

The Great Simplification

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[00:00:00] **Nate Hagens:** Good morning. This is part three of how to think about the future, where I'm gonna talk about how to build a systems terrain map of the various pathways to various futures. I keep making the series longer, because as most of you tuning in here feel, we are approaching a really serious juncture, in our global, economic situation and, our culture.

[00:00:41] And I really want more people to be able to visualize, discuss, and engage with all the unknowns steering towards life and continuity and away from dystopia, though some dystopian things are, probably now baked in, indeed happening now. So a quick recap so far. In part one, we talked about how to hold the future as a landscape of possibilities, coupled systems and phase shifts and shortfall risks.

[00:01:16] in part two, we built four grids of variables that will be core components in shaping the future, economic direction, up or down, power and distribution, geopolitics, and Earth systems. And we highlighted why technology is neither good nor bad, but an amplifier of whatever system it sits inside. In part four, the next video, I'm gonna combine sections of those four grids into composite worlds, specific futures descriptive enough that you can feel the difference between what it might be for us to live inside one versus another.

[00:01:59] But before I do that, I decided to add one more conceptual tool, because those composites I'm gonna build are not only just a list of possible futures sitting side by side with equal likelihood. They all will reside in a landscape, and the shape of that landscape, which valleys are deep and which ridges are steep and hard to cross, and which directions flow downhill or uphill from where we stand right now, I think matters enormously to understand which

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futures we're most likely to arrive at if we do nothing, and what it will take to climb towards the futures we want So all these concepts come from biology and ecology and are, in my opinion, pretty useful for thinking about where human civilization might be headed.

[00:02:56] Okay, so here's the biology. In the 1950s, a developmental biologist named Conrad Waddington was trying to understand how a single cell, a fertilized egg, eventually becomes an entire organism. Every cell in your body carries the same DNA. They start from the same place on the map, if you will. But a heart cell and a liver cell and a brain neuron end up as completely different things.

[00:03:30] How does a cell that starts with all the possibilities open to it end up committed to one specific pathway? Waddington imagined all this as a landscape. Picture a ball sitting at the top of a series of rolling hills and valleys. That ball is a stem cell, and it has the potential to become many different things.

[00:03:57] As it develops, it rolls, and it rolls downhill and enters a valley. And in that valley, there's a fork, and the cell enters one branch after that fork, and then that branch forks again. At each fork, some of what was previously possible to that cell closes off, and by the time it reaches the bottom of a particular valley, it is now committed to being, for instance, a heart cell.

[00:04:27] It will never again be a stem cell, nor will it become any other type of cell, at least not without extraordinary intervention. The valleys there are not all the same depth or size. Some are deep and have very steep walls, and once a cell enters, it stays because the constraints to leave are quite strong.

[00:04:50] Some valleys are quite shallow. A small perturbation or some chemical signal or a mutation might push the cell out and into a neighboring valley, and the ridges between those valleys also vary in height. Some transitions between cell

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states are relatively easy. Others would require enormous energy or very specific conditions that rarely occur naturally.

[00:05:19] I think this way of looking at a situation with valleys and ridges and mountains is useful because, you guessed it, I think it maps directly onto human civilizational futures. When we imagine and discuss and work towards various futures, we're not choosing from a list of possible futures the way you would choose from a Chinese restaurant, menu where everything is equally available and the only question is your preference.

[00:05:50] We're also not sitting at the top of a series of rolling hills and valleys like our imagined cell. We're already rolling through a moving landscape with a shifting topography. And some futures, I would argue most futures, are downhill from where we currently are. Some are uphill, and by downhill I mean the path of least resistance, the future that current momentum and present incentives already favor the one that takes the least new energy or coordination to reach.

[00:06:27] Those are downhill. Uphill futures are the ones that require sustained effort to climb towards and sustained effort to stay in once we arrive there. And once we find ourselves deep in a particular valley, the high walls constrain the possible next moves. A farmer in Malawi or a software engineer in San Francisco are all standing in very different parts of the landscape.

[00:06:57] So the futures that count as uphill for one community may be the default valley for another. So we here are more about the systems we share in common and not a location that everyone occupies. I want to make that clear. Okay, so let me make this concrete with other examples that don't involve cell biology.

[00:07:18] Think about a lake. Ecologists have studied the aging process of lakes extensively. A young, clear lake with abundant plant and animal life will gradually

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accumulate sediment and nutrient buildup over its lifespan. As it ages, it will become shallower and murkier, eventually reaching a point where it becomes a wetland.

[00:07:43] There are ecological forces that regulate the speed of all this happening. The plants filter the water, the clear water lets sunlight reach the plants. Fish populations eat the plants and the algae, and bottom feeders filter out the excess nutrients, creating a gradual succession. Humans benefit greatly from young and middle-aged lakes as sources of fresh water and food and as beautiful places to live near, in Minnesota, the Land of 10,000 Lakes.

