

# The Great Simplification

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Jason Bradford (00:00:00):

We need to have the graciousness to allow people who are coming in late to this and don't have the skills. We need all these buffers around the transition.

Andrew Millison (00:00:11):

Creating life, farming, growing food, planting trees, it is a natural antidepressant.

Vandana Shiva (00:00:19):

The earth and people and farmers and the sick people who are suffering are realizing, there has to be another way.

Daniel Zetah (00:00:27):

We're coming into a period where we have to teach more people more things in a shorter period of time than ever in human history. And the bottleneck is going to be, how do we teach people to do this?

Nate Hagens (00:00:39):

Greetings. Welcome to reality round table, number six. I really enjoy putting these together. I have almost 100 prior guests and I mix and match them to create interesting conversations. Many more very interesting conversations to come. The hardest part is arranging people's schedules. We have one coming on governance and another on plastics, another on what questions should we be asking in graduate school and postdoc to research on the Great Simplification and the meta-crisis.

(00:01:12):

Today, I've invited four prior guests back to discuss how could we, or could we, feed 8 billion plus or minus people with the minimum fossil fuel inputs? Is this possible? How might we go about it? What would the yields be? What sort of practices would be needed?

(00:01:34):

Joining me in this conversation are Daniel Zetah, a small scale farmer near me in central Minnesota. Andrew Millison, who's an educator, storyteller, and permaculture designer. He has a popular YouTube channel making permaculture education widely

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available. Jason Bradford, who's an academic biologist turned CSA organic farmer. He also hosts the Crazy Town Podcast from the Post Carbon Institute. And, last but not least, Vandana Shiva, who is a global champion on regenerative agriculture, biodiversity, nutritious food, and many other pro-future concepts. She has a PhD in physics and founded the Research Foundation for Science, Technology and Ecology, and she lives these practices in Northern India.

(00:02:28):

I hope you all learn and are inspired by this conversation with Daniel Andrew, Jason, and Vandana.

(00:02:47):

Greetings, my friends from around the world. Good morning and good afternoon.

Daniel Zetah (00:02:52):

Good morning.

Andrew Millison (00:02:54):

Good morning.

Jason Bradford (00:02:54):

Good morning.

Nate Hagens (00:02:55):

Andrew Millison and Jason Bradford, joining me from Corvallis, Oregon. Andrew, how are you?

Andrew Millison (00:03:02):

I'm doing great, Nate. Thank you so much for having me here to have this discussion this morning. I'm really grateful and look forward to a good talk.

Nate Hagens (00:03:11):

I've just watched some amazing videos of you with the Paani Foundation on your India trip, and we will get into that. JB, how are you, my friend?

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Jason Bradford (00:03:20):

I'm doing pretty well, Nate. Yeah, had a good sleep getting ready for this.

Nate Hagens (00:03:25):

7:00 AM your time. Thanks for joining. Vandana Shiva-

Jason Bradford (00:03:28):

Yeah. No problem.

Nate Hagens (00:03:29):

... In Europe today. Good to see you.

Vandana Shiva (00:03:31):

Hello.

Nate Hagens (00:03:34):

Thank you so much for joining us. It's hard to coordinate you bright agricultural cultural minds around the planet, so, I'm glad we're able to coordinate it. Last but not least is Daniel Zetah, a local farmer, colleague, friend of mine. Daniel, good morning.

Daniel Zetah (00:03:52):

Pleasure to be back with you, Nate.

Nate Hagens (00:03:56):

Okay, this is reality round table six, and the topic of the day is, growing food without fossil fuels or with de minimis fossil fuels. So, listeners of this show know that we use globally between 10 and 14 calories of fossil inputs to grow, process, deliver, and store our food, and this is the first time in human history this has happened because we used to have farming and human input was an energy source, not an energy sink.

(00:04:38):

So, people paying attention to the world know that we don't have unlimited oil and gas to serve as pesticides, herbicides, and fertilizers for our crops, and that fossil carbon is also causing bad impacts on the oceans and the environment, climate

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change, et cetera, and that, sometime in the future, oil and its derivatives will become more costly or less available or both.

(00:05:07):

So, each of you in this format, I invite to give as creative a response as possible to the following question: what would it take to feed a world of 8 billion humans without fossil fuels or with di minimus fossil fuels? And then, we will have a discussion. Let us go in alphabetical order. Jason Bradford, you're up first.

Jason Bradford (00:05:37):

Easy question. I've got a simple three-step program. Well, of course, I'm joking here, but really, in some ways, it's easy, but it's also really difficult. The first thing I talk about is depopulating cities and moving people back into small towns and farms, and also, breaking up large organizations into small, locally focused ones. So, that would be big farms into small farms, put people to work on the land, and farms that both feed local communities and repair the ecology. Redesign equipment and tools so they're much simpler, easy to repair, and even build with local materials. So, it's the opposite of what we've been doing for the last couple hundred years, it seems, in most parts, in many parts of the world.

(00:06:33):

So, now, why do I say all this? It sounds out there, obviously, because it goes against so many trends and what we think about as normal nowadays. But, if you look at modern cities with electrical, water, transportation networks, they have this incredibly high built-in power demand, and they're built and maintained with these highly specialized, complex materials and expertise. So, in any future where energy is not as abundant as it is today, it's going to become increasingly difficult to, and finally maybe impossible, to keep modern cities functioning.

(00:07:11):

Imagine a cattle feedlot, right? You see pictures of these things with animals really tightly packed together. And Bill Rees, who I know is a friend of yours, Nate, and mine, and been on the show, he urban studies professional co-developer of ecological footprint. He calls cities feedlots for people, and that sounds a little harsh, but he's talking about this in the structural way. Like, in a cattle feedlot, water is piped in, feed

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is trucked in and delivered to feed troughs. The waste has to be picked up and moved off mechanically, as well, and without the cheap energy we have, especially diesel, this would all be ridiculous and no one would do it. So, we have created this absurd food system, especially I'm talking about in so-called developed world, and it's an energy disaster and people have in mind big tractors when they think about energy in food. But, so much of it actually happens afterwards, as you talked about, with the processing and packaging. But all that is the requirement to get it into these cities so it stores and fits on trucks and in warehouses, et cetera.

(00:08:29):

So, this modern supermarket system really just can't continue. So, that's why, some years ago, 2019, I titled this publication I worked on called, "The Future is Rural," and prior to the industrial age, most agrarian people lived in small towns and villages. And, if you look at energy and nations and what happens when they urbanize, they become more energy demanding. Rural peasants are not driving to the supermarket, and there are still places that are mostly rural because they haven't had access to the same levels of fossil fuels as we have. So, there are places in the world that are still 75% to 95% rural, and they tend to use a 50th or a hundredth of the fuel and energy that we would use in a place like the United States. So, we could probably learn a lot from them, going to these places.

(00:09:39):

There's peasant agriculture all over still, and I think you're going to hear a lot more about that from other guests, so I won't go into it, but really, locally tailored systems like from wet rice agriculture in Southeast Asia to yak herders in Mongolia to really diversified systems in the Andes with potatoes, but Nick's farming with long rotations, integrating livestock, and they have guinea pigs in their homes as well as chickens.

