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

[00:00:00] **Brett KenCairn:** The environment that we're living in is becoming more unstable, more extreme, whether that's floods, heat waves, droughts, fire, new infectious diseases. That's why living systems regeneration is the fastest path for stabilizing systems. More photosynthetic capture, more soil carbon, more habitat, because all those trophic layers are gonna add opportunities for life, and that life is gonna be a lot more productive in terms of biomass, in terms of shade.

[00:00:30] It might not be stabilizing the entire globe at once, but we can stabilize the geographies that we live in. That's where my hope resides

[00:00:42] **Nate Hagens:** Today I'm joined by systems change practitioner Brett KenCairn for an overview of the no regrets regenerative strategies needed to build ecological and community resilience through a practice called Living Systems Regeneration. Brett KenCairn is the founding director of the Center for Regenerative Solutions and senior policy advisor for climate and resilience for the city of Boulder, Colorado's Climate Initiatives team, where he coordinates the city's nature-based solutions work.

[00:01:14] Brett has extensive experience in regenerative ecosystems and economic design and implementation. He has also worked across the Western United States in community-based initiatives. Additionally, he's the co-founder of multiple organizations, including the Rogue River Institute for Ecology and Economy, Veterans Green Jobs, and Community Energy Systems.

[00:01:38] In this conversation, we explore why overemphasizing carbon accounting has obscured the second and equally important leg of global heating, land use change and soil degradation. Brett breaks down why land use change

accounts for over a third of excess carbon, and how acknowledging this reveals a clearer, more manageable path towards local ecological regeneration and stability.

[00:02:06] Most excitingly, Brett shares some of the ways he and others have put theory into practice over many decades through community-led stewardship initiatives that are restabilizing land and local water cycles. Ultimately, Brett and I discuss why fully embodying all this will require us to complexify and deepen our relationship with the rest of nature and each other, even as we simplify our economic and material throughput at the global level.

[00:02:40] If you'd like to learn more about the information presented in this episode, I encourage you to take a look at our show notes, which you can find on our website on all episodes on thegreatsimplification.com, and in the link in the bottom of the description of this episode. The show notes include resources and references for topics covered in this conversation and are available for every episode in our catalog, including the Franklys.

[00:03:08] This was a really inspiring conversation. Please welcome Brett KenCairn Brett Kincairn

[00:03:17] **Brett KenCairn:** Nate Hagens

[00:03:18] **Nate Hagens:** Welcome, at long last. I was so glad I watched your Bioneers talk, and that connected us, and I've been reading some of your work, and, I think what you're working on may be at the heart of, what I have in mind and the goal of, this platform.

[00:03:36] **Brett KenCairn:** Well, Nate, I've been a regular listener for quite a while now. A good friend of mine who works in the same space that I work in sent it to me, actually, as I was returning from the UN Convention on Biodiversity a few

years ago, and he said, "You need to listen to this piece." And that kinda got me hooked.

[00:03:53] So I really appreciate-- and I come back to your program often for context on many things, and I've been watching for the way that the work that you've been doing around energy systems change and simplify sort of meet this work around living systems regeneration. So it's just really exciting to have this conversation.

[00:04:12] **Nate Hagens:** Thank you. I'm looking forward to it. Let me dive right in. I'm gonna read a quote, something that I saw in your work. I quote, "We cannot stabilize the climate, reverse the loss of species, and protect place base, indigenous, and traditional cultures without a global movement to regenerate the fifty percent plus of living system function that has been lost on this planet."

[00:04:40] So let's start there. Can you explain what this number is actually measuring, and, against what baseline, and what do you mean by all that?

[00:04:47] **Brett KenCairn:** Yeah. So I work for the City of Boulder. Among other things, it's my core job, and I'm grateful to be able to be a part of our climate team, and I have been there for almost fifteen years now.

[00:04:59] And so I started in the sort of conventional area of climate action, which was energy systems change and the sort of accounting of carbon. And, about five or six years ago, maybe a little longer, we started working on the sort of nature-based or nat-- what was called natural climate solutions work at that point, which was basically looking at the living world as just a carbon sink, and how do we enhance its capacity.

[00:05:24] We started to try to really understand the math that was representing, and it started to open up, some discrepancies that didn't seem to make sense,

numbers that didn't add up. And to make a longer story shorter, what it led me down was a path to realize that the re-remarkable degree to which our climate is actually a phenomena created by life.

[00:05:50] It is a biologically mediated dynamic. It's just not a, it's not just a carbon machine that's run by CO2 in and CO2 out. It's actually been created by life to create the conditions that best serve all of us. And it's this de- degradation of that living system that we're now starting to see more and more is also at the heart of climate destabilization.

[00:06:12] **Nate Hagens:** So I already have so many questions. How related is that to the Gaia hypothesis?

[00:06:18] **Brett KenCairn:** So some people sort of dismissed the Gaia hypothesis because it was intoning that the planet had a consciousness. I'm not gonna try to weigh in on that. I actually have a sense that there's a lot more sentience to life than we know, but that the planet l- is a living, interconnected being seems now increasingly clear.

[00:06:40] And so, but let me just give you some of the statistics that we started to unearth as we were starting to try to understand what role the living world had in climate and how that basically affects the dynamic. So we're living on a planet right now that, according to the World Atlas of Desertification, suggests that something like 75% of the terrestrial world is deeply degraded.

[00:07:08] We have a planet in which we've abandoned more agricultural land than we're actually using. So we're using about one and a half billion hectares for agriculture. We've already abandoned about two billion hectares because it's no longer productive.

[00:07:23] **Nate Hagens:** And what happened to that two billion hectares?

[00:07:26] **Brett KenCairn:** A lot of it is now desert. I mean, you think about, again, the, it's a kind of truism you think about the cedars of Lebanon. Lebanon is incredibly beautiful... I m- I loved your piece, by the way, on Lebanon and, you know, the whole Fertile Crescent, the way that's where agriculture started. That's where we started to do repetitive agriculture in ways that started degraded tho- degraded those sites, and it, as a consequence, so much of those land areas are now, they're, desert.

[00:07:55] So, and then some of the other ones that have emerged more recently that are just so shocking, things like global plant biomass The actual tonnage of plant biomass on the planet has been reduced by 50% since essentially about 10,000 years ago. We're at a-- We're on a planet that has a third less forest than it had even some of it just in the last 100 years.

[00:08:20] The acceleration of deforestation is quite remarkable. Y- we know the d- biodiversity numbers, I think we're something like 73% of all species are in decline. Some of them that, you know, are just so shocking. Wild, mammal biomass. You know, 10,000 years ago, 95% of all animal biomass was wild animals, 5% was humans and our domesticates.

[00:08:43] 95% of all animals are humans and our domesticated species, 5% are wild. I knew that one, but the things that I hadn't seen were some of the more recent ones around the ocean. We have an ocean where the phytoplankton have declined by 40%. Marine fish biomass is down by 60% to 80% over its original levels of most, much of that in the last 100 years.

[00:09:10] So what I'm really pointing to here, Nate, is there is no single number of studies that's gonna say we are living on this planet that has this. Although I did just find one the other day, it came out in One Earth, breaching planetary boundaries, over half of the global land area suffers critical losses in functional biodiversity integrity.

[00:09:32] But the point I'm getting at is when you look at it in totality. We're living on a planet that is operating at far less of its productive capacity than it had. 50% is probably a realistic rounded number. But it's-- And that's a kind of an abstraction. You can see this outside your back door. So if you go out in your backyard, if your backyard happens to be a classic suburban lawn, that land area of your lawn is operating at probably less than 50% of its photosynthetic capability because you have a few species, maybe four or five, a few grass species, and you maybe have a few shrubs.

[00:10:18] **Nate Hagens:** So let's say that someone has a one acre backyard- Mm-hmm ... which most people don't, but, and it's all yard with some, playground equipment, and a barbecue grill, and very few trees, some small ones and some bushes. What you're saying is when the sun hits that one acre every year, and then the winter comes, and then the spring comes, and every year there's a biological productivity that grows from that one acre.

[00:10:44] And if we average that around the planet, we are 50% lower than historically, and that acre, if properly regenerated, or I don't know what the term you would use, and, with a plan in service of growing more biocapacity, could on average grow 50% more than it does now?

[00:11:06] **Brett KenCairn:** Yes, absolutely. Maybe more. Maybe more than that.

[00:11:09] We've actually... In fact, our parks department is doing some leading edge work now to rethink the future of urban parks. Because we have our, in our park system in Boulder, we have 700 acres of parks, maybe most of them around the seven, eight acre size. About one acre is in a sort of improved area, picnic areas, what have you, and the rest is in grass and a few scattered trees.

[00:11:35] Average tree canopy in our parks is probably less than 15%. If we increase the tree canopy on half of that park to in the neighborhood of 35 to 40%

canopy, and we introduced a whole series of shrub layers and other forb and grass layers that are more synergistic together, we would probably increase the photosynthetic capture in that site by 70 or 80%, which is all basically in the service of creating more life.