[00:08:17] By the way, there are also 10,000 caves, which are also pretty cool. But importantly, we can impact the how and when a lake ages depending on how we interact with it. There are regenerative techniques that can expand a lake's lifespan by increasing water-filtering wildlife and reducing sediment and nutrients that would naturally run off into the water.

[00:08:43] These techniques require intention and planning and energy, but are quite effective. Conversely, we can also accelerate and distort this systemic degradation by adding even more nutrient runoff, like fertilizer from farms or sewage or phosphorus, causing the lake to become murkier more quickly, and the lake might even flip, via algal blooms.

[00:09:13] The water then becomes thick and cloudy with the suspended sediment, and light can now no longer reach the bottom. Most of the plants die, the oxygen then drops, then the fish die, and the unnatural aging of this system has also tipped the lake into a new stable state, a new valley, a murky algae-dominated lake.

[00:09:35] So this is now a deep, self-reinforcing, stable valley because the conditions that maintain cloudy, lifeless murkiness are now in a self-perpetuating

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loop. So here's the interesting and relevant, and in my opinion, important thing. These are both examples of systemic processes, but the transition between the dynamic life-perpetuating system and the dead zone is profoundly asymmetric.

[00:10:10] Flipping a clear lake to a murky one might take a few years of excess nutrient loading. Flipping it back Even after you completely stop that nutrient runoff might take decades or much longer because you don't just need to remove, the offending pollutant or stressor, you would need to rebuild the entire ecosystem that was lost, the plants, the oxygen, the fish populations, and the nutrient cycles and the ecological webs.

[00:10:42] So the system settled into a new valley, and getting it back out requires climbing a ridge that didn't exist before. This pattern that I just described for lakes shows up everywhere in complex systems, and it shows up in human societies too in lots of ways. Think about a society that transitions from democratic governance to authoritarian control during a crisis.

[00:11:11] Maybe there's a war or an economic collapse. Maybe there's gasoline and diesel shortages and empty store shelves, due to military action overseas. Fear and uncertainty spike, people accept restrictions that they wouldn't normally accept, and a leader consolidates power and then surveillance expands and opposition is algorithmized, is that a word, and suppressed so- sometimes probably violently, sometimes just through social pressure and institutional capture.

[00:11:48] And that transition from open society to authoritarianism during a crisis can happen in years or decades, such as the slow erosion of the Roman Empire. We've also seen it happen in months or even faster. Modern examples were Peru in, in the 1990s and Tunisia, a few years back. It's what I would label a behavioral downhill roll because once started, it gathers its own momentum, and it follows the gravitational logic that we talked about in part two of this series.

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[00:12:28] Contraction plus fear pulls power towards consolidation. But now try to reverse all that. Try to rebuild democratic governance after authoritarian rule. You would need, among other things, independent courts and a free press in a landscape where civic habits of debate and disagreement have atrophied. You would need institutional knowledge that was purged and a population that knows what self-governance feels like and believes that it's possible.

[00:13:07] You would need to rebuild trust itself, arguably, in my opinion, our most valuable resource from neighbor to neighbor and citizen to government. Such a transition probably takes a generation at minimum, often longer, and sometimes it doesn't happen at all. So the transition from democracy to authoritarianism downhill took months, but the transition back takes decades.

[00:13:38] This asymmetry, something my friend in Italy, Ugo Bardi, calls the Seneca effect, where things grow slowly and collapse suddenly, is not an accident or bad luck. It's a feature of the landscape topography itself. Organized, high-trust, coordinated systems like, democracy and civil discipline require energy and effort and social engagement to maintain, just like slowing down the aging of a young lake system.

[00:14:14] Degraded, low-trust, coercive systems are, in a thermodynamic sense, the lower energy state. They're what systems roll towards when you stop putting energy and collective effort towards them. The default societal valley, the place that gravity pulls us when we stop climbing. This brings me to the practical point of this episode ahead of when we start building composite worlds.

[00:14:44] The futures that are easiest to reach from the valley we currently inhabit are not necessarily the futures most worth living in. In contrast, the futures most desirable and worth living in will require some hard climbing. Let me stress that again, though to many of the viewers of this channel it will appear obvious.

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[00:15:07] The easiest futures ahead of us are not the most desirable, and the most desirable futures for humanity and the biosphere will require sustained effort to reach and sustained effort to remain in. And if we stop climbing, gravity, the social and ecological, will pull us back down into a valley we don't want.

[00:15:38] an important caveat too is the landscape we are navigating is not static. It's pretty dynamic and always changing, whether through human or non-human forces. And as we move through the peaks and valleys of the terrain, the ground beneath us continues to shift, under our feet. Energy descent, climate change, biodiversity loss, and much more are all actively reshaping the valley as we proceed through it.