(00:10:10):

So, if you think about what's happened in places like, say, Detroit, Michigan, or the Rust Belt, we've seen a situation where cities have depopulated, and thousands of acres in cities now in the US are involved in farming again. So, things like this have happened. There's maybe analogies there that we can learn from.

(00:10:36):

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So, the other thing I talk about, of course, is the tool set. So, the tools we have are so complex, and complexity is built and supported by high power throughput, by globalized supply chains. I have trouble getting replacement parts for equipment right now. It is a mess, I could tell you. Pieces of equipment sit around because one piece is missing. So, technology we use to support important functions need to get a lot simpler. Something I talk about is the modern flush toilet and compare that to what it takes to manage a composting toilet, and look at also not only what simple materials you can do with a composting toilet, but something we consider a waste product is now a recycled, important resource. So, I think we both need an appreciation of historic knowledge that resides in people from around the world that are still using more traditional methods, but we also have fascinating opportunities through education and modern design and understanding, not just of engineering, but soil science. Breeding systems are absolutely incredible right now. So, there's a huge amount of creative innovation out there that's possible to deal with your question. And, I think, if we had had people really looking at this, I'd feel a lot better about it. Okay, so that's me.

Nate Hagens (00:12:15):

Thank you.

Jason Bradford (00:12:17):

Hope I covered it in five minutes or less.

Nate Hagens (00:12:22):

I'm just visualizing homes in Wisconsin having guinea pigs in the kitchens, and I can't quite picture that, yet.

Jason Bradford (00:12:29):

Oh yeah.

Nate Hagens (00:12:30):

Let's move on to-

Jason Bradford (00:12:32):

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They're hysterical. They have a cute little chatter.

Nate Hagens (00:12:34):

Until you eat them. Andrew Millison, what are your thoughts?

Andrew Millison (00:12:41):

All right, thanks, Nate. Well, I feel like, when we think about transitioning agriculture, we have this imagination that we're talking about farming techniques, we're talking about types of agriculture, we're talking about labor distribution, and the thing that I think about when I imagine this transition from industrial agriculture to and more, I mean, really, we're talking about subsistence-based small farm, small community, family agriculture.

(00:13:14):

I think about a lot of places I've been around the world where the population distribution is still spread across the land in a way where you have the people that are distributed around to actually do the work, versus the US where... I know where we live in the Willamette Valley, here, I think the average grass seed farmer farms about 1400 acres.

(00:13:44):

So, we don't have the development pattern, we don't have the distribution of people, across the landscape. We don't have the transportation network that's conducive to this transition to a lower energy footprint. So, in a lot of ways, I agree with a lot of what Jason said about, if you're going to transition, say, the United States for instance, you're not just talking about an agricultural transition, you're talking about a demographic transition, a development transition.

(00:14:15):

I just came back from Senegal about two weeks ago, and I was in some really remote village areas. They were very far off the beaten track, so just like, dirt roads and really farm tracks getting in and between these villages. So, I was touring these different food forest sites, and the people were moving between these villages primarily through little tracks using donkey carts. That was the main mode of transportation. So, when you think about relocalizing and shrinking farms and agriculture, you're also

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shrinking transportation networks. You're shrinking commutes, you're shrinking the distance the people travels, and you're building a new type of development pattern that is scaled to small-scale agriculture.

(00:15:09):

So, in order to inform that, we would look at some of the best, most enduring villages in the world. You mentioned the Ponty foundation. I've spent a lot of time visiting villages in India, as well, that are actually positioned in the landscape based on their micro watersheds, right? So the village is managing their watershed area. So when we imagine redeveloping places like, in the US, this landscape, and creating farming hamlets or creating areas that are now scaled to actually small scale farming, we're talking about village design. We're talking about, how do we place human settlements in the landscape?

(00:15:56):

Now, contrary a little bit to what Jason was talking about ending cities, I would say that not all cities are created equal. I mean, permaculture has many different examples of really intensive urban agriculture, from scales, from people's apartment balconies, to parks to turning green spaces and city farms, and many cities are actually located in historically rich agricultural areas, and places that are also very important for trade, especially along rivers. When we look at the Mississippi watershed here, we have the largest area of navigable river on the planet, and a lot of cities historically are placed within that navigable water system based on trade. Moving food, moving goods via water is the most energy efficient way of moving material.

(00:16:58):

So, I don't envision really the possibility, say, in the United States of going to a completely localized, peasant-based agriculture. First off, that would be a little bit hard of a political sell, in this day and age, and then, we have rivers. People are used to getting around. We still have highways, and even if you had much less fossil fuels, or even if you had other wheeled types of implements moving across the landscape. We have train tracks. Pathetically less train tracks than we really should have, but, to actually imagine a country like the United States transitioning to a non-fossil fuel agriculture, we have to think about the repurposing of our existing transportation

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system and the repurposing of cities, towns that are located in strategic places for moving goods around the landscape.

(00:18:05):

So, I'm not sure that the United States population is really suited right now to a rapid transition to peasant based agriculture. I think that would be a pretty tough sell for people, and I think a lot of people would have a psychological and physical problems with that. So, that would have to be something I think that would have to happen generationally for it to really be effective and not a complete shock for people.

(00:18:40):

But, we have a lot of models. There's a lot of places that are still basically living in subsistence agriculture, and when we look at the development patterns of those places, we look at the social patterns, we look at the family sizes, or we look at the housing distribution. Then we start to get a clue of, how many people do you need, how far apart on the land to actually hand and animal manage the landscape at the level we need, including small scale livestock for recycling manure and urine into biofertilizer and all the things that we see in the best villages around the world?

Nate Hagens (00:19:20):

Excellent. Thank you, Vandana Shiva, good afternoon, and what are your thoughts?

Vandana Shiva (00:19:28):

Well, I think the first thing we need to do is recognize that most of the world is peasants, even today, and we need to defend them. We need to protect their rights. We need to prevent their displacement, both by all the mega destructive projects, as well as an idea of agriculture whose very aim is to squeeze the farmers off the land. I remember, in the early days, the US Secretary of Agriculture said, " You got to squeeze the farmer off the land, like we squeeze the last bit of toothpaste out of a toothpaste tube." After all, not that long ago, America was an agrarian society, not even a century ago. So, A, recognizing that most people of the world are farmers, and recognizing that it is possible to make the transition in places where the farmers have been pushed off the land, to have farmers again.

(00:20:32):

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The second is, the fossil fuel agriculture, the fossil chemical agriculture, is the reason we have monocultures. When you allow nature to work, symbiosis allows different plants to work together. The movement has started. Navdanya means nine seeds, nine seeds grow together. 12 crops grow together. In Mexico, the milpa system of the corn and the beans and the squash. But, when you put an external input of fossil fuels, then just one variety, one species can go.

(00:21:09):

So, the monocultures have been driven, and we've been misled by a very false indicator, which I realized when I was studying the green revolution in 1984. The indicator is called yield per acre, but yield merely measures the commodity that leaves the land. It does not measure the state of the land. It does not measure the state of the farmer. It doesn't measure the fossil fuel inputs and the energy inputs. It does not measure the quality of the food you're eating. So, when we talk about feeding the 8 billion, we need to talk about food, not the nutritionally empty commodities that are being traded. 80 to 90% of the nutrition is gone in food because of chemical fertilizers, because chemicals don't feed the plant. It's the symbiosis between the soil organisms and the mycorrhizal fungi, which feeds the plant, and the plant feeds the fungi, and that's how the constant sustenance of life carries on.

