

INDIGENOUS REGENERATION: DECOLONISING THE MIND

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Recodifying Agriculture: Indigenizing our Ways, to Regenerate the Planet

Some have said that 'the soil will save us' or that 'in soil we trust'; others have accurately described the rise and fall of civilizations based on how they have related to this thin layer of life-giving and energy-transforming infrastructure that we inherited from the past. We still have soil thanks to the evolution of the Earth and the living systems that have thrived on it. Our current population is possible because of the soil. What we do to the soil, we do unto ourselves. Soil, its health, or lack of it, its loss or regeneration, as in the past, is again at the center of global mass migrations, hunger, malnutrition, economic collapse, climate change... the list goes on.

This is a writing about soil, but not as matter or as a medium, rather about how it came to be, and how we can work with the Earth's ecosystems so we can regenerate it, and as a result restore in a significant way, the health of the planetary ecology, communities, and nations. I am writing this article in a language I am not native to, in a land I am not native to (Minnesota, US), and in a mindset I am

not native to. I write this seeking spiritual connection between my indigenous self, my indigenous intellect, my connection to the systems that have regenerated the Earth's living systems for millions of years, the systems that delivered us the diverse living systems which allowed us to evolve into our current human form, and the colonizing world that has now verifiably succeeded at creating the most effective structures for achieving global mass destruction.

I am also writing from my experience as a Guatemalan born in poverty, raised with a close symbiotic relationship with other living ecosystems, someone who experienced first-hand the wealth that healthy soil and living systems deliver, who experienced the original concept of indigenous regenerative ways. As a child I was taught to understand that we don't 'work with nature'; rather, we ARE nature. I am writing these words from an indigenous perspective on agriculture and food, a perspective recently 'discovered' and similar to other discoveries has been named 'regenerative', and like other colonizing processes is now under full scale appropriation and segregation from its

original expression, the one that holds the promise for large-scale planetary solutions to climate, hunger, malnutrition, poverty, and overall loss of the biodiversity on which we depend for our human survival.

I may not be native to this land I now call home, but I am not a colonizer or invader either. I know this because I have accepted, and fully embrace the fact that I, as any other living creature, am indigenous to this planet. We all came from it, because of it, and because of the evolutionary processes which gave us a magnificent and balanced design for all living systems to thrive. Systems that symbiotically feed on each other and have moved across time, an ebb and flow, a planetary level dance where ecosystems thrive and advance and make room for other living systems to emerge, thrive, evolve.

From this perspective, I offer some solutions to counteract the planetary disruption caused by our species, the largest the world has ever seen. I hope we will all see the need to collectively grasp the magnitude of the problem and build the indigenous intellect needed to move forward. We must be an intelligent species, but so far, the intelligent and rational part that is supposed to separate us from the behavior of other species has not fully kicked in. We insist on devouring the very planet that feeds us, and from that perspective, we cannot collectively claim to be better than a virus or bacteria that does the same till they consume the body that feeds them and their populations collapse. Yes, many of us are mobilizing in a way counter to our destructive and colonizing urges, and more in alignment with our indigenous sense of belonging to the Earth and of being part of its living systems, but at a large-scale we are still too few to tip the balance of destruction over to regeneration.

Understanding this divide is critical for a proper discussion of the issue of climate disruption. Too often, hearing that regenerative agriculture is not 'economical' or 'scalable' enough to be a solution. Embedded in those questions and remarks is the colonizing concept of extraction and exploitation. And yes, regenerating the planet means shifting

away from degenerative colonizing ways, and to do so we must radically change how we do things. That radical mental, economic, and structural shift from colonizer to an indigenous-centered stewardship of resources is what is not currently scalable, not the actual physical transition of the land. Let's not confuse the scalability potential of regenerative agriculture design with the lack of capacity to think collectively and transform our economies of extraction and exploitation into economies of regeneration at scale. The two may be connected at some point, but the truth is that there is still sufficient land outside of corporate control, in the hands of small farmers, native tribes, and community holdings to reach a tipping point. We can welcome the colonizers as they decide to shift, but we don't have to wait for the current system to decide to change at scale. We have sufficient scale. We just need better organization and to build infrastructure to harness the power that we already have.

