell to

the Chinese mine, you're not gonna get Chinese finance. And if you're gonna try and get finance, um, for, for a Western mine, you have to know who you're gonna sell to.

[00:30:32] If you don't know who you're gonna sell to, you can't get capital. Um, and that's an extraordinary change because you can no longer say, Hey, I think on the merits of this, this mine, I think we can, we should go forward and, and, and develop this. You really have to have a really good idea about what, who you're gonna sell it to.

[00:30:51] And if you're not gonna sell it to the Chinese, you better lock in the, the, the western governments. And so it's, it's narrative even more because it, the, the, we're starting to finance these projects. Like the Chinese are financing it preferentially with low, you know. Grants and low interest rate loans and, uh, extraordinary amount of activity there, but it's being done very narrowly, is going, you know, okay, we need heavy rare earth.

[00:31:18] We're gonna, we're gonna, um, finance this particular company. And this, you know, MP Metals for instance, they took I think 10%, 10% equity.

[00:31:27] **Nate Hagens:** You know, what's standing in the way of, of, uh, a massive reindustrialization of the west. And the resulting energy and mineral security that you are implying is gonna be important is the consumer and the, the 210,000, uh, kilo calories a day that the average American, uh, is consuming in, in terms of energy, um, wide boundary sense.

[00:31:57] And so China doesn't have that sort of. Entitled, attitude of Consumers. Um, and, and so any, any political move in this country, I can't speak about Australia in this direction. We can, we have a very lot of very ambitious and clever people, uh, investors, innovators here, but to do it here at the wages that we have and everything else.

[00:32:28] It is gonna be a lot more expensive, which means either less profits that it has to partner with the government or the things we buy are going to be factors, uh, higher in price. So that, that's a big constraint. Yes,

[00:32:42] **Craig Tindale:** it's a huge constraint because our whole, our whole economy, our whole culture is based on, you know, um, eyeballs on screens and, and, um.

[00:32:53] And consuming stuff, throwing stuff for wine. But as it turns out, there's a long tail to that. There's consequence to that. You can't do it forever. You can't borrow money and, uh, speculate on asset prices and eventually not, you know, all your chickens come home to roost because, you know, inflation for consuming good has to go up because, um, it had, the capital has to flow to, um, you know, there's, I think the capital markets, its, I heard a number, the other, the day is $400 trillion in, in, in the us.

[00:33:27] And what percentage of that is allocated to the things that we're talking about today? A very low percentage. You know, our heroes are. Uh, mark Zuckerberg, who, who get, who gets, who, who focused on eyeballs, on screens, you know, the, these people were innovators because they built platforms to con for, for consumers.

[00:33:47] They, they weren't innovators because we don't even know the names of our extraordinary inventors. You know, they, the, the, the Thomas citizens of the today, because they haven't, they haven't had capital flow to them. You know, people like James Tour, um, people like, um, you know, who, who has invented extraordinary mineral, um, technology to extract minerals.

[00:34:12] But, you know, he, he, his name wouldn't be known by, you know, 999 out of a thousand people.

[00:34:20] **Nate Hagens:** What did he invent? I've never heard of him.

[00:34:22] **Craig Tindale:** So he's invented flash jewel heating. And flash fuel heating is where you use resistant heating to heat it up to 3000 degrees. And then you add a bit of chlorine and add a fly ash.

[00:34:33] Like you've got hundreds of millions of tons of fly ash from coal, uh, coal power stations sitting around the US polluting stuff. He can turn, you know, he can get 6.5 kilograms of, uh, titanium outta fly ash. He can pull out copper and silver and gold out of fly ash and aluminum, um, what they call red earth, the stuff that comes out of a aluminum smelters, you know, for instance, um, e-waste, all those, all those circuit boards that, that, that lie in piles at the moment.

[00:35:11] Um, he can, his system can take four, I think it's 485 grams or half a kilogram of gold out of, out of, um. Vwa and these, these are the types of inventors. You know, there's, there's Zach Fang out of the University of Utah who has invented a way of making titanium outta scrap as well. You know, think about titanium.

[00:35:38] We, we titanium about 20% of an F 35 is made of titanium. Okay? So it's a very high amount. You know where we get all that ta titanium from? We get it from China and Russia. So we build our F 30 fives from materials that we order from China and Russia. And you look at any supply chain that tells them an extraordinary amount about the, what we're building as, as far as the, the specifications for the alloys, but more importantly, how many we're building.

[00:36:16] Like they can tell how many F 30 fives we're building or how many shells we're building by the minerals that we order and where do they go

[00:36:24] **Nate Hagens:** And we pay them with dollars.

[00:36:28] **Craig Tindale:** Yeah.

[00:36:30] **Nate Hagens:** Which also is its own unfolding story. Um, because relative to atoms and jewels, uh, we can print more dollars, but we can only extract atoms and jewels, uh, a little bit faster.

[00:36:45] We can't create them. This, this whole thing doesn't have a good ending. Craig. Um. Uh, which is why I have people like you on, on the program to discuss what we might do. So, so let me ask you this, are we effectively in a Cold War 2.0 right now with China and the West, kind of under the surface racing to decouple, but at the same time, are, we're still deeply interdependent?

[00:37:12] Um, what, what do you, what do you see?

[00:37:14] **Craig Tindale:** Well, I, I, I think where we're at at the moment is Col Cold War 2.0. They won, we won the first one. They look like winning the second one. Okay. We're in a situation where we've, we've made ourselves extraordinary, vulnerable, you know, across 23 different, uh, sectors. All the things that we want to do, all the things that we hear about every day, the AI race, the drone, the combat drones, every single category that we're talking about, um, is dependent on their, uh, large s to, to allow us to have the, the, the things that we need to build those things.

[00:37:52] If they decide that they don't, they can collapse our entire economy. More importantly, they can, we, we, they can stop us defending ourselves. You know, I mentioned Zach Fang out of the University of Utah, who's invented extraordinary technology to create, uh, titanium on shore, but they we're still, they're still trying to get it funded.

[00:38:15] They're still trying to get it funded at an extraordinary level.

[00:38:18] **Nate Hagens:** How common is your view that you've been unpacking, uh, and is quite coherent and plausible to me at high levels of the investing world and the governance world?

[00:38:30] **Craig Tindale:** Well, I, I'm talking to a number of CEOs across these sectors that are looking at, uh, department of War and Department of Energy funding.

[00:38:39] Okay. So I'm, I'm talking to the people who are talking to the government and, you know, there is a realization that things are happening and they need to do something extraordinary about it, but the level of speed that they're going at, um, suggests that, that, that it may, it may not be fixable, you know, for instance, machinery.

[00:39:00] Um, all of the things that we need to build to refine things, to smell things, um. Uses machinery that comes from China. So the, the machinery has become difficult to get, you know, it's to 12 to 36 months lag time. So you, for instance, you had the CEO of Linus metal come out the other day and said, well, it's all very well for us to build a rare earth factory in China.

[00:39:28] Uh, so sorry, in Texas. But we do, we have the machinery to do it.

[00:39:34] **Nate Hagens:** We've only had one prior conversation and, um, I know more about your work than you know about mine. Um, but I have something I often say in my presentations that we're facing the five horsemen of the 2020s or the next decade. Uh, and one is financial overshoot, uh, where we have too many claims, uh, versus the underlying and, and possibly declining physical reality.

