The Great Simplification

Nate Hagens (00:00:00):

Greetings. Today, I am pleased to welcome my friend Lisi Krall to The Great Simplification. Lisi is a professor of economics at the SUNY University of New York in Cortland. She was a Fulbright Scholar, a SUNY Senior Scholar, the recipient of many awards, including the Chancellor's Award for Research.

(00:00:22):

Her most recent book, Bitter Harvest: An Inquiry into the War between Economy and Earth takes a wide-lens view of the evolution of humans through the agricultural revolution, all the way to the progression of capitalism, to today's economic superorganism.

(00:00:42):

Today, Lisi and I discussed the importance the agricultural revolution had on framing, setting the foundations of the structure of the global energy hungry system that we have today.

(00:00:56):

We also talk about the profound duality between humans and the other than human world. And both of these are actually core tenets of my work, so Lisi and I have been traveling parallel paths on this research.

(00:01:12):

Please welcome Professor Lisi Krall.

(00:01:26):

Lisi, great to see you.

Lisi Krall (00:01:28):

It's good to see you, Nate. Thanks so much for the invitation.

Nate Hagens (00:01:34):

You and I haven't spoken too often, but we've been in contact over the last 10 or 15 years. A lot of my current work on the superorganism and the metabolism of society is on the shoulders of you and John Gowdy, your writing colleague, and others. But you were academically way ahead of me in integrating humans, anthropology, energy, economic theory.

(00:02:04):

I would like you, in your own words, to do a long-form unpacking of the grand narrative of your work, your anthropological thesis of how humans arrived at this point.

Lisi Krall (00:02:20):

Okay, well that's no small task and I'm not sure-

Nate Hagens (00:02:25):

No, take your time.

Lisi Krall (00:02:26):

... and I'm not sure how useful grand narratives are. And I have a few notes, so I may look down at my notes to try to keep things moving.

(00:02:39):

But, as I look out at the economic landscape of our contemporary economic world, what I see is this world of an economy that is expansionary. It fluctuates between expansion and stagnation. It reliably produces inequality, and it expresses a profound duality, an alienation between humans and the biophysical world. And now we're reaching biophysical limits.

(00:03:28):

We can talk about it in terms of climate change. We can talk about it in terms of the sixth mass extinction. Almost any gauge we have, it's evident that we're reaching biophysical limits. And yet, the thing that captures my attention is that we don't seem to be able to do anything about it. So it is clear that we have a formidable system on our hands.

(00:04:00):

So I've been very interested in this system. I've been interested in how it started, its structure and dynamic. The duality that it embodies between humans... Or, what ecological economists call humanities, household, and Earth. And I'm interested in it in part, because it's not always been the case that human societies have been organized in this way, okay?

(00:04:31):

So let me give you a little bit further background. So that kind of is the contemporary kind of world I look out at and I have these questions that come up in my mind.

(00:04:46):

I've had the good fortune of having many great minds to influence my thinking, as all of us have. For me, some of the notable influencers on me are the human ecologists, Paul Shepard and Wes Jackson. And both of those people concentrated to a great extent on the agricultural revolution and what a profound change that was for humanity. So, I've been greatly influenced by their work.

(00:05:24):

I've also been influenced, as an economist, by Karl Marx and Friedrich Engels, and mostly by their methodology. Their methodology of dialectical and historical materialism, to me, is very, very useful in trying to think about economic systems, their formation and how they evolve over time. And so, I've tried to engage that kind of methodology, which is not always easy because it's kind of messy.

(00:06:02):

I've also obviously been influenced by evolutionary biologists, particularly of course, Darwin. And more recently, EO Wilson and David Sloan Wilson, and their work on sociality and the evolution of sociality. So I've been influenced by that kind of spectrum of people.

(00:06:28):

John and I had the good fortune of working together for many years. And we came together in part, because we both had this kind of predisposition to have a curiosity about hunters and gatherers. And also a curiosity and an appreciation for the profound change in human society, and the relationship of humans to the Earth that had taken place when the agricultural revolution had occurred.

(00:07:00):

So we came to collaborate with that kind of background appreciation. And our work on ultra sociality that we did together was a way of trying to create a story of what had happened to humans, to try to understand the processes and the unfolding.

Nate Hagens (00:07:25):

So, there's a common rebuttal when we talk about this grand arc of humans, that a lot of people think that what's happening now, the biophysical limits, the inequality and some of the other things you mentioned, is a fault of capitalism and the industrial revolution.

(00:07:51):

But I think your work suggests that that schism or that duality happened sooner.

Lisi Krall (00:07:58):

Yes. Absolutely.

Nate Hagens (00:07:59):

Much earlier in our past?

Lisi Krall (00:08:01):

Absolutely.

Nate Hagens (00:08:02):

Could you explain that?

Lisi Krall (00:08:03):

I look at capitalism as the legacy of the agricultural revolution, okay? So it's a system that...

(00:08:16):

So when I think about the agricultural system, I think about it as a system that has an expansionary dynamic that creates a duality. It has tremendous material interdependence, in terms of the people that participate in it. And I'm talking about grain agriculture.

(00:08:47):

And it's a system-

Nate Hagens (00:08:49):

What's the other type of agriculture other than grain?

Lisi Krall (00:08:52):

Well, I suppose you could be growing potatoes. That might be slightly different. Or cultivating fruits, or something like that, or tubers.

(00:09:02):

But grain, because it can be stored, and because it's amenable to sort of routinization and standardization, is a particularly interesting co-evolutionary plant with humans, okay?

