

The Great Simplification

Nate Hagens (00:00:00):

Welcome to the second episode of Reality Roundtable. Joining me today to discuss ecology and what an ecological civilization might look like, are my friends Bill Rees, former Professor of Ecology at the University of British Columbia in Vancouver, Nora Bateson, who runs the Bateson Institute, as well as Warm Data Labs out of Stockholm, Sweden. And Rex Weyler, original co-founder of Greenpeace, activist, journalist. In a broad and deep discussion, it was fascinating to see how people agree on deep ecology and the ecological predicament of human overshoot, yet take wildly different perspectives in how they view it. From bees and apples to overshoot and population, I hope you enjoy this ecological round table. Please welcome Bill, Nora and Rex.

(00:01:14):

Welcome my friends, Nora Bateson, Rex Weyler, Bill Rees. Good to see you all.

William Rees (00:01:22):

Good morning.

Nora Bateson (00:01:23):

It's nice to be here.

Nate Hagens (00:01:28):

One of the reasons I'm doing this Reality Roundtable is I'm blessed with a universe of kind ecologically literate, good humans like yourself, and I'm not bringing on people I don't know to have contentious dialogues. We're all friends, and I think there's something to be said for that. So today's topic is going to be ecology, something that all four of us care a lot about and know a lot about, but that is counter to our cultural and educational system. I studied Chinese and business in undergrad, finance in graduate school, and I was in my mid thirties when I got my PhD. I was exposed to ecology, like an actual class on ecology. And now it's like everything in the world revolves around this. Why isn't this a central part of our entire social discourse? I would like to give the mic to each of you in turn to first start with what is ecology, your own definition or the lens with which you view ecology? Why is it really relevant to our world? And maybe offer a few thoughts on your own particular flavor of your viewpoint or work on ecology. Professor Rees, why don't we start with you?

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William Rees (00:03:00):

All right, Nate, thank you very much. Ecology, I suppose, is a well known term, but most people have no clue what it really means. So I'm going to give you the kind of academic definition first and then tell you what I think it's really all about. So if you go to a textbook, ecology is a discipline. It's a scientific discipline within biology in which people study organisms in their habitats, and particularly the relationships and interactions between organisms and their habitats, both other organisms and the biophysical environment. Those relationships or interactions are basically defined in terms of energy and material flows, and that gives every ecosystem a defined structure and function, which is studyable, quantifiable and all of that. So that's basic ecology as it's taught still in most of our universities.

(00:04:01):

But to me, there's a great deal more to it than that. And four terms come to mind that I think are really important to understand, although they're completely outside the vocabulary of our civilization. The first is emergence. Life is an emergent phenomenon on earth. It emerges spontaneously from the primordial soup, as it were, in the presence of energy gradients, both chemical energy and ultimately solar energy.

(00:04:32):

The second principle that I think is utterly essential to understand here is the concept of self-organization, that living systems self-organize and self produce because they can. They're in an environment which is filled with gradients of energy and material, and that enables them to emerge in a self-organizing way to take advantage of the energy, that is to say the capacity to do things, that is in those environments.

(00:05:03):

The third principle is something 99.9% of even scientists have not heard of, and that's called a dissipative structure. Ecosystems are dissipative structures. That is to say they feed on gradients of energy, in this case, solar energy as it's an ecosystem. And they dissipate that energy as low grade heat into the environment, but they use it to construct themselves. This goes back to self- organization and self production. They use that energy to produce themselves and a very simple material is extracted from their environments. So if you think of green plants, they use solar energy, they dissipate it, but in the process they are using water and essential nutrients extracted

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from the soil to self-produce. They produce biomass, plant biomass, which then becomes the basis for the energy flows through the entire ecosystems. All animals are dependent on plants. Animals are also dissipative structures. We dissipate the biomass energy accumulated by plants.

(00:06:11):

And the fourth principle I think that's really important to understand here is that all of this occurs through an evolutionary process. So natural selection is at work. So when you put these four things together, emergence, self production or self-organization, dissipative structures and evolution, one gets a picture of the ecosphere as a very thin layer of dynamic living, throbbing substance. In constant self-production, every gradient becomes an opportunity for evolution to occur. So an example, animals are made possible, that is to say animals such as ourselves, mammals, because of the existence of green plants. Green plants survive on the gradient of energy represented by solar energy. But once plants are in the picture, they too represent a deposit of energy or a gradient, which is then taken advantage of by animals which have evolved to consume plants. Parasites are the same. They take advantage of an available gradient of either plant material or animal material to sustain themselves.

(00:07:21):

This thin film of life over the surface of the earth is a dynamic structure in constant evolution. People used to talk about the balance of nature. There's no such thing. What there is a constant thermodynamic equilibrium within the ecosphere where the ecosphere is thriving, but only because of the constant throughput of solar energy. And that's the way it goes. We are, as human beings, components of this energy system. First of all, we live mostly on what we call endosomatic energy, energy that we consumed, primarily green plants or other animals, part of the energy gradients in which we live. But more recently, we've tapped into a extrasomatic source of energy. We can talk about that later, which makes us somewhat unique in this, but not exceptional. That sounds like a contradiction, and I'll explain that a bit later. But that to me, what ecology is all about is the study of the emergence, self-organization, dissipative nature and evolution of living systems in consort through the dissipation of available energy over the earth. And if that energy were to be cut off, the whole thing disappears. It can't exist.

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Nate Hagens (00:08:40):

Bill, thank you for that. That was quite an extemporaneous ecological mouthful, especially at 7:30 in the morning, British Columbia time. Excellent. Who's next? Nora.

Nora Bateson (00:08:56):

Yeah. Well, what to add to what Bill has just said? And I think given that he's said all that, what I would like to pile into that is the study and the attention of what's happening in these interrelation processes that are collectively producing life. This is where I think we are losing a lot of understanding and are susceptible to falling prey into static models of ecological processes. The hitch is that relationships do not stand still. And that underneath the idea of relationship is actually the idea of communication. How are these different organisms communicating with each other? There's a whole sort of field of study looking at biosemiotics, looking at the biosphere as a semisphere, looking at the way that all organisms in all levels are in communication. So that communication for me is I think where my studies are focused.