(00:22:12):

And our research in India has shown that when we... Because we save seeds, so we intensify biodiversity. When you intensify biodiversity rather than chemicals, you actually increase nutrition per acre, and what matters in food is not the weight. What matters in food is the nourishment and the nutrition. So, we could feed two times the world population by shrinking the acreage, but intensifying the biodiversity and further intensifying the nutrition in that biodiversity, which is what happens both when you use biodiversity itself and diversity of native seeds, which are bred for nourishment, as well as encouraging the soil to feed the plant. That's organic farming, that's ecological agriculture. And the data is clear that-

(00:23:03):

... Toxicological agriculture, and the data is clear that 70 to 80% higher nutrition in plants that have been fed by the fungi rather than the fossil fertilizer. So intensifying these relationships, intensifying biodiversity, and changing the measure from yield per

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acre to nutrition per acre, to wealth per acre. Our farmers earning 10 times more by using no fossil fuels. They're all fossil fuel free-farmers. And now my next book is going to be care per acre. How much do you care for the land? How much do you regenerate it?

(00:23:42):

And we've done this for pollinators. We have seven times more pollinators. We've done this for soil health and nutrition. Over 20 years in our valley, the nutrition in the organic farms has gone up for nitrogen, 99%, soil nitrogen has gone up. And in the chemical farms, when synthetic nitrogen is being applied, it's declined by 14%. People think by putting nitrogen fertilizers, you give the soil nitrogen. No, you make the soil lose its nitrogen because you make it lose its organisms.

(00:24:16):

Organic matter, up 99%. That's the key to healing the cycle. Zinc, such a key element, 37% decline in chemical farms, 14% increase in the organic farms. Manganese, 70% decline, 14% increase. It's these nutrients that are the cycle of nutrition. That is the food cycle. And no matter which element you look at it, whether you look at yield or you look at your nutrition, or you look at the greenhouse gas emissions, 50% or more from the same destructive food system that's causing for us 75% of the chronic disease pandemic. It's just not working as a food system. It might be working as a trade system, as a commodity system, as an agribusiness profit system, but it is not a food system. So the most important transition is get out of this fossil system, to grow real food.

Nate Hagens (00:25:13):

Thank you. Rounding out the panel. Daniel Zetah.

Daniel Zetah (00:25:19):

Yes. Hello. Thanks for having me on again today. So I would actually like to just challenge the question itself because I hear... The story of we have a moral imperative to feed the world goes around a lot around these parts because I live in the Midwest of America where we have three feet of top soil, and so we have a lot of industrial farming. And I would actually say that we have to challenge the presupposition to that question because I don't think that the current system, with its fossil fuel reliant

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components, is actually feeding the world in a very good way. Like Vandana says, a lot of people are still malnourished.

(00:26:01):

I would say a lot of Americans are actually malnourished even though they're obese because they're not getting the nutrition that they actually need. But I've been telling local farmers around here for years that we need to look at the divergent equation that is, we've got a population that is going up and we've got a farming system right now, especially in the western world, that is degrading the landscape. And so every year that goes on, as we plant and we grow more food in this way, we are actually degrading our land base. And so at some point, it's going to end in tears.

(00:26:43):

So I would actually... I look back at the history of Minnesota where my parents grew up in, they were born in 1937 in a very small community called Raymond, Minnesota, in Western Minnesota, which was in the tallgrass prairie region. And my parents... Well, my grandparents were farmers, but before... My parents, when they were brought up in the '40s, and even in the early '50s, before cheap refrigerated transport came along, there was on Friday nights, all of the farmers from all around the area would bring all of their produce that couldn't be transported.

(00:27:23):

So you've got cream, you've got milk, you've got eggs, you've got all kinds of stuff coming into town. All of the people would come off their farms on Friday night. They would sell all of their produce to cooperatively owned buying groups that would distribute this produce back to the people in the town. And then they would take their money and they would go buy the very few things they actually needed. And then they'd go... And they might actually go have a drink, they might go to a dance. And then they would go home and then they would start all over on the work week again.

(00:27:56):

And so, like Vandana said, the peasant culture even in America isn't that far gone. It's two generations removed. So do I think that we could do it again? Absolutely. So as far as I'm concerned, we're not feeding the world right now as it is, other than the peasants that are still around on their land, that are doing it around the world. But can we feed the world without fossil fuels in a growing population? And this is another

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qualification of the question, can we do it in a way that safeguards the remaining life on the planet, at the very least? At the most, while regenerating that life on the planet?

(00:28:41):

And I think that the answer is yes, because I've been growing, with my wife Stephanie, we've been growing 85% of our own calories on our farm, our 117 acre farm here in central Minnesota, for the past six to seven years. And every year, because we are planting perennial systems, every year our workload gets less and our productive capacity of the land goes up. Our carbon and our soil organic matter goes up. All of the indicators of health and the ecology and of the animals and the people go up every single year. So do I think that we could do this? Absolutely.

(00:29:18):

The question is, will we do it in a way that is reactive or proactive? Because if we make this transition in a proactive way, we can do all this, no problem. If we do it in a reactive way, probably not because, like the other guests said, there's going to have to be such a demographic shift from the cities to the rural areas to be able to capture low density energy flows across the landscape that we would end up spending so much of our time just trying to rebuild infrastructure to make that happen that I don't know if we would actually make that happen in a timely manner. So the answer, yes, is absolutely, no doubt about it if we do it in a proactive way.

Nate Hagens (00:30:02):

Thank you. Thank you all for your opening statements. I have, as you might imagine, tons of questions. And building on what you just said, Daniel, the whole purpose of this podcast, the whole purpose of these round tables, is to pass the baton to more humans to think and act in a proactive as opposed to a reactive way. We're trying to change the initial conditions of events coming our way.

(00:30:30):

So one thing that I would like to understand, the four of you on your podcast with me in the past, and many other people that I've interviewed, David Montgomery, Anne Biklé, and others are confident that we actually can grow, as Vandana points out, more nutritious food with less fossil input. But a common thing that is implied is we're

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going to need a lot more human labor input relative to today. In the United States, 3% maybe of the population is involved in agriculture. I think in India it's 75 or 80% or something like that.

(00:31:13):

What are the labor requirements from such a shift? And maybe you could also add what are the land requirements? Daniel, you said you have over a hundred acres. I assume that's much more food than just you and Stephanie and the people working there. But is there enough land, humans together to pull this off? And what are the labor implications? Because I know I'm running a podcast and an organization, and I have a huge garden. And I haven't had time to weeded my potatoes or do a lot of things, so my garden is suffering because of my job. So we would probably need a lot of the discretionary jobs moving back towards labor and the land. Can each of you weigh in on that? Who'd like to start?

Daniel Zetah (00:32:02):

I would.

Nate Hagens (00:32:03):

Daniel.