Within its larger capacity to regenerate, the ecosphere evolved into thousands of macro and micro sub-ecosystems, from rainforests and their own micro-ecologies, to deserts, highlands, tundra, etc. Each of these ecosystems has developed its own regenerative blueprint over millions of years, and did so at a large scale with its own fully adapted soil profile. Such is the scale achieved, that they supported the emergence of life and food webs to support and sustain species over billions of years. Those are the regenerative processes that we owe our own existence to, and those are the processes that we have systematically disrupted and have pushed to the point of ecosphere-level imbalance. What we call climate change is simply the system responding and rebalancing to compensate for our disruption. The Earth's ecosystems have always done this, from giving birth to the age of the dinosaurs, to rebalancing after their demise; the Earth has a resilient and magnificent way of managing energy to support life and its regeneration. As a single ecosystem, everything on Earth is connected and life operates based on energy flows, its transformation, and constant

movement within this unique ecosphere-level, a system of organization that resembles every bit that of a fully functioning organism, which the Earth is from an indigenous perspective. That perspective is what can ultimately save us all if we start to collectively act as an intelligent species.

My experience as a farmer and farming systems professional has always been grounded in this indigenous understanding of the Earth's ecosystems. Yes, I obtained conventional mono-cropping, row-cropping, mechanized agricultural training, but after first having understood how the Earth's ecosystems operate, it was impossible to swallow all the theories and arguments being sold to us as students. It also took more than 25 years before those teachings would become relevant to my life's dedication to food and agriculture again. But here we are, and now more than ever, we will depend on this foundational systems-level understanding to regain our footing and give it our best at reversing the global calamities that colonizing systems have created.

From an indigenous perspective, the idea that farmers or companies 'produce' food is ridiculous. As farmers and food systems professionals our single most significant role is: 'the stewarding of energy transformation processes that turn inedible energy into physical forms that we call food.' These energy transformation systems developed over billions of years and were perfected by the Earth's evolutionary processes. Collectively they have the capacity to continually cycle energy at the largest scale the planet can support, and these energy transformation processes result in the diversity of life, the food systems that support this diversity, and the ebb and flow of the Earth's ecosystems, the evolution of us all.

So as stewards of energy transformation, rather than 'producers of food,' we must understand that the collapse of our systems is the result of how we have mismanaged this massive inheritance. And to solve our current riddle we must understand where the pivoting points are, so let me humbly submit to you that the Earth's energy transformation capacity

which ensures our food, the health of our bodies, our reproductive, mental, spiritual health, the very evolution of our species, all these basic and indispensable things are defined by; are governed by, how energy flows and balances out. Mess up these cycles, and we get the consequences we are living through. Address these root causes, and we stand a chance of a civilized society into the future. To apply these concepts to real life we must codify them according to indigenous ways of thinking – because if we apply colonizing extractive and exploitative codification processes, then we are bound to continue to consume the planet till we collapse as a species.

Focus on poultry

Focused on poultry, I want to show how completely capable we are of designing solutions that every farmer big or small (but especially small ones) can adapt immediately. I also want to expose that the problem we have is not one of know-how, but rather an insistence of trying to solve the problem while at the same time doing the same things that created it.

To codify this thinking into a regenerative model, we have sectioned out three globally critical energy transformation areas that every farm operation must engage: 1) Optimize the photosynthetic capacity of the native local species and those adapted sufficiently to independently thrive without invading the local space; 2) Optimize the management of animals' intestinal tracks, from earthworms to elephants, dolphins to eagles, animals have an ecosystem-level function of transforming complex energy structures – disrupt the role of animals in agriculture and the energy transformation stalls, and 3) Optimize the magnificent energy transformation capacity of the soil's microbiological systems.