[00:12:07] And then the other thing we would be doing is actually decreasing the amount of water we need probably by about two or three million gallons a year to keep it alive, and we would have a whole lot more of the sort of shade, water absorption, and biodiversity that we're gonna need to have a landscape that's gonna protect and shelter us from the extremes that we're living into.

[00:12:27] **Nate Hagens:** Yeah, I wanna get into that. but still on the historical arc, so 10,000 years ago, we didn't know it at the time, but that was effectively the Garden of Eden, which has been slowly degraded, with increasing acceleration of late. But back then, we're living off the interest, all the humans that were alive then, and it was m- more, way more than we needed, so we never even thought about it.

[00:12:57] But now we're living off the interest. Latest data is 40% of the net primary productivity, Right ... on the planet is diverted to human endeavors. And historical primary, productivity in the form of fossil fuels. So, we are using a much greater amount than today's plus 50%. We're using today's plus 1,000% in the form of ancient productivity in coal, oil, and natural gas, right?

[00:13:29] **Brett KenCairn:** Yeah, and I wanna come to that sort of, petrochemical bump in a little bit. But, just to stay with the sort of land capability piece, I think one of the things that's beautiful, if we think about it, is that we actually have the stories from our elders of what it li- looked like and felt like to live on a planet that was operating at much more of its capacity.

[00:13:56] So, you know, when we talk... When we hear stories about the skies becoming black with carrier pigeons, like, you know, because there were just so many, or that you could literally walk across the backs of salmon across the river, those weren't metaphors. They were actually sort of that's how abundant.

[00:14:11] Or when you would look across the plains, and there would be buffalo of such magnitude that everything was moving.

[00:14:18] **Nate Hagens:** The sad thing is in the last 10,000 years, those things you just mentioned were only 150, 200 years ago.

[00:14:25] **Brett KenCairn:** Exactly. So I, I do wanna, before people jump off a cliff in depression here, I wanna make sure that we counterbalance this a little bit.

[00:14:34] So I think that the climate issue swallowed the environmental movement. Mm-hmm. And that it became an existential issue, and that as a consequence, we stopped paying attention to what was actually happening around us, and that, as you say, in just the last 30 or 40 years, the acceleration of these dynamics has been so remarkable.

[00:14:54] But there are examples, both historical and current, of people and places where we have reversed this. I think the most striking example of that in... for me culturally at least, is in our own Great Plains and what happened during the Dust Bowl. I think if people haven't watched, you know, a documentary about the Dust Bowl, Ken Burns did a great one by the way, it...

[00:15:21] you should do that just because it's instructive to see what it might have felt like to live through a living hell of that kind of ecological breakdown. The dust storms that started just a few a year until finally they were happening like every several weeks. People were living through all that. And so, and the scale of the devastation, and this was all happened because of wheat And the ability to plow,

and that what we did between, say, the mid-'20s and the early '30s to meet this sort of wild wheat market basically turned up most of the Great Plains in a very short period of time, and that's what led to...

[00:16:01] And we simplified it into one species, and then we- we know what happened. And so I would have thought if, probably if I were a resident on the plains at that time, like, "It's over. It's done. There's no hope here." In fact, of course, many people just had to move and move west. Fortunately, at that time, you know, maybe a time not so dissimilar from the one we're living into, when we had enormous dislocation economically, socially, politically, we had leadership that had a sense that if we could provide the right opportunity for these many underutilized people to do good and meaningful work, that we might be able to turn that around.

[00:16:44] And the remarkable thing is that we did. In the course of just 10 years, we stabilized the plains. In another 10 years, we started to actually bring its productivity back online. But that happened because we put millions of people to work. I mean, the scale of that is really something that we have to start thinking about.

[00:17:03] **Nate Hagens:** I, I personally have not watched a documentary on the Dust Bowl, and I'll put that on my list. But if you could just briefly say, what did those millions of people do and how... What were the ecological treatments that resulted in the change?

[00:17:20] **Brett KenCairn:** You know, it's interesting that Aldo Leopold was a part of the many people who were recruited to figure out how we were gonna stabilize the plains.

[00:17:31] And so they developed terracing systems and everything from simple hand-built rock structures to large equipment-based, efforts to kind of stop the

erosion, the planting of the windbreaks across the plains. They had to create nurseries, thousands of nurseries, to grow out the stock of shrubs and trees to plant this massive s- sediment-catching wall, and then just hundreds of thousands of terraces and other structures that they put in place.

[00:18:08] So they... and all that is, it's in our legacy of materials, and actually some of it we need to be pulling back out because the last of those shelter belts in the plains are being cut now after all those years of doing that work. And so, and then, and just to say, that's not the only place that's happened.

[00:18:25] if you haven't seen John Lu's remarkable documentary about the Loess Plateau in China in the late '90s, the World Bank and the Chinese government took an area the size of, I mean, it's huge, millions and millions of acres. And this is a place that human beings had basically exploited for thousands of years.

[00:18:45] It was one of the cradles of civilization And again, in the course of just a couple of decades, they created a site, a s- an ecological system that could start supporting human communities again. So th- those are several historical examples at scale. Again, I mean, in the case of the Chinese government, they just deployed, again, millions of people with hand tools, largely, to be building terraces and planting berms and doing all that work.

[00:19:15] But there are some really interesting and exciting examples now, and if folks haven't seen Andrew Millison's work, Andrew Millison's up at, Oregon State, runs a permaculture institute up there, but he's been documenting amazing work across Africa and South Asia in this. And then just, the other day I was touching back in with some friends, Didi Pershouse and Walter Yennett's work with Vijay Kumar in India.

[00:19:42] The natural farming movement in India is absolutely remarkable. This is a movement of people who have almost nothing. They're little, like one hectare

and smaller farms. And over the course of the last 10 years, drawing, by the way, on a lot of the regenerative ag guidance from people like Ray Archuleta and Gabe Brown and people from here, they were just watching YouTube videos.

[00:20:02] And Walter Yennett, they have created the most incredibly kickass land regeneration effort ever... By the way, Nate, when I first checked in on them, there were already 800,000 small farmer participants in this one state of India, and I blinked. Three years later, 1.8 million farmers participated.

[00:20:24] **Nate Hagens:** So let me briefly summarize and ask you a question. These farmers in other countries who are very poor are watching videos from some American ecologists, regenerative farmers, and making changes where they live. I have to ask you, is it the fact that they have, to use your words, close to nothing that sprung them into this direction.

[00:20:53] Why is it that the United States is not taking the lead on some of these things and it's happening elsewhere in the world, or is that a true statement?

[00:21:03] **Brett KenCairn:** Well, I wanna further elaborate how remarkable, and then I'll come back to your question. because of the lack... So by the way, this movement grew on the backs of the women's financial cooperative movement.

[00:21:19] So the first step was to start organizing women to support each other through small loans to do small enterprise.

[00:21:26] **Nate Hagens:** Wa- was Vandana Shiva involved in that?

[00:21:28] **Brett KenCairn:** That, what I now realize is Vandana Shiva's work was influencing a lot of very similar efforts across the continent- Yeah ... right? And so they were doing, they had a similar, probably related, but separate network that was doing that kind of work.

[00:21:41] And simultaneous as they're working with these women, the wave of farmer suicides and basically collapse of the agricultural economies because they had all been bought into fertilizers and chemical inputs by the Green Revolution was taking place. So it was basically the collapse of the Green Revolution in small farmer economies And that created the space for people being open to trying something different.

[00:22:07] And so they created this little micro extension program around natural farming where they were just sort of learning it on the fly, but having to develop all of their own amendments from the classic old scale, like using animal products, but actually culturing them and preparing them and creating seed coatings, but all out of local materials.

[00:22:28] And so they were very successful and have been with all these biologically generated, locally produced materials. But over the last five or six years, the other thing that they've started to innovate around is cover cropping with not just like five or six, six species. They're now cover cropping with thirty, 40, 50 species.

[00:22:48] And they're starting to realize that they can create the... And this is Elaine Ingham actually was, they call on her as one of their great inspirations. God bless her. may she rest well wherever she is now. But they've discovered that basically by getting that kind of plant diversity, they can create this natural fertility program.

[00:23:09] So I think that there's a huge amount we can learn from all of these other communities around the world who've been forced to innovate in that way. So now as to why we're not doing it here, well, there's a lot of obvious reasons. While we have been looking up, the petrochemical industry has been quite effectively infiltrating even more deeply the research and academic institutions

and the professional land management communities to believe in chemicals even more.

[00:23:36] I, I, won't try to go into it 'cause it's a politically sensitive topic even in my own hometown. But the ways that our... We've started to accept that certain very toxic chemicals are essential to restoring plant communities because we don't necessarily have the budget to go out and use animal management and other practices that wouldn't be as easy as drone spraying something.

[00:24:03] **Nate Hagens:** I'm sure there's a lot of truth in what you just said, but it's also at a broader cultural level, the soma, and the distraction of people that have the modern version of bread and circuses, at least so far. I think that's about to end. So we don't feel the necessity and the agency and the imagination and the drive to do some of these examples, but we're going to have to, which is one of the reasons I was keen to have you on the program.