Daniel Zetah (00:32:05):

So pre-World War I, the percentage of the American population that worked on farms, and lived and worked on farms, was 30%. The latest statistics that came out a couple of years ago was that it's less than 1% of the American population. Now, another staggering number is of that 1% that is actually growing food in this country, 1% of that 1% is growing it organically. And I would proudly venture a guess that, again, of that 1% of 1%, I would probably say another 1% is actually doing it regeneratively. And so that's got to reverse around. But the thing that we have to remember is that it is a cultural situation. Culture is in the word agriculture. Permaculture revolves around the concept of permanent agriculture. But if we can't get the general population to get more involved in our food production, it won't work.

Vandana Shiva (00:33:06):

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I think the tragedy of industrial agriculture and fossil agriculture is to constantly increase fossil use, including for fossil chemicals, and external input dependence, but never counted these inputs in any productivity and efficiency calculus. You know, 10 to 15 times more inputs to generate one unit of bad food. Over the years in India, I have talked to every agricultural scientist and every agricultural economic and said, "What are the inputs you calculate?" The only input they take into account is the farmer themselves. And I've always said, "But the farmer is not an input. The farmer is part of the system that is the culture of agriculture." You can't take an end, an object, something that is the purpose, and turn it into an input. And through that definition, every technology that displaces the farmer by itself increases food production, even though it does not. Glyphosate and Roundup decreases the work of farmers, but it's defined as increasing production by destroying all the biodiversity that could feed us. And Amory Lovins did this work years ago, and I think we need to update it. He showed that for every American there were 250 energy slaves more than the Nigerian. And therefore, this is in the '70s, instead of the 4 billion population, the population was really 200 billion, with most of the population not eating food, but eating energy, fossil. And if we were to take today's population, this would be 3.35 trillion people, except that they're energy slaves. And I think the way to have enough food for all is to do what was done during the Great Depression and the great Dust Bowl. The two crises were one crisis, the collapse of the economy and the destruction of the soil. And what was done at that time by Roosevelt? He created a Conservation Corps to put people to work on conservation and regeneration of soil and also create employment. (00:35:40):

So in countries where the farmers are still there, like mine, we need to defend them. And they've been defending them. 14 months, they were on the streets to say, "We will not disappear. We want to be small farmers, we want to be sovereign farmers." But for the rest of the world, given that 50% emissions come from industrial agriculture and you can actually have negative emissions with an ecological agriculture and organic farming, having a Conservation Corps would be the way to put more people in creative work. But that means redefining work for the healing of the land as creative. It's been too often defined as drudgery. I remember journalists asking me, "Oh, but you promote small farmers, therefore you support the oppression of women because it's such bad work." And I just asked this journalist, I said, "Do you do gardening?" And

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he said, "Of course. It's so beautiful." I said, "The same activity when you do it is fulfilling and beautiful, and when a woman does it for her food sovereignty, it's oppressive."

(00:36:48):

This apartheid must end. We must recognize that growing of food is the highest vocation. In India, we have... the person who gives you food, is the highest vocation in life. That's the big culture shift. And then the big culture shift of instead of \$400 billion of subsidies for industrial farming, we shift that to say, "Go to the land. Take care of the Earth. Grow more food, solve the climate problem and become physicians, not just of the Earth, but physicians of the people." The evidence is all there. Right now, industry only has propaganda, nothing more than propaganda. The Earth and people and farmers, and the sick people who are suffering, are realizing there has to be another way we go, and people have to work in care instead of fossil fuels, being energy slaves to displace us from work.

Nate Hagens (00:37:48):

So in India, farming and providing food is a high status profession?

Vandana Shiva (00:37:54):

Culturally, civilizationally, yes. It says very clearly, "Farming is the highest, and the lowest is trading, making money by trading." And right now, we've put trading at the highest, and the trading companies are wiping out the farmers and the earth.

Jason Bradford (00:38:12):

So yeah, I get a newsfeed. The AI has figured out what I like to read, and so I get these agricultural dumps, whatever's coming on Reuters or whatever. And so many of it is absolutely absurd because our world is so confusing and disjointed and doesn't hold together. So they have robots and AI, apparently, are going to take over even more of the labor as sort of one of the messages you get. But then on the other hand, you also get the news about the kind of stuff that Daniel's talking about, and peasant movements. So what is going on? It's a land of confusion right now.

(00:38:58):

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Something that I've been working on is I'm in this sea of conventional agriculture and I've got a farm about the size of Daniel's, but there's an incredible hunger for people to actually do what we're talking about here. And I mean, Andrew brought his class out this weekend, and there are people who are just, they want an opportunity to get onto the land. Even though there's this chatter about robots and all this stuff, a lot of people don't buy it, and they care about food sovereignty. And so my property, I farm a few acres at a time, but I've got over a hundred acres here. And how do you then manage land nowadays in the US, where the culture is, big machines just take it all over and there's hardly any people? But people want to come back to it. There is a huge hunger, but we don't have the structures in place. We don't have the culture yet. (00:39:52):

And so I have got six different businesses on my farm right now, small farming businesses, that we're all managing the land together. And I'm sort of the manager of the system in a sense, but mostly I try to share responsibility because it's a lot to do. We have this vision, and Andrew and I have worked on this for my property here, where we do the stuff that we're talking about. And like Daniel is saying, every year you can see more pollinators, more habitat for other creatures, soil quality going up, more people showing up to make the place better. And it is kind of an interesting situation to think about, where the old view, or the modernist view, of nature is that it's separate from humans and we have to protect the nature out there from humans. And then we're going to have these places where we're going to intensively get meet our needs, and nature doesn't really matter in those places.

(00:40:57):

That doesn't work. And humans that are intelligent on the landscape could do incredible things. So I've been really impressed by the changes that you can see in a relatively quick time. I think we're all kind of singing the same song here, but yeah, creating new systems that get people onto the land in places where they've been depopulated is really important.

Nate Hagens (00:41:22):

Thank you. Andrew, thoughts on this?

Andrew Millison (00:41:26):

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Yeah, so I wanted to bring another perspective in because Jason's in the wonderful, fertile Willamette Valley, and Daniel's in the beautiful Midwest. And these are known as these abundant, temperate climate landscapes. And a lot of people in the world live in really marginal landscapes, marginal climates. Again, I just came back from Sub-Saharan Africa, so my mind is in the Sahel, right? In places where, oh, there's two or three months of rain per year. People are planting with the rainy season. There's not really irrigation potential. Senegal, where I just came back from, imports 70% of their food. And a lot of people are eating baguettes, right? People in the morning, and you see people eating French bread, right? It's imported wheat from Europe, from Russia, from Ukraine, from Poland. So there's a lot of places in the world that are already... They're supporting, or they have large populations on really degraded landscapes, and are surviving on the imported food of industrial agriculture. And it's a big leap that we potentially face here with the collapse of global transport of food, the collapse of industrial agriculture as we know it.

(00:42:47):

And so when I think about how many people can be supported on land, my mind goes to more marginal landscapes or landscapes that are in a high state of degradation. And suddenly, we get back to landscape restoration, ecological restoration, water table restoration, reforestation, water collection, bringing organic matter back into soils. Not just for agriculture, we're talking about cropping agriculture, but also improving the overall vast landscape for grazing. So when I traveled up to the border of Senegal and Mauritania just a few weeks ago, went through the Sahel that is really, for time immemorial, people are moving grazing animals down as the rains recede from the Sahara down through from the north to the south. And just looking at the health of that landscape, this isn't a fenced off, sectioned off, divided agricultural landscape, but this is a landscape that's feeding massive amounts of people with the movement of grazing animals.