(00:10:20):

And asking the question in the interest of making change, we might first start by thinking we could change the parts. Then with a little more refinement of our understanding of ecology, we could start thinking, well, what we have to change is the relationships. But if you go deeper still, what you start to ask is, well, what's happening in the communication? Not so much how do we change the communication, but what was it possible to communicate? Okay, so what I'm looking at is the way that organisms produce limits in their communication, what it's possible to communicate. So for example, we talk about dog whistles or things that are outside of frequencies. There are ways in which different organisms' sensory processes cannot receive information. So what is possible to communicate is going to create a whole world into which those relationships can take place. Now, ecologies never do things one at a time. Nature doesn't do things one at a time. If you look at any organism, the way that that organism is in communication, relationship is forming and informing other organisms, you start to see that this is a mind blowing world of things changing things, things shifting things. And things shifting things in multiple realms at all at the same time is something that is inconvenient to most of the habits of creating strategy, creating plans, and generally trying to manage or get control. The bit about that that is extra

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difficult is that when there is a shift, that shift does not take place only at what we would call first order. Most of what is happening in natural processes is taking place at second order or nth order, which is to say that the thing you're looking at is both far down the line of relationships and communication that was made by relationships and communication that was made by relationships and communication, and is also producing relationships that make relationships and communication that makes communication.

(00:13:15):

Where we get caught is thinking that we can identify a static snapshot in an ecological process and get control over it, we can enact something upon it, and thinking that we can do that toward what has been perceived as a positive outcome. Without recognizing that with all of these different organisms that are changing each other all the time, we're actually going to make a mess. Now, I like to share this slide that's got these beautiful moths and butterflies that have eye spots on them that look like predators, birds of prey eyes. What's interesting about these organisms is that the predator of the moth is not the owl or the eagle. The predator of the moth is something like rodents, bats, stuff that actually will be eaten by the bird of prey. What we're seeing is a physical expression of a second order relationship. That's, I think, an important place to start because the impulse, especially in a society that is so habituated to engineering type thinking, is to make direct correctives. These direct correctives, they're going to be ecological. That is the issue. For me, one of the things that I think is most challenging is this question of how do we think like an ecology? That means that even in our moments of great anxiety, when we know so certainly what the answer must be to all our ecological problems, that there has to be a significant dose of humility and being able to wait to be careful to begin to practice that thinking that allows for these multiple orders of relationship.

(00:15:36):

In an ecology, you have a continuity and you have discontinuity. You have to have both of those things. In order for anything to continue, there must be discontinuance. All of these organisms in their continuing vitality are discontinuing various ways of being, living, communicating, and relating. But what is continuing is the vitality itself.

(00:16:07):

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I've been playing with this sort of new phrase that has to do with addressing the habit of constantly talking about ecologies as though you could freeze them. So I've been toying with this phrase of simultaneous implicating, that the organisms in an ecology are implicating each other always all the time simultaneously. And in doing so, they're generating a kind of mutual learning so that the way that the shark is in relationship to the group of fish and the algae and the way that the algae is in relationship to the oxygen and later into the forests and the forest floors, all of these processes are implicated in each other simultaneously. That hurts the little human brain a little bit, mostly because we're not used to it. We haven't been trained to think like that.

Rex Weyler (00:17:11):

I'd like to carry on with this idea of how confusing it is and why we're so slow to make appropriate responses. I compare ecology to the so-called Copernicus Revolution 500 years ago, that humans were finally able, Copernicus, Kepler and Tycho, to look out beyond earth and notice how planets moved and figured out that the whole universe is not orbiting Earth, but that Earth is orbiting the sun and the moon's orbiting the Earth, and the planets are orbiting the sun and so forth. Clear, straightforward observation and analysis. And it took centuries for those ideas to settle with humanity. And wars were fought over these ideas, and people died at the stake and were burned alive by the churches and so forth. I think of ecology as kind of imagine Kepler or Galileo sitting around 50, 100 years after they'd realized that Earth was orbiting the sun going, "What's the problem? Why don't people get it?"

(00:18:40):

And here we are with ecology. I think it's been 60 years since Rachel Carson's book, which to me really set off the ecology movement in the Western world, and we're still not getting it. We've had 36 climate meetings over 44 years since 1979. 36 climate meetings and the emissions have doubled over that time and gone up every year. So something about our process is completely wrong. Something about our understanding of ecology is completely wrong.

(00:19:17):

But for me, I look back at, for example, the Daoists. To me, the Daoists understood very deeply the complexity. Daoism really starts with just accepting the mystery and the complexity of the world and not trying to necessarily explain it all, and then to

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pattern behavior after these natural processes. I think the Daoist were kind of the first to start figuring out that understanding ecology had something important to do with how humans should live.

(00:19:56):

There's a Daoist concept of Shin Lin, which is the divine efficacy. That's the long, deep effectiveness that comes from appropriate action that is non-contrary to the way the world works. I think that's something that we have to learn. But for me, ecology involves some of these ideas is that all living things have, if we have value, if we have an idea of value, which may be a human construct, I don't think evolution cares necessarily which species live or dies or which relationships endure and so forth. But we place value on life. But I think we have to understand that all forms of life have value, and that we can't place human value above all those other values and that the diversity itself has value, the complexity has value. So as humanity expands across the planet and humans and our livestock now comprise 95 plus percent of mammal biomass on earth. We are in every habitat virtually on earth. As humans expand across the earth, we're destroying that diversity. But that diversity has ultimate value. So we're making a huge mistake not paying attention to that. If we have a sense of rights, which we do. It may be another human construct, but we talk about human rights and we want to protect our human rights. We have to expand that sense of human rights to the rest of the world and understood. We don't have the right to destroy that diversity which is critical and which has inherent value. So of course, our policies have to change. And I think this is also part of our sense of who we are as humans, as ourselves, and the idea of the self, the individual, and even the humans as this individual species, these divisions are arbitrary. I don't stop at my skin. I'm breathing air. I'm drinking the water. I'm eating food. I'm eating an apple.

(00:22:21):

When I eat an apple, when do the molecules of the apple become me? When I'm chewing it in my mouth, when it's in my stomach, when my system has broken down the nutrients. When is that point that nitrogen molecule becomes me versus the apple? I would propose that apple is me when it's growing on the tree. I think of the blossoms of the tree and the bees. The blossoms of the tree, the tree can't reproduce without the bees. So is the bee part of the tree? The bee is part of the reproductive system of

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the tree. So the bee is part of the tree, the tree is part of the bee. The bee needs the tree. The tree needs the bee.

(00:23:08):

This is just one simple relationship, but it's not simple at all because the bee needs a lot of other things, and the tree needs a lot of other things. And the mycelium and the soil. We talk about a tree and the soil and the atmosphere and the bee as if they're all separate things. And that's convenient because our language has nouns that mean certain things. So we want to talk about trees. It's nice to have a word for tree, but we get it in our head that the tree is separate from the soil, which is separate from the atmosphere, which is separate from the bee. And I'm saying no, those divisions are indeed somewhat arbitrary, but we use them for convenience. But the soil's not the soil without the relationship with the tree and the tree's not the tree without the relationship with the soil and the atmosphere. And the atmosphere is not the atmosphere without the relationship to the tree, to the bee, to me and the

Rex Weyler (00:24:03):

soil. So to me that's the essence of ecology. And that we have to expand this sense of self, individual self as well as the species of humans. And this isolated self, I think is a socially reinforced construct, but we get sucked into it. And we talk about relationships in ecology and we talk about the value of all living things, but in our actions we come back to the individual self. Our economic system, as you pointed out, is geared to the individual self and to growing human enterprise. And this growth of human error... I've even had the experience of environmental group people from environmental groups complaining if, for example, I use the term homo sapiens when I'm talking about humans, that this is an insult, that we're not just animals.