[00:24:35] We can move as a species. I'm not sure we're going to, but we can move from destructors and dominion towards regeneration and stewardship. I mean, who else could? I mean, how else could the world from where it is now boost our ecological primary productivity by 50%? Could it happen just by nature

[00:25:01] **Brett KenCairn:** Yeah, I wanna come back to this.

[00:25:04] I really love how in your trajectory of conversations, you have been coming towards this set of questions around how do we do it on the ground? Yes. And doing it on the ground ultimately means always in your community. All of this work is fundamentally, intrinsically, essentially local So I wanna come back to that, but I wanna make sure we didn't miss a couple of really critical points because I think that there's been an orthodoxy in terms of understanding how climate change is happening and what we need to do about it that is so deeply

embedded that it basically diminishes or essentially externalizes the value of even thinking about these other things that we're about to talk about.

[00:25:52] So I wanna just try to make the case about the role of the living world in climate first, and then come back to what we then do about that locally. So what, what happened, I believe, and this has really been informed both by talking to elders in the science community who were around in the '70s and '80s in the early discussions about climate, but also this fantastic podcast or, Substack called, Life According to Climate.

[00:26:22] He went back and he looked at the early discussions about climate change, and so one of the first major publications around this in the sort of more modern era was in 1971, out of MIT. It was called the Study of Man's Impact on Climate. And it then spawned an international gathering to talk about, because this was in the first dawnings of like, "Oh my God, I think we're gonna have a real problem here.

[00:26:52] We gotta do something about it." And if you go back and you look at those transcripts and those documents, they all talk about how climate change had two legs. I love how it was like climate change was a two-legged problem. That's interesting. So one leg was, yes, about burning fossil fuels and the emissions that it was generating.

[00:27:14] But the other leg was about land degradation or living systems degradation, because we al- we've always known the predominant greenhouse gas is water. And one of the most foundational things that happens when you degrade land is that you disrupt the water cycles. And one of the things that disruption of the water cycle does is it releases a lot of the water that's in the terrestrial systems into the atmosphere.

[00:27:38] And of course, as it gets hotter, just the physics of this further compounds this, and so that very negative loop of land degradation liberates both... And by the way, Sanderman and others in 2017 did this analysis of soil loss globally over the last 12,000 years. And one of the things that they assert is that about a third or more of the excess carbon in the atmosphere didn't come from burning fossil fuels, it came from burning our soils.

[00:28:06] **Nate Hagens:** When you say burning our soils, what, do you mean exactly by that?

[00:28:10] **Brett KenCairn:** that's a bit of a euphemism, but it's basically whenever we stop, when we remove the, living cover And you expose the soil to sunlight and wind, you're basically liberating, you're volatilizing that carbon, and it goes up into the atmosphere.

[00:28:27] And so, a third of the excess carbon in the atmosphere was not from burning fossil fuels, it was from basically land degradation. And then you- Yeah ... add to that the implications of disrupting water cycles, and we're living on a planet where, a, an immense volume of water that was cur- that used to be in the land is in the atmosphere.

[00:28:49] And so we've only been thinking about one thing that's extra in the atmosphere, which is carbon, and we should be thinking about water and how we actually not only bring that water back down, but hold it and cycle it. Because water is the basis of the natural heat pump that the planet operates on.

[00:29:07] The process of transpiration and turning water from a liquid to a vapor basically captures energy, and that creates a convective cycle that then sends that into the atmosphere. And a bunch of that when it re-condenses back into water, that energy is released, and a lot of that energy heads out into space.

[00:29:25] So we've disrupted that natural heat pump. I love it because a big part of our energy systems work is trying to get people to adopt heat pumps, and it's like, well, we actually ought to get the other heat pump going too, or re-get, you know, starting that. So I just wanna make this case that there- we've known for a long time that climate was a two-legged problem.

[00:29:45] But let me just say, there were several reasons why we decided not to follow that track. One of them was we knew it was gonna be an international issue and that we had to actually coordinate action across all these nations, and talking to people about technological change is actually much easier than talking to them about land use and land degradation.

[00:30:07] But the other one was that in 1971, we didn't have the computational power to model water cycles, and so the carbon scientists, the geophysical scientists came forward and they said, "Look, yes, that's a part of it, too, but if we could just manage this carbon problem, then we could probably stabilize climate, so let us focus on that because we can model carbon."

[00:30:27] And then, of course it was very nicely tied to technology, and we love technological solutions, and those always create financial and economic opportunities, and so then we were off to the races, and that's where we just started to focus more and more. And so we didn't completely forget, because in 19, what is it, '92 when we had the Rio Earth Summit, there were three conventions created, three global problems, right?

[00:30:52] Climate was one of them, but you know the other two, right? Biodiversity, so we created the Convention on Biodiversity. But most people don't even know that there was a third one. It was the Convention on Combating Desertification.

[00:31:03] **Nate Hagens:** I d- I didn't know that.

[00:31:05] **Brett KenCairn:** No, and it wasn't even supposed to be called the Convention on Combating Desertification.

[00:31:08] It was supposed to be about land degradation. It was gonna be the Convention on Combating Land Degradation. But they thought, "Oh, that's not very sexy. Let's call it desertification." But the problem with that was, well, then that was just a problem that was happening in Africa, right?

[00:31:21] **Nate Hagens:** So climate change, and I usually, prefer to call it global heating, is real, is urgent, and, it's going to accelerate, with respect to its impact on humans and the biosphere.

[00:31:35] But what you're saying is it was maybe a branding and systems problem from the get-go, and if we had referred to it as a living systems challenge that incorporated all these other aspects, even though, like you said, we didn't have the compute power and some of the science we have today, that would've been a better approach 50 years ago.

[00:31:59] so your work at the center of it is called living systems management. Maybe you can bridge that here and explain what that is and why i- it's relevant to this conversation.

[00:32:13] **Brett KenCairn:** we still have to change our energy systems, no question about it, and your work and so many others illustrate that beautifully, and that is the other leg that we have to work on.

[00:32:23] **Nate Hagens:** I mean, I'm still kind of processing this, so Only a third of the pre-industrial to today's, emission increase in the atmosphere is from the actual burning of the ancient carbon, and the rest is from increased water vapor and land degradation in the soil, burning the soil, going into space and, all those things.

[00:32:47] So presumably the impact, or the implication is if we regenerate those things, does that draw the carbon back down?

[00:32:59] **Brett KenCairn:** Yes, and but again, so, just to make sure we're using the same terms and numbers, we know that about a third of the excess carbon in the atmosphere was not from burning fossil fuels, it was from land degradation.

[00:33:14] **Nate Hagens:** Okay.

[00:33:15] **Brett KenCairn:** That was only one of the drivers for climate destabilization on the land side. The disruption of water cycles was the other one. Nobody's really fully quantified what the disruption of water cycles has contributed, but I would argue that it probably puts land systems degradation at well beyond half of this.

[00:33:31] But that's sort of– Yeah ... almost an academic argument. It–– they're still both really important, it's just that we haven't focused on living systems regeneration.

[00:33:39] **Nate Hagens:** I'm gonna assume that you're friends with climate scientists around the world. Do they know all this?

[00:33:47] **Brett KenCairn:** A lot of them frankly don't, because we trained a whole new generation of climate scientists based entirely on geochemical geophysical dynamics.

[00:33:58] So in fact, one of the last of the climate scientists that was involved in those early 1970s conversations was Millán Millán – which is one of the things that was chronicled in this podcast that I'll send you a link for. He passed away just a couple years ago. He talks about what those conversations were like.

[00:34:18] But again, that whole generation of scientists is now either retired or gone.

[00:34:22] **Nate Hagens:** Yeah.

[00:34:23] **Brett KenCairn:** That's why it was so important for me f- for us to have this conversation because I think that most people don't know that living systems degradation is at least half of the problem. And in fact, it is the half that we can do the most in terms of immediate action about

[00:34:41] **Nate Hagens:** It is more than half.

[00:34:43] It's like 90% of what we can immediately do- Right ... more about. I'm suspecting, but keep going, Brett.

[00:34:49] **Brett KenCairn:** So, let me now get to the point about living systems and why I call them living systems. I- part of it is this... So about, almost 10 years ago, we launched something to try to start working with local governments to support what we were then, what we started to call nature-based solutions.

[00:35:08] So in 2017, by the way, so there, there has been this effort to sort of recognize that living systems were, they weren't called living systems, that the land was important, and it was a, there was a paper, a famous paper that came out in 2017 called Natural Climate Solutions. And I'm gonna just do a little bit of terminology stuff here.

[00:35:25] Natural Climate Solutions was entirely about how we were gonna manage land as a carbon sink And so th- that paper came out. Next year, there were natural climate solutions in the US, and those arguments were, "We can do about a third of all the climate action we need just by managing landscapes for carbon sequestration."

[00:35:44] And that got a whole set of carbon markets off and running, like, and all these financial guys just th- slathering. And so then, you know, the let's do that in agriculture, and let's do that in forestry. Of course, all this had to be big, and it had to be in places that cycled a lot of carbon for it to be relevant.

