



PARADIGMS OF AGRICULTURE

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PREFACE & ACKNOWLEDGEMENTS

For thousands of years, the indigenous ancestors of all people alive today practiced what some might now call “regenerative agriculture.” In all climates on all continents, human beings lived deeply enmeshed in bio-geo-cultural landscapes, co-generating incredible ecological, spiritual, culinary, and linguistic diversity.

Today, most people (especially in over-industrialized societies) have mostly forgotten this. Most days, I forget this. And yet, somehow, against surprising odds in the last 500 years, the seeds of deeply regenerative culture and agriculture have survived – and in some cases, thrived.

I have been fortunate enough to find myself in some of those places, to have been fed the food that comes from those seeds, to have heard chapters of the stories of how those seeds have been kept alive. I am incredibly grateful to the people in my life from whom I have learned and continue to learn, and I will thank them here – without them, I would not have been able to cultivate the soil from which this paper sprouts.

First and foremost, I acknowledge and thank Carol Sanford of the Regenerative Paradigm Institute and the author of *The Regenerative Life* (among many other titles); and Martín Prechtel of Bolad's Kitchen and the author of *The Unlikely Peace at Cuchumaquic* (among many other titles). I also thank Aimak Djangaliev, Joan Alison Henry, Tiokasin Ghosthorse, Michael Kotutwa Johnson, Tomoyuki Kon, Hugh Williams, Hanna Bail, and Kseth Sö Zaah Sócrates. Each of you have in your own way shared with me intellectual, experiential, spiritual, and living seeds of your ancestral lifeways. Thank you.

I also want to acknowledge the indigenous peoples of the stolen land upon which I live and farm: the Waranawonkong, the Munsee/Minsi Lenape, and the 10,000+ years of inhabitants before them whose names might never be known, but the remnants of whose horticultural and agricultural developments are still living along the edges of streams and monoculture cornfields in the river valley I call home today.

Finally, I thank everyone who reviewed the manuscript and to my colleagues in the food and agriculture industry, especially Mary Jane Melendez, Merijn Dols, Tina Owens, Koen van Seijen, Caitlin Leibert, the HowGood team, and the members of the Regenerative Supply Innovation Working Group. Gratitude to David Fortson & Alice Chein at Loacom for design, and to long-term thinking partners Dyami Soloviev at High Falls Farm, Luke Smith at Terra Genesis International and Gregory Landua at Regen Network, without whom this paper would never have come to fruition.

Now is an important time in the history of the human species.

Never before have we expanded so quickly, with this much technology, and done this much damage to the ecological and cultural systems of the planet.

Agriculture has been a large part of this. But agriculture is not inherently the problem.

Now is an important time to be asking, “**What is regenerative agriculture?**”

Is there an approach to agriculture that could revitalize damaged landscapes? That could transform local economic systems? That could heal old wounds and generate new potential for communities around the world? And that could contribute to the ongoing development and evolution of human consciousness?

I’ve written extensively about what regenerative agriculture is - you can read more [**here**](#), [**here**](#) and [**here**](#). In this paper, I’d like to try a different approach.

Instead of explaining regenerative agriculture itself, I’m going to contrast it with other paradigms of agriculture. My goal is for you to be able to discern between the paradigms – to distinguish between their different characteristics, motivations, and effects. I will introduce four prominent paradigms and explore for each of them:

- How are decisions made?
- What are some tangible indicators of their current expression?
- From where do practitioners of each paradigm source their ideas?

None of these paradigms are “better” or “worse” than the others. They each have different abilities to work with complexity and produce systemic effects, but should not be considered hierarchically or with any form of moral judgement.



PARADIGMS OF AGRICULTURE

**Regenerative
Net-Positive**

**Conservative
Extractive**

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Don't take my word for it.