(00:44:07):

So I think it's important to look at, when we look at, the carrying capacity of land, when we look at how many people can live off of particular landscapes, we need to see the overall state of the ecosystem. Nature, most of the world, we don't have separate forest areas like we do in the United States. I mean, you have grazing leases on national forests, but we have wilderness areas, we have agricultural areas, but most

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places in the world, there is not that fine line. And natural areas are periodically grazed, and nomadic herders are moving through. And so really working on ecosystem restoration is a huge component to actually trying to come up with the carrying capacity of any particular area.

(00:44:59):

And also, I mean, I think we need to be really compassionate for the places that are very imbalanced and are really importing a large amount of their food at this point, and are very much reliant on the current global trade system. Even within the US, I think of places like Las Vegas or something that really have very little agricultural potential based on their population. You know, like, okay, is everybody going to have to leave Las Vegas once we start working out the carrying capacity of the Great Basin agricultural potential? So I think we get into very precarious territory very quickly when we start talking about even local areas feeding themselves because so much of the world is dependent on the Midwestern US, at current, shipping corn and soy out, or what we're seeing with the Russia-Ukraine war and grain moving around the planet. So yeah, that's what I want to say.

Nate Hagens (00:46:05):

Yeah. Boy, there's so many aspects to this. So roughly 38% of the viewers of this program are in the US, and the rest are around the world. And clearly, there is not a one-size-fits all response to agriculture and fossil fuel depletion. I could argue that the US is 90% energy independent, and even though oil is peaking and will decline soon, I could argue that the United States might be one of the last countries that would urgently see the need to do some of the things that you four are talking about. So the two-part question, take whichever part you like. How can we proactively change our culture, a culture where intelligent, pro-future young people see the value in becoming a land steward instead of more temporarily economically attractive career paths? And related to that, are countries like India that have not partaken in the fossil fuel smorgasbord to the extent that the Global North has? Are they actually real examples of forward-looking methods that the rest of the world can learn from? How do we fuse these two things? I'm curious as to your thoughts.

Andrew Millison (00:47:37):

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I feel like one thing that I try to do in my work with my video production is to make land restoration sexy and fascinating to people, where it's like, "Wow, this is amazing." Right. To bring the wonder into taking a dead or degraded landscape, ecosystem, agricultural system, and the magic and the inspiration of actually bringing the life force back into a place where it's been depleted. And so, I think for young people, I mean the inspiration of... Well, the story of taking what is troubled and degraded and depleted and bringing back to life, I mean, it taps into people's personal feeling of bringing life into their own souls. So I think there's a lot of potential with young people because any young person is paying attention, is scared right now about the future about what their generations are going to look like. I have daughters in their twenties and a son in his teens, and I see young people facing this in my students.

(00:49:06):

And I think that looking at places in the world that have actually made that transformation. So a lot of my video work recently just with the Paani Foundation in Maharashtra, India, showing villages that were in a devastated and desperate situation just a handful of years ago with water depletion and the collapse of their agriculture. And then showing those stories of transformation, showing that it is absolutely possible in a short period of time to restore local watersheds and bring back abundance, both food and natural and cultural abundance to societies. I mean, my hope with my work is to spark people's inspiration, because ultimately inspiration is the thing that's going to get people up in the morning doing this work here. So you said a two-part question, inspiring young people and how that relates to the village.

Nate Hagens (00:50:14):

And the US is maybe, arguably, psychologically we're going to get the urgency last relative to the areas in India that you just mentioned. So how do we get ahead of that? Or do we?

Andrew Millison (00:50:30):

Yeah. Well, I would say that the US is also, we are really probably leading the world in depressed young people. So in permaculture, like to say, "The problem is the solution." Because people that are feeling depressed and despondent, if you present a viable pathway to them, then they can jump right on that and become some of your most

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dedicated, most inspired activists in that sense. So I think that there's a lot of room out there to spark the passion of young people in land restoration because creating life, farming, growing food, planting trees, it is a natural antidepressant. I mean, it's something; it brings love and joy into people's lives. And so, I think once people kind of get tapped into that, I mean, that's my hope for how the wave happens basically.

Nate Hagens (00:51:37):

I agree with that. It brings me a lot of love and joy, a little bit of anxiety because I haven't weeded my potatoes, but I started digging them last night, and I still have like 80% of the yield that had I weeded them. So it's okay. Who else would like to comment? Vandana, and then Daniel?

Vandana Shiva (00:51:54):

Yeah, I think that young people are facing a triple crisis. They're facing the lack of a future ecologically, but they're also facing the lack of future because of the economic system that is every day telling them 99% of you won't be needed. The robots and AI will do your work no matter what the work; whether you're a nurse, you won't be needed, a professor, you won't be needed, a school teacher, you won't be needed, pharma, you won't be needed. And they're all worried about the ecological crisis in a very, very deep way. And the third is this entire fossil path has been a fragmentation of society.

(00:52:44):

It tore society apart. So what we have to offer to future generations is, "Here's the best work in the world." If you were totally free, what... You know I'm in Florence, and my friends today were telling me there's this former head of Pfizer who's bought an organic farm here, a former vice president, or someone of Cargill who's bought an organic farm. So they destroy the world during their money-making days, and then they want to come and be organic farmers. All of them. All of them. I mean, we at Navdanya, at the university, we run this one-month course in September, October.

(00:53:27):

And we get the people from the IT industry and the banking and financial sector. They want to be farmers, and we have to show it as the vocation. And that 400 billion I was talking about, if during the Great Depression resources could be mobilized to

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restore the land as the way of employment. Today, there is enough money in the world. Stop funding the wars, stop funding agribusiness and subsidies for fossil fertilizers, start putting it to the service of young people so they can be in service to the Earth. That's the best use of money today.

(00:54:08):

And that public money is our money. We paid those taxes. I think the war against the Earth is being carried out at the same time when other wars are being financed. But we could end this war through people turning to the land and seeing farming as agriculture, the culture of the land, learning from the land, learning from the earth. And the second real issue is I think everyone is suffering the impact of the bad food system in terms of health. I know top doctors, the top cancer specialist in Italy, a cancer specialist in Hawaii, cancer specialist in New York. I know them because they invite me, and they are leaving their hospital profession to turn to take care of the soil because they've understood by the end of the day, our health is connected to the gut microbiome. The gut microbiome is connected to the soil microbiome.

(00:55:13):

And if the young people realize, "My God, I'm in the healthcare system by taking care of the soil." It's not just restoration, but it's regeneration of society and the earth at the same time. Because we will not be able to achieve any of this separately. It's only when human beings find a new meaning in life that we'll be able to get the energy, our autopoietic energy, our energy that is able to both create another future for ourselves and regenerate the earth at the time. Where the young people are just seeing collapse, extinction, collapse, extinction. They're all marching against oil. I think I hope your podcast reminds them that the place to march against oil is get it out of the food system.