[00:36:02] Like, people quickly said to us, like, "Oh, you know, the Intermountain West, where it's sort of like semi-arid deserts, like, y- you can't do anything there, so I wouldn't even bother managing your land." Almost like, "I wouldn't even bother managing your land."

[00:36:13] **Nate Hagens:** Because there's no profit to it.

[00:36:15] **Brett KenCairn:** Yeah, 'cause all we're doing is counting carbon.

[00:36:17] **Nate Hagens:** Mm-hmm.

[00:36:18] **Brett KenCairn:** So, so but anyway, th- so natural climate solutions come out. It's actually built into the IPCC. In fact, a lot of their models for how we were gonna stabilize climate depend entirely on, or not entirely, but significantly on this. But in the, but that was so carbon-centric that the UN and the UN Environment Program came out in '22, and they say, "No, wait a minute.

[00:36:39] Th- we actually need a different definition here. We need something that's broader, that isn't just seeing the value of li- living systems as carbon sequestration." And so that's when this term nature-based solutions comes out. So we picked up on that and started to use it. I've never liked the term because it has the term nature in it, which nature by its nature is this kind of, almost semi-mystical thing that's separate from us, you know, and it's always, it's sort of in the Emerson tradition.

[00:37:04] It's like if we just leave it alone, it's so beautiful, and then we can... And I agree with all that on one level. It's just that it sets us up as separate from nature, and it also, al-, it reinforces this other piece, which, you know, for the last 30 or 40 years, we've been having this growing movement around ecological restoration, which I love, and I think it's really important, except that often ecological restoration is oriented towards trying to restore something to some historical baseline which isn't gonna exist the same way anymore.

[00:37:36] We live in a different world that is rapidly changing, and that historical system that we think we're restoring to might not even have been the original system. Like, let's take the Intermountain West. A lot of us arrive here after we've already trapped out the beaver. We did this first huge flush of enormous damage from overgrazing in the mid-1800s just to feed all the miners.

[00:38:01] There was this massive deforestation all across the country. We don't even know what those historical conditions were like and what those historical conditions were then are not necessarily relevant now because we're gonna be 10 degrees warmer. We're gonna have really different growing cycles. So we have to...

[00:38:19] And I'm not arguing that the restorationists are gonna go bananas about this because they're gonna think that I'm trying to argue that we shouldn't be doing restoration, which I'm not. I'm just saying this is a much more nuanced thing than just putting it back the way it was.

[00:38:33] **Nate Hagens:** I think viewers might want to know, because I wanna know, what's the difference between, you used the word restoration and regeneration.

[00:38:43] What's the difference between those?

[00:38:45] **Brett KenCairn:** Yeah. So I'm gonna use the case of y- a backyard as a case point for this so that we can sort of relate to this. I could go out and try to restore it to the native prairie that existed in Boulder, you know, s- at some historical reference point. so- Okay

[00:39:01] it'd be a short grass, probably cool season, and that would be a cool thing to do And it wouldn't necessarily provide much shade, and it wouldn't necessarily provide much habitat for a whole bunch of other things that I wanna basically be able to s- pr- provide support for, whether it's birds or amphibians or dragonflies or things that I actually need to have in my system to be able to help it stay cooler and more water absorbent.

[00:39:30] So what I wanna do in my backyard is I wanna regenerate the capacities. I wanna put more photosynthetic capture in there. I wanna th- put things in there that are gonna add more soil carbon. I wanna put things in there that provide more habitat because all those trophic layers are gonna add opportunities for life.

[00:39:49] And that life is gonna be a lot more productive in terms of biomass, in terms of shade, in terms of carbon s- growth, so that th- this system is gonna be more capable to buffer and protect my family. So I'm not necessarily saying we should go out and do that in all natural systems, but I'm gonna use the Great Plains as an example.

[00:40:10] If we'd had restorationists at the time saying, "Okay, we're gonna put toge- back the plains the way it was into a bunch of just, you know, prairie," which w- we should definitely plant as much of that prairie as we can, but they wouldn't have planted any shrubs and trees because they weren't necessarily natural to those places, right?

[00:40:28] And we wouldn't have been able to then stop and slow all of that sediment and erosion control. So we're gonna have to think about things that balance how we're trying to put systems back together from their historical perspective and also what they can be most productive in.

[00:40:43] **Nate Hagens:** And the... We have to face the biophysical reality and constraints that we have today.

[00:40:48] So one would be regeneration for more life. but a subset of that is regeneration, given that we've degraded the biosphere and we're headed for two to three degrees Celsius plus on the current trajectory, and the drying and multiple standard deviations of heat waves and droughts and floods and all those things.

[00:41:10] So its regeneration with that already in the pipeline should be the backdrop and, our goal for planet-wide sort of, response to all this.

[00:41:22] **Brett KenCairn:** That's exactly right. And so now I'm gonna step out to a larger landscape level to give you a kind of glimpse of some of the things that we're seeing in our work here.

[00:41:30] So we did a project over the last three years to do what we called a desertification risk assessment. So we worked with a really, smart, local consulting firm, Linker, to do an analysis th- of all the remote sensing technologies that we could access to look at an area of 500 square miles. So it's the area between Boulder and Longmont, not including the forest, because it was just too much complexity at that moment, but the plains area, so basically the foothills out to the east encompassing most of Boulder County and into our east- our eastern neighbor, Weld County.

[00:42:05] Because actually we use the boundaries of the resource conservation districts. That is the closest jurisdictional boundary to a watershed that we have, which of course came out of the soil conservation and soil preservation services of the, '30s. So we said, "Okay, let's look at this area, and then let's see if we can, through those satellites, see land conditions change, and then actually map on top of that irrigation and sand seniority of water right."

[00:42:33] Because what we know is not only are a lot of these lands already marginal because we're in a semi-arid desert, like people are out there strip farming wheat with fallow. So we, looked at that large area and we said, "Okay, which of these lands do we think are most at risk, both already on a trajectory of degradation, but also especially now with the Colorado River Compact basically falling apart when the water calls start to happen and the junior water right users can't get access to that water?"

[00:43:03] We're probably gonna see, I think, thousands of acres of marginal agricultural land turning to desert, because those are all landscapes that are, operating under the artificial conditions of supplemented irrigation water and species that are dependent on those. And if we're not, if we're not proactively acting now to try to change, transition those systems into species that are gonna be capable of surviving without irrigation water, then what we're gonna get is bare dirt.

[00:43:36] And when we get bare dirt, what we're gonna get is a lot hotter temperatures that are gonna set up those convective cycles that are gonna actually further desertify this whole system.

[00:43:45] **Nate Hagens:** It all makes so much sense to me. not... Presumably you, on your own, where you live, would know how to construct a living system to be regenerative given the constraints we have in your area code, yes?

[00:44:02] **Brett KenCairn:** I would know how to try to bring together the people who are doing the various parts of the work, who if woven together and funded and supported, have a really good shot at being able to do that.

[00:44:15] **Nate Hagens:** and I know there are, lone celery wolves like you that are invisibly doing this work around our country and around the world, and presumably in every area code and zip code, there might be people who know the answers on how to get this started.

[00:44:32] **Brett KenCairn:** Yes. I think there... I'm, not so much a lone wolf as I maybe in the w- y- past liked to be because I know after having spent 15 years in the local government, you have to actually figure out how to mobilize and support the remarkable intelligence and capability of all my colleagues across the various departments who are all doing their best within a very incrementalist system that has never been invited to actually try to act at scale.

[00:45:03] In fact, one of the insights, Nate, when we did that 500 square mile an- analysis was there's nobody minding the store. There is no jurisdiction that watches over the system.

[00:45:13] **Nate Hagens:** Okay. Now I have a lot of questions. so you follow the podcast. You know I'm concerned that our economic system just hit an iceberg, with what's unfolding in the Strait of Hormuz and complexity and energy supplies.

[00:45:32] Let's just for now assume that all aside- ... and assume that we're gonna get back to business as usual from an economic standpoint. What you're saying is even if that were true This living systems management for where we live in our watersheds, in our bio regions, is going to be essential to make sure that we don't turn into desert and lose the ecological biocapacity that we have now in heading into a period when we're going to need more biocapacity in spades for many other reasons, right?

[00:46:10] So we're not even including the energy, the carbon pulse, economic debt, international globalization dependence aspects.

[00:46:20] **Brett KenCairn:** Let's circle back to that one because I think that it-- we, we should try to put these two together. But I would say there was a whole series of things happening in the '70s that got us off on some really, I think, wrong tracks.

[00:46:32] And then-- and one of them was how we reframed the climate piece. The other was the birth of the sustainability movement. And, you know, it was in '70, what, '71 or '72 that Donella Meadows and the Club of Rome came out with The Limits to Growth. And then there's this sort of massive effort to sort of, bury and discredit that because it is the fundamental critique of where we are now.

