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[00:00:00] **Nate Hagens:** Good morning. This is part two of how to think about the Future series, where we're gonna take a deeper dive into scenario building and ultimately using that for planning and doing. in part one I talked about why I think it's important to hold the future as, sort of a landscape of possibilities.

[00:00:24] not the futures we want or prefer, but those that are possible. Starting there, and I shared the trap, I often see people fall into. when we get settled on our particular view of the future and then start framing and judging everything else against it. In contrast, I and many other system scientists that I've, known or studied, find it most helpful to have a distribution of postel futures that I consider with kind of a midpoint.

[00:00:57] And the reality is, I don't know which one specifically is coming, none of us do. So the more honest and ultimately helpful move is to learn how to hold several scenarios at once if only to have, overlap with. Discussion, with people that you're striving towards making change with. So today I wanna lay out the building blocks for how to do that.

[00:01:33] So I'll start with a frame. Most of you have already heard me talk about the four scenarios I've used for years now to describe. the near term possible Futures, green growth, moreor, The Great Simplification and Mad Max, if you're newer to the platform here and want to dig deeper into these scenarios, probably the best, Polished presentation is the 2024 summit presentation we'll link to in the show notes. and as a reminder, every podcast and every frankly we've ever done, has thorough references and show notes that you can find by clicking somewhere. Okay, I'll quickly refresh. the logic of this, the first axis is whether the global economy keeps growing in aggregate.

[00:02:26] Or begins to contract from today's level of throughput or for some, from some future level of throughput. The second axis is whether that growth or contraction happens in a way that more or less stays closer to ecological limits, or whether it runs further into overshoot and keeps liquidating the living world.

[00:02:47] So that would give us four quadrants. Green growth, which is physical expansion that bends toward regeneration, moreor, which is expansion that stays extractive and further exceeds planetary boundaries. The Great Simplification, which is contraction with coordination and ecological stewardship and mad max contraction in a world of ecological and other deterioration.

[00:03:13] Of course, the reality is the future world won't land neatly in just one of those quadrants. These are directional attract, for conversation and planning and education. And different regions in the future may be in different quadrants at the same time. And the quadrant you might be in might also shift and sometimes abruptly.

[00:03:38] But I do think these four categories are useful 'cause they provide an immediate handle on the directional possibilities via a simplistic two by two grid. However, they also hide something important because none of our futures will be only an economic story, growth or contraction. Two people can agree we're headed into contraction, but still disagree completely about life.

[00:04:06] is gonna be like, and feel like, 'cause they're imagining different power structures, geopolitical backdrops. Ecological conditions. So today I'm gonna keep the four scenarios that I just mentioned as the foundation. Treat them as the first of four grids, and then add three more grids that capture some dimensions of the economic, grid that aren't covered, in those four power and distribution geopolitics.

[00:04:40] And last but not least, earth systems. Plus I'll add an additional section about technology, which I'm gonna treat as a wild card or, modifier, and I'll explain why later. So, each of these scenarios will be a two by two grid with four quadrants. And the spectrums in these grids give us a way to talk about direction and tendency without us pretending, that these futures have any sort of.

[00:05:09] Precision or predictability. Okay, so the first one, growth or post growth is one layer, but now let's add on what determines the lived experience under that headline, starting with power. so before I lay out the axes here, I'm gonna step back and explain what I mean here by power, because that word gets used so widely and so loosely, it can get confusing.

[00:05:42] When I say power here, I don't mean energetic power, the ability to do work. I mean, four specific things, four sources of power that. In any society one could study actually. Shape the outcomes of that society. And what I'm gonna expand on here is what I, first learned from one of the Daniel Schmuck, Berger Bend Not Break podcast.

[00:06:08] Okay. The first is military power. Who has the guns? Who has the capacity to use force or threaten it? Military power is the oldest source and the one that ultimately backstops the other three. Second is political power. Who makes the laws? Who appoints the judges? who controls, the legitimacy and authority of the state?