[00:40:01] Another is, is geopolitics. Uh, another is the social contract. Another is, uh, leaving the stability of the Holocene with climate and other things. But the fifth is complexity, and it's not something that a lot of people talk about, but

everything you've said, um, on the, on, on this conversation so far shows the deep interdependence of global nations on the guns and butter comparative advantage trade that has been happening on the up slope of the carbon pulse.

[00:40:36] And it's one of those things that we, we just assume, like you started off this conversation by saying, oh, if the price gets high enough, the market globally will provide. So I, I think this complexity and fragility of our six continent just in time supply chain could be the weakest link in, in the coming decade or so.

[00:40:58] What are your thoughts on that?

[00:40:59] **Craig Tindale:** The just in time supply chain is, you know, I talk about it in four clocks. We've got the, the, there's the corporate clock, which is. Quarterly to quarterly, we've got the climate clock, which is we've gotta do something in 10 to 20 years. We've got the war clock that we've gotta do something now because it's, it's, it's urgent.

[00:41:20] We can't defend ourselves and you know, we've, we've got the. The, the consumption cloth that, that, that is Dr eating aways continuously because we're addicted to the things that we're doing. Like we're an addicted society, we're addicted to, um, you know, uh, extraordinary amounts of wastage. And, and, and I think the good news there is some good news in this.

[00:41:46] And the good news is that the only pathway to, um, having a, a circular society is probably through this or I guess valley of death. The, that, that. In order for us to learn how to use the coal fly ash, um, stockpiles that we have, we maybe have to be forced to look at the technology that can retrieve that those, uh, those minerals from the fly ash or through the aluminum waste or through the e-waste and things like that.

[00:42:20] **Nate Hagens:** But if that happens and we get the titanium and gold and whatever out of the fly ash with some new miracle technology and add some chlorine to continue that five years from now, 20 years from now, you still need that magnitude of, of fly ash as a precursor.

[00:42:40] **Craig Tindale:** Well, I think what happens is everything gets recycled dimensional

[00:42:44] **Nate Hagens:** because, so right now we're only recycling like eight or 9% of global.

[00:42:48] **Craig Tindale:** Yeah.

[00:42:49] **Nate Hagens:** Yeah.

[00:42:49] **Craig Tindale:** And so the big, you know, if you're, if you. In the lithium industry. The lithium industry's a great example. We always, there, there was always proposed that the lith lithium mining would only go to a certain extent. It would only go for the next 10 or 15 years, and then you could recycle all the lithium back again and use it again.

[00:43:09] And that's what we end up with, is that we need to learn how to, this is the evolutionary pressure that this is placing on us.

[00:43:16] **Nate Hagens:** Is that happening with lithium?

[00:43:18] **Craig Tindale:** I think it's gonna happen right across. It is happening with, uh, uh, I don't think it's happening with lithium yet, because, you know, again, um, Australia's biggest, one of Australia's biggest, uh, uh, lithium miners, um, you know, has its entire, uh, output, its offtake, uh, committed to, uh.

[00:43:39] The, uh, the Chinese, uh, lith, uh, battery factories. So it, it looks like an Australian mine, but it's all going, it's all gonna go to China's, to Chinese battery factories. And then, then you've got this extraordinary tension between defense. You know, I was talking about the clocks that you've got this tension between defense and climate, right?

[00:44:01] Um, silver is used as about 500 ounces of silver in, um, every, every, you know, every large missile, right? It's 500 ounces of silver makes, I don't know, seven or 800 different, um,

[00:44:19] **Nate Hagens:** solar panels,

[00:44:20] **Craig Tindale:** solar panels. Um, do, does the silver go to the. To, to the, to the missile, or does the silver go to the, to the solar panels?

[00:44:30] **Nate Hagens:** Let's unpack that just a little bit. I, I'm sorry, Craig. I have just so many questions that I'm not sure, uh, where to go. Um, um, probably our, our viewers are gonna get a little about, uh, a little bit of whiplash, and that's on me. Is there a way to have policy or taxes or rules or something that, that create a hierarchy of priorities for scarce inputs in society?

[00:44:58] You just mentioned silver, but there are many other ones so that they're not being Well, I, I like to say that we're, uh, taking fossil hydrocarbons and turning billions of barrels of ancient sunlight into microliters of dopamine from all the little addictive social media apps and, and such. Is there, do you have a way of, of.

[00:45:21] Increasing the odds that these, uh, scarce materials and inputs are eventually used towards more production, investment and best use as opposed to not.

[00:45:34] **Craig Tindale:** Well, I think we've gotta get over the, the, the situation we're in first is, you know, what are the priorities? The priorities, um, I think will play out. Uh, we need to defend ourselves first.

[00:45:48] And at the moment we're, we've got an extraordinary situation. We're extraordinary vulnerable because we can't defend ourselves. And then we have to look at, um. You know, the, the, the, the bigger issue for issue of climate change and how the only way you can do that is government regulation. At some point the hammer's gonna drop and say, well, okay, we need to, we need, um, silver, and we'll use that as an example.

[00:46:15] We need the silver and the missiles, um, more than we need the silver in the solar panels. And this is the question that China's gonna ask us too, is we're happy to ship your silver for, uh, this purpose, but we're not happy to ship your silver for that purpose.

[00:46:30] **Nate Hagens:** But at some point, the Miss Solar panels have to be rebuilt every 20, 25 years.

[00:46:36] Uh, and, and that can be done, but the missiles eventually, I mean there, there is a, uh, an end game to missiles. Uh, and if China wins the material race, does it gain escalation dominance as well?

[00:46:52] **Craig Tindale:** Yeah, well, it has to. It has to, if, if, if that's the whole purpose of the why, why it's done it, that's why Germany did it in World War I is because they dominate the capacity of the Western to defend itself.

[00:47:07] **Nate Hagens:** How do we make it through the next 10 or 15 years without a nuclear exchange?

[00:47:14] **Craig Tindale:** Um. There are dependencies on the other side, and this is where the tension is played in at the moment. We, you know, lith lithography, um, well, certain things like, um, uh, certain, certain minerals are on the, on the west side. There are things, you know, the software that is used to build, uh, um, uh, different chips, et cetera.

[00:47:38] We have extraordinary control of those where know we can basically turn that chip factories off because they're still using American software. So there's this tension that we have to ride out. It's this fine line that we can fall off the fence at any time, but we have to walk this narrow fence and this narrow fence doesn't give us a lot of options.

[00:48:00] **Nate Hagens:** So, on, on the AI. Piece of this and strategic dominance, uh, between the west, well, between the US and China is compute now, uh, a core axis of geopolitical sovereignty in the same way that that oil and shipping lanes were in the 20th century.

[00:48:19] **Craig Tindale:** Yeah, it's, it's like energy. It's like, it's, it's, it's a core input into whether we can be dominant or not.

[00:48:28] You know, we we're putting a lot of money on the fact that we're gonna outthink the Chinese because we're gonna have an AI that's smarter than them. You know, that may or may not work. Um, they may catch us or they may have such a dominance in, I guess, more boring components like critical metal metals and, and, and, and various other materials that they may have just as, uh, uh, just as big a holder to us to stop us from building that intelligence than we have on them.