You will get the most out of this paper if you use your own thinking. Take concrete examples from your own experience and “test” the validity of what I am presenting. Right now, before going any further, I invite you to bring into your mind the image of a specific farm that you know intimately - see the farm and its people – dynamic, working, and alive. As you read through the four paradigms, ask yourself:

1. “What would this farm look like if it were sourced from this paradigm?”
2. “How would this farm act or work differently if this paradigm were embraced?”
3. “If this paradigm were guiding decisions here, what would the effects be on the farmer, the community, and the wider region?”

This paper is about discernment. I do not offer prescriptive answers or suggest particular paths forward. Use your own mind and experience to figure out how to best make use of what I am proposing. The more you can ground and explore these ideas through real farms that you know and care about, the more capacity you will have to help the wider system of agriculture actualize it's potential.

Extractive Agriculture

The first paradigm aims to extract value from the surrounding environment to achieve personal, family, and societal progress. Farming focuses on maximizing productivity, utilizing all available resources to increase quantitative yields and economic profitability. Modern extractive agriculture often relies on other extractive industries (mining, petroleum, petrochemicals) to further its harvesting of value from natural systems. One common effect of extractive agriculture is that the productive capacity of living systems decreases over time, requiring increased off-farm inputs in order to sustain high yields.

In the United States and many industrialized economies, mechanization and advances in chemistry and biochemistry have led to extremely high yields per acre or hectare, and an accompanying growth in the size and scale of farms. In many cases the significant financial cost of mechanization and high levels of off-farm inputs has led to mounting debt, along with consolidation of farm and infrastructure ownership into the hands of fewer and fewer large companies.

These restraints are seen to be reconciled by a more efficient and technically sophisticated approach to agriculture, which leads us to the next Paradigm.



Conservative Agriculture

This paradigm aims to protect natural resources and reduce the negative impacts of agriculture on the environment. While maintaining high levels of agricultural productivity is important, adopting practices that respect the natural world but decrease yield are sometimes seen as a necessary tradeoff. Conservative agriculture works to prevent soil erosion, minimize water use, and lower pollution levels on farms. Often these are achieved through decreasing non-renewable inputs, reducing environmentally harmful practices, and innovating with agricultural technologies.

Efficiency is paramount in this paradigm. Practices like precision agriculture, integrated pest management, and high-efficiency irrigation enable farms to “do more with less”. More efficient machinery is used to plant and manage more efficient crops. Combining digital field monitoring, fine-tuned fertilizer application, and more targeted biocides allows farmers to reduce their inputs and costs.

Most agriculture that is promoted as “sustainable” emerges from the Conservative agriculture paradigm - the route to “sustainability” is almost invariably a step-by-step reduction in environmental harm. Most principles and practices advocated in “sustainable” agriculture are the same as in conservation agriculture, focused on increasing efficiency and decreasing the impacts of farming.

However, it is rare (if not impossible) for incremental reductions in harm to ever reach “net zero” negative impact. Over time, productivity gains from efficient mechanical and biological technology have slowed or even reversed. Soil does seem to erode more slowly when this paradigm is prominent, but is this enough? The idea emerges that perhaps agriculture could do more than conserve natural resources - especially considering the significantly degraded agricultural landscapes where most conservative agriculture is practiced.



Net-Positive Agriculture

Instead of “conserving” natural resources and “doing less harm”, Net-Positive Agriculture aims to “do good”: To improve the quality and functioning of natural resources and eventually restore agro-ecosystems to a “healthy” state. This paradigm explicitly aims to build soil, improve water cycle health, and increase biodiversity while producing food for communities and economic well-being for farmers. The greatest goal of net-positive agriculture is to create abundance for people and other species, making life “thrive” instead of simply “survive”.

Instead of seeking to solve soil, water, plant, and animal problems in a fragmented way, net-positive agriculture aims to find integrated solutions through conscious design and planning. Land-enhancing synergies emerge from this integration, functioning to repair degraded ecosystems through the working of biodiverse over-yielding polycultures.