(00:25:11):

And I mean the, bless their hearts, but the Sierra Club tried to outlaw the terms, in their own internal conversation, they tried to outlaw the terms carrying capacity of the earth as if it was an insult to suggest that the earth had limits. They wanted to outlaw the term. They told their spokespeople, don't use these words, don't ever say carrying capacity, don't say overshoot. And Bill can talk about more about this. But I believe that this inability of us to really embrace ecology, it has to do with this complexity which is just proving to be really beyond our natural mental abilities.

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Nate Hagens (00:25:54):

I wonder if removing the term carrying capacity and overshoot is itself an ecological response to humans acting as a dissipative structure? We have to remove barriers to further dissipation. Do you have any thoughts on that?

William Rees (00:26:14):

Well, I guess I have a couple. First of all, I think I'm going to make three quick comments. Rex has put his finger on some very important issues here when he used the term human construct. Human beings don't experience or act out of reality. We socially construct stories, narratives, paradigms, if you will. These are, I suppose, constructed perceptions of the nature of reality, which may or may not map to the real thing in any significant way. So you've already mentioned we have an economic system that seems to defy ecological systems. Well, of course it does because our economic system is a social construct which includes no useful information whatsoever about the ecological relationships. Or for that matter, even the social relationships with which the economy interacts in the real world. So here we are, our entire global human enterprise operating out of a mental model, a construct which does not make reference in any significant way to the real world in which it operates.

(00:27:25):

And this is a reflection of another construct, which is human exceptionalism. Now we operate from the perspective that humans are not part of nature. Now, Rex has just made a very elaborate and beautiful illustration of how humans are not only part of nature, but cannot extract themselves in any significant way away from nature. And yet again, we operate out of mental models in which there's no significant connection between humankind and nature. And these social constructs are unique to every culture. Every culture has their own. And we know from neuroscience now that when an idea or a concept is repeated as we do in our education systems and our religious systems or whatever, over and over again, it literally helps to form synaptic circuits in the brain, which then tend to block out counter information. And we seek out experiences and people that reinforce these preexisting circuits.

(00:28:31):

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So it's a wonderfully adaptive system if you go back 100,000 years because it creates a sense of tribal identity and personal identity, tribal cohesion, we all share the same stories and all the rest of it. And it's not dangerous as long as it doesn't conflict significantly with the nature of the reality within which the tribe is embedded. But we live in a global tribe now, operating from a mental construct, which is entirely hostile to the biophysical environment in which we operate. And then we act surprised because it's not working. It can't possibly work. You can't fly a jet engine on water. You can't do anything where there's complete incompatibilities between the major components of the system. We have created a global culture which is antithetical to the function and constructs of the natural world. Why are we in trouble? Goodness.

Nora Bateson (00:29:30):

Yeah. I was reflecting on Rex's comment that the diversity is itself such an important aspect of ecological process. And my reflection was that here's the problem. If you start to say, well, what we need is more diversity, then what happens is there's a kind of engineered thinking that kicks in and thinks, well then let's create that diversity. And this is where we go horribly wrong, thinking that we can actually do the multiplicitas work that nature does and the beginnings and the ends of which we have no idea. We're just learning about the microbiome. We're just learning about the mycelia and the way that trees are communicating. Are you kidding? We're at the beginning of this adventure into this understanding of how organisms that are interdependent are in communication and are in fact supporting one another. This is something that runs exactly contrary to some of the most basic ideas of evolutionary theory that started with survival of the fittest and competitive behaviors.

(00:30:58):

Of course, I know that that got taken out of context, but it fitted into, okay, to your point, Nate, it fitted into an ecology of ideas that were already there, that were based on isolating individuals, that were based on high levels of production that you could measure and account for, that were based on this idea that there's something in it for me, that there's a point and that there's something in it for me. And to get it is a linear process. And so these things are all exactly, no, they are exactly not the direction that allows for what Charles Sanders Pierce called abductive process, which is the way that the different organisms in an ecology, if you can just use your

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imagination and think about how they become descriptions of each other. In what way is the tree, that Rex is talking about, a description of the bacteria in the soil?

(00:32:06):

In what way is the bacteria in the soil describing the birds and the bees? And Rex as a organism himself is made up of trillions of organisms. So this starting with even this idea of self, of where's the edge of me? Where's the edge of the apple? Where's the edge of the soil? I think it is a good beginning into trying not to get caught in this trap.

William Rees (00:32:39):

Not only is Rex composed of trillions of cells, but Rex has more bacterial cells cohabiting in his body than cells of his own stuffness. So we are completely and intimately related to even the microbiome in that sense.

Nate Hagens (00:32:59):

Here's the challenge that I see. The ecology that you guys are describing is an observational thing that happens over long periods of time, but we don't have that time given all the things that are at risk. So it's almost like there's a Zen ecological Taoist observation of global ecological systems, but then there's using our knowledge of ecology and the oceans and the biosphere and the species loss. And we are an apex species right now, and our impacts on the planet are legion. So what do we do about it? How do we go towards more sustainability? Is it possible to have an ecological civilization or do we just observe and describe? I mean, these are lots of questions. Maybe we could head in that direction, but that's where I was thinking when you were speaking.

Rex Weyler (00:33:59):

We don't have a lot of time if we're thinking about saving business as usual. But what do they say in every first aid manual when you're first learning first response, first aid? First lesson in every first aid manual is, in a crisis, stay calm and try and help the people around you stay calm. Panic and freaking out and thinking we have to do something immediately, I don't believe it's going to help. Now, yes, there's a call for action. I've been involved in environmental actions for the last 50 years of my life, all

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of my adult life. Nothing wrong with that. But rushing to create solutions, and I think Nora kind of mentions why this gets problematic, but rushing to create solutions, we rushed to create solutions using this engineering system, the linear thinking that got us into this mess. So I would say, yeah, the first thing I go with the Taoist, just relax and stay calm.

(00:35:10):

Try and see if we can find that long divine efficacy rather than create... we think we're going to solve our, for example, our global warming problem with windmills and electric cars. And so far we're not doing it. Emissions keep going up. Like I mentioned, 36 meetings in 44 years, emissions keep going up. So what did all that rushing around get for us? Now we've got more so-called renewable energy, which is not really renewable, it's replaceable, but replaceable with a lot of mining and engineering. So we've developed this alternative energy system, which is not really an alternative either because it's just adding more energy on top of the hydrocarbon energy that we're already using.