[00:46:58] Basically, they said, "This is where you're gonna end up, and here's where we are." And we created this whole sustainability movement to make us... because we all wanted to believe that we could sort of keep having this kind of thing that we were having and that it would be fine. And so I spent most of my career in this sustainability movement.

[00:47:15] But after, you know, about six, seven years ago, we started to say things like, "No, there's something fundamentally wrong here." And so I think that we're now in a movement from sustainability to resilience. It's gotta be about how we create systems that can be resilient to these kinds of changes. And it's about moving from a sort of restoration to regeneration, because I think that there's actually huge potential in what the world could be like if we brought that more than half of the productive capacity of this planet back online.

[00:47:46] That to me is the true abundance agenda.

[00:47:49] **Nate Hagens:** Well, there's two questions there. One is, do we have the technical capacity and wherewithal to increase the planetary biocapacity by 50%? You can guess the second question. It's Ehrlichian. If we increase the biocapacity with our current governance and value systems and cultural aspirations, we will eat it and somehow go further into ecological overshoot, or will we?

[00:48:26] Well, that's a question for you.

[00:48:27] **Brett KenCairn:** As I was thinking about this conversation, Nate, I thought it's a bit ironic that I think that your podcast is called The Great Simplification, and I agree with the basic premise of this. But we're living in a world that we have greatly simplified ecologically and biologically, so that we're living out what the Great Simplification looks like on that level.

[00:48:49] **Nate Hagens:** Actually, I've thought about this weekend, and let me take this moment to clarify that. The podcast title was, a nod to Joseph Tainter and that we- Mm-hmm ... complexify using energy. The label The Great Simplification is talking about our economy-

[00:49:09] **Brett KenCairn:** You're right ...

[00:49:09] **Nate Hagens:** and our debt and our throughput and that.

[00:49:11] **Brett KenCairn:** Yeah.

[00:49:12] **Nate Hagens:** But you are right that from a wider boundary perspective, our economy and the, our, the, all the SKUs in our supermarkets might simplify, but our relationship with the natural world and the web of life is going to hopefully re-complexify. Right. Exactly. Yeah. Good. But talk more about that if you'd like.

[00:49:33] **Brett KenCairn:** That's just the sort of interesting twist that I've been thinking about in a relationship, because we have to think about these two pieces

together. We do have to shift our material f- consumption and throughput dramatically But because a lot of our effort needs to be put into helping re-complexify this bio-ecological world.

[00:49:57] And I think that this is a place where I was trying to maybe point at this earlier when you were starting to say, "Well, you know, people don't do this because..." You know, and then there's all the reasons that we're culpable for not doing this because, of course, we all live embedded in systems that keep reinforcing us to do all the stupid things.

[00:50:17] Yeah. So I think- Yeah, that's it ... that what I see is a lot of people really yearning for and engaging in efforts to be a part of this regeneration, but that we haven't understood and seen it as a core social priority, and we haven't organized ourselves to accomplish that. So there's a couple of different layers that I would wanna point to here.

[00:50:42] one of them is at a very local and practical level, and I'll just, n-note that we've created a lot of barriers to participation in stewardship. We've professionalized stewardship to such a degree that, "Oh, no, you can't go out and do anything in that area because you're not a, you know, whatever, ecologist or, you know, biologist or you don't work for the city or..."

[00:51:03] And for a long time, that worked okay because we were in a relatively, you know, well-resourced context. But as we get into these sort of wicked problems that are way bigger and more complex, we don't have the resources. We frankly don't even have the resources, I would argue, to manage all the landscapes and things that we are responsible for now.

[00:51:23] And so we need our community to be able to participate more, and this came out in spades in our community a couple of years ago when we caught our school district spreading herbicides in our elementary schools. They were

spreading herbicides because they didn't have any other way that they could effectively manage weeds from their perspective because they have so little resource to manage the landscapes around schools And so we busted them on that and they said, "You're right, that was not the right thing to do, but we don't really quite know what to do."

[00:51:52] 'Cause we've been saying, "Hey, can we plant more trees around here? Can we put in these biodiverse gardens?" And they're like, "You could, but they'll all die, and we don't wanna be responsible for that." And so we worked with them for several years to start designing the systems, and then we thought, "We have to actually develop the social infrastructure of maintenance for these systems."

[00:52:12] So this year in our community, we've launched the Community Land Stewards program, where instead of it, by the way, thinking about the sort of 20th century notion of volunteerism, we say, "No, our community's time and knowledge is important. They might need some additional knowledge, so we're gonna create a training program for the neighborhood foresters, and we're gonna ke- create a training program for garden stewards, and then we're gonna stipend those folks for 10 or 15 hours a week or a month at about 30 bucks an hour so that they can take care of these p- commons landscapes, in this case, starting with schools."

[00:52:46] We think that this is a sort of way that we can open up the stewardship needs of our community to the stewardship capacities and start building that culture and engagement.

[00:52:58] **Nate Hagens:** So from time to time, people, when I meet them in person, they ask me, "Nate, what would you do? How would you answer your magic wand question?"

[00:53:07] Nice. And I think I would answer it with just that. Every single town and city in our nation would have some sort of a committee like that worked 10 to 15

hours a week and relearned and did stuff on the ground right now with people in the community to restore our ecological situation. That makes so much sense to me.

[00:53:29] and it's really kinda sad because especially the viewers of this program around the world are starved for– Totally ... things to do. They want to– Totally ... do something now. They don't know what to do.

[00:53:41] **Brett KenCairn:** That's right.

[00:53:42] **Nate Hagens:** And I think this is a low-hanging fruit wherever you live, right?

[00:53:45] **Brett KenCairn:** Totally, and that's where I, say w– the principles of li– living systems regeneration are essentially operable from the backyard to the bioregion.

[00:53:57] The things that we need to do, the ways that we need to think about how we start to become a partner to life and what life wants to do. What life wants to do is to gather and cycle energy and resources. Life does not in– usually operate to just sort of have them all get parked somewhere and then one set of things just controls them all, right?

[00:54:19] **Nate Hagens:** So people like you, times thousands or millions, act as conductors or facilitators to help that process.

[00:54:28] **Brett KenCairn:** Yeah, and I think that there are lots of conductors out there, but again, I think that part of the issue is that we haven't understood this as a critical central social priority. We've thought that building some new technology and sort of shifting over our energy systems, like that's the core priority, and then just keep buying shit at Costco, right?

[00:54:50] **Nate Hagens:** This is compelling to me. And so based on what we've talked about so far, the argument for what you've referred to as living systems management is pretty clear from a climate and ecological standpoint. But what I've learned over the years of doing this podcast is many people are probably not swayed by that angle o- on this.

[00:55:12] So for those individuals, that hear you and have that response, can you lay out your best argument for why living system management is also critical for meeting the human needs and well-being in our communities especially, I'll re-bring it in now, as we approach a le- a lower energy and material throughput world?

[00:55:34] **Brett KenCairn:** I think anybody who lives in any ar- anywhere near where I live knows the world, the, environment that we're living in is becoming more unstable, more extreme, and is gonna have more of these instances of really significant disruptions, whether that's floods, extreme heat waves, droughts, fire, new infectious diseases What we know as a species from how we have evolved over time is that those societies that are most successful in living through periods of significant disruption are the ones that have strong social cohesion and interconnected, systems and cultures.

[00:56:25] And so it's just interesting that what I notice in my own community is that some of the most interesting neighborhoods are the ones now that are gardening together, and then they're having more potlucks together, and then they're actually figuring out that there's sort of mutual interdependencies that they can foster.

[00:56:41] And that may all sound really quaint at this moment, but as you and I know, that's gonna be more and more integral to how we live in the con- situations that we're gonna be in.

[00:56:51] **Nate Hagens:** That was always my view of local currencies, people thought, "Oh," they pooh-pooh'd it, "This isn't gonna run. People are still gonna want their dollars."

[00:57:00] And there's a proximate and an ultimate, and the, proximate goal is to have a local economy and do things more locally, but the ultimate goal is what you said. It's to build the social capital irrespective of what future arrives, and what better place and way to do it on your soils and the flora and fauna in your community and the fields and the meadows and the other species.

[00:57:27] That is something that you all experience and share, and if you use that as the crucible where people come together and talk about these things, you don't need to have a checklist of all the things we do. You just start talking and communing.

[00:57:40] **Brett KenCairn:** Yeah, I think one of the challenges that we have, you know, Nate, and as a...

[00:57:44] I would actually say that my underlying vocation is community organizer. I was actually right out of college, I worked for ACORN and was a community organizer in Albuquerque and Houston, and, then I went... I couldn't really s- take urban environments that much 'cause I grew up in Wyoming and wasn't well-suited for that.

[00:58:02] But I've always been kind of in the how do we bring communities together to actually relate to the living systems and landscapes that we're in to figure out new ways. and I think that one of the things that we're realizing now is that there are things that we can do in this historical moment And then there are things that we're gonna need to be able to do in a different historical moment.

