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Perspective

The Infrastructure of an Ecological Civilization Cultivates Stewardship and Safety

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"The top environmental problems are selfishness, greed and apathy, and to deal with these we need a cultural and spiritual transformation. And we scientists don't know how to do that."

—Gus Speth

Speth's oft-cited quote feels mostly true, but also like a meek call to action. Western science, as a data-driven methodology at least, probably does know "how to do that". There is enough evidence from neuropsychology, sociology, epigenetics, data science, etc. to put the pieces together in understanding why we do what we do, but Speth is right, there is something missing. But if western thinking has brought us towards a hyperconsumerist individualistic civilization, likely the same thinking won't get us to a relational ecological civilization. And even though I believe in a better world, I already sense the internal cynic talking back at me: *You've got it backwards! Speth is right, humans are greedy, hyperconsumerist and individualistic by nature. An entire civilization based on our most generous, empathetic selves is absurd. The best we can do is command and control our selfish, exploitative predispositions. Damage control. Harm reduction. Eco-efficiency. EVs and recycling.*

We can probably agree that this is not humanity's most aspirational path of relationality within Gaia. Sustainability is really about long-term social-ecological harmony. I didn't always know this—I once thought I had it all figured out—working in science and engineering at Stanford and MIT and sustainability policy at Harvard and McKinsey: eco-efficiency and assoiated policies to support a growing population with more consumption. But it always felt like I was aiming for less bad, not more good. And I began to notice the small glimpses of harmonious social-ecological systems, often in indigenous communities in Canada, Africa, Polynesia and South America. Not romanticized or extractive, I have simply witnessed enough pragmatic wisdom and tradition to give me a sliver of hope for humanity, more than just wishful thinking. I saw right relationship in Coast Salish youth harvesting clams slowly and respectfully, knowing if they take care of the clams, the clams will take care of their community. In Guinean elders singing to trees before they cut them, both trusting that the wood will be put to good use. In "poor" Tuamotuan communities, sharing an abundance of trust and love and laughter. I saw the more beautiful world, not in the damage control of less bad, but in embodied wisdom in living with more good, leaving things better off than when found. And I started to wonder, what is the grassroots infrastructure of right relationship here? Where is the innovation epistemology in this? And how does dominant society, respectfully without appropriation, shift towards the ecological worldview that creates this? Here I use infrastructure in a broader sense, as the interfaces between culture and nature, borrowing from Marvin Harris' anthropology. My intuition is that there is a feedback loop between the structure (norms) and infrastructure (interfaces) that supports mutualism in innovation. In other words, innovation supports infrastructure that supports adaptive stewardship. This is turn reinforces the structure and superstructure (ideologies) that recognize and reciprocate intrapersonally, interpersonally, and transpersonally. One could call this right relationship to self, other, and the world. Yet, to some extent then, we know the destination more than the path.

It is true that dominant society today is typified by hyperconsumerism. Unfortunately, "stuff" is often procured to fill an internalized developmental gap, e.g., acceptance, trust, identity, confidence, meaning, health, status, power, love, significance, attraction, exhilaration, advantage, joy, wisdom, etc. And most unfortunately, we often euphemistically call these gaps "markets" and celebrate them as beneficial to society, rather than considering more systemic root drivers. The principal driver behind all this is a nuanced

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insecurity, an omnipresent but subtle nervous system dysregulation in all of us that says "I'm not okay here, things are not okay as they are". And this is taken advantage of by profit-motivated firms—when we are dysregulated, i.e., survival mode, we consume to fill that gap without regard to externalities. We are consuming in wrong relationship, not out of need/connection/celebration, but rather attempting to avoid what is, effectively, existential insecurity. Wrong relationship is part of the "ontological crisis of humanity" that has been variously described by existentialists, post-modernists, the Club of Rome, etc. and compounded by today's existential risks of nukes, CRISPR, AI and proliferated by a narrow-goal economy optimized for a race to the bottom in which firms compete to ignore the most externalities. If it sounds daunting, it's because it is.