(00:35:59):

And in fact, the renewable energy so-called that we have developed in the last 20, 30 years has not kept pace with the increased demand of energy so that our demand for hydrocarbon energy has gone up alongside it. So we're not making the progress we claim to be making with our engineering solutions. So I think had we taken the approach of slowing down and staying calm back in the 1950s and '60s when Rachel Carson was introducing ecology to the western world, had we maybe paid a little bit more attention to what the Taoists were saying and our indigenous brothers and sisters regarding the sacredness of all our relations and slowed down and really thought about our place in the world, I think maybe we would've been better off.

William Rees (00:36:51):

I guess I take a slightly deviant view about all this. I don't think we are making progress because we don't understand the problem in any profound sense. Again, we're reacting in this linear single cause/effect manner. We think of climate change as the existential issue facing humanity, but it's only one symptom of a list. I could give you 20 other symptoms from biodiversity loss to ocean acidification that are all linked to the same issue. And that's the overgrowth of human society. It's this question of

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overshoot. The human system is currently literally devouring, we talked about this earlier, ecosystems as well as non-renewable resources and much faster than nature can regenerate. And we're polluting ecosystems much more rapidly than natural systems can process the degraded materials. So it's a fatal condition. Now, let me make an outrageous statement. Unsustainability, is a natural phenomenon.

(00:38:02):

Human beings have the potential to be unsustainable by nature, but so does every other species. What I mean by this is that we have three capacities that we share with every other species. The first is a tendency to grow exponentially in favorable environments. Every species exhibits exponential growth in a favorable environment. The second is that we tend to expand into all available habitat. And no species other than humans occupies the entire surface of the earth, even habitats that aren't favorable because we alter them to suit ourselves. And the third thing is we tend to use up all accessible resources. Now if you put those three things together and add technology, you have a situation which sets us free to essentially pillage the planet. But again, there's nothing exceptional about this. If you think of a plague of locusts or a plague of mice or frogs or whatever, every species, when it is situated in an environment which for whatever set of juxtapositional reasons is favorable to the expansion of that species, it will explode and expand.

(00:39:14):

And humans are no different. With fossil fuel, we acquired the ability to exploit the planet and provide all the other resources needed to grow the human enterprise to realize for the first time in human history, our full exponential growth potential. So up until about the industrial revolution, we were held in check by negative feedback. The positive feedback tendencies of the species shared by all other species was held back by resource shortages, disease, war, and all of that stuff. Well, fossil fuel temporarily relieved us of that, and we exploded just as a plague of locusts explodes during a favorable environment. But then what that explosion does is deplete the resources and it crashes. So I think we're on a one-off population boom/bust cycle, which is completely natural. It just, it's never happened to humans before on a global scale has many times before on a local scale. But this time it's a global thing. It's natural, it's going to happen, get used to it. And Rex is right. Don't panic. Start taking care of what you can in your immediate environments.

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Nate Hagens (00:40:22):

So I recently did a podcast with Daniel Schmachtenberger, and we talked about how narrow boundary versus wide boundary goals and a particular narrow boundary and intelligence would outcompete a wider boundary wisdom. And so right now, the market system is a very, very narrow boundary. Let's maximize profits. Profits are tethered to energy. Energy is tethered to fossil carbon and CO₂. So all of you, the three of you are saying that ecology is a wider, more nuanced interrelationship and the more relationships and second to end order things you add, the less able it is to compete with the dissipative structure that is the market. So I have a ton of questions. Let me ask a leading one and then we can backfill. What would, knowing what we know, what would an ecological civilization look like? Or an ecological community, an ecological society, what would that look like? And I'd like each of the three of you to respond.

Rex Weyler (00:41:40):

Well, I'll say there's a danger in that question. It's a good question and it's a question we should be asking, but there's a danger, and that is that we're going to come up with a model for ecological community and then we're going to make it happen. And that right away violates everything that Nora just pointed out. That's absolutely critically important. That's not the way nature works. Nature's not working on any particular participants plan. Like the bees all get together and say, this is all screwed up. We're going to do it this way from now on. It's not how it happens. So there's danger in that.

(00:42:18):

And that is our engineering brain. That's our linear thinking. That's our first order brain. So take my other comments, please, with a grain of salt. First of all, we have to ask what endures. We want to be sustainable. You hear the term all the time now about something we did made us more sustainable or we've no such thing as more sustainable. Just it's like making the train. It's like you're going to make the train, you make the train, you don't make the train. You're not better off if you almost make it. So we keep celebrating all these little victories to feel like victories, and we want to stay positive. So we celebrate them and we say that's that's, we're now more sustainable. But are we more sustainable, for example, now today in 2023 than we

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were when Rachel Carson wrote her book in 1961? No, humanity's not more sustainable.

(00:43:23):

After 50 years of environmental activism and environmental ministers and consultants and green products and green laundry detergent and everything else, were not more sustainable. So I'm trying to answer your question, Nate, about what would a civilization look like? It would not look like what we're doing now, that's for sure. But one of the first things I would suggest that an ecological civilization would recognize is our animal nature. That's the first thing. We're animals. We tend to overshoot our habitat like every other animal, as Bill has pointed out, and we see this in our own gardens. When the blackberries grow through the apple tree, the blackberries don't back off and go, oh, excuse me, go ahead, have that space. No, the blackberries just grow through the apple tree and the apple tree and the blackberries fight for who's going to survive in that space.

(00:44:28):

Wolves overshoot a watershed. The algae overshoot the lake normal. But what happens in nature is that when any species or relationships overshoot them, overshoot their habitat, what happens? They contract. They have to contract. Wolves overshoot the watershed. They eat too many of the prey. The prey die off. Then the wolves have to contract. One plant grows over the other. Someone's going to have to get smaller, contract, maybe even die. So we're denying this. So second of all, we need to admit our animal nature. All animals tend to overshoot. Then we have to admit that when an animal overshoots its habitat, it has to contract. And this is the catch point for our economic system, our mental constructs. We cannot handle this idea that there are limits to human exceptionalism. We can do anything. We can solve any problem. We can engineer our way out of this, but we're not doing it.

(00:45:38):

We have no examples of us actually succeeding at doing this, and it's not doable. So accept our animal nature and accept limits and just end human exceptionalism and start to see ourselves as a part of this soil, tree, atmosphere, insects, evolving, living, always changing, always slightly out of balance, always seeking equilibrium, moving world and not thinking we're going to create a method or a structure. Remember, a

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map is not the territory, Korzybski. A map is not the territory. And the problem that, one of the problems, we have with our engineering mind is we try to create these maps and then make the whole world work that way. It doesn't work.