[00:49:01] That we won't give them the chips. There's, there's, there's this tension that we can't escape. You know, you, you, you're seeing, I think, Trump this, this week has decided that he's gonna ship some, some, some, some new chips to

Nvidia chips to, to China. And that's a recognition that that, that this thing is in an extraordinary tension at the moment.

[00:49:24] And he has to concede things and they have to concede things in order for to, to function. And that's probably our major hope you call, talk about, you know. Uh, a nuclear war and things like that is that, can, can this tension hold both sides, um, back from destroying each other and, and how do we address climate change at the same time?

[00:49:48] You know, if we send off our whole economy to, to build, uh, and defended ourselves, which, you know, seems common sense, um, you know, it's gonna, it's gonna divert an extraordinary amount of, um, effort and energy. Um. To that and not, and not to fix the, and not to fix the things that are absolutely important to us.

[00:50:10] **Nate Hagens:** Let me ask you this, uh, Craig, because it's not often that I have someone so fluent in finance and technology that also is deeply fluent in climate and the risks there. I have a couple of follow-up questions, but maybe just share your view on the midpoint of our climate trajectory under business as usual, without any, uh, you know, governance regulation or, or new tech, uh, solving things.

[00:50:38] **Craig Tindale:** I got pulled in COVID, so I decided I'd read the IPCC climate models, and then I go in down rabbit holes in all parts of the climate model. So, you know, I'm, I'm far from an expert because I don't hold any, any degrees in it, but I certainly understand the models. Um. The models were extraordinary wrong. You know, I position it as the skeptics and the climate activists were both wrong.

[00:51:03] Um, you know, they're talking about 2100 and things that are gonna happen out there. What they missed was their models were too coarse, and the

fact the whole thing is accelerated much faster than we thought they would. And so they were wrong as well. And so, um, our ability, our window to change is, is, is basically closed.

[00:51:25] You know, it's probably an unpopular opinion, but this idea that we're gonna fix it, um, especially with these diverting factors of AI and, and defense, the idea that we're gonna fix it with renewables, I I, is almost fancy for, at this stage, looking at it from reality.

[00:51:43] **Nate Hagens:** Yeah, I, I agree. It's gonna be, uh, uh, adaptation, uh, will rule, um, not mitigation, especially because.

[00:51:55] The hierarchy of priorities in our economy right now, AI and energy and the dollar and debt and war and defense, all those things rank higher at, at pretty much every, uh, governance level than climate does. But you like, you're being modest because I've seen some of your tweets, uh, you had a recent one on, um, solar aerosol, uh, in injection, um.

[00:52:29] And you said there's a, because I've, I've looked, uh, on wealth, equality and human behavior and, and other things. There's a big difference between the median and the mean. And maybe you could unpack your, your punchline on that. 'cause I thought it was quite interesting.

[00:52:45] **Craig Tindale:** Well, okay, so the models basically average everything out across the world, and they socialized models.

[00:52:52] There's no doubt about that. In my mind. The, you know, the IPCC sat there and said, well, we can't tell the people at the, in the equator that they're not gonna, you know, be able to virtually live because it's gonna get so hot and tell the people in Australia and New Zealand and parts of North America that they're gonna be probably okay.

[00:53:11] So it's gonna go up two or three degrees. So they socialized the entire models. And what they did at the other time is they made a series of extraordinary regulatory changes that they never modeled at all. Um, and that was for instance, the IMO 2020, the rule that they would take sulfur outta marine diesel and that marine, that marine sulfur was, was floating up into the atmosphere and creating clouds and those clouds through a process of, uh.

[00:53:40] Cloud mirroring or albedo, uh, reflect its heat back into the, in, into the stratosphere. Um, it all, what it also did with the cloud condensation nuclei, these little particles that, that were, the sulfur particles were the nuclei for raindrops. And so those clouds also created the level of rain. And now deforestation, you know, you know, forests create cloud condensation nuclei through monoterpenes anyway, so they, they, they kind of call in the rain.

[00:54:13] They, they, when it gets extraordinarily hot in Australia today, it's 37 degrees Celsius. The eucalyptus trees send out these cloud particles, um, and they form the nuclei for raindrops and they create the clouds. Now what we did through, uh, industrialization is we cut down all the trees, but we let, we let a lot of this sulfur out.

[00:54:35] Now, this sulfur. Was creating the, I guess, the sunscreen for the entire earth. Um, and that sunscreen was taken away as soon as we, we dereg or we regulated it and took it out of the, we took the sulfur out. Now what's happened is, you know, places like China, places like, uh, the Gulf Coast in the North America now have a shortage of cloud condensation, nui.

[00:55:01] They have a shortage of clouds and what happens? When, when, um, you get evaporation and there's no particles in the air for the nuclei to attach themselves to, they go to what they call atmospheric clouds. And those atmospheric clouds dump much harder. They, they, they don't provide soft rain. They provide very, very heavy rain.

[00:55:22] And so you get the flooding you head in Texas and things like this. And that's, so we've changed the way our ecosystem, our environment has it works. And so we've accelerated climate change by regulating, you know, sulfur creates acid rain. It's, it is also very bad for you. Probably. You know, I've, I've, I've looked at research that says, you know, there's a million deformities caused by sulfur acid, rain, you know, across the world they've done these kind of research studies.

[00:55:50] So there it's one of those, there's no. Good choices, but by deciding that we were going to, um, take it out via regulation has extraordinarily accelerated the climate change. And you'll get, you know, you, you'll get, um, people like James Hansen and Leon Simmons who have put. Extraordinarily blunt research out there recently saying, does everyone know that this is exhilarating faster than we thought, than it was?

[00:56:19] There's, there's research at the moment that says that am o where a MOC, the North Atlantic in current is, is, is slowing precipitously. Um, you know, one of the proxies for the, the flow is, is. The, the sea surface temperatures and the sea surface temperatures in the North Atlantic, um, are extraordinarily hot.

[00:56:42] They got, they're off the scale.

[00:56:44] **Nate Hagens:** So now you are in territory that I'm familiar with, Leon Simons, uh, um, and others have been on the show discussing those things. I'm gonna just make a mental note here, Craig, that the next time you get bored and decide to take a deep dive on a topic, please give me a holler and we'll, we'll do a podcast, uh, after you've done your learnings.

[00:57:06] Um, so on climate though, if, if parts of the United States political system, uh, the current administration Wall Street pretty much remain in practical climate denial, is that because and acknowledging. Of what you and I are

discussing about climate and the implications of a renewable future implies surrendering hegemony, like from the get go.

[00:57:31] Is is that a real phenomenon?

[00:57:33] **Craig Tindale:** I think so. I think if you read, uh, it's, it's hard to say this, but if you, if you read Trump more finely, um, and when he says he doesn't like, um, you know, wind farms and, and, and wind energy, um, you look at offshore wind energy, it really closes down your, the ability for radar to see, uh, incoming missiles and planes, right?

[00:57:57] It, it on radar. A, a wind farm looks like a whole bunch of, you know, bombers coming in. You know, just as equally all those rare earth metals that are used in wind farms. Need for defense. You know, they're, they're limited capacity. Same with everything else. So you've got, you've got this, this trade off. You know, do we defend ourselves or we do, we, we change the, the, the energy, uh, production of, of, of our planet.