(00:09:19):

So let me just go back and get into agriculture a little bit, and then I'll evolve into the questions that you have about capitalism and its relationship to agriculture.

(00:09:32):

So, agriculture is this complicated system. And I guess part of my curiosity about it also came about because John and I realized that we weren't the only species that practiced agriculture. There are many species of ants and termites that also cultivate. They cultivate fungi. And the remarkable thing about it was that the structure and dynamic of their economic life and their economic system is very similar to the structure and dynamic of the economic system that humans have.

(00:10:18):

And so, that led us to... Or, humans have an economic structure and dynamic to their economic life once they engage in agriculture that's similar to ants and termites. Because ants and termites that cultivate fungi have been at it a long time. Okay?

(00:10:37):

So this made us very, very curious about the formation of an economic system. And in particular, the formation of an agricultural system. So we started thinking about these ants and termites and humans, and thinking about what they had in common.

(00:10:56):

And one thing that they had... Because they're, I mean, obviously extraordinarily different species. But one thing that they had in common was an evolved sociality.

(00:11:08):

So ants and termites had attained the stage of superorganism when they began the practice of agriculture. And humans had attained culture, a high level of sociality,

employing a division of labor, et cetera, et cetera, when they began to engage agriculture.

(00:11:33):

So it occurred, certainly to me, that an evolved sociality was sort of a species characteristic that is somehow captured by an emerging agricultural system, and it expresses itself in a certain way. And the way that it expresses itself is with an elaborate division of labor. Okay?

(00:12:00):

So there's this commonality with ants and termites around their already existent sociality, that comes to be integrated in a system of cultivation that then expands cultivation, expands the division of labor, expands population. And there seems to develop a sort of feedback process that is foundational to an agricultural system, certainly around grains.

Nate Hagens (00:12:40):

I use the word superorganism a lot. Could you just briefly define it though, in the context of your academic work? What does superorganism mean?

Lisi Krall (00:12:51):

Well, it doesn't mean a biological superorganism in the sense that we're reproductively a superorganism. In other words, that we have different members of our community that reproduce, and their tasks develop around reproduction and that sort of thing.

(00:13:13):

It doesn't mean that, although you can have superorganisms that are biologically superorganisms in that sense. That also become, what I call, an economic superorganism.

(00:13:26):

So, my thinking about an economic superorganism is that it is a matter of the material kind of organization of a species. And it need not be...

(00:13:44):

I mean, humans, when they make the transition to agriculture, become economic superorganisms in that they're bound together in this system, where individual

autonomy is very much reduced. But they're not tasked in reproductive tasks and that sort of thing.

(00:14:04):

And the human genome probably… I'm not suggesting it hasn't changed since agriculture, but it hasn't changed measurably. So the economic superorganism I refer to is a material system that develops around certain species.

(00:14:25):

I guess I consider that something that evolutionary biologists ought to think about. Because what it does is, it expands the boundaries of evolution and how we think about evolution.

(00:14:41):

If you think about the profound changes that have occurred since the agricultural revolution 10,000 years ago, the planet has become populated by, now, 8 billion humans. And all other species are reduced. That influences the genetic endowment of the planet in profound ways. And that has, obviously, evolutionary implications.

(00:15:14):

And so, I actually think that the economic superorganism, the development of this system, is a major evolutionary transition for humans. It's another step in the evolution of our sociality, but I don't think evolutionary biologists necessarily agree with that.

Nate Hagens (00:15:40):

Let me ask you this. So the sociality of our species always existed, or for a very long time existed. And what happened was, we combined our sociality with surplus for the first time? And that's what kick-started the superorganism dynamic, yes?

Lisi Krall (00:16:02):

Sort of. But I think it's important to think about, not just combining our sociality with surplus, but that our sociality comes to be involved in a co-evolutionary process with annual grains that creates a system that gives rise to surplus.

(00:16:28):

So the division of labor, the ability of humans to do that, I think is an essential part of the story. And let me just elaborate that a little bit.

(00:16:41):

Think about humans as hunters and gatherers, and then think about external conditions that exist like the Holocene warming, the carbon left in the soils from the Pleistocene. Think about those things as kind of embellishers of the development of annual grains. Because we didn't develop annual grains. They were there. But the Holocene warming created an opening for their expansion.

(00:17:21):

So humans, who already had a capability of working together… And this isn't a very complicated story, really. They start to be more sedentary around these wild stands of grains, okay? They're still engaged in hunting and gathering, but now the complexity of their material world has increased, because the cultivation of annual grains is additive to what they're already doing. And probably by being more sedentary, their reproductive rates increase. Okay?

(00:18:04):

So as that happens, the division of labor is elaborated. They become more articulated with the cultivation of annual grains. And those annual grains are an expansive proposition. It doesn't take great human intelligence to look at a seed, see it germinate and realize that you could affect that process.

(00:18:38):

That's not great human intelligence, especially for human beings who, as hunters and gatherers, were extraordinarily observant of the natural world. Their strategy was to embed themselves in the rhythm and dynamic of the natural world. That's how they tapped into the ecologies and their movement to create their economic life, their material life.

(00:19:08):

So humans start cultivating a little bit, and cultivation takes off. Cultivation, annual grains have their own expansionary dynamics. So, annual grains can be stored. The more you start to depend on annual grains, the more you realize that they're annual. They can be stored, but you can't predict how they're going to grow for from one season to the next. So it becomes imperative to try to maximize production in any one year. Okay? That's your guard.