William Rees (00:46:35):

If I can pick up on that, Rex is going back to something I said a little bit earlier about unsustainability, or at least unsustainable behavior being a natural phenomenon, because we are far better than any other species at exploiting our habitats. And we do that because we've had the one-off abundance of fossil fuel to enable us to do it. Keep in mind, again, nature isn't a balance. It's an uneasy equilibrium. Every species has this capacity to explode, but they're kept in check by negative feedback. So there's this constant balancing act between negative and positive feedbacks.

(00:47:20):

And what human beings did with the industrial revolution, and particularly fossil fuel, was first of all to increase our life expectancy by reducing mortality. But at the same time, and more importantly, we were able to provide all the resources needed to grow the human enterprise. But in the process, we're eating all the apples, we're destroying the soils, we're down fishing the oceans, et cetera, et cetera, et cetera. So we've got this enormous population now, an eightfold expansion in just the past 200 years or so, suspended on a fountain of fossil fuel, which is about to run out, and with it, all the other resources needed to sustain the

William Rees (00:48:02):

system up there at that far from equilibrium displacement that we've reached as a result of that fossil fuel bounty. So just like every other species in a plague phase of its growth, as I say, it's a one-off population boom cycle, we will contract. Rex put it very gently, he said that the species has to contract once it goes up there, but it won't do so voluntarily. And all of these desperate efforts that we're making around the so-called green energy transition and concepts such as the circular economy, which is a complete fantasy and biophysical thermodynamic impossibility, we develop these models as ways of encouraging ourselves to change in marginal ways that are really aimed at maintaining the status quo. Can we keep the growth oriented system of

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humanity going by alternative means, that's what I call it, business as usual by alternate means.

(00:49:06):

It will fail, and the longer we pursue these kinds of fantasies, the harder we're going to fall. And that to my mind is the real great tragedy of humankind. We may be selected out by nature because that's what happens when species get out of hand. The negative feedback comes back with a vengeance and slams that population back down to something that its ecosystem can sustain. And we're in for that kind of shock. I think in the future, unless we take charge of the situation and aim for some kind of gentle landing, I don't think we're going to do that because there's a huge gap between what is possible. Everybody knows what we should do. We've known that as Nora and Rex have emphasized for 50 or 70 years, but we don't know how to do it. How do you get this incredibly diverse human global culture that can't even agree about whether climate change is real to respond to this grotesquely more complex systemic problem called human overshoot? I don't know, how do we do that?

Nate Hagens (00:50:15):

We're going to get to the what could we possibly be done, but let me jump to Nora on what the question on what would an ecological civilization look like?

Nora Bateson (00:50:29):

It's, in my lifetime, I've lived in a lot of different communities and one was the Esalen community in Big Sur. I lived at in an another community in Santa Cruz when I was a little child I lived in the Zen Center community in San Francisco for a while. I lived in a yoga community for a while. My family was always interested in this question of how might we live in another way and how do these various communities begin to construct the premises and the logic of ways of being together. So the ideas that make these premises were something of interest, okay? They are inside universities and the academy. They are inside scientific laboratories. They're inside the tech community. They're inside religious communities, they're inside various, all sorts of different kinds of communities, exist. I can tell you that my experience is that intentional communities are not only not fun, but a disaster.

(00:51:54):

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And one of the reasons they're both not fun and a disaster is that they have a mission statement. They already know where they're going and there's some abstracted map-like idea that everyone thinks that they're cohering to. But then it turns out that everyone actually interpreted that differently and the way they interpreted it yesterday changed. And so that thing becomes the territory on which you are in polarity with each other and not the thing that you agree about. The thing you fight about most is the mission statement. So I think that's one thing that I'm looking at is how do you nourish unintentional community? And I think that's a really kind of relevant question actually. What is it that we can actually do together to help provide a remembering or a mutual learning on actually how to help each other in need? Just basic things.

(00:52:59):

I mean, do you know what to do if someone next to you is having a stroke? Do you know what to do if something's on fire? Do you know how to actually create a water catchment system? Just basic knowledge of how to be with somebody who's in a mental health crisis. So this type of redundancy I think is really important of learning how to be redundant, not repetitive. A machine is repetitive but redundant. And that means that the way I sit with somebody in mental health crisis is different than the way you do. It means that the way I respond when someone is having a stroke is similar but not exactly the same as you, and that that's okay. So we are moving out of this idea of mechanized response systems into something that allows for me to be me and you to be you and us to actually be alive together.

(00:54:03):

And one of the things that I think is so just kind of flattening is the plan of how we're going to create survival turns into this party I don't really want to even go to, right? It's lacking the very thing that makes life, which is this unintentional possibility. And so for me, this is the thing that I see again and again is not... Okay. So I said I grew up at Esalen and all these crazy new age-ey sort of places, and I can tell you that I have seen every flavor of self-help and personal development that you could shake a stick at. And none of them work. They all breed assholes. I mean, I'm sorry, but if you're an asshole, there's no way around it. Nothing's going to fix you. And if you're not an asshole, then everything is going to make you less of an asshole.

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(00:54:58):

So the reason that's important is that there's a lot of pressure on how people should live, how they should think, how they should be, how they should feel. And this top-down instructional of telling people how to live, think and feel is, I think, a completely un-ecological process that is interrupting the possibilities of who... The way to reverse that question instead of how do I develop, it's this question, who can you be when you're with me? That's an ecological shift right there from being, how do I become a better person to who can you be when you're with me? Do you see that difference? And so I think there's a lot right there. Who can you be when you're with me? And how might I learn to be in support of things that are really basic that we need to do together in our own way? Yeah, I'll leave it at that.

Nate Hagens (00:56:16):

So multiple different answers and perspectives there. Nora, you're championing the idea that an ecological society or an ecological civilization would have to start from one's own interaction with others at a ground level. I don't know, Nora, that you agree with this. I know Will and Rex do that contraction of the human enterprise is inevitable. If we start with that premise, is there a way that our species, our culture, our individuals, and how they respond with others, is there a way that we can respond with wise decisions? Can we, not as individuals, but can we as a culture be ecologically literate and wise, given what we face? What are your thoughts on that?

Nora Bateson (00:57:14):

Yeah. Okay, I'm glad that you're clarifying this because I think what I'm saying is basically that because contraction is inevitable, the question then is how do we do that best together? And that the wisdom in that is not going to be packaged in a book. The wisdom of that is going to be in the particular and a sensitivity to the particular, to the complexity on the ground instead of reaching for the manual, which is that engineering mind popping in again, how do we create an engineered version of how to go through crisis together? And this is exactly the wrong question. The question is, who can you be when you're with me, and what does it feel like to be in mutual learning together? How do we meet an unfamiliar and dangerous situation together? How do we do that? What is it that you can give your kids that you can give your friends, that

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you can give your family right now that will allow them that possibility of perception and of generosity, of integrity, so that in a moment of crisis there is the possibility of creating something together that you cannot imagine right now. All right, we hop to the what's the solution? And the point is we don't know. The point is how do we be in relationships such that whatever comes, we can be creative together and meet it. And that's a second order response. Do you see? It's preparing for second order, not first order.