[00:06:35] Political power shapes the rules everyone has to live under. The third is money. Who has the capital, who controls financial flows and therefore the resource flows? Who decides? What gets funded or unfunded and a financialized economy? This source has gotten enormously bigger over the past 50 years to the point in many places, one could argue it drives political power rather than the other way around.

[00:07:06] And fourth, which is newer, but growing fast is technological power. Who controls the platforms, the data, the algorithms, the infrastructure that the rest of life. Now runs on top of 20 years ago, this would've been a footnote inside the money category, but today it's becoming its own source of power. And honestly, in some domains, it's already the dominant one.

[00:07:31] And as we are seeing in real time in April, 2026, today is Monday, April 20th. Military power for now remains the ultimate power. Who controls violence, holds the real power. And the other categories are more like how. That power gets enacted. We are still fire rapes after all, and a small percentage of us have dark triad properties.

[00:08:01] this is both an important point and a provocative one for a future scenario analysis that the backstop power violence might report to the tech class or the wealth class. And as a reminder, probably most of the viewers here don't need this reminder, but 26 people hold the same financial claims on biophysical reality as the bottom 4 billion of the human population.

[00:08:27] And the AI raise is in the hands of relatively small group of humans and an even smaller group of companies. And the current trend in governments in many countries is towards concentrating and consolidating power. Okay. So when we look at any society, we can ask which of these four aspects of power is concentrated and which is distributed.

[00:08:55] And the answer often tells us something that the headline numbers don't. A country might have broadly distributed political power, one person, one vote, and still be deeply unequal because money and information, end up in, in a, in very few hands. The vote might be broad, but other leverage in the society is, quite narrow.

[00:09:19] So the first axis of this grid is power, is decision making authority in the economy, broadly distributed or pretty concentrated. the second axis under power is gains are the material benefits of the system broadly shared or captured by a narrow group. Where is the ecological and energy surplus flowing?

[00:09:49] And here's, an important aside, something I've recently been thinking quite a bit about during a period of growth where a rising tide lifts all boats, the who gets what question feels like a question primarily about fairness. Am I getting my share? Are things more or less fair and equal? But during a contraction phase, that question may transform into something much more basic.

[00:10:17] Is there enough? Can I feed my family? Can I heat my home? And the axes stay the same, but what it feels to live inside of each of these quadrants changes dramatically depending on. Whether the economic headline from the original grid is growth or contraction, it's like, phase shift from focus on fairness to focus on basic needs.

[00:10:45] Okay, so the four quadrants here, to integrate broad power and broad gains. We could call this the civic ideal. People participate meaningfully in decisions and the resulting outcomes reach most of the population. think functional democracies with strong public goods during growth, coordinated rationing during contraction, which is hard, but also, With dignity. So the second quadrant would be concentrated power and broadly shared gains. And, I could call this the stewardship, deal. Small group holds authority, but the outcomes are broadly distributed because the rulers choose to or need to keep the population functioning. Singapore and East Asian post-war development states are modern examples.

[00:11:42] It can be stable. But it's dependent on the continued competence and goodwill of whoever's at the top. And that is a fragile thing to depend on over time. Okay. The the third quadro would be broad power, but narrow gains. This

might be labeled a captured democracy. Everyone votes, but institutions are really only nominally democratic and the real gains flow to a small class, meaning industry leaders.

[00:12:12] And, lobbyists write the laws and the formal structure, professes shared power, but the lived experience feels a lot more like things are raked. And I think this is arguably where much of the west, already sits today. during contraction, this becomes the most unstable quadrant because people have just enough political voice to be angry, but not enough real power to change the outcomes.

[00:12:41] You would get extreme regime swings and rapidly dissipating trust. in the government. And lastly, the fourth quadrant would be concentrated power and also narrow gains effectively, some form of forced feudalism. A small group, both rules and takes, kleptocracy, colonial extraction. Resource curse states come to mind.