If existential insecurity is the root driver of hyperconsumerism and thus a major contributor to ecological impact, then perhaps the opposite, *existential safety*, is a likely root driver of ecological civilization. Individual, interpersonal, ecological, transpersonal, cultural, and spiritual safety. A felt sense that our life, our loved ones, our culture, our ecologies and our beliefs are not in imminent threat; a deep knowing that we are not living in survival mode. No one can have long-term empathy for others or nature from a place of survival mode. Existential safety, to some degree, was present in all the glimpses of the more beautiful world I have seen; a sense of place, a sense of belonging, a sense of consuming in right relationship, a multi-generational embodied wisdom of resilient patterns that have continued since time immemorial. Not perfect nor immune to adversity or conflict, but rather, a somewhat generalized feeling of safety. We are very much missing this feeling in modern society. It is even hard to imagine what that might feel like. Yet, what we can probably imagine, what most of us have experienced at least somewhat, is the opposite of fear—some degree of trust. Not in everything, but perhaps we have felt some level of trust in our families. Or some level of trust in our food or water systems: the fish keep biting, the well keeps flowing. Or some level of trust in a higher power—this is literally stamped on coins in the USA. To me, a priority in rebuilding existential safety, and in building an ecological civilization, is expanding that sense of trust. Consider how many people live in survival mode today, both acute (food, water, shelter, conflict, climate change), and chronic (loneliness, nutrition, discrimination, mental health). Certainly billions, most simply priced out of their humanity. Overwhelming, to say the least, making the concept of an ecological civilization sound like indulgent tripe. And yet, on some level, we probably all know that we must rebuild trust, safety and stewardship into dominant cultures for the survival of the planet and all life.

How do we do this? First, most policy targets still to focus on eco-efficiency, e.g., "net-zero carbon by 2050", and not "by 2050, we aim to live with a sense of safety and stewardship with Earth". The former is dependent on the latter, and that message hasn't been made clear enough to policymakers. A colonial worldview struggles to grasp this—stewardship and safety are feelings, not numbers. Elinor Ostrom's Nobel-prize winning work on polycentric governance of common resources and the importance of local actors can be interpreted as evidence that holistic policies focused on qualitative stewardship can be effective, leading to the quantitatve improvements in sustainable resource consumption. The quantitative lags the qualitative.

Second, stewardship requires empathy, and empathy requires not being in survival mode, a chicken and an egg problem. Coming out of survival mode only happens when we have built and stewarded a world that trusts each other and the natural world that we're going to be okay. Try saying it out loud. *I'm okay because I trust that I will receive what I need from others and nature*. Notice if there is a small or large part of you that doesn't feel this is true. There is in me. And this makes sense, our ancestral brainstem has a negativity bias wired for day-to-day safety. Overtrusting hominids were quickly selected out. Yet, somehow, on a good day, I do feel safe. I do trust. I recognize what a privilege this feeling is, it is so rare. Anxiety and cynicism dissolve, enough to notice anyway. And something interesting follows, I get more curious about nature and others, about how I can better steward all my relations. And the more curious I get, the more I understand, and the safer I feel. Empathy and stewardship and getting out of survival mode go hand in hand.

Third, we have an opportunity to build a right relationship economy. In *Braiding Sweetgrass*, Robin Wall Kimmerer describes consuming meat in right relationship, hunters who wait for a nod exchange with a deer before firing. We can take this analogy to learn right relationship in all of our consumption, all of our economy, all of our infrastructure. As discussed above, our culture is mostly stuck in survival mode, leading to "man as economic actor" norms. But this is why I disagree that greed and apathy are the root causes of the environmental crisis; greed and apathy are economic symptoms not causes. The root cause is existential insecurity—and *we can do something about this*. This reframe switches from inoperable blame to compassionate and pragmatic action—we can do something about this even at a wide scale—it is challenging, but not impossible. An equity-focused approach to understanding safety and stewardship from both western and indigenous science is crucial. The western scientific explanation of safety is probably rooted in relational neuropsychology, research that would help us understand drivers of ecological civilization, yet this is still in its academic infancy. *Sapiens* by Harari, *The Ascent of Humanity* by Eisenstein or *Ishmael* by Quinn, had little neurochemical reference. These authors map our converging crises as symptoms of a deeper cause of seeing ourselves as separate from nature and each other. But the question remains: Why? I am hoping western neuroscientists and environmental psychologists help answer this; I'm rooting for a Nobel Prize in the 2030s for understanding the metascience of ecological reunion. Likewise, pan-indigenous concepts have long built reciprocity into economies for millennia. These include agency and voice for other-than-human relations, circle decision-making and polycentric governance, seven-generation thinking to reinforce intergenerational responsibility, ceremony to experience "all things are connected" and feel more integral and resilient. Real or perceived existential risks were present in indigenous societies, yet day-to-day

anxiety was mostly not present—the narrative of "brutish and short" is well-documented to be false. The common themes seem to be land-based, community-centric, and patience for emergence. Integrating these themes without appropriation or homogeneity into dominant economies can start with sharing power with wisdom lineage holders. Likewise, economic frameworks that accommodate safety and stewardship values can prevent them from simply getting economically selected out in the short-term.