Nate Hagens (00:59:02):

I do see that, and I actually think it's maybe one of the ways that we're doing this four way conversation is because we all have, I have relationships built over many years with each of you. And so we can have this less formal discussion because we understand and agree on a lot of these things. So we're at a place of vulnerability and curiosity and openness. You know my story, you all know my story as I think we have so far acted as a dissipative structure and that the super-organism will continue to call the shots until it runs out of low entropy goodies.

(00:59:41):

And then we're going to have to see what happens then and respond, which is why I'm doing this work, is to pass the baton, not of solutions to other humans, but of the context and the game board as it were, so that there's all kinds of emergent responses. I don't know what the responses are other than we're probably going to on average have to use less. And I hope that we treat the sacredness of this planet and the life on it and the other species more of value than we do now, and that there's an internal response in each of us to be wider boundary in our thinking, our actions, our behaviors. But I don't know. So where are we? Rex and Will, would you like to respond to everything that was just said?

William Rees (01:00:38):

Okay, I think we should start putting some dimensions on what we're talking about here. So I think it's fairly clear that we agree there's going to be contraction. And the question then becomes ,what are we really talking about? And I think as a rough way to begin thinking about this, could the world with 8 billion people live sustainably in the absence of fossil fuel? I think right now if we were to omit fossil fuels, drop them, it

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would be utterly catastrophe. You'd be condemning billions of people to death. So we need to think creatively about how we can come down to say about half the energy and material flows through the planet that we now have, and that means about 75 or 80% less energy and material flows through countries like the United States and Canada on a per capita basis. Now that sounds horrific, but it just takes us back a hundred years or so when people live perfectly happily without all the gadgets and stuff that demands so much of the energy that we're wastefully dissipating right now.

(01:01:52):

But those are some of the kinds of numbers I think we should start to play with. I have no doubt that it's going to be a renewable energy future. It'll be a future of draft horses and water wheels and windmills, mechanical and so on, but not the kind of renewable energy people are thinking of right now. And by the way, to provide for all those oxen and draft horses, which are going to have to replace mechanical contrivances in agriculture, you need about a hectare, two acres or so per capita per animal to sustain and feed them in addition to the food crops that we're going to need to feed ourselves. So we should be breeding all mass right now, the necessary animals to displace mechanized agriculture. Nobody subscribes to this, but that's really, I think, what an intelligent species would do, confronted with the fact that we will run out of fossil fuels that are economically exploitable in this century.

(01:02:55):

And there is no possibility in my humble opinion, and I think there's plenty of studies to sustain or support this, that renewable energy can quantitatively substitute for fossil fuels. So get used to these simple realities and start doing the kinds of policy development and educational development to get people used to those new emergent realities. And if we don't do that, it's going to be miserable for a vastly larger number of people than any of us would care to contemplate. That's what a sustainable society looks like.

Nate Hagens (01:03:32):

We're not going to run out of fossil fuels for quite some time.

William Rees (01:03:36):

No, we're just going to have less canonically exploitable.

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Nate Hagens (01:03:40):

But one could argue that there's 10 or 20 or 30 years left of quite a lot of them. So from an individual standpoint, this might be-

William Rees (01:03:50):

But if we were sensible about this, we would be allocating that to the essential uses. So right now, 90% of our food production is fossil fuel dependent. Why aren't we reserving the remaining carbon budget for food production, for example?

Rex Weyler (01:04:06):

One of the taboo issues of our culture is to even address the question of human population. It's so taboo that even the environmental groups, most of them don't want to talk about human population as a limiting factor. I don't want to talk about it as a limiting factor, but when Will talks about making earth sustainable for 8 billion people, one question arises, it'd be easier if it was 4 billion. And then people start thinking, oh, what are you going to kill half the people? No, but there are solutions and one for example, contraception should be universally available, cheap, virtually free, available to every family on the planet. Women's rights should be a universal policy that every modern democratic nation is battling 24/7.

(01:05:05):

And if women had reproduction rights and marriage rights worldwide, and if contraception was available worldwide, we could probably reduce virtually all unwanted pregnancies. Make abortions available. Right now, the human population growth is 1%, approximately 1.1%. So we're adding about 85 million people to Earth every year. That is the population of Delhi, Mexico City and Sao Paulo altogether, every year added to the planet. Now, once people are born, of course we support their rights.

(01:05:43):

Of course, we want human rights for everybody, but people make the mistake and even including a lot of environmentalists who will say that, well, we can't talk about population because it's racist, or we're violating people's rights to live. But that's not the point. The point is that there actually are policies we could make that would

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eliminate unwanted pregnancies. And all we have to do in the population issue is instead of growing at 1% per year would be to shrink at 1% per year, if we were shrinking at 1% per year, then we'd be having 85 million less people to feed every year. I mentioned earlier that humans in our livestock and pets and so forth now comprise 95% of all mammal biomass on earth.

(01:06:35):

Ecologically speaking, that's not reasonable. It's not fair, and it's going to crash. So why don't we make some policies to make that a softer landing and just gently allow our population to slide. I think Nora has a comment, but I wanted to bring up this issue of population because it's a taboo. And whenever there's a taboo, something's wrong in our discussions.

Nora Bateson (01:07:00):

Yeah, I want to chime in on that one because I want to go back to this image of the mother nursing her child and how to support and nourish that process right there. How to make sure that milk that baby is getting, it doesn't full of plastics and chemicals, and how to be sure that that mother is strong in her bones and her own nutrition enough to be able to give the baby what is needed and still be strong in herself. And I think this is so important because like Rex said, tending to those relationships, because that's a relationship that's being tended right there. It's not a statistic. And if you tend to these relationships, what you're going to get is a shift in other places where you can count the statistics in another way. But one of the reasons we have the taboo is that the suggestion of population control comes in at the wrong level.

(01:08:18):

It comes in at control. And I think what we're actually talking about is support for the families that are being made and the people who are doing what they need to do. And that is not just about making a population difference. It's a whole way of life that changes. It's a whole ecological shift of relationships that are changing. And so I think it's really important in what Rex is saying to remember that what's under that is not just the changing of how many mothers are having babies, but an entire epistemological community. Actually probably physical, spiritual, agricultural, economic shift is included in that. It's not just not one category that's getting changed. So just wanted to bring that in because I know that Rex is holding a big piece there,

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and the taboo is there because eugenics was at the beginning of this population control.

(01:09:24):

And the eugenics itself is the thinking, that is the industrial control thinking that that is exactly what we have to be very careful of right now. It is way too easy to slip into eugenics thinking when you're trying to come up with a solution and it's happened before. That was the whole lifeboat exploration. Who do you save? What is the criteria? If you're asking those questions, you're not dealing with an ecological process.