Daniel Zetah (00:56:08):

I would say that the veneer of the story of modernity is starting to peel, and it's peeling badly. And most young people, especially, are seeing the fact that, like everybody just said, their futures are looking pretty bleak if we keep going on the path that we're on. So there is a lot of people that are feeling depressed and they don't know what to do. And I feel like what people are looking for is purpose and meaning in their life, and that is lacking in this current culture. And so, like Andrew

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said, we are a keystone species on the landscape. And when we can become land stewards, where we're controlling all kinds of inputs and outputs and the variabilities of going on. We're like a conductor of an orchestra when we're actually working on the land. That is a sense of purpose and meaning that I've never felt before.

(00:57:09):

And I sleep soundly at night ever since I came back to my family farm and started doing this because I was an activist for many, many years, and I felt powerless a lot of times because there was just this crushing weight of all of the problems in the world. But when I'm out with my cows or when I'm working with my hands in the soil, I don't think about any of that. I'm present. And I think that's what a lot of young people are missing, and that's what we're trying to do. It's what we are doing on our farm. We're focused on ecological restoration as the first and foremost. Food production is a distant second, probably a distant third. Education is the second. Education for young people. We hold internships and apprenticeships where, if an intern wants to come for a month or two or three, or the entire growing season, we have spots for four or five people every year.

(00:58:08):

We would love to have apprentices that come for multiple growing seasons. I'm just finishing up a student accommodation building on the farm that'll host... It'll have five bedrooms, and we want to see, we're coming into a period where we have to teach more people more things in a shorter period of time than ever in human history. And the bottleneck is going to be how do we teach people to do this? The bottleneck right now is to find the young people that are willing to give up their privilege of living in this wealthy, wealthy society that has these temporarily fleeting views of wealth where they feel like, "Oh, if I go to college and I can get this degree and I can get a job, I can make this money and I can do these things." That's just not the way it's panning out. So yeah, I think we just need to get people to see the value of going back to the land.

Nate Hagens (00:59:06):

And in backing up the walking the talk, in your case, this is being recorded on a Tuesday morning. Four days ago, the Israel-Palestine thing happened, and you emailed me last night about this, and you had no idea that had even occurred

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because you were working dawn to dusk in your fields and not looking at email and such. And I think so many of us are distracted by all the things going on in the world that were disconnected from the land. Jason, did you have any brief thoughts on that question?

Jason Bradford (00:59:43):

Well, let me just kind of summarize what we're all saying. I think one of the things that's come up repeatedly is that time is really important. How much time do we have to make this sort of turn? And in some places, they're going to be up against the wall, and they're going to act fast and with purpose. And other places, like maybe the US, where we have more slack and the population is more confused, it's going to take longer. This brings up also something that Andrew was talking about, where so many places are still so reliant. If it takes a while to do the ecosystem restoration and get the population to have these new skills, there's still some reliance on the current system. So is there some sort of hybrid path, a transition path where you're maintaining this trade and these cheap grains that can be moved, while at the same time you're aggressively trying to wean yourself from that?

(01:00:48):

So those are the kind of things I think about. And the idea of apprentice systems is really important. How do we train people? I know that my son is looking into electrical apprentice system, and there's a union, and you basically apply, and you are paid to work with someone who's an electrician and help them out. And over some years, you then get your license. So we desperately in places that have been so overwhelmed with modernity and depopulation of the loss of peasanthood, we need that. I often joke that, unfortunately, I did not grow up as a Romanian peasant. Because I'm 54, I started doing this sort of work when I was in my young thirties. So I've had over 20 years now of this, and I am starting to get okay at it.

(01:01:50):

But if I had been... I played baseball, I wrestled, I did all these other things with my time, and I realized, "Oh my gosh, if I had grown up..." And I've been to these places where the 6-year-old kid is herding the sheep, and we are completely de-skilled in the things that are going to matter. And so, we do need time, and we need to have the

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graciousness to allow people who are coming in late to this and don't have the skills. We need all these buffers around the transition.

(01:02:32):

And I do worry about, the other thing was some places are going to have the caring capacity, and it's going to be a softer path, maybe like where Daniel and I are. And other places, it's tough. There are a lot of people there relative to the biocapacity, and that's true for nations and that's true for regions within the US. So yeah, I don't know how Phoenix and Las Vegas fair in this. I don't think they fare well. And so, are there places that they should go? So people always talk about this. We're talking about this for a species right now, for assisted migration, all right? Taking trees and plants from and moving them in restoration projects. We probably need assisted migration for humans as well. And it's one thing to say that within a nation, that's difficult enough, but I really worry about the implications of what happens between nations and what this does to reactive politics.

Nate Hagens (01:03:35):

What in a visualization exercise, can you imagine where each of you live, Vandana, either in Florence or in your home in Northern India, if humanity does get its act together in your regions? Can you paint a picture for me of what your location looks like with respect to agriculture, food, and community in, say, the year 2050? What would it actually look like with some details if you could conjure up some image of that?

Vandana Shiva (01:04:16):

So of course, here in Tuscany, in Florence, the agriculture around the outside, where industrial agriculture has taken over. On the hills, it's like it's been for thousands of years. And in my region, in the Himalaya, in the central Himalaya, because that's where I started to work with the Chipko movement in the seventies. And then, when I started to save seed, I encouraged women to save seeds and do organic farming. Today we have brought back so many of the forgotten foods, and this year, I'm so happy to say, is the year of Millets. 35 years ago, I took a pledge. We are going to make these forgotten foods the foods of the future. They used to call them primitive;

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they used to call them backward; they used to call them inferior; and foods that had to be driven out.

(01:05:12):

And these are tiny little terraces in the mountains, and they grow diversity. And the women celebrate the fact that they have knowledge that they haven't lost their seed and, most importantly, that they work with their bodies. They're proud women, and they understand the roots of freedom. Our freedom today is beginning with freedom from fossil fuels, and freedom from fossil fuels in food is where we can all start. Each of us can start that, and I personally feel satisfied that 50 years later, our mountains are richer in biodiversity, the prosperity of our farmers is better. And because we are connecting, the growers and the eaters, we are connecting the health of the earth and the health of people, and we are regenerating the culture of caring for the land.

Nate Hagens (01:06:18):

So in your case, in 2050, you hope it's just an acceleration of where you already are today, in where you live?

Vandana Shiva (01:06:26):

Absolutely. For us, it's been protect the Earth. And on our particular farm, our water level has come up 70 feet. The difference in the peak heat wave last year between our farm and neighboring farms was 25 degrees centigrade in the soil and 15% moisture in the soil. These are the systems that make living systems, and we should not see the crisis as one-dimensional. It's not just temperature; it's not just water; it's just not malnutrition. All of it adds up together. A healthy food system is a solution to all, and it's a luxury we cannot afford to ignore.

(01:07:13):

There is, and many people mentioned modernity. Modernity assumes farmers must disappear; farming without farmers, food without farm. There's a gang called Post-Eco-Modernists whose job is to keep modernity alive while it's dying. And they are pushing fake food and lab food. Very tiny, three or four of them, but huge money behind them. And that's why all of us, both creating future options and remembering ancient options. 10,000 years of farming in India, 60,000 years of farming in Australia, 10,000 years by the Native Americans across the Americas. Not forgetting

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our rich knowledges and not allowing the extinction of our rich biodiversity. That, to me, is the future and the present for us.

Nate Hagens (01:08:16):

Thank you. In so many ways, this all reminds me of the fable between the tortoise and the hare. And the hare is focused on efficiency because of this shiny energy surplus that humanity found a hundred years, 200 years ago, and the tortoise is working on the land and resilience and protecting the land, and it just seems that that's so apt to our situation. Anyways, I digress. Who else wants to answer that question?