[00:58:26] And that we've been in a historical moment that really was, antithetical to that kind of neighborhood-based, community-based. It's all been about how we sort of, financialize and marketize all of our relationships from childcare to, you know, whatever. But w- increasingly, that's not gonna be true, and I think I subscribe to the general sense that your podcast is saying that we have to prepare for this very different time that's gonna re- really bring things down to that level.

[00:58:53] But the trick is that we have to build these systems now so that they're ready and available in those moments when they're really needed, and that's the kind of, you know, ongoing dynamic and challenge.

[00:59:08] **Nate Hagens:** Dare I ask if you have some vision and plan on how that might be accomplished, either in Colorado or in the United States or in communities around the world?

[00:59:20] **Brett KenCairn:** Going back to the desertification risk analysis, part of the reason that I thought we should do that is so that we could start identifying the parts of our landscape that we could mobilize tens, hundreds, thousands of people to be working on if the time became that we both had that available resource and we were in even more difficult circumstances.

[00:59:47] And so to me, that's been a part that... And so on one level, it looks like just a, you know, an analysis of lands at risk, and it is, and it's useful for that. But it might actually be a foundational element for that kind of other piece. So right now, I wanted to mention we're starting to look at forests now in a s- in a new way.

[01:00:07] We've... You know, this whole notion, again, of managing forests for carbon was such a sidetrack. It was such a dead end if you ask me. What we should be thinking about, especially in the West, is how we manage forests for

water And if we ask the question of how are we gonna ma... Not for surface water, by the way, not for water that we're gonna impound and then sort of control, which is where all of most of our land, our water managers are in that space.

[01:00:33] What we need water managers in is the space of how are we gonna manage the soil moisture reservoirs that are driving the transportive pumps that are actually resulting in the rain and the other climate buffering factors that we need, in that whole region. And so we're starting to think about how we actually design forest management treatments so that we can retain snowpack.

[01:00:57] And that means you, you think of it very differently spatially, like what trees you need to remove. You need to be thinking about what... We've always thought, "Oh, well, there's just way too much biomass in the forests. We need to move all that out. We need to think about these huge markets for that."

[01:01:10] **Nate Hagens:** So y-y- what you're suggesting is that we...

[01:01:14] Well, first of all, we look at forests as dollar signs for the most part. but the vanguard is looking at them as carbon and the ability to sequester carbon. But you're saying an even wider boundary is, looking at them as part of your living systems management. You probably watched the podcast I did with Anastassia Makarieva on the biotic pump and how she, pretty compellingly to me, argued that trees are not only important for storing carbon, but also for managing the water cycle, as you've just mentioned.

[01:01:52] So can we v... Like, is this actually a conversation that's happening in the state of Colorado that has a lot of trees? H-how can sustainable forestry support this idea of managing water rather than just carbon? And is that conversation changing?

[01:02:09] **Brett KenCairn:** Well, it's interesting. You know, I spent almost 20 years in the Northwest where I was working on forestry, and in that context, where we were still, we still had a very active and powerful commercial logging industry and wood products industry.

[01:02:25] That was one set of conversations and d- actors. In Colorado, that's almost gone. I... There's very few. So it's not really about the commercial value of these forests anymore. It is entirely about, mostly now about fire. And but we haven't been thinking about managing them as a water utility, essentially.

[01:02:46] So I, I have followed Anastassia's work, and sh- her work around the biotic pump was sort of validating things that Walter Yenno and others have been saying for a long time, which is that local land cover dynamics shift local climate dynamics. And one of the very interesting things that we found in our desertification risk analysis was that when we surveyed the moisture patterns across the seasons over 20 years in this 500 square mile area between Boulder and Longmont we discovered that the spring precipitation had increased by an inch and a half.

[01:03:22] This is in a landscape that gets maybe 15 to 17 inches of rain a year. So an inch and a half more rain at a certain period of time is significant, especially if it comes in the spring. The average for the years wasn't changing. It was just arriving sooner and more in the spring. And when you think about it, what we also know is in the upper forests, our snow release is about three or four weeks earlier because it's been so much warmer.

[01:03:50] And so all that water is being liberated not just into surface water. Those trees are starting to transpire earlier so I think that what we're seeing in the plains is exactly representative of what she's talking about in terms of biotic pump. We're seeing that dynamic of forests releasing water earlier in the spring, coming out in rain earlier in our plains, which in some ways is cool, except in

other ways, if that, if those forests are drying up over time, it's gonna be a, it's gonna be a train wreck.

[01:04:18] I, I wanna just point... But to further illustrate this, there's a really remarkable presentation which I'll include so you can have in the show notes by Elizabeth Heilman from Wichita State. She and her husband, Dale Strickman, have been leaders in the regenerative ag movement in the whole plains area, especially in Kansas and Oklahoma, and she had this, presentation at the recent Soil Revolution conference that we do here in Boulder every year, in which she talked about mastering water cycles, and she described how in certain areas, like this one northern Oklahoma county, they've had so- such a high level of adoption of regenerative practices that now something like 60% or 70% of that county is now under continuous, plant cover, as opposed to being under these cycles of long periods of open, bare dirt.

[01:05:08] And so what... And what they're seeing, this is important, Nate, this is the first time I'd ever heard it quantified, is that they think that they know now... And that, th- that in those areas, they are seeing an increase in precipitation in those areas by 15% to 20%, and that they actually now believe that they know what the minimum scale of land regenerative practices needs to be to start to change the local climatic dynamics, which is about five square miles.

[01:05:34] That's a remarkable possibility.

[01:05:38] **Nate Hagens:** So it's not dependent on what's happening in the world.

[01:05:42] **Brett KenCairn:** No.

[01:05:42] **Nate Hagens:** I mean, a little bit, but- Yes ... but it's mostly dependent on what people have done to their local ecosystem and improved it and steered it in a little bit better direction.

[01:05:52] **Brett KenCairn:** Reducing average temperatures, increasing local precipitation, and increasing the durability against a whole bunch of these extremes.

[01:06:02] **Nate Hagens:** I wanna get back to the science and actually what we can do about this, but, let me ask you this, human question. Do you think it's possible in communities across our country, the United States, and broader, maybe easier, abroad- That people can view their wealth and their meaning, and wake up in the morning and be excited about what they do to do something like you just described, to help regenerate, the, plants and the soil so that our community, our little region here, our watershed gets a little bit more water, every year and is more resilient to, times ahead instead of the individualistic, you know, cultural traps that we're in now.

[01:06:53] Do you think that culturally that could happen with the humans alive today?

[01:06:58] **Brett KenCairn:** I think it is happening. I think it's not the thing that makes the headlines. I think it's not necessarily the consistently visible dynamic in a community. I think that, you know, we're all on this treadmill of activity that makes it really difficult for us to slow down enough, and I feel very much on that same treadmill.

[01:07:26] I have two kids, and man, you wanna complicate things, add kids to the mix of all this, 'cause just all the things that they're expected to do and the... but where I'm going is, I think that we have to see each other making these shifts in ways that we start to s- see this as the cultural norm, and that's one of the reasons why in our community we've created an organization.

[01:07:49] We- that's basically a network of community-based organizations. It's called Cool Boulder, www.coolboulder.org. If you go there, what you'll see is this,

like, enormous array of activities taking place. By now s- I think there's 65 member organizations. Because part of what we're trying to do is norm that this is what we do in our community.

[01:08:09] We go out and we, you know, cultivate biodiversity habitats, or we plant trees, or we support the collection of, you know, un- gathered fruit. We send choke cherries to the Wind River Reservation. We-- Those are the things that we start to wanna see each other doing. And is it completely changing Boulder? Not yet, but I would argue that it's probably having a bigger effect than we think, and that as we move into these next stages, it might be that all those networks are even more accessible and ready to act in that next stage of work that's possible when we're in greater need for each other.

[01:08:44] It's like, you probably know, Greg Brown, you know, he, the s- the folk musician. He does that great, sort of monologue where he talks about living in the UP and driving around in the middle of the winter. You probably have this experience in Michigan. Like, if you're driving around in the middle of the night and you see somebody f- who's over in the borrow pit, you're gonna stop, and you're gonna try to help them because you know next time that might be you.

[01:09:09] And this notion that community happens when we need each other, and we haven't needed each other, but we're going to more and more.

[01:09:17] **Nate Hagens:** Actually, I think, Brett, the truth is that when I would stop and someone was in the ditch, I wouldn't be thinking, "I better stop because I want him to help me in the future."

[01:09:28] That would never enter my mind. It's just obvious, this is what you do. This is what you do to help people. There's-- It's not transactional at all at the core of how we respond to things.

[01:09:40] **Brett KenCairn:** I love that, but I would just s- challenge you slightly to say, when we understand that's how life works That's how life works, that we do need each other.

[01:09:50] Then that- Yes ... and that you've int- you've internalized that completely, that is the nature of community. So, and I agree that we shouldn't transactionalize everything. But I just would say the reality is, and this is the thing about living systems regeneration, is, and humans are actually needed now more than ever.

[01:10:09] This is the moment where we actually really need to empower and enable ourselves to go out and work with the rest of the living community to do this.