[00:13:10] And during contraction, this would be the most dangerous quadrant because the people have no voice and also no share. This is where violent resistance or total societal breakdown, become more possible. So I'm deliberately using just one grid here to cover what we might separately call governance and political economy and social structure to use a Marvin Harris term.

[00:13:37] Those three things move together probably more than they're separate, and this is complex enough. So I think one reasonable scenario grid with caveats is more helpful, to this exercise than three grids that. Seem independent but aren't. Okay. So we're two grids in, the economic and the power. Both of these are domestic.

[00:14:03] They describe what happens inside a society. The next grid zooms out to the international level because even the best domestic arrangement can be

disrupted by what's happening between nations as we're seeing. Actually we're not seeing it. We're about to learn it. maybe. So grid three is, geopolitics.

[00:14:26] And this grid captures the international backdrop that shapes energy security, supply chain reliability, whether coordination on shared problems is even possible, and of course the background risk of major wars. So the first axis is cooperation versus adversarial. Can major powers coordinate on shared problems, even if they don't like each other or view each other as adversaries in all the other realms.

[00:14:55] The second axis is interdependence versus self-sufficiency. Our nation's deeply enmeshed in global supply chains for essential needs like today, like the US today. Or have they built enough regional and domestic capacity to function more independently? Like. Russia, and I should note upfront, true self-sufficiency is nearly impossible at today's modern levels of complexity.

[00:15:27] Even North Korea depends on China for fuel, the US is 90% energy self-sufficient, but deeply independent On. Semiconductors and pharmaceuticals and all the things. So self-sufficient on this grid means relatively self-sufficient enough that a major disruption doesn't immediately threaten, your ability to function.

[00:15:51] And countries sit somewhere along this spectrum. and this Iran situation is causing many of them to actively move. Towards this now. Okay, so what would the four quadrants be along these two axes of coordination and dependence? The first would be cooperative and interdependent. This is kind of the globalization ideal trade flows.

[00:16:22] Freely shared institutions would manage disputes. This is broadly what the world aimed at from 1990 to the 2015 ish. It is extremely efficient, but everything is wired to everything else. So a disruption anywhere probably

eventually shows up. Everywhere else. The second quadrant would be cooperative and self-sufficient.

[00:16:51] Think of this as a friendly neighbors but with good fences sort of situation. Regional blocks that trade and maintain relations, but don't depend on each other for survival. it's slower. There are more redundancies. And in my opinion, this might actually be the most stable long-term configuration under the energy contraction and the carbon pulse because it reduces the transmission of shocks while preserving some core cooperation, which is important.

[00:17:24] The third, quadrant is adversarial and interdependent, kind of a danger zone, hostile relations between powers that still depend on each other's resources and choke points where every economic node becomes a potential weapon. Straight of Horus as leverage Taiwan straight as, some sort of a international pressure point.

[00:17:50] And this is arguably, or demonstrably where we are right now, extremely unstable because a single choke point or international incident, and there is a. Cascade of failures globally. And the Iran war is demonstrating this in real time with sulfuric acid and helium and fertilizer and the unknowns. for want of a nail, the kingdom was lost.

[00:18:16] Sort of examples. Fourth quadrant adversarial and self-sufficient. This would be kind of the Cold War. Part two scenario. The fission of the Superorganism, which I mentioned recently, two or more blocks that have decoupled enough to survive independently, but are also hostile to each other. Lower risk of supply chain cascade, but.

[00:18:42] Paradoxically, higher risk of direct military confrontation between the two economic superorganisms because the economic deterrent of mutual damage is now reduced because we're not joined at the hip on all the things. If

you don't depend on each other, the cost of fighting goes down. and that is a sobering thought.

[00:19:09] We can see this grid playing out live right now. The MOUs closure is showing every country what the adversarial and interdependent quadrant feels like. The Philippines declaring an energy emergency and Bangladesh closing all their schools to save electricity. Japan releasing all the emergency reserves in their oil reserves, and the response everywhere is.