(00:19:51):

They're also an ecological disaster. They're bad for soil erosion. And so, another way that you counteract that is by further expanding your grain production.

(00:20:10):

So I'd say the annual grains themselves are kind of an expansionary proposition for humans. And humans come to be co-evolved with annual grains. The annual grains become... Like, the non-shattering of seeds that are selected for may have been selected for inadvertently, but they become part of the complex kind of agricultural enterprise.

(00:20:40):

And that enterprise, because those annual grains, the production can be routinized and standardized, and you can employ a division of labor around it, you get certain efficiencies that can develop there. And that, too, is expansionary.

(00:20:59):

So I think this system develops that is actually a universal system, that is utilized by a number of different species, but it's elaborated. It has its particular kind of characteristic with the co-evolution of humans and annual grains. But they get into the same kind of expansionary division of labor, greater interdependence, as ants and termites do.

(00:21:36):

But also, humans do have intelligence, and they have technological capabilities, and they have institutional capabilities. And so, they develop institutions and technologies that further elaborate that system.

(00:21:56):

And once that system gets going... And I think this is counterintuitive to people. It's a system that... All material systems are earthly systems, but it's a system that has, in some sense, been disembedded from the rhythm and dynamic as a more-than-human world.

(00:22:17):

You're no longer looking at migratory paths. You're no longer moving through different ecologies and garnering what you can in terms of berries ripening here, tubers there. You're no longer doing that. Your engagement has been reduced to the annual cycle of these grains and the whole dynamic that's set up.

Nate Hagens (00:22:50):

So the dawn of agriculture, when we started to grow and then store the surplus from grains, is that when hierarchy and inequality began in earnest in human societies?

Lisi Krall (00:23:07):

Exactly. They develop out of that surplus, yes. And then that hierarchy feeds back on the imperative to expand the surplus even more. Yes. So you get patriarchy.

Nate Hagens (00:23:23):

How so?

Lisi Krall (00:23:24):

Because, if you are... I mean, surplus allows for people who aren't engaged in agriculture to do other things.

(00:23:36):

So, surplus in agriculture allows people who aren't engaged in agriculture to become potters, to become philosophers, to become kings, to develop military operations.

(00:23:50):

It allows for the elaboration of, I guess what we might call, a more elaborate social division of labor to develop around that agricultural surplus. And then there's always the imperative. They have their own dynamic of expansion, the imperative to keep that surplus going.

(00:24:15):

So yes, it adds to the expansionary dynamic.

Nate Hagens (00:24:18):

Okay. Now begins the part of the interview where I ask you very difficult questions that I've been thinking about for a long time.

Lisi Krall (00:24:29):

Okay.

Nate Hagens (00:24:31):

Could equality and a non-hierarchical, non-patriarchal human society exist in tandem with large amounts of surplus? Or does surplus itself imply that hierarchy and inequality are part of the system?

Lisi Krall (00:25:00):

Well, let me give you a long-winded answer to that.

(00:25:05):

Capitalism, which is the global economic system now, as I've said, is the legacy of the agricultural revolution. The form of surplus changes with capitalism, but the fact of surplus doesn't change.

(00:25:24):

Surplus in capitalism revolves around the extraction of surplus value or profit, and then the whole accumulation dynamic associated with that. Okay?

(00:25:39):

So it's an expansionary system, because in competition there's always this imperative to keep investing and get ahead of the game. It's a tremendously interdependent system, and it's interdependent in a very specific way. And that is that you have capitalists that are owners of the means of production and workers that are not.

(00:26:11):

And that right there sets up... I mean, that's how the system...

(00:26:17):

You can think about profit an institutionalized form of surplus, but that's how the system of profit, in part, gets its money, from exploitation of workers. That's a very Marxian interpretation, but I think it's as good as any.

(00:26:37):

So if you asked me, "Can you have a system of surplus without hierarchy?" I guess the answer would be, theoretically yes, you could have a system of surplus without hierarchy. But it couldn't be a capitalist system, because a capitalist system is, by definition, a system of hierarchy.

Nate Hagens (00:27:04):

I meant from the evolutionary repertoire of homo sapiens, the plasticity and group selection, competition, cooperation that is hardwired in all of us.

(00:27:21):

Could we have a system, in the presence of huge exosomatic surplus, the way we have now? Or even half of what we have now? Could we have a system that wasn't hierarchical, with massive inequality?

(00:27:41):

I guess I'm asking, is it the surplus that drives these things? Or is it the system that drives the surplus?

Lisi Krall (00:27:50):

It's the system that drives the surplus. So that's not to say you couldn't have surplus. Right now, it's the system that drives the surplus, and things evolved in a certain way to get us where we are now.

(00:28:15):

"Could we theoretically have a surplus system that wasn't a capitalist system?" Yes, I suppose we could. But our particular evolutionary trajectory did not lead us to that kind of system. Instead, it led us to the kind of system that we're confronting now.

Nate Hagens (00:28:42):

Well, it didn't really lead us. The system we have now was selected for, which is different words to represent the same concept, right?

Lisi Krall (00:28:53):

Yes. We definitely got involved in a system that elaborated in a certain way and landed us here. And you can kind of see it through, In a simplistic sense, the expansion of markets and a market society.

(00:29:13):

So you get agricultural surplus. It elaborates the division of labor. Now you get potters and all kinds of other things going on. They then trade. So you can think about initial markets as an institutional arrangement for trade, okay? That makes some sense. I mean, Adam Smith talked a lot about that.

(00:29:40):

And then you get markets that develop where you get merchants that want to make money off of the trade. So they want to buy cheap and sell dear.