[00:58:27] And, you know, any sensible person goes for the defense first and, and then looks at the other thing later.

[00:58:34] **Nate Hagens:** Well, this is what's happening in, in, in Europe. I mean, Germany, uh, didn't go for defense first, although they're trying to catch up, uh, rapidly, uh, from what I've read this week. But there's a difference between clean energy and energy security.

[00:58:51] And I, I, I think you're, you're painting which way the world is gonna go.

[00:58:55] **Craig Tindale:** Yeah. Um, we need energy security. We need to be able to produce, um. Energy where it's needed for what it's needed. And, you know, AI is, is, has, has had an extraordinary impact on the energy production

requirements of, of the us. Um, it's also had an extraordinary, um, impact on, on the water production, the, the H2O that's needed to cool these places.

[00:59:24] Um, you know, uh, I I I could use the example of Sydney. Um, just the small AI data centers in, in Sydney are gonna pro consume 22% of, uh, Australia, uh, Sydney's energy, uh, electrical energy, and 35% of its water by 2035.

[00:59:46] **Nate Hagens:** Do you think I, I mean, we could spend another hour just on ai. Do you think that, that what you just said, which is incredible to think about, do you think that.

[00:59:59] The output from that will setting the environmental costs aside for the moment, which you and I don't like to do, but will the productivity in society off offset what you just said? Will we have one to 2% boost in productivity system-wide because of ai?

[01:00:17] **Craig Tindale:** Well, that's the big, it's the big $64 million question, isn't it?

[01:00:20] Yeah. Is does, does it put us, does it push 50% of humans out of work? Like if you look at it through a lens of, um. Technology disruption. We, we've got Silicon Valley, uh, disrupting the technology of, of human labor and, you know, Silicon Valley, um, everyone says, how are they gonna make all this money out of, uh, ai?

[01:00:44] You know, it's, it's huge investment. The unspoken bit is that they, they're gonna take it outta the wages of human beings because they're gonna replace us.

[01:00:52] **Nate Hagens:** And I, and I've talked about that and if, if a third or a half of us are replaced by robots, uh, or ai, think of all the consumption and the

mortgages and the car payments and everything else that no longer has an income, that's a fricking mess.

[01:01:08] And, and the government's gonna have to do some sort of basic income, or we're headed towards a futile future. Um, probably anyways,

[01:01:18] **Craig Tindale:** it's the end of capitalism.

[01:01:20] **Nate Hagens:** A AI is the end of capitalism.

[01:01:22] **Craig Tindale:** You, you don't, if you don't have wages, if you, you don't have taxes. If you don't have taxes, you can't have government anyway.

[01:01:29] Um, if you don't have wages, you can't have consumption.

[01:01:33] **Nate Hagens:** And if, if that does happen and it's the end of capitalism, then what would it be? The beginning of,

[01:01:37] **Craig Tindale:** I think it be, it's, it's, it's the beginning of a, a form of, of, uh, directed socialism. You know, for instance, um, you know, the, the, where does it default if, if the technology companies get rid of 50% of humans or 30% of humans, even 20% is just as bad.

[01:01:59] The robot owners, they get the wages, the capital flows to them. Um, and the robot owners, um, will have to distribute it somehow. You know, and for instance, you know, we've, you in the economic rationalist, uh, you know, with the economic rationalists hat on, um, you know. Is transport or health or anything else better provided by private enterprise?

[01:02:28] If it's robots, you know, you've destroyed the, the, the, I guess the advantage of private enterprise. This assumption it can do it better because the government can do it just as well. You know, for instance, if, you know, um, is it

better for, uh, a, a, a rentier capitalist to own the, the, the self-driving cars that turn up to your door to pick you up, to take you to the hospital?

[01:02:54] Or is it better for the government to own it because they can run it just as efficiently? It changes a lot of the assumptions because the, the, the need to have capital, um. You know, the, the, that impulse that, you know, we, we innovate, uh, changes because we aren't innovating anymore. Um, it's the robots and the AI that's innovating and providing the human labor.

[01:03:18] And, you know, um, you know, a certain percentage of us will, will adopt the Ironman model, we'll put on the suit and we'll become extraordinarily more powerful. Um, as per, you know what I was talking about before, but at 50, you know, a large percentage of human beings aren't capable of that. Aren't capable.

[01:03:37] You know, they, they, they're the taxi drivers. They're the, they're the people who are making the meals at, um, the restaurant. They're, they're all of these people, you know, the, they're people stacking the shelves in the supermarket. You know, we've made ourselves obsolete. It's, it's classic. I, I, I went to the University of Columbia for my masters and we, we discovered, uh, we studied innovation and the disruptive effect of, of technology.

[01:04:04] And what I don't think we really covered was the fact that the dis, you know, tech, that Silicon Valley is make humans obsolete. And that's the unspoken thing at the moment. The reason that hundreds and hundreds and, you know, trillions of dollars is going into AI is the unspoken presumption that that AI will tap into the, the wages and the, and the revenue that come from that wages over time.

[01:04:32] What they're investing in, they're investing on our own ob obsolescence, which is an extraordinary situation because we, we, you know, what is gonna happen to the political, um, system when the humans work out that you

know that it's not gonna be 2% better productivity. It's actually gonna be, you know, it might be 10% better productivity, but it's, it's, it's, it's gonna be an extraordinary change in, in the ability to earn things, especially for young people.

[01:05:01] You know, I'm old, you know, what do they look forward to?

[01:05:05] **Nate Hagens:** Is there any. Possible path of stopping or slowing ai. I, I guess the path, the, the way to stop it is if it can't access this amount of energy and, and compute and water like that, we run into real, uh, atoms and, and bits and Juul constraints.

[01:05:24] **Craig Tindale:** Well, I think, I think that, I hope they're building big fences around the AI and, and, and around the power stations because I think at some point we've got kind of a, a, a neo lud light situation where humans are gonna, uh, politically and, uh, I guess in, in other ways, objective being made obsolete and which, so we go through a dystopian period.

[01:05:48] And that dystopian period, um, is where the society reorganized itself. We, we, we've got an aging population, so we're gonna get smaller anyway, and we're gonna, you know, we're, we're not replacing ourselves. Maybe we need less, less humans and, and the robots will do, do things maybe we'll do with population shift.

[01:06:06] **Nate Hagens:** What do you do for fun, Craig?

[01:06:09] **Craig Tindale:** Uh, ride horses with, I, I, i, I, I wish I could show you the camera, but, uh, we, I live in the extraordinary old growth forest in the middle of Sydney. It's probably the str, it's Sydney's biggest one. And so I plant trees.

[01:06:24] **Nate Hagens:** Yeah, I, I actually wanted to talk to you about that. Um, I, is it a friend of yours company, or is this air seed company, is that your company?

[01:06:32] **Craig Tindale:** I was a founding investor. What we're doing is we try to work out how to make drones in a more productive.

[01:06:39] **Nate Hagens:** But, but tell me, tell me the why, the, I mean, there's a reason why you started this.

[01:06:43] **Craig Tindale:** Well, because we noticed that the forests, um, you know, f forests are distributed. They're seeded by animals, they're seeded by birds.

[01:06:52] And so in order to, um, uh, retain the forests and, and bring back the, we need a way to replace those animal birds seed distribution capability,

[01:07:03] **Nate Hagens:** because birds have been dropping like 30 to 50% in the last 50 years.