Nate Hagens (01:09:57):

I'm going to kick it back to Rex. I have two comments. One is building on what you just said, Nora. We have a population of humans and we also have a population of refrigerators, airplanes, air conditioners, televisions, cars and things like that. So there are two population problems. But the second thing, Rex, you said something interesting. You said, ecologically speaking, that's not fair that we have 96% of the mammalian biomass, but this is a conversation, a round table about ecology. Is ecology fair?

Rex Weyler (01:10:37):

No fairness, again, is a human construct. And I mentioned before, evolution doesn't care. If a species is going extinct, evolution doesn't freak out and go, oh, we got to keep that species. It just happens. There's no thinking being back there going, well, should we let them go or not? And let's face it, when we eat the blackberries off the vine, that's their babies. Is that fair that we eat the babies of the blackberries? I don't know, wouldn't beef to the blackberries if they had a voice? In the natural world, everything that exists eats something else that exists, and that's how we all get nutrients passing through our bodies. And there are more gentle ways to do that. We notice a note, for example, that eating less meat and growing food and eating a vegetarian diet is demonstrably gentler on the world than our meat cravings. Stephen Gaskin used to say it's obvious that it's less.

Rex Weyler (01:12:03):

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It's obvious that it's less violent to eat things that aren't trying to get away from you. But no, nature isn't necessarily fair. There's not a fairness in nature. When I use the term ecologically speaking, it's not fair that we have 95%. I could also say it's not smart. You talk about wise decisions, it's not wise to dominate your habitat the way humans have done. Bill pointed out it's natural. All successful species overshoot their habitats.

(01:12:39):

But if you're an allegedly smart species who's trying to make wise decisions, you would notice, that's not wise. And I would 100% agree with Nora that we're not going to engineer these solutions, but we can create the conditions so that they can happen. We could create the conditions. I mentioned something like contraception and women's rights. Those conditions would help gently reduce human population growth. So why aren't we doing those things?

Nate Hagens (01:13:14):

That would be bad for GDP if we did that.

Rex Weyler (01:13:17):

Well, yeah. If GDP is our measure, that's another unwise way to go about the world. And unfortunately, GDP is our measure for the most part in our societies today. Economic growth is our measure. So that's very unwise and it's leading us to these problems that are going to be for ourselves in the future and our progeny and future generations in the future. And we can't appear to get out of it because we're stuck in these economic paradigms.

William Rees (01:13:51):

Yeah, I'd like to add a little bit to what Rex said. We both live in the province of British Columbia and Canada, which is actually now made contraception completely free. So I think if not the first jurisdiction in the world, certainly in Canada or North America, in which contraception is free to anyone who wants to avail themselves, it's part of the provincial medical Medicare plan. So that's, I think, a very progressive move.

(01:14:20):

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I think it's also absolutely right in suggesting that if we made things a whole lot easier on women in terms of economic independence and their ability to make choices about these things, we would see a very rapid turnaround in population growth on Earth. But keep in mind there's a contrary movement afoot here. Pro-natalists in many governments are lamenting, and many governments are lamenting the fact that in certain wealthy countries, Japan, certain countries in Europe, even Canada and the United States, natural birth rates have indeed fallen.

(01:14:59):

And so we're doing everything we can to encourage the maintenance of birth rates on purely economic grounds. People are needed to maintain the growth trajectory, to keep our pension plans afloat and so on and so forth. So we have, I think, some major problems to overcome and they have again to do with this worldview. The narratives we live from are contrary to ecological reality, ecological common sense, as I think Rex has put it. It does not make sense for one species to command most of the energy flow through the ecosystems of which it is a part.

(01:15:38):

That's a very destabilizing situation. And the wise species would do everything possible to reestablish some kind of balanced energy and material throughput. If we don't do that, again, I keep harping on this, people hate me for it, but we will go down. There's just no question that the natural system is one that will take us out if we don't take ourselves out with a degree of grace and good judgment.

Nora Bateson (01:16:08):

You can have very few people and still be using way too many resources. A very small population of the planet is using a very large percentage of the resources. So population is an issue, but the relationship to stuff and the idea, the identity predicaments that are wrapped up in what is success? What is it? What makes you lovable or gives you credibility? It's mixed up in that.

William Rees (01:16:44):

Yes, but I think we can go back to one of Rex's points, that it's easier to have fewer people living well than a whole lot of people living poorly. And if I had my druthers and could snap my fingers, I'd like to see say a billion or 2 billion people on the planet

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living at a reasonably decent material standard than seven or six or 10 or whatever number of billion people living at poverty levels, which is the direction we're headed.

Nate Hagens (01:17:12):

I actually disagree with that. I think it's easier, ecological speaking, for us to have 10 billion very impoverished humans. I think that's the default that we're headed towards.

William Rees (01:17:25):

Well, I agree. I think it's easier, but I said if you want to plan for something and do it in a more difficult way, it would be a better life for 2 billion people than for 10 billion people, however you got there.

Nate Hagens (01:17:39):

So is the field of ecology, as beautiful as the concept is, is it always synonymous with these dark, doomy, ominous discussions, or is that only because it's coupled with this late stage overshoot situation of massive energy surplus from the carbon pulse? Ecology and ecological conversations, Nora was having them when she was a child, she shared with us, are beautiful and interesting and relevant. But it's almost like ecologists in the tortoise and the hare race are the tortoises and the world is caught up to this story. But I love ecology, but this is a round table with three preeminent ecological thinkers. It's heavy stuff. It's not for the faint of heart.

William Rees (01:18:44):

Well, again, I hate to jump in, but it is beautiful. The intricacy, the mind-boggling complexity of overlapping complex systems that constitutes the global ecosphere is a marvel to behold. But that doesn't mean that it doesn't have internal tensions. I think Rex has made the point over again that we eat each other. There has to be some means by which the finite energy flows created by photosynthesis through the system are distributed to sustain all of us.

(01:19:17):

That means there are food chains, and that means that some species eat other species. It means that look, each of us is a way station, a temporary stop off point for the molecules and atoms that comprise the living fabric of the planet as it continues

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to recycle and cycle again through the system. So it is a beautiful, incredible, amazing system, but it gets out of whack once in a while when certain species breakthrough the negative feedbacks that normally holds them in check.

(01:19:49):

And that's what humans have done. So it's perfectly natural that we will be set back and the system will reboot. And that's the way ecosystems operate. I don't think there's anything fearful about it. We just don't realize it. We have this arrogance to think that we're outside of that system and it can't happen to us. And right now, part of the ecological tension on the planet has to do with war. The Russo-Ukraine war, I think is at least remotely connected to the eco crisis we're talking about. Ukraine is one of the most resource-rich countries on the planet, and don't think for a moment that's not in the backs of the minds of some planners in the Kremlin.