[00:19:36] Movement towards greater energy, security and self-sufficiency. And the question is whether that movement happens cooperatively or adversarially. And that's the axis that determines whether we get, friendly neighbors with good fences or some sort of a new cold war. okay, three grids. Now, the economic direction, power and geopolitics.

[00:20:05] And the last grid, is different from the other three. And the first three describe human choices. this last one describes boundary conditions, what the planet is doing at the same time that we invent and legislate and debate and fight. So grid four is the earth system. this is the grid that bats last.

[00:20:31] As many, point out that phrase, we might be able to steer it. And in my hope, humans as stewards is one of the benign scenarios in, all this. But the earth system has momentum and a metabolism all its own. The first axis is stress from global heating. And I don't mean just average warming, I mean both the volatility and the extremes.

[00:20:59] my parents have a cottage that, had six inches of rain this past weekend and the roads washed out. it's flooded. I mean, this is like a hundred year, thing, and we've had a couple of 'em in the last few years. Heat waves, droughts, floods, fire seasons, crop shocks, as well as compound events where multiple of these extremes hit at the same time.

[00:21:25] The second axis I'll summarize as biosphere integrity. Are the living systems we depend on still broadly functional, or are they unraveling, soils, fresh water, forest, and their many functions? Fisheries, pollinators, important insects. Trophic webs. This is the dimension, that the Potsdam Planetary Boundaries work focuses on, and it's one that gets.

[00:21:57] Often overshadowed by the climate conversation despite being equally critical. maybe more so in some ways. Okay, so here would be the four quadrants, strained but workable. So there's moderate climate stress. The biosphere is still broadly functional, and adaptation is hard and extremes are more frequent, but systems mostly function and there is still some slack and mistakes are survivable.

[00:22:24] The second would be quiet, unraveling, moderate climate stress still, but the biosphere is thinning out under the surface. Soils, have degraded. There's been a crash in pollinator populations. Fisheries are well past peak fish and in decline. Water tables drop. Food production gets harder even without dramatic weather because the biological foundations to grow food are weakening.

[00:22:52] And this one is kind of insidious because it doesn't make headlines the way a hurricane or a heat wave does. It's just the slow erosion of earth's carrying capacity and the baselines are shifting slowly but inexorably away from the stability of the Holocene. And then we get into the two, bad categories.

[00:23:18] hot house triage, which is severe climate stress with a partially resilient biosphere, constant emergency management society is always responding and always having to rebuild. And important economic resources are perpetually diverted from development to stasis and recovery. In the last category, which I guess if I had to name one, objective of this podcast platform is to steer against this category, which would be a cascading breakdown, severe climate stress, and an unraveling biosphere simultaneously, multiple ecological systems failing at

once, and compound failures where each shock hits before we can recover from the last one.

[00:24:07] And in ecological terms, this quite simply is where overshoot finally stops being a fancy term we use and becomes an everyday felt, reality. An important thing to highlight here is that none of these four quadrants includes a fully healthy and stable climate or biosphere. That's because we've already locked in some level of degradation in these systems and we've already loaded the atmosphere and oceans.

[00:24:35] We've already significantly degraded soils across major agricultural regions, and we've already pushed multiple planetary boundaries past safe thresholds. Seven out of nine at my last look. So I'm trying to be objective here. This grid describes trajectories from an already compromised starting point in 2026.

[00:24:58] We are just choosing, and working on between how much harder does it get? But I also wanna be clear about this. Choice still matters. Efforts still matter. Regenerative agriculture can rebuild soil health over not too long of a period ecosystem restoration in all the ways, can recover some of the biosphere functions.

[00:25:25] I know many people working on various global cooling initiatives and many other regenerative ideas, and I'll I. Hosting a lot of those people in coming months. So the overall trajectory in this quadrant is set, but I think the destination still has quite a bit of flexibility and it's why I work so hard on these issues.