Photosynthesis – Poultry is a jungle-fowl, so the photosynthetic infrastructure of a poultry farm can

be built from a multitude of economically viable and socially acceptable overstory and understory crops. In Minnesota we use sugar maple, oaks, basswood, hickory, and other species as overstory. For understory we use hazelnuts and elderberries among others. In Northern Guatemala the list of species is much larger. Perennial cover balances out soil temperature which optimizes biological activity, trees protect against predators but also provide highly valuable cash crops; chickens weed and fertilize, but also roam and peck supplementing their diets with nutrient dense forages. At the ground level we developed a series of agronomical practices intended to optimize forage production and sprouting grains. Photosynthetic processes, under this design are optimized to transform energy every minute the sun shines from the top of the trees to the sprouts in the ground. I hope these pointers help the readers' imagination do the rest. This process ensures that we optimize carbon and other greenhouse gasses draw down, we need those elements in the living systems of the Earth, not in the air choking our existence and degenerating our health and quality of life. It is not about sequestering anything; it is about restoring this energy to its rightful place in the cycles of life, but to do that, we must stop killing and destroying, we need to start regenerating the ecosystems and their functions.

Animal-based Energy Transformation – The optimization of photosynthesis generates the most flow of carbon into the plant systems, animals eat some of these plants (chickens in this case), while others grow as permanent aerial energy pumping systems, drawing more energy as they grow. Chickens are provided with ground-up feed supplements. Daily energy intake flows through the animals within a day or two and is then transferred to the ground as the chickens roam their ranging paddocks (designed and calculated to meet specific densities of bird population, blueprints are different for different species and ecological characteristics). As this raw energy intake is digested, it is broken

down further into molecular structure that can be available to the soil microbiology once it is passed and turned into manure. If we were to put a bag of grain or a bundle of forage into a regular compost pile and skip the animal intervention, it would take close to a year to achieve the level of breakdown that the chickens in this case can achieve in under three days, speeding the energy transformation cycles and draw-down (atmospheric carbon especially). The more the energy cycles through the landscape, the more of it we can harvest in the form of food. Remove the animals from an ecology and the system stalls to a crawl.

Soil-based Energy Transformation – As energy continues to flow through the animal-based digestion, some will be deposited as manure in the soil. In a healthy soil, this energy is rapidly taken up when there is a healthy soil macro and micro biota. The most important indicator of soil health can be accurately measured by the speed that it breaks down organic matter and makes it available as food to plants or to other microorganisms. Because of this endless process it becomes plant food, and later fruits, nuts, etc. There is no step in the energy transformation cycle where something is not food to something else, it is when we remove and place ourselves outside of the living systems of the Earth that we lose track of this ancestral blueprint that defines us, and we start acting against our own interest and that of all other living systems.

As humans, we have disrupted all three of these critical energy-transformation centers in the Earth's ecosystems. First, we insist on removing the multi-layers of perennial cover that already exist, effectively minimizing the photosynthetic capacity of each cleared acre. This disruption results in massive releases of greenhouse gasses into the atmosphere and the elimination of the photosynthetic infrastructure that feeds the animals and the soil and the very system that could recapture such emissions. Second, we have taken

animals out of the land and placed them under inhumane factory-like conditions, stalling all processes they are responsible for in nature, while we disrupt the established systems and reduce the landscape's capacity to deliver food.

Yes, an animal factory can fatten animals in a larger volume per square foot, but it costs over 40% (in the US Midwest) of the arable land, where a much larger number of the same livestock can be produced while also regenerating the very landscape where they are raised. The difference is that one requires stewardship and a symbiotic relationship with the ecosystems, and even though it produces more collective wealth, it is also more resistant to extraction. The sole goal of confining animals and deploying monocultures is to maximize extraction. Feeding the world is only the argument and mass communication agenda, not the actual end goal.

That is the reason we have supported one over the other against the will of the indigenous ways that delivered an efficient and time-tested design. Third, we systemically uncover and expose the soil particles when we disrupt it with equipment, which makes it easily erodible by wind and water. As the soil's nutrition decreases, soil poverty increases, and energy yield stalls. To 'correct' this artificial problem we have created, we recur to toxic and artificial inputs, this further increases the soil's biological and nutritional poverty and more of its inhabitants are killed or the soil is made inhospitable by nutrient deprivation, salinization, or is simply lost to erosion.