[01:07:09] **Craig Tindale:** Yeah. They, they've dropped 30 to 50%, but it's also the other animals, the possums and the bandicoots and things like that, they eat roots and they go round the place distributing the seed.

[01:07:19] And so what we, what we thought is, is, is, uh. Where you would use the modern technology to replace those animals, those, that distribution ability so that we could reforest the world. Because I think that's one of the, the big things that we need to do.

[01:07:37] **Nate Hagens:** Totally agree. So

[01:07:39] **Craig Tindale:** we've, we've lost, we've lost about, uh, you know, I think at about 2 billion, uh, square miles, 2 trillion or heck,

[01:07:45] **Nate Hagens:** 2 trillion.

[01:07:45] 2 trillion trees. Yeah.

[01:07:48] **Craig Tindale:** Yeah. 2 trillion trees or something like that.

[01:07:50] **Nate Hagens:** Mm-hmm.

[01:07:50] **Craig Tindale:** And that's since 1800. If we had those trees that were cut down, um. Since 1800. We, our, our, uh, our CO2 would be 50% better off. So our CO2 parts per million in the air, if we had those trees, all those trees were storing carbon. And so what we need to do is be able to replant those trees and store all that carbon again.

[01:08:17] One of the great fixes for climate change is to, um, replant those trees. And so we can do it at scale. You know, a drone can drop 40,000, um, seed balls a day. You know, we've, we've, we've, we've researched, we are indeed the, the substrate we put, we can, you know, you know, the seed, uh. Those protein balls that you see in, um, the gyms where you have a protein ball and they're, they're like chocolates.

[01:08:45] They're about that round. What we've done is we've, we've, um, mechanized that so we can create, you know, 24 seed balls a second, right? And so we can throw 'em up in the drone. They can do 23 hectares a day. We can put 'em in swarms. So we can tr plant extraordinary amounts of trees. Um, you know, right across the landscape.

[01:09:08] It's like a paint by numbers. So we, we include diversity. We include, you know, 15 tree, 15 different species at once, you know, on the southern aspect of the, of a, of a hill. They may need one particular species on the northern aspect of hill. They might need something else. So we map these out and we, we drop the seeds as if we're painting like an Ink Jo printer, you know, we're, we're, we're dropping the different species into the right position at the right time.

[01:09:37] **Nate Hagens:** I, I'm. On the fence of being a neo Luddite, because I see the downsides of some of these technologies, but what you just described like truly is using the devil's tools to do gaia's work. It sounds like a phenomenal idea. Are you scaling this? Is it working?

[01:09:55] **Craig Tindale:** Yeah, it's scaling. We're our most, we, you know, we've done, um, we've got, we've done projects in Mongolia or in Africa, and, um, south America.

[01:10:04] It's scaling, but we need more incentives to, to, to wanna put those trees back. You know, the, the, the, the ability to put our trees back, I think is underrepresented as far as our, our response to climate

[01:10:18] **Nate Hagens:** and not only climate. Um, I had a podcast recently, please watch it when you have time with Anastasia Eva from Russia, who, um, is one of the developers of the Biotic pump theory.

[01:10:30] Um, where it's not only for climate, but standing, uh, contiguous forests also create rain, and if they're depleted, that changes our, our rainfall, uh, et cetera. And there's a difference between just any old forest, like a, um, uh. You know, plantation of monoculture versus an old growth or, uh, diverse, older, mature forest in what they provide, uh, to the ecosystem?

[01:11:00] **Craig Tindale:** Well, yeah. A rainforest contains about 44,000 liters, uh, per acre. Uh, a pasture is about 4,000 liters per acre, and everything else is in between, and they are blood biotic pumps a tree, you know, it has an extraordinary ability to pump water from the ground. Um. You know, through it stems and leaves and, and release it into the atmosphere.

[01:11:25] It's, it, it is a pump in, in every, in every sense. And that's where I go back to the monoterpenes that they release. They, they, they do cause rain. Not only do

they retain that moisture, but when that moisture is evaporated, they release what they call monoterpenes, these particles that form the cloud condensation nuclei for raindrops.

[01:11:47] And, and those raindrops coalesced into clouds. Um, and so forests are extraordinarily important.

[01:11:54] **Nate Hagens:** Let's merge these two, uh, uh, threads. So on the one hand we have. AI and compute and kinetic, uh, world power games between the US and China and, and where that's headed. On the other hand, you are using AI to come up with some of the knowledge and wisdom, uh, that you've amalgamated here, and you use drones and AI to successfully plant a hillside with what would fit there, and you could do it faster and better than a human could.

[01:12:26] How do we as a culture. Lean into that second and away from the first, like what sort of first steps, what sort of governance, what can you envision, even if it's not yet plausible? What's the, the pathway there, Craig?

[01:12:42] **Craig Tindale:** We've gotta focus on resilience rather than, um, you know, we've gotta look at, I, I, I've gotta kind of experiment going on this farm.

[01:12:50] I've got where I've, I've looked at every aspect of creating resilience. I'm off grid. I can, I can pump water. Um, I think I've got nearly five kilometers worth of water pumping. I pump it from the ground and I put it in a dam and all this kinda stuff. We've all gotta start thinking like that. When I was a, a young bloke, my, my grandfather, um, in the sixties.

[01:13:16] Used to grow this amazing vegetable garden. We used to, I remember as a child walking barefooted through it. Um, and every, every house had a vegetable garden. And, you know, we've gotta think in those terms that, that the world, um,

is, is not gonna be super abundant anymore. That we're gonna have to look at everything that we're doing.

[01:13:38] And a lot of us are gonna, a lot of people are gonna be unemployed or struggling to find income, et cetera. And so we have to lower the cost of us, uh, of our existence. We have to lower the cost. We have to be able to produce, you know, food, for instance. We grow most of our own food here. Um, food for instance, is free.

[01:13:57] Like I can, I can buy a and i, I trans it, it's the tree economy for me. I can buy a tree for $140 for a nursery, or I can create one for less than, you know, many times less than a cent from a seed. That, that is probably a good analogy is that do I go to the, do I go to the tree farm and buy trees or do I go and, you know, buy five kilograms worth of, of seeds, which makes 30,000 trees.

[01:14:28] Um, and we need to do that in kind of every, in every factor in there are food in our uses, which are, uh, of electricity or energy. Um. You know, in our debt, you know, the, the, the consequences of what we're talking about, um, means that the, the extraordinary level of domestic and, and, and government debt that, that we currently support is unsupportable.

[01:14:53] **Nate Hagens:** Yeah.

[01:14:53] **Craig Tindale:** You know, without wages and all those kind of things. And it doesn't have to be 50% of people. What, say it's 10% of people and it's incremental. 10% of people lose their jobs every couple of years. That's still extraordinarily difficult when you've got an aging demographic society. We're shrinking, you know?

[01:15:11] Yeah. They talk about DEG growth, but no one ever could explain how it's gonna happen. This is DEG growth being forced on us.

[01:15:19] **Nate Hagens:** Well, in my view, yeah. I, I prefer, I don't like consciously saying we must degrow because the, there's a big, uh, speed bump between here and there on the financial markets. I prefer to say post growth because post growth for most people.