[01:10:19] **Nate Hagens:** So I had a... I don't know if you watched the podcast I did with Tom Chi, but he f- followed that logic, that, well, let me just think of this.

[01:10:32] So climate and humans, the trilogy. In the first act, climate actually caused humans, because the climate warmed and stabilized, and all of a sudden in seven areas around the planet, we just started to do sedentary agriculture, and we changed everything, and surplus and agricultural revolution. And then because of that, we found fossil carbon and did all the things, and here we are now in the late stage of act two.

[01:11:04] But act three is humans as stewards, and we need technology- Mm-hmm ... and the cultural wherewithal to scale it. But we probably know how to do the, some of the things that you're talking about and suggesting way better than we did 30 or 40 years ago. Or maybe not, I don't know. But, I mean, this is act three, right?

[01:11:29] on, on humans and the biosphere.

[01:11:32] **Brett KenCairn:** No, I was thinking about this, so this is where we start to talk about the energy economies and the human economies. Well, I wanna make one point right now because it's probably one of the most important things I wanted to say on this, on the program. That is, we won't have this world that I think you and I wanna live in, where a significantly larger portion of our communities and societies are engaged in the regeneration and stewardship of living systems if we don't create an economy that actually supports them in doing that.

[01:12:03] So that's why we created the Land Stewards program. It was unrealistic of us to think that we were just gonna get people to sort of naturally go and take care of trees at the schoolyard when they have all these other things to do. And so we've created this modest little stipend program for them. We have to also go to the next level, and so we're creating small contractor training programs for contractors who do this as a part of their work, to do various forms of resilient landscape stewardship, and then we're setting up contracts for them so we can build that infrastructure.

[01:12:33] But the point I'm getting to is, we have to make a choice as a species and as societies that we're gonna value the regeneration of living systems, and we're gonna build an economy around that. We have chosen to build an economy around technology and around capital, and this is gonna mean-- and th- this is fundamentally a political exercise.

[01:12:54] **Nate Hagens:** I agree, but I do not think in the time that we have that we will choose that as a society writ large. But I think we can choose it as local groups, and scale that, because what you're really talking about is a modern equivalent of the Civilian Conservation Corps from 100 years ago, informed by our constraints. How could we expand what you're doing in Boulder nationally?

[01:13:24] What would be some of the steps where other community leaders, whether they work for the city or they have an ecology degree or not, but they're listening to this and they wanna get started in their communities, what recommendations would you have?

[01:13:39] **Brett KenCairn:** I think we have to do both, Na- Nate. I think we have to build for moments where we're gonna have a lot of surplus human capacity that we could then do a huge amount of stabilizing work.

[01:13:51] Yeah. But we still have to build an ongoing stewardship economy around the maintenance of living systems. That s- living systems at higher levels of productivity, that's the thing. Yes, we can let them sort of sink down to a fairly low level of ecological function, but if we want these hot... this, these, this world that is operating at its fullest capacity, that requires ongoing stewardship and engagement.

[01:14:15] **Nate Hagens:** Actually, let me ask a clarifying question because I kinda skipped over your, jaw-dropping statement of 50% increase in, in global biocapacity. What's the standard deviation of that? Just use the United States, for example. Is pretty much every state, at least, a- at 50% less of what they could be producing, or are some at 95% and others are at 5%?

[01:14:42] I, You might not know the answer to that, but just what do you have to say?

[01:14:46] **Brett KenCairn:** Well, this paper that I just was mentioning earlier, Breaching Planetary Boundaries, they actually went through and mapped the different continents, and our North American continent looks, like, generally degraded across the entire thing.

[01:15:02] And that's where I would say, go out your back door, and if you start to look at the living world in this way, I think what you'll see is e- almost every living system around us is operating at less than its capacity because we have simplified, all of these systems And that's where, again, I, don't wanna go back into it, but the distinction between regeneration and restoration is really important here.

[01:15:27] Yeah, there are certain settings that are relatively simple, and we could leave them that way, and that would be fine, but we're in a context where we need to be capturing as much of the moisture and air out of the air and carbon, and we need to... That requires a more robust system.

[01:15:42] **Nate Hagens:** And it's not just the carbon, as you've said.

[01:15:44] **Brett KenCairn:** No.

[01:15:45] **Nate Hagens:** It's the moisture and the soil and the species and the symbiosis.

[01:15:49] **Brett KenCairn:** And the energy. We need to create these multiple layers of photosynthetic solar panels that are basically leaves of all these different types, because there's this massive amount of energy now in the system that we're not utilizing.

[01:16:05] So that's... we've been so hyper-focused on this sort of fossil fuel type of energy. We need to be thinking about the living systems energy, 'cause that's available to be captured, too.

[01:16:15] **Nate Hagens:** And then that, at scale, if it's successful, among other things, the moisture being a big one, would also change the albedo, right?

[01:16:26] **Brett KenCairn:** Absolutely. You know, that's why these are... That's why living systems regeneration is the fastest path for stabilizing systems. And like you said, it might not be stabilizing the entire globe at once, but we can stabilize the geographies that we live in.

[01:16:42] **Nate Hagens:** So having done this work for decades, Brett, what do you think, or what's your experience, as the key areas that hold people back from getting more actively involved in initiatives like living systems management?

[01:16:57] **Brett KenCairn:** I think the first, again, is, you know, Donella Meadows says this in Systems Change. The first fundamental lever, and most important, is consciousness and conceptual. Like, we don't even understand that this is the work to be done. Then the second is like, okay, then where do– Right, right ... Where do I do that work?

[01:17:16] How do I do that work? Which is why we're creating all kinds of training programs and, stipended programs and youth tr– employment programs to get people in to actually learn how to do the work. Then we're trying to create these economic mechanisms that support and enable people to keep doing that work.

[01:17:37] And then I think we start to actually think about building these into longer term, more robust career pathways. So I think that one of the biggest barriers is that we, people don't know what, how to... first, that it's important, and then how to enter into the work.

[01:17:53] **Nate Hagens:** How many people do we... Like, you could talk about your own experience in Colorado or just your general observation.

[01:18:01] Do we need 50% in every community of people doing this or, 2%? I guess anyone is better than zero, but what are your thoughts on the momentum of making this happen, your land stewardship, and ideas?

[01:18:18] **Brett KenCairn:** I think that there are way more people doing it than we know, and that part of the job is actually just connecting them together.

[01:18:25] So that's one. The second is to create, a sanction or a sense of, the significance and importance of doing this work. So, and I think that this is where the opportunities in my view are around the greatest risks that communities face, and those are different in each community. So I don't know what it is for your community.

[01:18:46] In our community, it's fire. it's also gonna be flooding again. We had it in '13. We haven't been thinking about it. It's gonna happen again at some point, and then we'll think a lot more about flooding again. But right now we're thinking a lot about fire. And so there's all kinds of ways that helping us address that existential risk that we're facing locally open this piece up.

[01:19:06] So right now we're launching a whole initiative to both work with community members and with contractors to go out and start doing that work, and the intention is to start on these pilot projects that then start block by block sweeping through entire areas getting this work done. Then it's not just parcel by parcel.

[01:19:24] We're starting to create a sort of continuum of... And then we can start to think about how we do that at a sub-community and maybe even at a community scale. That starts to be a whole new level of economic opportunity and activity.

[01:19:35] **Nate Hagens:** Islands of coherence.

[01:19:37] **Brett KenCairn:** Yeah.

[01:19:38] **Nate Hagens:** So I know you've done this research, between Boulder and Longmont, and then you've got this land steward program that they're not volunteers, but they're people that are, working on these things.

[01:19:52] But what advice would you have for people in other communities that are like, "Holy crap, we could do this. We should do this where I live in Bend, Oregon, or Topeka, Kansas or, upstate New York." What would you recommend to people to do to just get that started?

[01:20:10] **Brett KenCairn:** One of the realities that we didn't talk much about is that for us to take this work to scale, we actually have to have local government actively involved.

[01:20:23] I spent 30 years as a nonprofit person, and I love non-governmental organization work and things, but ultimately, we need to have our local governments actively connected to and helping to support this work, because they are the ones that steward most of our shared resources. And I think that what our local governments are struggling with is that they're-- we're living in a time where we don't have enough resources to do all the things that need to be done in our communities, especially around taking care of our lands.

[01:20:54] And now, that isn't to say that we should be trying to take care of everybody's personal lands, but it does mean we have both our own public lands, and we also have ways that we can work together to coordinate private land management and public land management. But that means that we need more people to be able to do this work.

[01:21:11] And so this effort that we've launched, the Community Land Stewards effort, is intended to be a pilot that hopefully lots of other places would try. It's a simple principle. It's just recognizing the fact that nobody can actually volunteer

forever. In fact, that was kind of a 20th century model when there was a lot of excess social capacity, which we don't have very much of.

[01:21:33] And it also doesn't really respect and acknowledge that volunteerism was always a little bit of a kind of thing that the more well-resourced people could do and others couldn't. So now how do we make it possible for anybody to be able to do that? And so we think of giving them adequate compensation for the m- s- the sort of limited amount of time that we wanna ask of them.