Net-positive agriculture often focuses on human beings, making human “quality of life” the core goal. Earth is seen as a place to make Eden for people, or as a place to “restore” to its previously healthy state (commonly seen as without human interference). While net-positive agriculture aims for continuous improvement, this improvement is flat instead of evolutionary - like a spectrum from “bad” to “good” where the goal is to move across the spectrum to “good”.

Some forms of net-positive agriculture focus on adopting “best practices” for land restoration. Others work to improve human decision-making processes, but avoid ongoing disruptive development of human beings and the systems of which they are members. Agriculture is still fragmented from the whole of life, and farms are still the primary unit of focus for repair. Varying degrees of awareness are brought to larger nested systems, but practitioners often struggle to move beyond a functional view of ecology as a metaphor for human behavior.

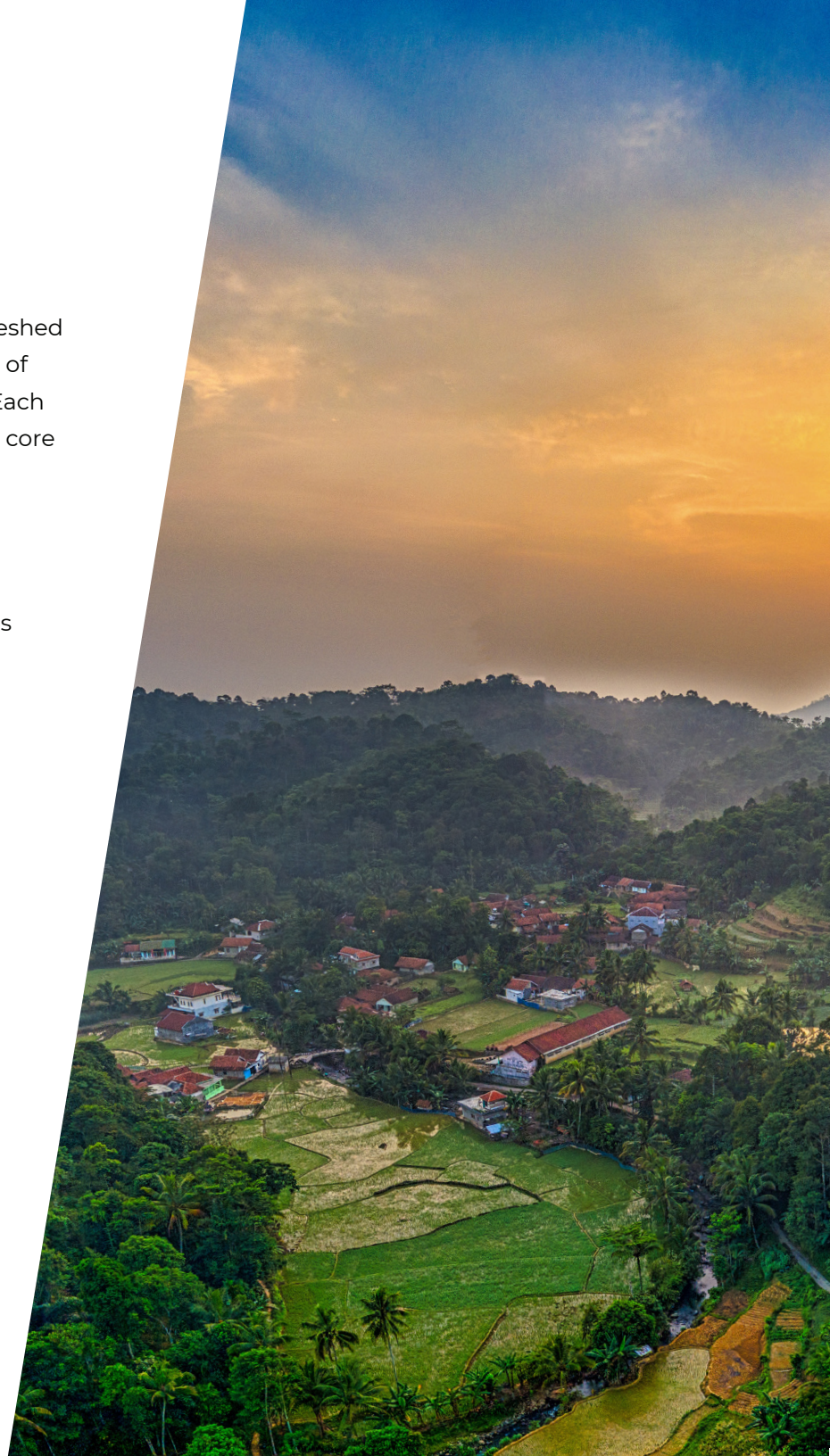


Regenerative Agriculture

In the fourth paradigm, the primary unit of consideration is a whole “lifeshed”. A lifeshed is like a “watershed”, except that all life is seen dynamically working as one, instead of fragmenting “water” away from ecological, geologic, social, and cultural systems. Each lifeshed is seen to have its own unique “essence” - a singular and un-fragmentable core way of processing and generating life.

In the regenerative agriculture paradigm, each farm is considered in terms of its contribution to and reciprocal relationship with the unique lifeshed in which it lives. This requires developing a deep understanding of the last five hundred million years in each place, including special attention on the last fifty thousand years and its biological, horticultural, agricultural, and human stories. The agro-ecological diversity of regenerative farms is inevitably a living genetic history, with unique varieties of crops carrying the narratives of climactic variability, human movement, and culinary-cultural evolution.

Equally important in most places in the world is to learn, acknowledge, and in most cases grieve the extractive and damaging events of the last 500 years, where destructive colonial and financial-bottom-line pressures drove the widespread attempted genocide of indigenous peoples and the illicit and explicit theft of their land. In some places this was followed by centuries of human slavery and oppressive caste systems, later remixed into financial, legal and political structures that further ingrained systemic racism, sexism, and the subjugation of ecologies and communities.