(01:20:31):

So we could extinguish ourselves in a blink of an eye if that goes out of hand. And that's one of the dangers of overpopulation and overconsumption on a finite planet. The further we push, the more we come to reasserting the negative feedback that will slam us back. And war is one of those negative feedbacks that would be catastrophic for not only ourselves, but countless other species.

Nate Hagens (01:21:04):

Especially war today, with the nuclear fallout and everything else. Rex or Nora, do you have any comments to what we just discussed? And after that I will ask you all a closing question.

Nora Bateson (01:21:24):

Life is beautiful, and it's also terrible. And I think that there's something inside this about this question of what's the point. And if you ask that question, what's the point, you're asking the wrong question. What's the point of the forest? The forest is just foresting. And so the reason for tending to life is because life. And so I think this is really extraordinarily counter indicated to all of the ways in which we think about that question. What's the point? What's it for? How are we going to do it? What's the strategy?

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(01:22:24):

All of that thinking is wound up in something that's taking us to an end point, and does not allow for what I perceive as a vast realm of possibility that's right under our noses, that is completely emergent. But if you are looking to do it to get a result, you are going to miss that. So my feeling is there's lots and lots of possibilities that are sitting right with us, and they are in the ecology of our relationships, our communication, the ecology of our ideas, the ecology of possibilities. There is an ecology of possibilities.

Nate Hagens (01:23:22):

Well, that's where I was kind of going, is do each of you have a key thing from this discussion that you'd like the viewers to take away? And Nora, you kind of gave one there, but I'll close with you at the end. Rex and Bill, do you have any answer to that?

Rex Weyler (01:23:40):

First of all, accepting our animal nature, and end this human exceptionalism, which blinds us to our animal nature, just for starters. If we have a meeting about climate or biodiversity, in our minds we need to invite all other creatures to those meetings. And I'm not just trying to be foolish or silly here. I'm serious, I'm dead serious about it. We need to be sitting at the table with the elephants and the jaguars and the wolves and the algae and the apple trees and the bees and allowing those voices somehow into our conversation.

(01:24:24):

So that's one thing I would ask people to take away is accept our animal nature and ecologically, we also have to accept that resources are limited and accept limits. And if people think that's dark, there's a harsh edge to nature, there's a harsh edge to staying alive on this planet. We can soften that harshness, but we can't eliminate it. And accepting limits is one way to get us on that path. I'm 100% with Nora on the idea of creating the context for these changes and not necessarily trying to rush to a linear solution.

William Rees (01:25:07):

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Well, I agree utterly with both Nora and Rex, and particularly as an ecologist on the notion that we are animals and we are bound by the same natural laws and physical forces that every other species is bound by, and particularly the laws of thermodynamics. There are no exceptions to the second law of thermodynamics. What's putting us off here is this human exceptionalism.

(01:25:37):

There's a phrase or a book I guess called *The Arrogance of Humanism*. And as long as we maintain this egocentric anthropocentric perspective on ourselves as a species different from all the others, then we're finished. Nature will show us how wrong we really are. So the real question to me is whether debates and discussions of this kind are able in time to overthrow the arrogance of humanism, the arrogance of anthropocentrism, and get us to the point where some of the multiple options and opportunities and possible outcomes that Nora talks about could actually be realized.

(01:26:22):

They will not be realized as long as we are a self-referencing system that insists on finding solutions from within the same set of beliefs, values, assumptions, and attitudes that have created the problem. So I think things will unfold exactly as nature requires that they do. There will be, unless humans actively and intelligently implement our own process of negative feedbacks so that we withdraw our dominance from the ecosystems of which we are apart, then nature will do it for us. And that is the way of the world. That is the natural cycle through which we shall go.

Nate Hagens (01:27:04):

As you're all speaking, a thought comes to mind that this last hour and a half of conversation, this couldn't be at a plenary in an IPCC or UN meeting, not yet. And if there's one person in a thousand saying these things that are ecologically honest and literate and that grows to one in a hundred and that grows to one in 10, who knows what might emerge from that? I certainly don't. But the whole effort of all of our work is to change the initial conditions of the future in a way that is more interconnected in service, as Nora said, of life. At least that's how I like to think about it. Nora, I'm going to give you the last word.

Nora Bateson (01:27:54):

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Okay. I'm going to give you a word then. Because it's a word that doesn't come up in these conversations. And Bill just said that if we don't stop with this self-referencing process that can only find a solution from within the existing systems of thinking, then we aren't going to make it. There is a word for that thing. It's called a tautology, and tautology is a word we don't use very often. It doesn't come up in relationship to ecological processes as often, I think, as it should. I think it's an important word because of exactly what Bill just said and what we've been talking about, basically this whole hour and a half, of why can't we get out of the hoop? We keep trying to get out of the hoop and we can't get out of the hoop.

(01:28:53):

And part of this has to do with the constructs of what's real is real because we said it was real, and what's researched is researched because the research proves the research. And the monetary system is where the buck stops because the buck stops at the monetary system, and we're caught in these loops. Now the thing is, there's something very ecological about these loops. Part of the problem of the ecological thinking conundrum is that we are in an ecology of thinking that is adverse to ecological thinking. I know that sounds tricky, but I'm actually quite serious. We are living in a context that's allergic to context. And so there's something I think very important about just recognizing that. Those moments when you are perceiving how you perceive, just take a look at how we're talking. Pay attention. What is happening here?

(01:29:58):

That is an opening. That's where something new can get in, that moment of being a little bit confused, of not knowing exactly what someone said or a cultural confusion or some moment when there's been a moiré effect of some pattern crossing your pattern that just, woo, that's super important. Those are the moments when the new information can come in, and that's exactly what a tautology does not allow. A tautology is adverse to new information coming in. So there's a way in which we have to, with our animal claws, rip a little hole in the tautology so that we can start to actually have some new information moving and new rhythms of movement.

(01:30:43):

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I think this happens because it's ecological. It happens in poetry, it happens in podcasts, it happens in the way mothers treat their babies. It happens in how you make dinner. It happens in how you are with your partner. It happens in courtship. It happens in spiritual practices. It has to happen everywhere because that's how ecologies are. They work from lots of different directions. It's a trans-contextual process.

Nate Hagens (01:31:11):

Thank you, Nora, Rex and Bill. I'm going to be thinking about the content in this for a while. I had no expectations how this would go other than we're all friends and you all have a lot to say and I may likely be asking each of you back again to contribute your thoughts to this fascinating and perilous moment that we are living on this planet. Thank you all. To be continued, and I will talk with you soon.

Rex Weyler (01:31:45):

Thanks.

Nora Bateson (01:31:46):

Thanks, Nate. Thanks, Rex.

William Rees (01:31:48):

Thanks, all of you guys.

Nora Bateson (01:31:48):

Thanks, Bill.

Speaker 1 (01:31:49):

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