[01:21:53] So 10 or 15 hours a month, we think, is enough to keep several schoolyards going. And then we can start to apply that model to the greenways, or we can apply that to all kinds of different places where we need more community capacity. So I-- we're just launching that as a sort of gesture to say, "Hey, everybody, let's try a new model."

[01:22:13] We would love to see other people try it too and see what kind of creative solutions they come up with.

[01:22:19] **Nate Hagens:** Yeah, I will, for interest and time, get to some of my closing questions. So if you could take off your forestry and living systems hat just for a moment and put on your human hat, what sort of recommendations do you have to our viewers and listeners to deal with all the things discussed on this podcast, or is it all up to politicians and leaders?

[01:22:47] What's your advice?

[01:22:48] **Brett KenCairn:** I think that we all are being invited to rejoin a community that we were always a part of, but that we forgot we were just residents... We were just members of a larger community. And that community has been really having, you know, a difficult time, but it has this, like the living

world has this incredible intrinsic resilience, and that's what's to me, that's the r- where my hope resides, is...

[01:23:23] And so that if we can in- if we can learn how to speak the language of our larger community, if we can learn how to be in relationship, and that sounds abstract, but it can literally start with a houseplant, and then it could go to some planter boxes on your back porch, and then maybe you actually do a garden.

[01:23:46] Each one of those is actually a relationship opportunity, and that you're being invited to learn that language of reciprocity. And there are so many interesting things that happen when you open up to that kind of relationship. You'll get buzzed by a dragonfly, and you're gonna swear that dragonfly was actually doing that intentionally because they were trying to get your attention, or you're gonna hear a bird call because they were actually calling to you, or you're gonna see a squirrel stop, and they're gonna look at you in a certain kind of way.

[01:24:16] And then you're gonna realize, "Oh, I'm actually being invited into this community." And then you're actually empowered to start being a part of that even larger community. It might be the park behind your house or the watershed.

[01:24:28] **Nate Hagens:** You have no idea how that resonates with me at, on this day, in, in this week.

[01:24:34] so I'll follow that with a question. Have you always felt that way, or was there a time in your life that you went through some of a phase shift or recollection, remembrance of, humans, as part of the web of life? Or were you that way when you were eight?

[01:24:51] **Brett KenCairn:** I don't think I'm unique in that way. I think I was blessed to grow up in Wyoming and spent a lot of time outside with my dad, who was a fish biologist, and so I had that chance to be in that kind of an environment more.

[01:25:12] But my partner, has been one of the greatest teachers for me as I just watch her take what had been a s- silly suburban lawn and turn it into this incredibly biodiverse oasis in our front yard, and to see all the life that's started to reside with us here. And I think it's, again, it's just, it's available to all of us all the time if we can just slow down a little bit and enter into some place where we can start paying attention.

[01:25:40] **Nate Hagens:** Can, I would just really love to visualize, what are the... Okay, so you've got new plants in your yard and things like that, but you mentioned some of the other creatures. Like, what do you see and what comes now that you weren't used to?

[01:25:55] **Brett KenCairn:** Well, I'll tell you a funny story about the front yard. So, you know, it was just a lawn and then this really weird weeping tree.

[01:26:01] I don't even know what it was. It didn't... And then we had this aspen that was really struggling. So literally we had two trees, three trees and a lawn. So we finally said, "We're gonna cut the turf." She starts getting all these, native plants and things. And, by the way, we'd been told by the local arborist, "Oh yeah, you don't...

[01:26:19] You're 5,000 feet. You shouldn't be trying to grow an aspen. They're higher elevation. They're never gonna do it." The minute that we removed the turf and started putting a lot of things in there that aspen was familiar with genetically and sort of associationally, it became so happy, and then all these other things.

[01:26:38] And suddenly an oak tree starts to show up. We didn't plant the oak tree. Somebody planted that for us, that some non-human entity showed up and planted that for us. And then the aspen sends runners down underneath the sidewalk over to the other side of our front yard to provide shade in front of that

big west-facing glass window that we had there, that old stupid sweeping tree from wh- And it was like...

[01:27:02] And the- it suddenly, within three years, it was 10 feet tall, this wave of... So I'm just telling you that they... And then bumblebees and all kinds of other insects. but it's... The... I was telling you about the dragonflies. I get regularly buzzed by b- dragonflies now, and I know that they are expressing some gratitude for all the additional habitat that our family has created with them.

[01:27:28] So I'm actually s- now about to learn how to try to do a pond because they obviously need some water in the front yard too.

[01:27:35] **Nate Hagens:** Thank you. What specific recommendations do you have for young humans? You mentioned you have two children, but, I don't know how old they are, but what recommendations do you have for the listeners of this program in their teens and 20s who become aware of all the things?

[01:27:52] **Brett KenCairn:** Yeah. I do think that one of the first things is to find a way to start learning how to be in relationship to living things. It's just a-- like learn-- start learning that relationship and that language. I think the second thing is... Well, actually, my broader advice is to all the adults who keep saying about young people, "Oh, I'm so glad there are these amazing young people, and they're gonna really figure out how to..."

[01:28:18] Like, that is a bunch of, We just-- we have to take responsibility for what the mess we've made, and if we can't do anything about it, then we have to figure out how to, as quickly as possible, get the resources and support to that younger generation so that they have whatever at least we have to work with.

[01:28:36] So I would say that for the young pe- Totally agree ... with the young people, you should just be very demanding about, if, the adults around you or if

the older people around you are not getting the job done, then get them to give you their resources and get out of the way. But the other thing is I heard one of your other guests say this.

[01:28:51] I think it really serves us to have basic school, skills and tools. Learn how to build things. I would like to learn about electronics. It's something I haven't learned about, but I really want to. I did learn how to build. I learned how to do basic mechanics. Those things have served me so well in even learning about how to be with living systems.

[01:29:12] So get some practical tools in addition to whatever conceptual tools, and then just keep pushing your way in to work on the work. Find the things that you're really interested in, and if you have to, volunteer, but then quickly propose how you can actually get the resources to get paid to do that. And if you come to an entity and you say, "I see what you're doing, I understand it, I wanna be a part of it, and here's how I'm gonna get the resources to help me pay," I would bring you in a second.

[01:29:38] So don't wait for somebody to ask you in. Come in and be a part of it.

[01:29:42] **Nate Hagens:** That's a great answer. I probably don't need to ask you the next question, but I will anyway. What do you care most about in the world?

[01:29:51] **Brett KenCairn:** It's a hard time for kids

[01:29:56] And I see the ways that my kids

[01:30:02] Struggle And

[01:30:11] I'm just doing everything I can to try to give them the best shot that they can

[01:30:19] So And if I had a s-- my magic wand question is this, and it comes out of working on the school stuff and seeing the remarkable disconnection between our educational systems and the living world. And so we've designed these remarkable climate-resilient landscapes for this elementary school here, and there's no connection to the curricular elements of the school.

[01:30:49] And we're working really hard in all the very slow and patient ways that we can to try to work with the district to actually understand first and foremost that understanding living systems is the integral survival skills that our children need, and that the landscapes of their schools should be integral parts of their education, and that stewardship should be a practical thing that you learn just as about in being in school because you're helping take care of that space that you're spending all that time in.

[01:31:21] So I want every school in the world to have integrated into its curriculum the basic skills of working with living systems.

[01:31:30] **Nate Hagens:** Hear, do you have any closing comments for people watching, listening to who, learned and, are curious and, agree with what you've laid out here today?

[01:31:43] **Brett KenCairn:** Well, Nate, I-- again, a huge expression of gratitude to you.

[01:31:50] I have a sense, though not d-direct, but I have a sense of the burden that what you're doing represents, and I want us to all appreciate and hold you in our prayers to keep doing this work in a good way. And I think that what you've been pointing towards is that it's not just about conceptually understanding the challenges that we face.

[01:32:13] We actually now have to live with the solutions, and that's an intrinsically local, personal thing that we need to figure out how to do as we're also working on the big picture stuff. So I really appreciate that, and I encourage those who are watching and listening to just see what it looks like to do that work in your own backyard, in your own community.

[01:32:38] **Nate Hagens:** Act three is, upon us, humans and the biosphere and the future. Thank you for your kind words and, thank you for your addition and, sharing with you your vision today and your very important work. I wish, and maybe I already know that there are people like you in most towns and cities around our country and beyond and, onwards, my friends.

[01:33:06] And thanks so much, Brett, for your time.

[01:33:08] **Brett KenCairn:** Thank you, Nate.

[01:33:10] **Nate Hagens:** If you'd like to learn more about this episode, please visit thegreatsimplification.com for references and show notes. From there, you can also join our Hilo community and subscribe to our Substack newsletter. This show is hosted by Nate Hagens, edited by No Troublemakers Media, and produced by Misty Stinnett and Lizzy Sirianni.

[01:33:32] Our production team also includes Leslie Batt-Lutz, Brady Heyen, Julia Maxwell, Gabriella Sleiman, and Grace Brunfelt. Thank you for listening, and we'll see you on the next episode