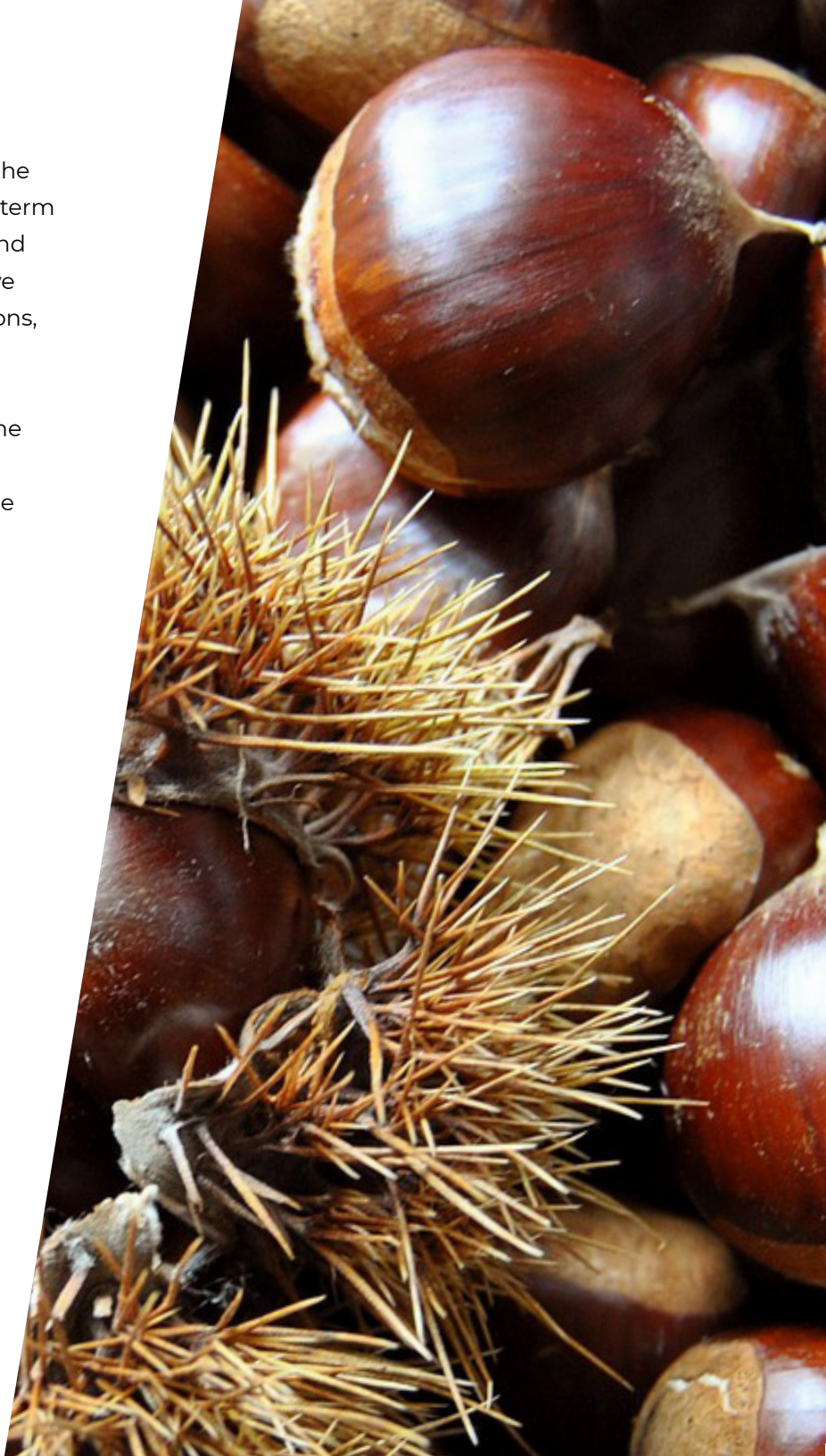


This context of social and economic devastation cannot be ignored or sidelined by the promise of environmentally beneficial farming. In the regenerative paradigm, long-term processes of reparation and rematriation that follow the leadership of indigenous and marginalized communities must go hand-in-hand with deep personal and collective work to understand and disrupt the roots of systemic oppression in the minds, actions, and policies of any and all that want to work towards truly regenerative agriculture.

A core ingredient of a such a recipe is for practitioners to grow the capacity to see the absolute uniqueness of each person, place, and business. No individual human or lifeshed has the same story, and the ultimate diversity that this implies can crack the hard shell of belief that every soil, person, farm, and business must be categorized and classified so that a pre-determined set of “best practices” can be applied for improvement.

Instead, each farm is understood to have its own unique *essence*, which is grasped as a source of innovation for the creation of agricultural products, functioning landscapes, and ongoing human & business development. When farms know and resonate with their own essence, they become non-displaceable — each farm enterprise has its own individuality that cannot be replicated. Its products are known and highly desired as distilled expressions of the place, and the wealth generated by these offerings is systemically re-invested into the health of the nested wholes of farm, community, and life-shed.

At the same time, regenerative agriculture practitioners and landscapes are not static — they are consistently developing new approaches, novel ways of thinking, and deeper eco-social complexity in their genetics, enterprise systems, and human relationships. Because of this, regenerative farms have significant impacts beyond the boundaries of their landscapes: They *evolve the capacity* of other farms, businesses, and even whole industries to improve the effects they have on the life-sheds in which they live.



Regenerative agriculture focuses on the un-manifested *potential* of each place. Instead of organizing work and design around “problems”, this paradigm orients decision-making and planning towards generating new potential from the healthy working of living systems. Instead using a scattershot approach or a mechanically-minded analysis to find “leverage points”, regenerative agriculture seeks to identify *nodal interventions*. These are more like acupuncture points that can shift the flow of energy in a system, evolving capacity indirectly instead bludgeoning an issue in an attempt to improve it.