[00:25:47] Could humanity at the 11th hour become more stewards than Reapers? Okay. so you might be wondering in these four quadrants why I haven't spoken more about technology or even had a separate grid on technology, AI

automation, surveillance, renewable energy, biotech. These are obviously gonna shape the future.

[00:26:12] And here's my reasoning why Technology's effect depends almost entirely on the context. It sits in the same artificial intelligence, large language model is a tool for liberation in one power structure and a tool for authoritarian control in another. And, similar with ag, the same agricultural technology could be regenerative.

[00:26:38] In one economic model and totally destructive and extractive in another. So I think technology, like Dennis Meadows said in his podcast, if someone's coming at you with a hammer and they change it to a screwdriver, they're still coming at you. Technology mostly amplifies whatever the surrounding system is.

[00:26:57] A ready doing for better in one context for worse in another. Also, probably some of you're gonna push back on this and say that AI specifically deserves its own grid. And I also have thought about that. The reason I chose otherwise is that data centers running AI are themselves a massive new draw on the energy and biophysical system.

[00:27:18] And energy and material constraints is the binding constraint in this whole framework. Global data center electricity demand is on track to double. By 2030 with AI as the main driver. So AI is not outside of these four grids. It sits squarely inside them amplifying whatever direction the underlying system is already moving.

[00:27:44] in more door. It makes extraction more efficient and make surveillance, more ubiquitous, but in a managed. Great Simplification. It could make design and repair, and those sorts of things more accessible and shared. So technology amplifies things and what it amplifies depends on which system, it resides in.

[00:28:13] Another thing that I considered and chose not to give its own grid is demographics. I'm gonna have more to say on this, once I get time, but global fertility, how many babies we're having has fallen faster than any forecast. Recent forecast has caught South Korea hit a fertility rate of 0.72 in 2023, which is a third of the level needed for full population replacement.

[00:28:38] So most of the developed world is now well below. Replacement and this is gonna reshape labor and care work and immigration and migration and political power over the same timeframe that these composite worlds describe. I chose not to give it a separate grid 'cause its effects will show up inside the other four.

[00:29:02] Similar to technology, but demographics and population are also sitting underneath all this. And in a longer version of this framework, they might earn their own dimension. Actually, there are probably tons of other potential grids that could be made and incorporated into future scenarios. Technology, demographic change, mental and physical health, freedom of communication and information.

[00:29:30] I think the ones I captured are relevant enough to continue in this exercise. Maybe you all can build on this and expand this conversation. what other grids might also be important spectrums for anticipating and articulating the future and how might they interact with the ones I've laid out today?

[00:29:50] Okay, so there's a zillion ways to parse all this. I came up with these four grids, which I think cover the main basis, economic direction, growth or contraction, power and distribution. Both how power is concentrated and how it's shared. Geopolitics, adversarial versus cooperative and independent or connected.

[00:30:14] And I suppose that could be an archy scale. And lastly, earth system, basically warmer climate or much warmer and more or less biosphere integrity plus technology as a modifier to it all. None of these is a future scenario by itself. These are only layers. A real scenario would be a composite of each of these layers.

[00:30:43] We're not gonna live in The Great Simplification in general. We'll live in a great Simplification with. A particular power structure, a particular geopolitical backdrop, and a particular ecological condition. So the same economic headline scenario will produce radically different lived realities depending on what else is in.

[00:31:08] Stack. So in part three I'm gonna build a handful of scenario composites from this foundation, and I will intend to make them vivid and concrete enough that we can, as scenario planners, feel the difference, between what it might. We like to live inside one world versus another. And I think imagining these scenarios is important because it then informs which interventions make sense depending on which composite we're considering or which composite we're actually moving into in 2026, and which ones we would like intentionally to steer toward.

[00:31:51] And once we can articulate the. Composite worlds somewhat clearly. We can perhaps reduce our arguing about single story futures and start talking more about practical, robust choices and effective strategies under genuine uncertainty. That's next part three, scenario composites. I'll see you then.