Fourth, focus on the interfaces with nature. Harris' cultural materialism framework suggests that the structures and superstructures of society greatly shape the infrastructure we build. This is true. However, the environmental movement is somewhat paralyzed in waiting for a global shift in the superstructure, in ecological consciousness. Perhaps the reverse is also true, re-engineering our infrastructure can also hasten changes in the norms and ideologies of civilization. So here I suggest the small-is-beautiful things we can do, today, in rebuilding society's infrastructure that might invite even a small amount of trust and safety into day-to-day life. In many ways our ideologies are shaped by our day-to-day experiences, and if we can optimize for experiences of trust and safety, we may, one day at a time, shift global culture away from rapture dog-eat-dog ideology and towards norms of reciprocity. What infrastructure brings existential safety? Ideally, we're designing for emergence—which is place-based and (by definition) impossible to predict. But I'll consider common qualities we would expect to see. I see these as the low-hanging fruit in today's resource and political climate.

- *Nature-based design in the built environment*. We are what we continuously do, and our infrastructure, the day-to-day mediums in which we interface with nature, significantly impact how we spend our time and energy. By allowing nature to have more agency within the built environment, we immerse ourselves in the resilient complexity and unpredictability of nature. Natural infrastructure, a type of nature-based solution (NbS), relies on the self-design and emergence of ecosystems to provide similar functions as engineered infrastructure, often at lower cost. What if roads, buildings, transportation, communication, food/water, were living ecologies? Our lab has written about this [1], and the spectrum of ecological complexity or "greenness" within each design. Having somewhere to start makes sense, this will be a 500-year project. Desired societal functions and ecological functions often do not map 1-to-1 and societal functions are typically less *efficient* than engineered infrastructure, e.g., a wetland filters water more slowly with less predictability than an engineered system. A well for drinking water requires more source-water protection than an engineered system. However, when we take a long-term resiliency perspective, they often become more *effective*. Resiliency and effectiveness in infrastructure slowly rebuild safety and trust into our day-to-day experience. We have to take baby-steps towards this, it is unimaginable today how highways could be living ecologies. Tangible examples applicable today include: living building systems that provide habitat and services to local ecosystems; hollow-paver roads that allow plant root and water infiltration; living reefs as breakwaters; wetlands instead of engineered water storage and treatment, etc. These build existential safety from the bottom-up by working with the inherent antifragility of *complex* life systems to provide societal functions instead of more fragile and complicated engineered systems.
- *Design for relationality*. I teach a course on ecological design, where we use a design practice to build more overlap between societal and ecological functions, more relationality. Relational design can range in scale from distributed compost bins for waste removal/nutrient recovery; to rain gardens for aesthetics/water infiltration; to food forests; to redesigning golf as a recreational sport that supports natural ecosystems; etc. If my four-year old was a city planner, there would be far more interconnectivity; where play and relationships are priorities. My kids literally don't stop exploring the wonders of life, everything in their world is relational. Because of all the threads of connection, they feel safer in the world—they can always follow a thread to the sense of "home". We could design infrastructure to maintain interpersonal connectivity (e.g., more public green space, 15-minute city concepts); equity (e.g., trauma-informed infrastructure, public infrastructure to support gathering); polycentric governance (e.g., housing/land co-operatives); regenerative economies (e.g., five capital models for land-use planning, indigenous protected and conserved areas). Building more interpersonal and interbeing relationality into day-to-day experiences will eventually support safety and stewardship into the structures and superstructures of society. "What is truly life-affirming in the long-term here?" might be a design goal, rather than looking at quarterly forecasts.

In conclusion, I believe dominant society is slowly remembering what indigenous societies have long known, the golden rule of reciprocity. This will take embodied reconciliation with the land and with wisdom lineage holders. It will be slow. But, perhaps, this is the greatest opportunity in history, the most at stake. An ecological civilization will likely consist of hundreds of thousands of heterogenous, place-based, values (not numbers) driven, mutualistic communities. Not utopia, but certainly not dystopia. One day at a time, one tree, one house, one path, one consumption in right relationship at a time—rebuilding trust that we will receive what we need from nature and each other. In many ways, isn't this the path of humanity? Reverence and harmony? Or, more poetically from Coelho: "what is life but a long march from fear to love?". Let's get out of survival mode and build it. Much respect to the those already on the frontlines.

References

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