Andrew Millison (01:08:51):

All right, well, that's an easy question because I moved to this area specifically because I could imagine a viable future in this particular geography...

(01:09:03):

... imagine a viable future in this particular geography, right? So, here we are in the heart of the Willamette Valley, a large, temperate valley, not far from the coast here at around 45 degrees north latitude. And the thing about Oregon is, it has really great urban growth boundary laws. So, they draw a line around the urban center, the town, and you cannot have sprawl past that line, basically. So where the town ends, the farms begin here. Also, the forest of the coast range comes right down here.

(01:09:40):

So I mean, I can imagine this still being a viable town because you can have people living in this population center that's centered around rivers with a good gravity fed water source. And, it's in very close biking, or walking, or horseback proximity to wonderful well-watered farmland all around. So, I can see a thriving town that is recycling the wastes of a human population center within and in close proximity around that town without large transport.

(01:10:25):

I could see a move to tree-based agriculture, which is so appropriate in a place like this where we get enough rain to basically grow all sorts of trees. So I could see, instead of having these vast plowed conventional agricultural fields, I could see the easy integration of perennial trees and other perennial crops into this type of system.

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And, I could see this really transitioning to a lot of the places that are analogous climates, like places in Europe where a lot of the silvopasture agroforestry, annual mix with perennial systems were so successful like Vandana was talking about, the thousands of years of agricultural legacy in these places.

(01:11:18):

I mean, a lot of it has to do with your geography and is your geography conducive to a future of down-scaled fossil fuel use and more hamlet village-based lifestyle? I mean, I would invite all the listeners of your program to do your own analysis of your location and be like, "Is this a place that would've survived 500 years ago and could survive 500 years in the future just based on the resources and the geography of that place?"

(01:11:55):

And of course, we get into the complexities of, and what's it going to look like in a warming climate? And what are the risks? And for us, it's fires, right? And, possibly flooding. So, there's all those considerations. But geography, location, location, location is a huge influence on what your future survivability and thriving ability is by 2050.

Jason Bradford (01:12:21):

So, just to say that the future is rural, which you can get at [postcarbon.org](http://postcarbon.org), I actually have a whole worksheet where I try to help people assess their geography for a future like this. So how a food, energy, fiber, cover crop system, let's say, integration of crops and livestock in your region. So okay, Nate, you had a podcast recently about the Lord of the Rings. You use that as the analogy. Remember that?

Nate Hagens (01:12:53):

Yeah.

Jason Bradford (01:12:54):

I had this in my head as well. So this is going to maybe sound a little cheesy, all right? But we've got the Eye of Sauron, which represents this industrial age, which is very destructive, deforestation, armies of Orcs. And then we have the Shire, okay? So in some ways, I'm envisioning a Shire future. And I'm going to get a lot of grief for this because it's so corny.

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(01:13:16):

But, I have been in places like this though. This is what's interesting is that a lot of people can't imagine this, but I can because I've been in places where, imagine the most beautiful garden. You ever go to somebody's house and you walk in their backyard or whatever, and they've got the most incredible garden. You're just like, "Everything is amazing." Just the flowers, and the bees, and the birds, and you can smell maybe the moist soil, and you're like, "Are you kidding me? You created this?"

(01:13:49):

Well, there are parts of the world where you can go. And it's also, this is the history of the Mediterranean. Europe was like this in the 1800s in parts of Italy, for example, and Spain, where you could be on a top of a hill and as far as you can see, it was just this incredible landscape of garden. And, there wasn't the metal. People were using wood. So, trees were grown so that the grapes could go from one tree to the other, the Arborvitae kind of thing.

(01:14:25):

I've been to a place where somebody's milking cows and then, they're handing me a cup of milk. And this is this beloved animal that has the walk of the village. I can imagine that here. And also, where nobody is lonely. Houses are going to have to be smaller. People are going to have to go outside and do a lot of work. And when I go out to the farm here, I meet the people that are out here also. Like I say, I'm farming with other people. And so, it's fun in some ways.

(01:15:02):

It's hard, too. You have to sort of put your shoulder in it once in a while, and it would be nice to have more people to help out with certain tasks. And then, I also have friends who are craftspeople. They make clothing. They know how to felt, right? And, that's from wool. And make clothing, vests, and hats, and stuff like that, and leather work with shoes. And housewares, I have a friend who carves bowls and stuff, and useful things out of local maple and madrone.

(01:15:40):

And the thing that still bothers me now is, I'm in this pre-Shire existence in my head sometimes where things are just aligning right even today. And then, the plane flies

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overhead, or I hear some guy revving his engine on the road a mile away, and it breaks it. And so, imagine that's all really diminished. And in the spring here in May, the bird song, you get the dawn chorus, and it's ridiculously loud. So, what if that's more of what we hear as well? So anyway, that's my corny Shire vision.

Nate Hagens (01:16:26):

I knew you were corny, and I invited you just the same because you have a pure heart and a lot of agro-ecological wisdom, my friend. Daniel.

Daniel Zetah (01:16:38):

So, what I envision is... I mean, first off I want to talk about where I live, where my farm is in South Central Minnesota is a place. It's very unique in the fact that just to the west of us, it was Tallgrass prairie as far as the eye could see, and just to the northeast of us, it was the big woods. But right where we are, there was a band of Oak Savanna Tallgrass prairie before white people came and destroyed it all. And every single city park that you've ever been to around the world as far as I've ever seen around the world, they're all patterned after that Oak Savanna.

(01:17:15):

And, it's a beautiful landscape. Just grasses, rolling hills and grasses, and large spreading trees. And so, what I could see is, I could see the trees that we've already planted, the hundreds of oak trees, the hundreds of hardy pecans and chestnut, hybrid chestnut trees and hazelnuts. I could see those dotting the landscape as far as the eye could see instead of the corn and soy that's all around us right now.

(01:17:44):

And, not only the landscape would be beautiful, but what I'm most excited about is all of the people. When I was young, there was still a small enough small farming community where if I rode my bike up our gravel road, every single farm site had people on it. There was kids my age, there was people working the land, they were always home. If they needed help, they just came over. They asked, "Can you come give me a hand?"

(01:18:10):

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Now, they're all dead. And all of their kids that inherited the land rented it out to one farmer that rents 5,000 acres, and has a combine that's worth more than our entire farm. He doesn't grow one calorie of food that he could eat. And so, I love the idea of re-localizing and repopulating the rural areas where there's life again. Not only is there life in the ecology, but there's life in the culture.

Nate Hagens (01:18:41):

Thank you. I am going to ask a difficult final question. Given how far away we are, at least in the Global North from your visions, what do you each think are some important first steps to get in that direction, either at a national governmental scale or in communities, localities, and even from individuals to get started on the path that each of you are charismatically outlining in this conversation?

Daniel Zetah (01:19:14):

End agricultural subsidies. That's got to be the first thing. Right now in America, we spend \$182 billion on agricultural subsidies that has directly destroyed, or greatly diminished the agricultural capacities of other foreign countries because they cannot compete with those cheap, imported grains that are actually not good calories. They're just hollow calories. But yeah, if we end that. And, that would actually let the market change a lot of this for us.