(00:29:54):

So that's kind of an evolution of the market system. From this system of agricultural surplus, to the expansion of the social division of labor and the production in an economy. Then to the development of markets as a way to exchange. Then to the rise of the merchant class that is trying to buy cheap and sell dear.

(00:30:19):

And then a further evolution of that is that buying cheap and selling dear feeds back on production itself. And the merchant becomes, essentially, a capitalist. He no longer is just trying to buy things from petty commodity producers to exchange and make money. He is trying to produce products to have him consistently available, and make money producing for less than he can sell them for.

Nate Hagens (00:31:05):

Embedded in this superorganism dynamic are multiple positive feedbacks that keep it going and accelerate it.

Lisi Krall (00:31:11):

Yes, exactly. And you can, in a sense, think about the evolution of capitalism as something that emerges out of these positive feedback loops.

(00:31:26):

It's an institutional elaboration, if you will, of this kind of system.

Nate Hagens (00:31:33):

So you've mentioned ants and the social insects, and you just mentioned a Marxian framing, that some people own the means of production and the workers don't.

(00:31:48):

Is there an analog in the social insects to that, or not quite?

Lisi Krall (00:31:53):

Well, not an analog that I would make, or that I would elaborate on. I mean, they don't have hierarchy and ownership in the way that we do, although they do have queens and workers, and workers that clean out the waste products.

(00:32:11):

But I think that's anthropomorphizing.

Nate Hagens (00:32:16):

So in nature, you've likened human societies and our economic superorganism to superorganisms in the social insects.

(00:32:30):

What happens to those superorganisms? Do they keep growing under a positive feedback? Do they reach a limit and stop? Do they hit a wall and disappear and collapse?

(00:32:44):

What happens to ants, termites and the social insects superorganisms?

Lisi Krall (00:32:51):

Well, I think there probably is collapse if, for example, leaf cutter ants run out of leafs, they're going to collapse. Okay? So I think there probably is collapse.

(00:33:02):

They grow to tremendous size, and the colonies last a long time, but they're relatively small and they can relocate a colony by having a queen fly to another location and start another colony. So they have that option to do that. So, I don't know...

(00:33:26):

I mean, the leaf cutter ants, for example, evolve in the tropics where there's a lot of material that they won't run out of. But I don't know how long the colonies last. I imagine it's variable.

Nate Hagens (00:33:44):

Well, let's just say that... I don't know a lot about the social insects, but let's say there's a colony that has 100 million individuals, and it's quite successful and has grown for a long time.

(00:34:01):

But it's approaching its limits, wherever it is, and the queen flies away and starts a new colony. So that new colony will continue to grow and expand, but from a much smaller starting base. So it's almost like expansion, but starting at a lower level.

(00:34:20):

Could there be any analogy of that to human systems? I guess we can't fly a queen somewhere else and start over.

Lisi Krall (00:34:29):

No, but I think there probably is some analogy in the sense that, once complexity and expansion reaches a certain point...

(00:34:42):

I mean, think about the process of globalization and now the process of relocalization. I think there is this tendency to revert back to more localized enterprises as things get more complicated and out of control, probably.

Nate Hagens (00:35:07):

So in our circles, ecological economics, there is a growing movement called degrowth, who is recognizing the biophysical limits, climate change, inequality, and... They don't often use the word superorganism, but the tea leaves are kind of clear.

(00:35:33):

Do you think it's possible, given your analysis of our evolutionary nature as evolved primates, to voluntarily degrow as a culture, or as a species?

Lisi Krall (00:35:47):

We've got a collective problem, and the problem is embodied in a complex economic system. And that complex economic system is a system with an inherent dynamic of expansion, profound interdependence, and it has set up this duality between humans and Earth. Okay? That's the way we're organized. We're contextual, we're organized in that way.

(00:36:22):

So in order to get to a degrowth, in order to downsize, in order to entertain limits, then we have to be willing to confront certain basic parts of that system.

(00:36:47):

And I don't know whether we're capable of doing that, because confronting foundational parts of the system means starting to unravel a tapestry that's very complicated. And I think we don't quite know how that unraveling is going to go.

Nate Hagens (00:37:10):

And when you say we, the we is not you and me, it's the voters, or the leaders? Who would be the we that would need to unravel that?

Lisi Krall (00:37:24):

Well, we would have to collectively decide… And I guess that's the voters. The individuals would have to decide that we're going to implement a different kind of system.

(00:37:39):

So if you're asking me… I mean, I think we can enact policies and have movements that make things more ecological. We can make this system more ecological.

(00:37:56):

"Can we create a system that stops expanding?" That's another question altogether, and I'm not sure that that is that easy to do.

(00:38:17):

Now, eventually it will stop expanding. So the question is, "Do we have to collapse?"

Nate Hagens (00:38:27):

Or simplify, which would be collapse light, where we bend instead of break.

(00:38:34):

You and I were talking the other day about how the general person aware of the global meta crisis underappreciates the strength and the momentum of the economic superorganism, and how difficult it is to change.

Lisi Krall (00:38:56):

I think we have a system that's been in play in various forms for 10,000 years and it's a powerful system. And I think people underestimate how powerful the system is.

(00:39:10):

And it was given... Let me talk just a few minutes about fossil fuel, because I think you have an emphasis and a curiosity about fossil fuel, and fossil fuel is important.

(00:39:26):

Fossil fuel did not create capitalism. Capitalism was a fully formed system before we began production using fossil fuel. In other words, the system of profit, and the expansionary dynamic, and the movement to a market system was already in play when we began to use fossil fuel.