When we think of food and agriculture systems as they exist today, under the argument of feeding the world, what we are witnessing is a systemic process by which we have disrupted and brought under our manipulative control, the fundamental food-producing energy-centered mechanisms of the Earth. As we have taken command, we have applied our colonizing systems to them for the purpose of extraction and exploitation. It is no wonder hunger and poverty is increasing, civil conflict is exploding, and the planet is either on fire, flooded, or

constantly under plagues. We can do so much better.

Utilizing poultry, we have developed a blueprint for re-engaging the Earth's energy transformation centers, but this process is not intended for chickens alone. The laws of thermodynamics and the biological, physical, and chemical processes on which the Earth's energy transformation is based are universal.

Blueprint for chicken

We start by rebuilding the energy transformation infrastructure. This is a short story of the first year of a 75-acre farm where we systemically transitioned from conventional corn-soybean rotations to an agroforestry-centered regenerative poultry system.

During the 2021 growing season, we focused on the 45 tillable acres of land that had been used for corn and soybean rotations for as long as 30 years. Knowing that the land's energy systems were fully disrupted and hence its capacity to respond naturally, we focused on two central outcomes for this season. 1) Detoxification (let the toxic stuff in the soil get processed as life returns to it), 2) Recarbonization of the soil so that the biological systems can thrive and do their job again including the restoration of the natural hydrological pathways of the soil.

In the spring, while the previous year's corn stubble was still on the ground, we broadcasted an organic fertilizer, followed by a sheep pasture right on top of everything. Then we no-till drilled a barley nursing crop (a crop to help the smaller pasture seeds germinate and grow), the no-till drill small disturbance shook the pasture seed and fertilizer into contact with the soil.

A drought hit us right after but not before the pasture and barley had germinated. The crops had a slow start, but the newly undisturbed soil held sufficient water and the new green cover and roots kept the soil in place. Once we had some rain,

everything took off. To build the carbon further and to avoid harvesting toxic grains, we mowed the barley just above the height of the pasture. This step deposited a thicker layer of organic matter on the soil, as the dropped grain sprouted it further supported the biology build up. The perennial structure of roots and stems held the soil together once we received rain, which came heavy and in a short period of time as expected. We then planted 8,200 hazelnut bushes on 20 of the 45 tillable acres to start preparing this part of the farm for the introduction of chickens. In total, the farm is 75 acres, but the remaining landscape is already wooded, so we are using a separate management process for that section while the tilled ground regenerates. To track the changes, a team of four scientists are sampling the soil to measure its chemistry, structure, nutritional integrity, and the increase in biological activity by measuring organic matter decomposition rates and through lab analysis to establish a biological activity baseline. We have developed a process to systematically transition farm after farm into an agroforestry-based regenerative poultry system. In the spring of 2022, the first chickens will go into the area planted with hazelnuts and their manure will speed up the regeneration of that space. The manure from the night shelters will be utilized to inoculate and add nutrients and organic matter to the rest of the farm.

With this and other farm-level projects underway, we want to communicate an unequivocal message of the system-level transformation potential of regenerative thinking. For that to happen we need the land in the hands of those who know how to care for it, and the infrastructure that generates aggregated economic value under collective management. That is how we feed the world and regenerate the planet's ecosystems. We are happy to offer one blueprint for accomplishing rapid results without compromising the urgency of planning for 7 generations.