One such ‘node’ focused on by modern and ancient indigenous peoples is the complete inseparability of agriculture (or horticulture, or aquaculture, or hybrids thereof) from culture. Whether learning from indigenous Kazakh food foresters, Sami reindeer herders, Hopi corn farmers, southeast Asian fishers, Comcaac hunter-gatherers, Celtic woods people, Yucatan forest gardeners, or ancient egalitarian agriculturalists of the Danube basin, growing food is a deeply cultural and spiritual process — in fact it is not even a process that is separate from the rest of life. Agriculture was, and is, a constant ritual that feeds the nested wholes of family, village, tribe, culture, place, and all life. It also depends on complex temporal, climatic, biological, and spiritual combinations of families, villages, tribes, and cultures. Regenerative agriculture either lives within the multivalent dynamism of the lifeways of indigenous peoples OR is being consciously developed in a life-shed by a community that seeks to regenerate a culture that can hold and evolve agriculture.

If you’ve read this far, you can probably sense that there are some significant restraints to adoption of the regenerative agriculture paradigm. Not only does it take transforming how the mind sees and works, but it also requires growing powerful personal agency: To see and work with essence, to constantly develop oneself and one’s business, to manifest unseen potential, and to literally regenerate culture as a whole.



Characteristics of the Paradigms of Agriculture

The following characteristics of the paradigms add another layer of consideration on top of the primary motivations and restraints described above. None of the placements below are “absolute” — consider certain modes of decision-making or signs of current expression to be clues (heuristics) to the primary paradigm at play. The schools/lineages, ways of making decisions, and external manifestations of practices do not “belong” to a paradigm, but generally tend to show up there. Again, do not take my word for any of this — test for yourself what I propose against specific agricultural experiences to see what emerges.

Paradigms	Sources of information and inspiration (Schools/Lineages)	How Are Decisions Made?	Signs of current expression
Regenerative	<ul style="list-style-type: none"> • Many indigenous Lifeways • The Regenerative Paradigm Institute 	Towards Living Systems Evolutionary Potential	Complex multivalent polycultures with ritual, cultural, and spiritual significance
Net-Positive	<ul style="list-style-type: none"> • Regrarians • Holistic Management • Carbon Farming • Restoration Agriculture / Permaculture • Some Agroforestry • Some Agroecology, especially smallholder farmer-led 	<ul style="list-style-type: none"> • From Principles • For ecosystem services, or “human needs” or “quality of life”, or towards “thriving” or “abundance” 	<ul style="list-style-type: none"> • Integrative Design • Polycultures • Intercropping
Conservative	<ul style="list-style-type: none"> • Conservation Agriculture • Climate Smart Agriculture • Most Agroecology • Most Sustainable Agriculture • Much of Organic Agriculture 	<ul style="list-style-type: none"> • Standards & Certifications • Rules & Regulations • Aiming for “less impact” 	<ul style="list-style-type: none"> • No-Till, Reduced tillage • Efficiency-focused Ag-Tech • Crop Rotations • Integrated Pest Management
Extractive	<ul style="list-style-type: none"> • Green Revolution • Mechanizing Agriculture 	<ul style="list-style-type: none"> • For self-serving profit; calculated for maximum extraction • Short-term yields over long-term health • Automatic & reactive modes of choosing. 	<ul style="list-style-type: none"> • Monoculture • Inputs from extractive industry • “Get big or get out” / industrial scale • Maximizing yield without optimizing for efficiency

Sidebar: There are no Regenerative Agriculture Practices

Last month I was talking with an executive at a leading international food company. They were describing to me their work to promote “regenerative agriculture practices” in their agricultural supply chain, attempting to incentivize farmers to adopt specific techniques on their land.

Unfortunately, this story is far from uncommon. The hype around “Regeneration” is driving a spurt of rapid surface-level growth in the food and beverage industry, often without intellectual depth or paradigmatic integrity.