(00:39:54):

But there is no question that fossil fuel changed the dynamic of the system. In a simplistic sense, it kind of moved us from petty commodity production, ultimately to the rise of the corporation and massive industrial enterprises. And it really creates the kind of contradictions in the system that, for example, Marx identified. That you get this expansionary system, but the system that generates inequality and the system that can go into depression under consumption and crisis. Okay?

(00:40:40):

So the duality that already existed between humans and Earth, it's exacerbated with fossil fuels. Because then this institutionalized form of surplus in profit starts to seem unlimited.

Nate Hagens (00:41:06):

What do you say to the people that think that climate change and our economic problems are due to Exxon and Shell and fossil fuel companies, or corporations more generally?

(00:41:23):

How does that fit into the hierarchy of your story?

Lisi Krall (00:41:27):

I think the fossil fuel industry is playing the game according to the rules of the game. Okay?

(00:41:36):

"Are they deceptive? Have they been immoral? Is there greed?" All of that is clear, but that doesn't negate the fact that they are corporations that are functioning on the basis of profit and trying to make money and survive in this economic system.

(00:42:06):

And it doesn't negate the fact that we have a massive energy problem. We are highly dependent… And you know this more than anybody else, because you've elaborated it extensively.

(00:42:24):

We are highly dependent on this concentrated carbon in the form of fossil fuels, and it's not so easy to get off of that. Okay? So fossil fuels give us the illusion that things are unlimited, but even they are not unlimited.

(00:42:52):

And so, I wouldn't blame the fossil fuel industry. I think you can hold them accountable, but you still have the problem of a massive economy with 80% of its energy coming from fossil fuel. Blaming the fossil fuel industry is not going to change that reality.

(00:43:14):

In order to change that reality, you have to know what the limits of renewable energy are. You have to know energy return on energy investment. And you have to understand that we're not going to do anything about climate change unless we have absolute limits on the extraction of fossil fuel, a hard cap on carbon.

Nate Hagens (00:43:52):

Those sorts of things would be a cap on economic growth. So at the bottom of the academic, intellectual scaffolding that you're building, or that you have built, is the issue of governance.

(00:44:09):

And, is governance that would succeed in doing some of the things you've just mentioned, incongruent with this amount of surplus…

(00:44:23):

Is governance without surplus and agricultural-based systems even possible?

Lisi Krall (00:44:29):

You mean governance that will downsize? I'm not sure I understand your question entirely.

Nate Hagens (00:44:39):

Yeah. Well, let me ask it a different way. Can we use collective awareness, knowledge, and concern for the natural world to create governance or new structures that reign in the superorganism, or direct its movement?

Lisi Krall (00:45:02):

We can, but we have to become a lot more enlightened about what's going on. We have to be a lot more discerning.

Nate Hagens (00:45:13):

And what does that mean?

Lisi Krall (00:45:13):

Well, it means, for example, that we understand that our basic challenge...

(00:45:20):

Okay, we have a dialectical tension that's emerged. And it's a tension between an expansionary economy and an economy that's reaching biophysical limits. It's a tension between an economic system that wants to function as if it's not an earthly matter. At the same time, it is.

(00:45:50):

So we confront this kind of dialectical tension in the system, and it's very, very hard to come to terms with how we resolve that.

(00:46:04):

I think expanding our understanding of things to the point where, we realize that what we're really trying to do here is to reconnect the economy with the rhythm and dynamic of the more-than-human world. We're trying to re-embed ourselves in that, we're not just trying to attain sustainability in some vague way.

(00:46:42):

And doing that requires limits. Yes, we're trying to end growth. But a nuanced and an expansive way of looking at that is by saying that, "We're trying to become an ecological species and move out of a system we've evolved into that is highly unecological."

Nate Hagens (00:47:11):

So on this topic, you discussed the idea of determinism in your most recent book.

(00:47:20):

In your opinion, how much agency do we really have as individuals, and in aggregate collections of individuals, to make change at a larger scale?

(00:47:34):

Do you see us as active agents influencing the economic superorganism system? Or, rather as smaller parts playing a role in a much larger story than ourselves?

Lisi Krall (00:47:50):

We are definitely captured by a system where we play a certain role, and we live in the contradiction of that all the time. Okay?

(00:48:08):

You can say, you know we need to stop expansion, and yet you hope that your portfolio expands so you have a good retirement. Okay?

(00:48:21):

You have to work, and the employment that you get is employment that is involved with companies that are making profit, and profit is expansionary. Okay?

(00:48:39):

So, we live with individual contradictions.

(00:48:43):

Now, having said that, in some sense we're a Pleistocene species that has become an economic superorganism. So we have this contradiction in our evolutionary history. I say we are both Homo sapiens sapiens and Homo sapiens agriculturali. We're both of those.

(00:49:07):

So we feel this tension and contradiction both in our individual lives, and it's obviously apparent to us collectively. An economy that continues to grow against a world in which we're confronting by our physical limit and we can't seem to stop it. So, we're dealing with those kind of contradictions.

(00:49:34):

"What difference can we make?" We have to get our story straight about certain things. For example... And you and I have talked a little bit about this.

(00:49:50):

We cannot have the attitude that our energy transition here is an energy transition to expanding renewable resources and having everything go on as usual.

(00:50:13):

First of all, that's not going to happen. And there are technological reasons why that won't happen. And so, we have to realize that we're caught up in an ideology that's outdated. And that's the ideology that technology can solve our problems.