[01:15:36] Unless maybe you're one of the owners of ai, um, is our likely future. So one of the questions that's been bubbling up, um, during this conversation, how do markets continue to function when they have become the goal, not the tool of our society? And can we potentially use markets and money in an ethical way?

[01:16:02] And how would we allocate resources ethically when, as you've said before, our security is at stake. Big, big questions, but do you have any speculation?

[01:16:11] **Craig Tindale:** I look at economics as a cycle. So, you know, when, when we had the great reforming times in the 1990s and two thousands where we decided we're gonna float dollars and we're, we're gonna deregulate everything and we're gonna privatize everything and, and all, and, and, and all of that kind of thesis of how we were gonna make the world more efficient by letting the, the pain and the expertise lay where it should lay.

[01:16:39] Um, and, you know, I go back to, you know, basically postwar or, or, or inwar economies where it was much more directed. And I think that's where we have to go. I think if you look at the cycles of, you know, uh, fiat money for instance, you know, everyone talks about fiat money and we have to go back to real money.

[01:17:00] But if you look at the, the, the real money periods, they were just this. It's difficult, you know, um, when gold was the basis of our economy, um, you would have gold hoarders. You know, the US had 90% of the gold in, in, in, in,

after World War ii, you know, at at different times. Spain, you know, if you go way back, Spain had most of the gold because it got it from the Americans.

[01:17:25] **Nate Hagens:** That's one of my, my fears with the, the trajectory you're describing that gold, silver, and Bitcoin, uh, are the same way directionally as the owners of, of compute and ai because. The biophysics of the situation suggests that that currencies are gonna continue to weaken, uh, relative to physical things. But as a percentage of the humans, very few of them probably actually own those things.

[01:17:56] And so if, if that future manifests and silver's $500 an ounce and gold is 15,000 or whatever, uh, the amount of wealth inequality is gonna be even higher than it is today. Maybe. What do you think?

[01:18:10] **Craig Tindale:** You gonna have a lot of self-satisfied, rich people who made extraordinary, um, wealth out of investing in gold and silver.

[01:18:19] But the great majority of people will be struggling, which is what you're saying,

[01:18:23] **Nate Hagens:** which means we won't have a society to be able to spend that wealth on really?

[01:18:27] **Craig Tindale:** No. And, and then they'll be stranded as well. You know, like if you're in a situation with, um, uh, you know, Bitcoin, you know, it's very reliant on network traffic.

[01:18:37] The ability to, uh, to, to consume energy. If you're looking at gold, you know, it can be red regulated. You know, people talk to totally, people are naive enough not to believe that what's happened in the past can't happen again. Now, you know, it's gonna be a really interesting situation. If, for instance, you know, we

talked about silver, the industrial need for silver to defend ourself negates the need for people to be able to freely invest in it.

[01:19:06] So, you know, the, the government says, okay, well, we're gonna prioritize, uh, uh, silver as a, as a, as a defense or a climate change asset, and we're gonna say to everybody, you can't own it. And people believe that, that that's not gonna happen. Well, they'll regulate the price. So, you know, for instance, gold goes to a hundred, sorry, silver goes to $150 an ounce.

[01:19:33] And then the, the, and then the government goes, well, okay, sorry. We need that for defense. The, the rate we're gonna pay citizens who $75 an ounce, you can't trade it. Um, and those kind of things, the real risks. And I, and, and I would actually posit that they're not only just risks, they're certainties. At the end of the day, the greater need, and this is what you are kind of pointing out, is the greater need of citizens, or the greater need of the population is more important than a bunch of, um, people who invest in gold and silver.

[01:20:08] And so that they're gonna prioritize the need of the, of the broader population. Um, you know, they're not gonna let the, the currency, uh, the fiat system that they've developed, um, fall down. You know, the, it's a naive belief. They're gonna, they're gonna regulate it, and they, they're gonna become, uh, almost tyrannical, um, to try and preserve their existing system, which is not gonna, which is not gonna, um, endear me to a whole bunch of silver and gold, um, investors.

[01:20:40] But I'm, I'm, I'm sorry. I don't, I don't see the world as being solved by real money.

[01:20:47] **Nate Hagens:** Well, it's, it's, it's such a. Yeah, it's such a perfect example, Craig, because from a narrow boundary sense, silver and gold are going

to go up. Yeah. You're, you know, that is clear with the exception of some deflationary pulses in between, but over time.

[01:21:04] But a wide boundary sense is okay, you were right about that. But what are the societal, cultural, environmental implications and political like you just said, and, and the wide boundary answers are to A lot of these things are, uh, um, there is, this is a predicament, not a problem. There is no solution to some of these things.

[01:21:26] There are better paths as opposed to worse ones. And so I think that's where we're at right now is kind of a triage situation to choose the least bad paths forward. So in a moment, um, and I've already, uh. Decided I need to have you back because I need to think about and research some of these things and, and really, uh, offer you some, some hardball pitches.

[01:21:50] But this has been a wonderful introduction to your thinking. Um, in a moment, I'm gonna ask you some personal, uh, advice for the viewers, uh, on how to navigate what's ahead. But right now, just assume there are some political leaders and philanthropists and big thinkers, uh, around the world viewing this show.

[01:22:10] What sort of just big picture macro advice do you have for citizens with degrees of freedom that are, are trying to influence thing at, at large scales to avoid the really dystopian paths?

[01:22:24] **Craig Tindale:** I think we need to do some really practical things. Um, you know, for instance, uh, uh, when I left school, I, I, I went for an unusual path.

[01:22:34] I became a carpenter first, and then I went back to school. Um. The thing is that we've lost our trade schools, we've lost our trade capabilities. We need, we don't need software engineers. You know, the, the whole, uh, the whole

idea that we're, you know, learn to code, learn to code, learn to code. Well, we've discovered that code is, is, is pre, um, it's a commodity.

[01:22:59] It's a commodity. And in fact, you know, the, the, the guy that earns most money off me is, you know, either my electrician or my builder or, or all those kind of things. They're gonna, they're gonna be hard to roboticize. Um, but we haven't got the schools to build that at the moment. We've lost our trade schools.

[01:23:17] And so we have to become more practical. We have to become, we have to incentivize, you know, growing our own food. We need to, um, if, if we're really gonna go through this extraordinary change, we need to make ourselves smaller so we consume less. And so if you're, if you're a politician or a lawmaker, et cetera, you've gotta, you, we've gotta shrink the, we've gotta shrink our needs, um, you know, our, our, our energy needs.

[01:23:47] We've gotta, we've gotta really, uh, apply our intelligence to every part of. Uh, our lives in order to make ourselves more, more efficient. Like as I I suggested to you earlier on, I think this is the evolutionary impulse, the, the pro, the provocative nature that it has to be for us to change, to become a circular economy, to re actually recycle things.

[01:24:12] I think that's the end state, that's the benefit to us. But we need to, we need to move down that, like in Australia, we're, we're still, um, worrying about, um, bringing in lots of, lots of immigrants and building lots and lots of houses. Um, and we've got the, you know, the lowest, uh, uh, per capita occupation of housing in the Western world.

[01:24:38] Um, you know, we're not using it efficiently. You know, I think we've got 1.2. We've got so many, I think with 270,000 empty homes in Sydney and the, and the prices, we've got the highest, uh, uh. Prices in the western world in Sydney,

you know, we can't afford that level of debt anymore. We can't afford people to have significant mortgages because they're not gonna be able to service them.