First of all, there are no such thing as supply “chains.” Chains do not exist in natural systems, and the metaphorical concept descends from the time when humans chained up other humans and forced them to produce agricultural goods and services. (Read more [here](#))

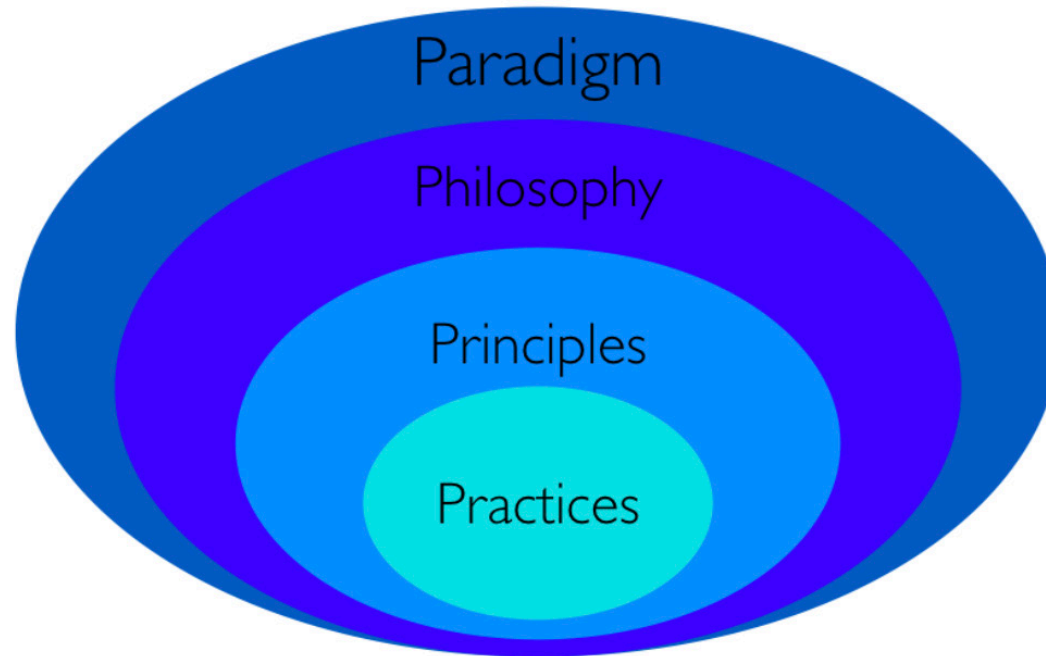
Second, there are no such thing as regenerative agriculture practices. Individual practices like cover-cropping, compost addition, tree-planting, or efficient irrigation cannot in and of themselves be regenerative – they describe an action, which will have different results depending on the location, soil, crop, and farmer. Only systems-level **effects** can be deemed “regenerative” or not.

For example, “no-till” has been lauded and promoted as a “regenerative agriculture practice”. But does it actually cause regeneration of a whole living system? Often it decreases soil and nutrient loss. Sometimes it increases soil biological activity. It can certainly decrease unwanted weed pressure and reduce tillage requirements. But the practice itself can be easily be utilized in an extractive or conservative agricultural paradigm. And its ultimate effect depends significantly on the soil type, the chemicals used (or not used), and many other farmer management decisions.

Similarly, tree planting can have many benefits to ecosystems, food security, and farm economic viability. But tree crops can also be managed extractively, eroding natural capital assets over time. It is not the practice itself that defines regeneration, it is the effect of the farm on the whole system of the lifeshed.



As a corollary, regenerative agriculture cannot be achieved on a farm by shifting a handful of practices. Instead, the underlying systems of thinking and decision-making must evolve. Consider the following:



A paradigm is the deep belief-system about the universe and how it works. A philosophy is derived from a paradigm, and defines an approach to affecting change into the world. Principles emerge from a philosophy, describing clear restraints and directions about which actions to choose given each unique decision-making situation. Practices are chosen based on principles.

Whether or not an individual is conscious of each layer described here, I propose that all layers actively influence every decision that a human makes. A *nodal* approach to changing agricultural systems would concentrate on offering farmers and land managers opportunities to see and choose their own paradigm, instead of on changes to practices.