Poor soil leads to starvation & migration

From previous experiences in Mexico, Guatemala, and many other places where we have tested this model, we know that when the soil is poor, so are the plants that we try to grow, and the animals that feed on them. Any harvest will also be poor. Poor soil results in sicker chickens and less forage, a poor harvest results in poor farmers, which results in less food available for communities, which exacerbates food insecurity. Less excess output means less support for the local economies, a spiral that if unbroken lands whole communities unable to support themselves, from there, conflict and violence erupts, migration and family breakdown, further increasing the overall civil unrest plaguing the planet. Poor soil across Mexico, Guatemala, El Salvador, and Honduras is the single most important reason families are starving. Political instability and simply lack of jobs was not sufficient to have people leave their communities at the scale that is happening now. Starvation has now forced sometimes upward of 160,000 families in a single year from some of these specific regions where data has been collected. That's just one region; the world's population is migrating at accelerated, alarming, and unsustainable rates and food is at the center of most of this civil instability.

Through our work with Guatemalan organizations, we have been able to introduce this way of doing agriculture to multiple communities. These community-level prototype systems are delivering the same results as our work in the US Midwest. In Minnesota, immigrant farmers are optimizing their income by restoring the health of their soil, which reduces the cost of raising their chickens, increasing their net income, and creating the highest standards of animal welfare as well as working conditions for farmers and workers. In the Guatemalan communities, some of the families financed their poultry coops and the purchase of hens and feed with 'remesas' or money transfers from their relatives in the US. This new achieved stability is directly coming from the return to

ancestral ways of working with the soil and with each other.

Decolonising the mind

Too often, in our eagerness to impress and sound smart we create elaborate plans and long documents as we attempt to find solutions to today's food and agriculture problems.

But the truth is that for the most part, the answer is right under our feet, and the code for finding those answers is all around us, with the abuelos and abuelas, our healers and mentors. It has always been staring us in the face.

We can start by validating the elders in Native communities, their stories, and their wisdom, and their sacred instructions. The knowledge and tools may come from the universities of the world or the high towers, but the wisdom to use either for the common good will not. We have waited long enough, a few centuries in fact. We were promised progress and a civilized society, instead we are inheriting destruction and civil unrest.

It is time to be one with creation again.

We are at a time when the simplest solutions need more attention. Let's stop talking about how we 'scale' narrow and myopic ways of thinking. Instead let's talk about how we embrace the scale of how nature works and let it do it again. Accelerating the transition to agroecological agriculture, land use and production may look more like accelerating the decolonization of the mind, so we don't block the magnificent design we inherited from the Earth's evolution and from the indigenous peoples of the world. Those who despite suffering colonization, genocide, invalidation, and almost total annihilation, have managed to protect over 80% of the world's biodiversity on less than 20% of the total land-based surface of the Earth. They have also sustained a culture of sharing, inclusivity, and full understanding of how the Earth's ecosystems operate.

If we are sufficiently intelligent as a species, we will stop trying to colonize this knowledge by reducing it to specific practices so that our colonizing systems can continue to extract and exploit. We have a global opportunity to decolonize the mind and to validate and adopt ways that worked for tens of thousands of years before colonization spread across continents, the systems that hold the code for a civilized modern world are still available to us.

I wrote this article to touch the indigenous intellect in all of us, the intellectual capacity we will need to fix this broken food and agriculture system. This is a capacity that does not come from holding master's degrees or doctorates. Those deliver knowledge, but knowledge alone is dangerous. In fact, every single one of the over 80,000 registered agrochemicals, every weapon of mass destruction, every economic theory of extraction, every oil pipeline and the machinery that consumes its products – almost everything we associate with 'progress' has come out of the minds of 'knowledgeable and educated' people. Yet, that knowledge applied to the wrong end purpose is how we have come to threaten our own survival.

Knowledge without the wisdom to use it is effectively a weapon of mass destruction of the ultimate kind.

The decolonization of the mind, of science, methodology, of processes, of systems and structures can allow us to balance out the vast amount of accumulated knowledge with the wisdom to know how to use it for the greater good.

To achieve this, we will need to build the collective intelligence and courage to decolonize; to defend and recover the indigenized world we need to become a truly civilized society. The path forward is embarrassingly simple, and even though our colonizing system and global structures stand firmly in the way, every person on Earth must realize that the most promising and powerful answer to a very large part of our current troubles, is right under our feet.