[01:25:04] Um, and we can't, you know, financialize everything, you know, you can't drive across Sydney or use Sydney as an example. We've got toll roads everywhere. You can't drive. It costs you 40 bucks to drive in any, any direction from where I'm at the moment because you've gotta pay a toll to get from one side of the city to the other because we've privatized all the roads.

[01:25:24] **Nate Hagens:** I would rather sit in an old growth forest with food that I grew and ride horses and look for kookaburras myself, but,

[01:25:31] **Craig Tindale:** well good. That, that's my one. My, my wife accuses me of, she says, you don't want to go anywhere. And I said, well, why would I wanna go anywhere?

[01:25:37] **Nate Hagens:** Yeah, exactly.

[01:25:40] **Craig Tindale:** You know, we've got, we've got 70, I've got this AI engine that identifies, um, uh, birds, um.

[01:25:48] By, they, they, they take in a 92nd single, uh, 92nd, um, uh, recording and they run of the grease against an AI engine and identifies which birds.

[01:25:58] **Nate Hagens:** Yeah. I I have one too. I use it all the time. The mine's called Merlin. It's from Cornell. But like, how many birds do you have on your property there? Uh,

[01:26:07] **Craig Tindale:** like we, we've had 78 this years different species.

[01:26:12] And we wake up, we wake up, and it's extraordinary. It's so, my wife, you know, turns over and says, can you hear this? It's, it's, it's like living in an Avery

because we only relate to Averies as a place where lots of birds are, in fact. Um, and you know, it's right in the middle of Sydney. It's this, this, this.

[01:26:31] Little valley,

[01:26:32] **Nate Hagens:** you're a wealthy man in the, in the ways that count. Um, I, I think that's amazing. Actually, the reason I was a couple minutes late, uh, showing up for this podcast is we had, uh, six, eight inches of snow last night and I had to clear off my bird feeder, uh, and then put some new bird seed out there, and immediately there were like 30 colorful birds there, blue jays and woodpeckers and cardinals.

[01:26:56] And, and I sat there and looked at 'em and it's just so rewarding. Um, given the Twilight Zone, uh, esque story, you just dropped on me the last 90 minutes. Um, so, um, what can someone watching this episode do now, today, this week, or this month to help address or at least directionally align with the things, uh, that you brought up today?

[01:27:24] Or is it all up to politicians and, and leaders?

[01:27:27] **Craig Tindale:** We have to make ourselves individually resilient. You know, like, we dunno what's gonna happen in the future. Um, I think people, we've got a lot of people in the, in, in media at the moment, pundits and different people on Twitter or what, whatever we, we, we think, who think, who claim to know the future.

[01:27:45] And the reality is we don't know the future anymore. Right. We may have an idea about what, what might happen. We may have fears, but we don't actually know.

[01:27:54] **Nate Hagens:** Mm-hmm.

[01:27:54] **Craig Tindale:** Um, because, you know, you listen to the, the, the different experts on ai, I've listened to 'em all, they've all got a different opinion. Yeah. You know, we've like, either in a dystopian world or, or you know, where, where, where nobody has to work and they just can live off, they can live off the, the merits of, of the AI society.

[01:28:15] You know, we actually don't know what's gonna happen. It's an extraordinary time. We're, we're, we know it's a time where we're making ourselves obsolete and we're also gaining the powers of gods. Um, some of us and, and some of us, it's, it's extraordinary narrow. And so, um, where we end up is that uncertainty has to educate us.

[01:28:39] That uncertainty has to inform us about what we need to do to be resilient, to make ourselves inde in, in independent and resilient, um, as we go into that future because we can't predict the future. It's that, it's like the whole defense thing. If we haven't got the, the, the ability to defend ourselves, and I don't mean against violent intruders, I just mean, you know, against economic.

[01:29:02] Um. Uh, difficulties or, or, you know, societal difficulties. You know, we're, we're, we're left with, we're leaving ourselves vulnerable. So we need to learn skills. You know, for instance, how many people know how to grow food? I was talking about my grandfather for before, you know, everybody in those days knew how to grow food.

[01:29:22] Like nobody knows how to grow food now, and that, that's a dependency. So, you know, I, I'm my whole mantra to all my kids, and I've got a few of them, um, is, is, is learn skills, um, is learn skills, and prepare and become resilient and educate yourself on the, on the issues of matter. You know, the, the, the, the matter matters, the, the, the whole.

[01:29:50] You know, it's, it's no longer, we're, we're, Instagram isn't gonna save you.

[01:29:54] **Nate Hagens:** I can now see why our friend Gordon, uh, introduced us. So in addition to growing food, just because you're so articulate, can you suggest a couple other skills in addition to that?

[01:30:06] **Craig Tindale:** Welding, carpentry, um, uh, uh, electrical skills, just anything to do with the real world.

[01:30:15] **Nate Hagens:** Yeah, yeah.

[01:30:16] **Craig Tindale:** Um, you know, you, you can nominate, you can nominate, uh, uh, learn how to carve, like we're gonna, we're gonna end an end. We're gonna, it's funny, we came out of an artisan agent that we taught ourselves that, that that artisan agent over was over in the manufacturing and, and, and things would be made for us by now.

[01:30:40] And I think what we're doing is going back to that. Artists and age, that ability to, and that's what's gonna be a premium. It's human things, things made by humans, you know, everyone goes on about how, um, you know, an AO engine could create a blues record. You know, that's not what the world's gonna be about.

[01:31:02] The world's gonna be about humans creating things. That's, you know, the value of our extraordinary abilities will go up. Humans', love of humanity hasn't stopped, and our, our love of other humans will have to increase. You know, there's gonna be an extraordinary societal. Uh, cultural change where we, where, where we start to question it.

[01:31:25] Like, you know, I, I had some friends the other day, my wife had some friends the other day and, you know, I'm so much about AI and, and, and what, what, how, how it's gonna change. So she's become a user of, of, of, of these engines as well. And she went into a group of people and said, oh listen, you know, I use it for this, this and this.

[01:31:44] And I looked at her and said, you gotta be joking. It's the devil. You know? And so I think that's gonna permeate, I think, I think we're, we're gonna look back and say, where's the humanity gone in humans and we're gonna value it. Much more significantly. I think we've taken it for granted.

[01:32:03] **Nate Hagens:** Well, I fully agree with you on that.

[01:32:05] Uh, and I hope somewhere in there there's also a recognition of the humanity, uh, as part of the natural world and the, and the other species who have no say, uh, and aren't being able to be a podcast guest. What specific recommendations do you have for young humans in their teens or early twenties, uh, who might be watching this show and are becoming aware or are quite aware of the economic and environmental constraints to the global economy?

[01:32:33] **Craig Tindale:** I think it's gonna be the, they're gonna inherit the world, so become politically active. I think they can see some of the value changes that will be needed. Um, I think they need to change the world. I think that the world is gonna get handed over to them at some point, and they need to prepare, prepare for it.

[01:32:53] Um, again, they need to learn skills. Um, they need to be able to be resilient. They have to become emotionally resilient too. It's not gonna be a, it's not gonna be an easy world, you know, a lot of, I've got seven kids and you know, I, I've got a very strong relationship with each one of them. And each one of them, I've known all their friends since they were, you know, eight or nine or 10.