[00:16:12] In other words, a future that was uphill in the 1990s may now be downhill, or will be in, in a decade from now or vice versa. So I like to think about this in terms of what we covered in part two. Contraction, economic contraction combined with adversarial geopolitics and increased concentration of power is now the path of least resistance, or at least economic contraction for most people.

[00:16:43] This is now a downhill roll. It does not require any conspiracies or villains. It merely requires people being afraid and leaders responding to fear the way leaders have responded to fear for thousands of years: consolidation, control, surveillance, walls. Economic contraction combined with cooperative geopolitics and broadly shared power, that's possible.

[00:17:13] That's uphill from where we are. It requires people to trust each other during precisely the period when trust is hardest to sustain. It requires leaders to share power when the incentives to consolidate are strong, it also will require communities to coordinate when coordination is the most expensive and tiring and difficult.

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[00:17:38] But-- and at the core of the work of The Great Simplification, and our outreach and the information and the community, uphill does not mean impossible. Plenty of things in nature are uphill, and they happen all the time. Every living cell in your body has succeeded in an uphill project. Salmon spend their adult life swimming against the current to spawn.

[00:18:02] A redwood tree in California spends centuries pulling water hundreds of feet up against gravity. So this landscape metaphor doesn't tell us that the climb cannot be done. It just informs us w- that the climb has costs. And also, what happens if we stop before we've reached a more stable resting place on the other side?

[00:18:27] We slide back. And this is true at every scale, your personal health, your relationships, your community, national and international governance, the biosphere. These are all states that are maintained with effort. They exist because someone or something is doing ongoing work, putting in energy, attention, and care to maintain it.

[00:18:55] And the moment that work stops or shifts, the contours of the system's landscape reassert themselves, and these systems devolve in years or even months because the landscape is always gently but persistently pulling them toward lower energy configurations. So when we get to part four, probably next week or soon, and I walk through four composite worlds I've come up with, I invite you to hold this landscape idea in your mind.

[00:19:29] Before I share those, next time, maybe sit with a few questions. Looking at the near and longer-term future, where do you see the steep valleys, and where do you see the open ground? Which civilizational pathways feel uphill from here, and which feel downhill? Where are you actually standing in this landscape right now?

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[00:19:57] Because what counts, as I said earlier, as an uphill from a farmhouse in Malawi looks very different from what counts as uphill from an office in San Francisco. Your sense of the terrain is shaped by where you start. And here's a harder one. When you imagine the futures ahead, notice which ones you find yourself wanting and which ones the physics and the data suggest are likely.

[00:20:26] Are those the same? And if they're not, what does that tell you? The composites I'm building and will share are not equally accessible or equally stable, and the transitions between them are also not equally reversible. The landscape of the future of humanity and the biosphere is tilted, and knowing which direction it's tilted is arguably as important as knowing what the valleys look like once we're inside them.

[00:20:57] Okay, before we conclude, I want to highlight four terms to carry through the rest of this series, and I may use them repeatedly in this channel's work because they are this channel's work. The landscape itself has two features: valleys, which are the stable states where systems settle and reinforce themselves, and hills, or more technically ridges, which are the barriers between these valleys, the cost of transitioning from one stable state to another.

[00:21:33] The valleys and the ridges are the terrain of the future. We don't choose them. They're given to us by physics, ecology, and history. But there are things humans can do to that terrain, two general categories. We can create switchbacks, use physical or social technology to carve paths up ridges that would otherwise be too steep to cross.

[00:22:03] So, building more social trust, that's switchbacking. Restoring depleted soil, creating cooperative institutions, those are switchbacks. They make crossings of the ridges possible that weren't possible before. On the other hand, we can erode the trail through actions or just through plain neglect, we let the paths disappear, and then the ridges do become impassable.

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[00:22:36] depleting fossil aquifers or soil, losing civic norms, building surveillance infrastructure that can't be dismantled, these are all examples of erosion. And if erosion happens fast, it leads to washouts of all the switchbacks that have been built, and these washouts do not have to be intentional.

[00:23:02] Sometimes it's just what happens when active switchbacking stops. Gravity and weather do the rest. So when you hear me describe the composite worlds, in part four, ask yourself which passages are we switchbacking right now, and which ones are we allowing, purposefully or out of neglect, to erode?

[00:23:29] Valleys, ridges, switchbacks, and erosion. Hold onto those ideas. And last point, though it's not the focus of this episode, these four things don't only apply to societies. Each of us has valleys and ridges in our own lives. We're each switchbacking or eroding our own future paths every day, whether we realize it or not.

[00:23:57] I will finish part four soon. See you then