Regenerative agriculture requires a paradigm shift, which will lead to new philosophy, principles, and ultimately different practices. Focusing on the practices without addressing the rest of the system will only achieve short-lived and dis-integrated change.

Transformations in Agriculture: An Invitation

Given the massive global shifts in climate, economy, technology and human demographics, it is clear that agriculture must itself evolve. But what will be the most effective path to transforming agriculture?

What would it look like if we worked to transform agriculture from the perspective of each of the four paradigms presented in this paper? If we started from an extractive perspective, how would we proceed? What about coming from the conservative mindset? Net-Positive? Regenerative?

To make this more concrete, I again invite you to bring into your mind a particular farm and farmer that you know and care about. If you were to approach a discussion with them about how to transform agriculture (especially their farm), what would it be like to engage them from each of the four paradigms?

As an example, I'll describe how I might approach a large-scale conventional apple farmer in my home life-shed, the Hudson River Valley of NY, USA.



Extractive Paradigm Approach: Convincing for own ego or gain.

I would attempt to convince the farmer that what they were doing was wrong; that they could be more profitable and financially secure if they followed my thinking about agriculture. I would approach as if I was “right” and would feel personally satisfied if I could convince them of my point of view. Especially if I had a particular practice or product that I developed (or was selling), getting the farmer to see the superiority of approach would be a primary goal.

Conservative Paradigm Approach: Regulations, Standards, Incentives

I would describe relevant farm regulations and point out any differences I saw between what they were doing and the law. I might also refer to farming standards (Global GAP, Integrated Pest Management, Organic Certification), and promote the price premiums, cost-savings, or government subsidies that come from following along. I would tout efficiency

Net Positive Paradigm Approach: Lead by example; Be the change

I would focus on the successes I and other farmers are having as we work to restore ecosystems. I would ask the farmer to consider what I was doing, and how it might improve their quality of life and the health of their farm. I would use ecosystems as a metaphor, describing the rampant cooperation and self-organizing tendencies of the natural world as a model to mimic.

Regenerative Paradigm Approach: Invite personal agency through reflection; Image effects on living systems.

To start, I would invite the farmer to a cultural/agricultural event at my farm, like a fall cider-pressing party or winter Wassail. The celebration itself would aim to express the essence of my farm, nested in the unique place where we live, and songs and the stories told at the event describe the history of the place and its ongoing changes and development through time. My conversation would mostly consist of questions that invited the farmer to reflect on their own farm, community, and the life-shed in which it lives, like “What is the effect of that agricultural practice on the local river?”, “In what ways do you consider the local community when you make decisions? What are the implications of that?”, “What impact do you want to have on this place for future generations?”, “What beliefs do you hold that lead to you thinking or working in that way?”. The key is to invite the farmer to observe themselves AND the whole at the same time; to develop their own personal agency to make changes towards wider systemic effects.

Clearly, the approach of each paradigm will change the timbre of the conversation. And it may be appropriate to combine questions and conversational strategies from different paradigms. Another level of this approach would be to explicitly describe all four paradigms, and in the course of an engagement invite reflection about which paradigms are shaping the discussion.

Conclusion

I have presented four primary agricultural paradigms that underlie the vast majority of agriculture taking place on the planet today. The motivations, restraints, and decision-making processes of each paradigm are distinct. The goals, level of systems complexity considered, and decision-making processes are also distinct. Each paradigm inspires a set of lineages or schools of thought, which tends to be associated with specific philosophies, principles, and agricultural practices.

In this time of significant global change, each paradigm suggests a different approach to evolving agriculture. If moving towards regenerative agriculture is your goal, I propose that it will be most effective to use approaches sourced from the regenerative paradigm. In fact, I do not think it is possible to invite farming systems or life sheds to become regenerative if working with extractive, conservative, or even net-positive approaches.

Agriculture is in need of transformation. What path will you take?