[01:33:17] And so we, when we, we have 21st and parties like that. Um, I get to talk, I had, I had nearly 30, 23-year-old young women the other day over for a 21st birthday party. And I talked to 'em all because I've been talking to all since they were na High. And, um, they've got some of the biggest challenges in front of them that they don't ever realize.

[01:33:42] You know, they're, they're, they're, they're, they're gonna have to live through a time where they become emotionally. Resilient and an ability to, to navigate this world. They're not gonna be able to, uh, I guess, rely on a situation where there's unlimited abundance. You know, they're gonna have to grow their own food, they're gonna have to be what the silent generation, the World War II generation, were.

[01:34:09] They're gonna have to revert to that. They're gonna be, have to be like our grandparents. So, you know what, what I say to is, you know, learn to get tough.

[01:34:17] **Nate Hagens:** Yeah.

[01:34:18] **Craig Tindale:** Which is the opposite of what we hear.

[01:34:20] **Nate Hagens:** Yeah. It is that, that goes against the grain of, uh, our cultural narrative. And it goes against the grain of the narratives out there on AI and productivity and super abundance and, and all that.

[01:34:32] Um, what do, what do you care most about in the world, uh, Craig, and I'm, I'm genuinely curious as to your answer.

[01:34:39] **Craig Tindale:** Well, first, my children and grandchildren, you know, families, everything, um, nature. I spent a lot of time in nature, like an

extraordinary amount of time in nature. You know, whether some of the things you were sending me emails and I wasn't responding is because I wasn't looking.

[01:34:56] Um, you know, I, I, I, I do my best thinking, you know, when I'm, uh, I'm, I'm, I, I'm nowhere near human beings. Um, I find it extraordinary, um, helpful to myan, you know, emotional stability and, and health to, to spend time in nature. That's where I live, where I do. Um, you know, and you know, one of the things that we did, you know, I talk about Monoterpenes before, you know, we as, as hominin or as primates, we've been sniffing these aerosol particles through our olfactory system, um, to, uh, I guess emotionally mediate ourselves for, I don't, six, 7 million years.

[01:35:44] And you know, it's no accident, you know, through, uh, shichi, which is the Japanese forest Yeah. Forest bathing through. Yeah, yeah, yeah. There is actual science to that. There's actual science. It's not just because you go out in the forest and you sit there and you feel cool and you feel great. Um, the, the particles in the air, the things that are in the air actually have real scientific meditative benefits.

[01:36:10] You know that when we, when we draw in these particles through into our system, they go straight into our bloodstream and that's why we feel better in nature. It's so, it's so, it's not just because we look around, they, oh, this is great. There's actually the, the nature medicates us. So, you know, that's where we have to get out.

[01:36:30] Like, you know, if you are looking at these screens, there's horrible things happening all over the world. But if I get up. Walk out the front door and go for a walk. It's the, the forest I walked through is, is the same as it was a hundred, 200 years ago. It's not, nothing's changed.

[01:36:49] **Nate Hagens:** Is it possible that we could have some sort of an 11th hour change in consciousness at a human homo sapien sapiens rite of passage level?

[01:37:03] Is that extremely farfetched or, I mean, we can't know. We can't understand, but what are your thoughts on there? Is there any,

[01:37:12] **Craig Tindale:** I think, I think if you look at the history of the world, um, I think we have to be guided and informed by that. You know, after a thousand wars or a thousand years or 2000 years, you know, we have to, you know, own up.

[01:37:27] And understand ourselves. You know, I always say, look, look, look at humans like a zoologist would look at it, you know, look at it, step back and look at the behavior of humans over time. Um, we don't learn things with our hard lessons. So yes, I think there is a pathway to what you're talking about, which is a, a more enlightened time, but that, that pathway is, is is by necessity, a very difficult one.

[01:37:56] **Nate Hagens:** The only way out is through, uh, is something I've been saying quite a lot recently.

[01:38:01] **Craig Tindale:** Yeah. I think that's a good, I think I'd add, add to through the Valley of Death. I, I, I honestly think it's

[01:38:08] **Nate Hagens:** the only way out is through the Valley of Death. Um, so this may seem like a, an or orthodox question, and I doubt that you watch my podcast, but if you could wave a magic wand and there was no personal recourse to your decision, what's one thing you would do to improve, uh, human and planetary futures?

[01:38:29] **Craig Tindale:** I take everyone's guns away.

[01:38:31] **Nate Hagens:** Okay. That's a good answer. Um, would not be popular in the United States, but

[01:38:37] **Craig Tindale:** I don't think they'd be popular because I think they're needed. But I think if you took 'em all away at once

[01:38:42] **Nate Hagens:** Yeah. It's a magic wand. Yeah.

[01:38:44] **Craig Tindale:** Yeah. I'm, it's a magic wand, so, you know, I'm, I'm not anti-gun because I understand this

[01:38:48] **Nate Hagens:** well, and then, and then with my magic wand, I would, I would do an accelerator on your wish and do the same for nuclear weapons, uh, the world over.

[01:38:59] **Craig Tindale:** Yeah.

[01:39:00] **Nate Hagens:** Yeah.

[01:39:00] **Craig Tindale:** I guess when I, when I said take away everyone's gums, I also, it, uh,

[01:39:06] **Nate Hagens:** all the way up to that level.

[01:39:08] **Craig Tindale:** All the way up to the levels, the tanks, the planes, the everything. Yeah. If you look at societies that actually didn't have a lot of conflict, that's kind of what they did,

[01:39:18] **Nate Hagens:** except they were peaceful and everything was kumbaya until they encountered another society that did have the tanks of the guns.

[01:39:27] **Craig Tindale:** Yeah. And then they got run over.

[01:39:28] **Nate Hagens:** This has been a just a, a wild ride, uh, with you and, and, uh, your expertise. Do you have any closing comments for people watching or listening who kind of understand and agree with, uh, your main thesis you've laid out here today? Any closing comments? Craig?

[01:39:47] **Craig Tindale:** We better do things very quickly.

[01:39:49] All the lifestyle that we're used to and the world that we're used to, the democratic world that we're used to, the free, free world that we're used to is gonna close down very, very quickly, and it's gonna close down in ways that you, you can't even imagine. And we need to, we need, we need to act now.

[01:40:07] **Nate Hagens:** Here, here.

[01:40:08] Uh, that is what I'm doing with this, uh, channel. Uh, and, and hopefully more people are starting to become aware and play a role. Thank you. I'm, I'm so glad we met. And, uh, please continue to learn and do your, uh, machine, uh, assisted polymath stuff and to be continued, my friend.

[01:40:26] **Craig Tindale:** Yeah. We'll have another one.

[01:40:27] Sounds great.

[01:40:28] **Nate Hagens:** If you'd like to learn more about this episode, please visit The Great Simplification dot com for references and show notes. From there, you can also join our Hilo community and subscribe to our Substack newsletter. This show is hosted by me, Nate Hagens, edited by No Troublemakers Media, and produced by Misty Stinnett and Lizzie Ani.

[01:40:51] Our production team also includes Leslie Ba Lutz Brady Hayan, Julia Maxwell, Gabriela Slayman, and Grace Brumfield. Thank you for listening, and we'll see you on the next episode.