(00:50:36):

So this movement to renewable energy economy is, in some sense, caught in an old... It's just the expression of an old ideology. I don't disagree with moving towards renewable energy, but what we have to realize is that our energy is limited. It has to be limited. We are going to have a lower energy future.

(00:51:07):

And unless people can think about what is happening in those terms, then I don't think that we're going to be able to move towards the kinds of changes that we need to make. It's very, very difficult to replace fossil fuel. You know that more than anybody.

Nate Hagens (00:51:31):

Well, there's two reasons that technology can't solve this problem. One is, technology requires energy. And two is, technological impacts impact our biosphere and our Earth's ecosystems, which are running out of sync capacity.

(00:51:49):

So do you really believe, or do you wish, that if 3%, 5%, 10%, 18% of humans understand that we're headed towards a future where there's going to be less material surplus, that we might make wiser decisions on preparing and responding to that?

(00:52:15):

Or do you think as we approach that cliff's edge as it were, that denial and fear will become predominant? Because it's a double-edged sword. We need to learn and be aware, but at the same time that awareness causes anxiety and fear.

Lisi Krall (00:52:36):

I think anxiety and fear might capture the day. I like to think that enlightenment is possible, and sufficient enlightenment to actually make meaningful change. But I'm not sure about that. I'm not sure.

(00:52:59):

But in a sense, it's not a question I ask. It isn't a question I ask. That's not a place I go. I don't, because I don't want to get caught up in whether I have to be hopeful in any of that. I am only caught up in, "What can be done now to try to bring awareness to where we stand?"

(00:53:29):

And I am for engaging any movement that tries to get us out of the path, the trajectory we're on. But that starts with basic understanding and enlightenment, that I think a lot of progressive people who are moving toward change don't really understand very well. You know, basic calculations about EROEI.

Nate Hagens (00:53:59):

That's the genesis of this podcast, Lisi. I don't have the answers, but I want to help people understand this economic superorganism dynamic, because a lot of the doors that we're rushing towards really have red X's drawn through them. They're brick walls. "Let's solve climate change by scaling renewables or buying electric vehicles." These are micro, old story responses to what we face.

(00:54:31):

So I think the more people that understand the systemic human organism that didn't start with fossil fuels, it didn't start with capitalism. It started when we started agriculture of grains 10,000 plus years ago. This is the manifestation of that story.

(00:54:53):

So I'm in my next little video, I think I'm going to refer to it as the emergent Heisenberg. The Heisenberg Principle is that, as a scientist you can't observe something without impacting it.

(00:55:09):

So I wonder if becoming aware that we are a economic superorganism, if that awareness itself changes the direction of the superorganism. I ask myself that weekly. I think about that. And of course I don't have an answer.

(00:55:29):

Do you have any speculation on that?

Lisi Krall (00:55:32):

Well, that's a really complicated issue. It's a very complicated issue, because when you get dialectical tensions developing in the system, the resolution of those dialectical tensions is a complex manner and a matter.

(00:55:51):

And I can't answer whether awareness of it will change the dynamic. Awareness of it, and its complexity, will help us to target what we do. I think it can help us target what we can do.

(00:56:12):

Whether what is capable or what is possible to happen in the system will be sufficient to change the system, I have real questions about. And I don't know what that means, ultimately.

(00:56:30):

But I think without awareness, we can't target what we do individually or what we try to do collectively. We can't be as strategic as we need to be. And I think being strategic is really important when things are moving so quickly and we are really standing in a very problematic place.

Nate Hagens (00:57:06):

The closing quote in my superorganism paper was Ilya Prigogine, "that at times of crisis, islands of coherence can shift the entire system".

Lisi Krall (00:57:20):

I'd like to believe that's true. I love that quote too, and I'd like to believe that that's true. I don't know if it is.

(00:57:30):

But there is one thing that we know for sure, the center will not hold. The dialectical tension that we confront right now is not something that can go unresolved. Okay?

(00:57:48):

And so, I think we can count on that. It has to be resolved. And it's a complex matter.

(00:58:01):

Let me just draw an analogy. I mean, maybe it's taking things back to some kind of mundane level where we shouldn't take them back to. But in ecological economics, there's been a tremendous amount of intellectual capital focused on critiquing neoclassical economics.

(00:58:23):

And I often think that that's really a case of... I don't know if it's misplaced concreteness or what it is, but it's a case of believing that the way that we describe things is necessarily the reality of things. The economic superorganism exists independent of neoclassical economics.

(00:58:53):

Now, whether neoclassical economics has influenced it and its course, I don't know. But I wish people would spend less time doing that, critiquing that, as if we can critique it enough and get on top of it enough, the system will change.

(00:59:14):

I wish we'd spend less time doing that and more time really talking about the evolution and dialectical tension of the system in a more expansive way.

Nate Hagens (00:59:30):

At the end of the interview with John Gowdy, your colleague, I asked him, "What can be done?" And he had just gotten done talking about the superorganism, and our evolutionary trajectory, and termites, and surplus… A lot of the things that you've said, obviously.

(00:59:50):

And he said, "Well one thing is, we need to vote all the Republicans out of office."

(00:59:54):

And it was a missed opportunity for me, because just like you just said, if we debunk neoclassical economics, the metabolism of the superorganism will still exist. So voting all Republicans out of office isn't going to change anything with the underlying dynamics of an energy hungry metabolic superorganism.

(01:00:19):

It might be good for some and bad for some humans in what they care about, but the underlying social, human-insect metabolism isn't going to change because of that.