(01:19:49):

In America, we talk about we live in this free market economy, but we don't. We live in this weird, corporate subsidized and corporate welfare state that greatly skews the outcome of what our cultural desires and wants are. But also, to reframe the cultural question of what do we want? What do we want from an agricultural system? What do we want from a culture? Those have to be part of it.

Vandana Shiva (01:20:16):

I totally support Daniel about ending fossil subsidies because all the subsidies in agriculture are fossil inputs. And when I did my book on the Green Revolution in the eighties, I realized that the chemical agriculture could not have been introduced in countries like mine without subsidies because it is so unviable. Farmers know it

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destroys the soil, it takes 10 times more water. Now we know it is a big contributor to the greenhouse gases.

(01:20:49):

The second is, I really do feel, and this has been my life's work, is we must end patents on seed and patents on life. It is ecologically, ethically, epistemologically a fraudulent claim, and it's pushing farmers into debt. It is pushing farmers in my country to suicide. So, no subsidies to make an unviable system work, and no patents to claim we are the creators.

Andrew Millison (01:21:19):

I think we need to do some ecological gerrymandering. And, we need to redistrict our political boundaries to correspond to watershed boundaries so a voting population has the same lines of control as a watershed population, as a catchment basin. And I think, that if our political will was aligned with ecological boundaries, then we would be able to start to look at this land in a way that would give us the basis to create this regenerative agriculture, regenerative culture that we're talking about.

Nate Hagens (01:22:06):

And the first step ahead of that is to explain to people ecology and what a watershed is perhaps. JB?

Jason Bradford (01:22:15):

Take Andrew's class. Take Andrews class. OSU has it online. So permaculture online, one of the best online permaculture classes you can get. Okay, enough sales. All right. So, a few things I've got broken up into four categories, laws, land use laws. Andrew talked about how in Oregon you've got this boundary around cities. In many ways that's good. It's protecting the land so developers don't get it. But, it's also keeping the land from being redeveloped in ways that are supportive of what we're talking about. So, we're in a catch-22 here.

(01:22:56):

And so, there are models though that allow for easing that. So, Wales has what's called the One Planet Development program. And if you can basically go to your local land use commission or whatever and say, "Hey, I need to repopulate this land

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because I'm going to live there. I'm going to be an agro-ecological farmer and have livelihood based in that place," then they will allow you. And you've got to make an eco home. And so, it's really interesting. So anyway, we need creative ways so that we can get more people onto the land in places like the United States that have been depopulated. India's fortunate that it still has its village system.

(01:23:41):

The other thing is private networks. So we talked about apprenticeships, and internships, and farms that provide land access like I'm trying to do for people. A lot of people want to have a few acres, or if they have livestock, they want 20, 30 acres for a small business. The local landscape is not set up in those kinds of units. So, how do you take these big farms that exist and the larger parcels in places like the US and manage them in smaller units? I think we need more models like that and demonstrations.

(01:24:15):

Local nonprofits do amazing work in ecological restoration. There are local watershed councils, soil water conservation districts, land trusts, they all are hungry for funds, volunteers, landowners willing to work with them. And, there's a lot of support for these programs at state and federal levels. There's funds available. It's a grant program a lot of cases, making those easier, more people can go and help those groups in any way possible. Come out and plant native prairie, for example, happens around where I live.

(01:24:54):

And, the other is getting into education and an open source knowledge. So, Vandana was talking about patented knowledge and stuff like that. It's amazing how underfunded our universities are for basic crop breeding. They've outsourced that to private industry. And I know of all these amazing plant breeders that struggle to get funding to breed the locally adapted varieties for dry farming, for example.

(01:25:21):

And then, think about also technologies, patenting of equipment. We need an amazing amount of new set of tools that is amenable for this future. And again, you could go to other parts of the world where they make stuff at the right scale, and we don't in places like the US anymore. And, getting access to these tools is actually

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difficult and expensive. So, those are the kind of things I see that would really be helpful.

Nate Hagens (01:25:52):

Excellent. This has really been informative and inspiring. We just have a few minutes left. I would ask each of you for any closing words of wisdom for the viewers and listeners of this program. JB start with you, then Andrew, then Daniel, and then Vandana.

Jason Bradford (01:26:13):

Well, I hope you've been inspired. I go between when I'm not actually outside looking at birds or working on the farm, I can get depressed and upset by the state of things. But, I am so lucky that I have this opportunity to be out and moving, and creating, and seeing how the web of life responds. So, it gives you a sense of purpose. It's good for your body, and you get good food into your body. And so, really everybody, the greatest antidote to what you may be feeling might be getting out and participating in any way you can in what we've been talking about.

Andrew Millison (01:26:57):

Yeah, the thing that keeps coming up for me in this whole conversation, it's been mentioned a little bit, but is just the migration of people, right? It's happening right now in the US and other places in the world. It's a huge political flashpoint. But, I think that the migration of people and the redistribution of people from places that can't support populations to places that are supporting agricultural surpluses, I feel like that's going to be a really big trend in the coming decades. It's going to be something that dominates many of our lives.

(01:27:40):

And, I invite people to have compassion and to step outside and think of the movement of people going on as a necessary, like Jason was saying, a necessary redistribution of resources. And I hope that the new cultures that emerge from this inevitable redistribution of people can be flourishing and can create new patterns where humans can actually be at peace, and actually thrive with these new formulations of cultures and populations that are inevitably going to happen.

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Daniel Zetah (01:28:28):

So, I invite people to be brave. Right now, we have a helper on the farm named Victoria. She called us up about three months ago from Southern California. She'd never done anything like this before. She grew up in a city, large town, and she's just never been on a farm really before. And just knew that looking at her family and looking at everyone that she knew that was firmly in the hamster wheel of modernity, that they weren't happy. And she's 26 years old, she's like, "I don't think I want to do that."

(01:29:08):

And so she didn't know where to look, but she found us. The first thing she found on WWOOF, which is the Willing Workers on Organic Farms website. And she called us up, she called us three times. She really wanted some reassurance that this was all going to be okay. I'm like, "Yes, it's going to be okay. Just jump." And, she did. She drove all the way out, and she's been here for two and a half months now, and she's here for another month.

(01:29:33):

And it's just been great to watch her blossom and learning all of these skills and learning the interconnectedness with the nature, and with working with your hands. That's what makes it worthwhile for me, is to watch the young people come and actually understand this and viscerally understand the connections. So yeah, I just invite everybody that is watching this that's confused and doesn't really know what to do with their lives, take a chance and jump, and you will not be disappointed.

Vandana Shiva (01:30:07):

Yeah, no matter what you're concerned about, could be climate havoc, it could be species extinction, it could be the fact that people are hungry, or it could be that everyone around you is sick. If we turned to a food and farming system that takes care of the Earth, and through that care addresses all of these problems, we realize that it is time to stop eating oil and taking care of the soil.

Nate Hagens (01:30:42):

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Thank you. And, thank you all for your bold and visionary work on these issues. And I'm proud to call all of you friends and colleagues. And, to be continued. Enjoy the rest of your week and good luck working in the soil, and thanks a lot.

Vandana Shiva (01:31:06):

Thank you.

Nate Hagens (01:31:06):

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