(01:00:32):

Do you have any thoughts on that? I'm sure John doesn't mind me bringing that up here, because we're friends. But what do you think about that?

Lisi Krall (01:00:41):

Well, I don't think voting the Republicans out of office is going to… I agree with you. That's not going to change things. And Republicans aren't our only problem, okay? Because we have Democrats who are not enlightened in the way that we would like them to be enlightened about our circumstances.

(01:01:04):

For example… And you and I talked about this the other day. Joe Biden, who has all these energy policies in the Inflation Reduction Act and everything to promote renewable energy. At the beginning of his presidency, he goes and gets in an electric Humvee and rides around like we're on track to change things, and leases for fossil fuel production are still being given out.

(01:01:36):

And moreover, if Democrats aren't more enlightened than being able to say, "We need a hard cap on carbon." Unless we get that, we're not doing what we need to do.

(01:01:55):

So Republicans aren't our only problem, which leads me to say, I sort of agree with you. It's a complicated system, highly evolved and articulated around fossil fuel, and we have to face what that means.

(01:02:19):

And what that means is, we're going to have less energy. If we want to do something about climate change, we're going to have access to less energy, or less surplus, as you say. And that's the reality. And I don't think the Democrats are confronting that reality any more than the Republicans are.

Nate Hagens (01:02:40):

They are not.

Lisi Krall (01:02:42):

In fact, sometimes some of the Republicans... And this is horrible to say. Sometimes, some of the Republicans who say, "We can't manage without fossil fuels."

(01:02:55):

Well, I think it's probably true that we can't manage to have the expansionary kind of dynamic that we have going on now without fossil fuels. I'm not sure we can.

Nate Hagens (01:03:08):

No, we can't.

Lisi Krall (01:03:09):

It's not popular to say that. I'm sure I'm not going to get any marks in my favor for saying that, but it's true.

(01:03:20):

So it's not just the Republicans, it's the Democrats too. "How do you change that kind of thinking?" It's a worldview change.

Nate Hagens (01:03:31):

You and I have talked a bit recently, and we talked a lot like 10 years ago, but there's been some years in-between where we were out of touch. And I'm smiling, Lisi, because

you've arrived at the same conclusions that I have, independently. And it makes me feel less alone, that this situation we face is beyond politics and there are no easy answers.

(01:04:06):

We can infer that we're going to have to use less energy in materials in the future. We don't know how that point is going to arise and how we can influence it. And yet, we have to try, because we don't know what could happen. What evolutionary trajectories of humans, interacting in an era of surplus, could create…

(01:04:31):

I mean, is there a possible that we have a new evolutionary trajectory here, that the dawn of agriculture kicked us into an economic superorganism? Maybe we could have a new cultural evolution towards something else.

(01:04:46):

Or, at least 50 years from now, 100 years from now, the descendants of people alive today could be living a different human existence.

(01:04:56):

Do you have any thoughts on that?

Lisi Krall (01:04:58):

Well, I think what going back to the agricultural revolution and talking about hunters and gatherers and thinking about hunters and gatherers taught me, was that it's really important to contemplate the complexity of the human being both individually and collectively in relation to Earth. It's important to think about what our place on Earth is.

(01:05:38):

That's kind of a spiritual question. It's a practical question, but it's also a spiritual question. "What are things going to be like if this kind of magic that we inherited, that we have evolved in, this numinous more-than-human world is eliminated entirely?"

(01:06:22):

I think those are questions that people need to think about. And if you think about those questions and you don't want to see what that's going to be like… Because that's

where we're headed quickly. Then you need to think in constant terms of limits. Limits. Limits.

(01:06:56):

We are not in an age of expansion. We have to be in an age of limits. And unless we can start to think in those terms, and think in terms of our relationship to the more-than-human world, I think we probably will not do what we need to do.

(01:07:23):

I think we have to constantly keep those things in the back of our mind. And I know that might sound kind of wishy-washy, but it's true.

Nate Hagens (01:07:33):

Yeah, I agree with that. So, can you bring that down to an individual level? Our viewers and listeners...

(01:07:43):

You've been working on this as a career choice your entire career, integrating the economic superorganism, biophysical limits, the ecosphere with your work with Paul Shepard and Wes Jackson.

(01:07:58):

What sort of personal advice... Many of the listeners of this show are aware of these things. What sort of personal advice would you give to people who are aware of the economic superorganism, yet they want to live their life and play a role in our situation?

Lisi Krall (01:08:19):

Look into the black hole, constantly. Look into the contradictions. Look into what we're confronting, and don't be afraid of looking into them deeply. Don't be afraid of engaging them. Don't be afraid. Don't let yourself sink into despair at the same time.

(01:08:50):

Sometimes enlightenment only comes when you can look at something squarely and size it up for what it is, and then there's a certain liberation in what you're able to start thinking about. You're able to start thinking in different terms once you do that.

(01:09:13):

Don't get caught up in whether there's hope. Look into the contradictions, look into the black hole, engage it fully. And then don't let despair overpower you. Continue on. Make your choices about your activism and what you do based on what you come up with when you size things up.

(01:09:44):

And I guarantee, in terms of what we're talking about, you will have to confront this proposition of limits. Okay?

(01:09:55):

And we try to hedge that, "We can have development without growth." Well yeah, we can. But unless there's infinite, no diminishing returns to technology, that's limited. We have to confront this limited world, that we're starting down.

(01:10:24):

And there's practical things you can do. For example, I'm involved in a lot of conservation work. I'm trying to stop the development of somebody who wants to put in a massive resort up a small river valley in Wyoming, and he's saying he's doing it in the name of conservation.

(01:10:52):

I've been involved, two years, in a project trying to stop it, trying to speak to the migratory paths of animals. Have I been successful? Not altogether, but I think that kind of work is good work and it's work people can engage in. You can engage in those kinds of localized community-oriented enterprises, movements. But you have to see clearly what you're doing.

Nate Hagens (01:11:27):

Are you still teaching? And what would you say to college age humans who start to understand the synthesis of climate, anthropology, energy resources and limits?

Lisi Krall (01:11:41):

I would say to them what I just said, don't despair. Embrace the world in all its magic. Try to understand it at a very foundational and critical level. Lead a thoughtful life.

(01:12:01):

And understand that what has happened in the past, that your goal in life is not to be better off than your parents. That is not your goal. That is not your future, because you're at a different moment, and you have to rise to the historical moment.

(01:12:24):

That's what I tell my students all the time, and they find themselves at a very important historical moment. And I am almost at the end of my teaching career.

Nate Hagens (01:12:35):

What do you care most about in the world, Lisi?

Lisi Krall (01:12:39):

I care most about, I guess, compassion. And I also care most about, right now, I think trying to fight for what remains of the wild impulse of the planet.

(01:13:02):

I think that's what I care most about.

Nate Hagens (01:13:06):

Me too. Me too.

Lisi Krall (01:13:08):

Good. Well, I'm glad we agree on that.

Nate Hagens (01:13:12):

Yeah, we deeply agree on that. Most of my guests agree on that.

(01:13:20):

Here's a question I ask all my guests, and I'm really looking forward to see how you answer this, because it's not so implausible that you might, one day, have such a moment.

(01:13:34):

If you, professor Lisi Krall, had a magic wand and there was no personal recourse to your decision. What is one thing that you would wish, with that wand, to improve human and planetary futures?

Lisi Krall (01:13:52):

I can only have one?

Nate Hagens (01:13:57):

Well, if you have a couple of key points you'd like to make, I'll give you more than one.

Lisi Krall (01:14:04):

I would wish that we would be able to see the end of the ideologies surrounding our economic system. I would hope that we would be able to see that the system of profit is not sustainable, and that trying to move in a direction away from it is not going to impinge on individual freedom. It's going to expand it. It's going to expand the richness of life, not diminish it.

(01:15:00):

I guess I would hope for that.

Nate Hagens (01:15:02):

Well, let me ask a follow-up to that. Is it an ideology that is at fault? Or is it a biology, paired with surplus, that we have to change?

(01:15:17):

I'm still not clear on the distinction between the ideology in service of the superorganism, or the biological momentum of a social species finding surplus and then building economic structures… Not consciously, just the same way an ant would build a subterranean highway.

Lisi Krall (01:15:39):

That's actually a really good question. It's a really profound question.

(01:15:51):

I think we got here by accident, not intent. And I think we got here by peculiarities of our evolutionary dynamic. And not just individual evolutionary dynamic, but collective. How we evolve collectively, okay?

(01:16:14):

So, I don't think getting here was an aberration. And this is the hard thing. Getting here wasn't an aberration, this is where we arrived. And I can think of, which I have, the story of how this might have happened.

(01:16:36):

It's not an aberration, but we arrive here as a bit of an ecological misfit, nonetheless. And I think if anything, what it demonstrates is that evolution doesn't see ahead, and it's not perfect. It's not perfect.

(01:17:04):

So I think the challenge is... And we develop ideologies around that. Around rationalizing, and justifying, and extending where we ended up. But I think we have to go deeper into our evolutionary history and understand that we are both of the Pleistocene and of the Holocene. We are Homo sapiens sapiens, and we are Homo sapiens agriculturali. That is the peculiarity of our evolutionary history. Okay?

(01:17:46):

There is no question that that will create formidable challenges for us both individually and collectively. And so, the struggle that we're engaged in right now is predictable.

(01:18:11):

So, "Will the ideology matter?" Yes, the ideology will matter I think somewhat. Whether a change in ideology can resolve the dialectical contradiction that we find ourselves with, I'm not sure. But we can only go about changing ideologies, trying to develop deep ecologies, strategically looking at what we need to do. Not having our head in the clouds, instead looking into the black holes. That's what we have to do.

(01:18:48):

And so, we'll see what happens. Clearly, I don't have all the answers.

Nate Hagens (01:18:59):

Neither do I. But you're trying to describe the problem and help other people understand it, which I think is a very important step.

(01:19:10):

Thank you for your time today and for your lifetime of scholarship on these issues.

(01:19:17):

If I have you back in the future, now that we've done kind of the preliminary Lisi Krall's worldview, is there any topic that you are currently really passionate on, relevant to human futures, that we could do a round two on?

(01:19:34):

Do you have any speculation on that, or ideas?

Lisi Krall (01:19:39):

Well, we could expand a discussion of methodology, which seems kind of weird. But we could expand our discussion of the importance of thinking in evolutionary and dialectical terms.

(01:19:59):

We look for simple answers. We look for simple stories. But there's something to be garnered in more complexity that I think is important. So we might want to talk about that.

Nate Hagens (01:20:14):

All right. I've written it down as a soft circle.

(01:20:19):

Thank you so much and good luck with battling the Wyoming development. And we'll talk soon, my friend.

Lisi Krall (01:20:29):

Okay, Nate. Thank you so much. I appreciate it.

Nate Hagens (01:20:34):

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