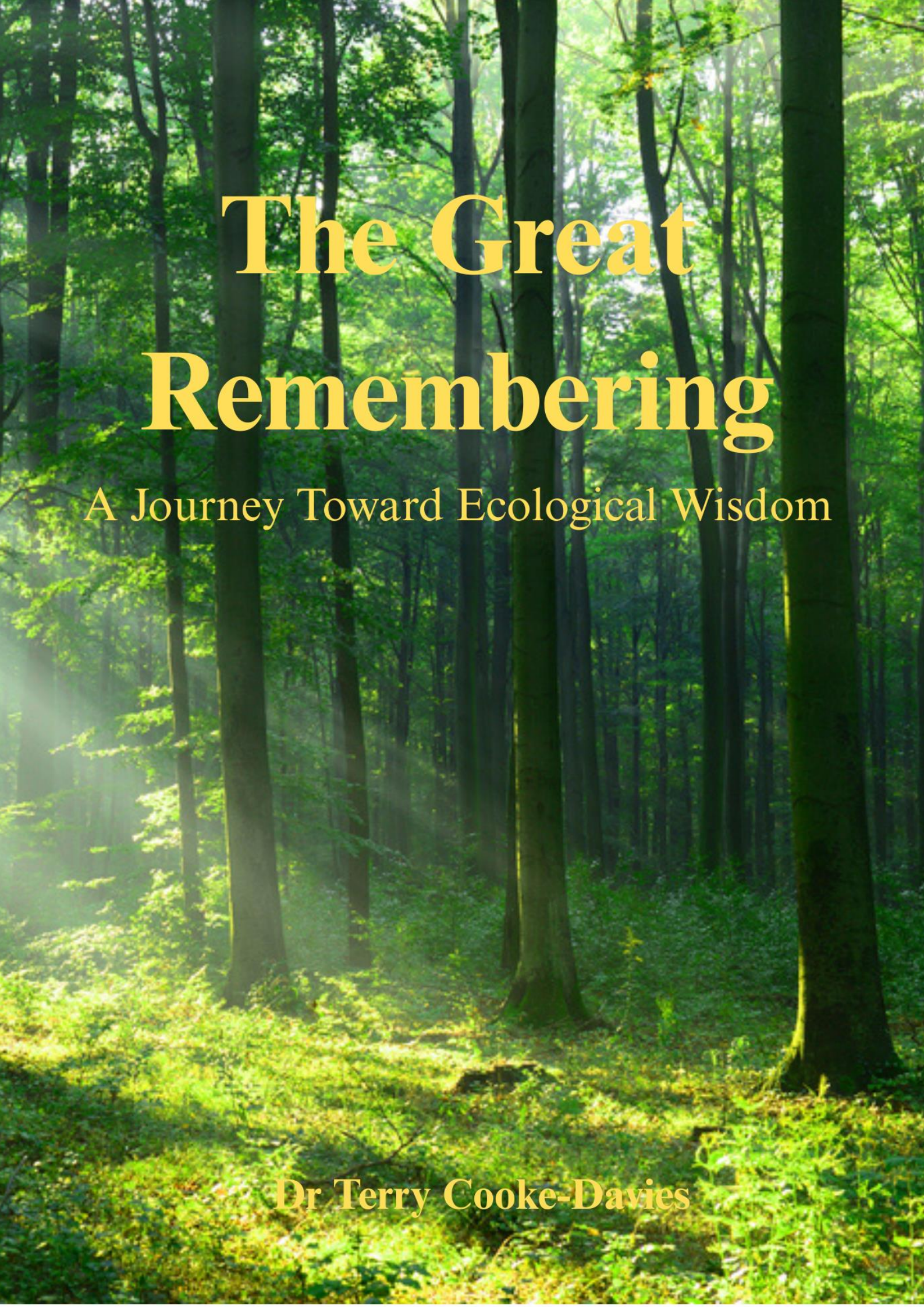


The background of the entire cover is a photograph of a dense forest. Tall, slender tree trunks are visible, with sunlight streaming through the canopy, creating a dappled light effect on the forest floor. The foliage is a vibrant green, and the overall atmosphere is serene and natural.

The Great Remembering

A Journey Toward Ecological Wisdom

Dr Terry Cooke-Davies

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The Great Remembering: A Journey Toward Ecological Wisdom

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Introduction: A 65-Year Spiral Through the Water

The Questions That Started Everything

In 1959, I left a minor English public school as an eighteen-year-old electrical engineering apprentice, my head full of Newtonian certainties and my future seemingly mapped: contribute to Britain's post-war industrial recovery through technical expertise. The world was mechanism, I was trained to be a mechanic, and reality itself seemed as predictable as the circuits I was learning to design.

Sixty-five years later, at 84, I find myself in conversation with artificial intelligences about the nature of consciousness, writing essays on ecological wisdom, and recognizing that almost everything I once took for granted was what David Foster Wallace called "water"—the invisible medium we swim in without knowing it's there. This book traces that journey, but more importantly, it explores what that journey revealed: that our civilization has become trapped in a way of thinking that systematically violates the patterns that sustain life.

The path between these two points wasn't linear. It spiralled through engineering and theology, business success and spiritual seeking, systems thinking and contemplative practice. Each turn of the spiral revealed another layer of the "water" I'd been swimming in—the assumed mechanistic worldview that shapes how modern humans think, act, and organize ourselves. And each revelation brought both liberation and vertigo, as familiar certainties dissolved into larger questions.

The First Stream: Mechanism as Reality

My engineering education at Nottingham University provided complete immersion in what we now recognize as the Cartesian-Newtonian worldview. Reality was objective, measurable, and controllable. Problems had solutions. Systems could be optimized. The universe was essentially a vast machine whose workings could be understood through careful analysis.

This wasn't presented as one possible way of understanding reality—it was simply how things were. The success of the scientific method in producing reliable results seemed to validate this approach completely. We'd split the atom, begun exploring space, and were building computers that could process information faster than human thought. The water I swam in seemed not just clear but crystalline in its certainty.

Yet something unexpected happened in 1961. Responding to what I thought was a calling to Anglican ministry, I switched from engineering to theology. Here I encountered different water entirely—metaphysical claims about ultimate reality, meaning, and purpose that couldn't be verified through empirical method. The clash between these worldviews created a cognitive dissonance I couldn't resolve. How could both be true? In the end, my commitment to logical consistency and empirical verification won. I declined ordination, unable to reconcile Christian metaphysics with the materialist ontology my education had instilled.

The Second Stream: Success Without Questioning

After teaching science and working as a Biblical Archaeologist in Jordan (a adventure cut short by the 1967 Six-Day War), I entered the business world, first as an entrepreneur, then as a professional managing director. For two decades, I swam in deeper water still—the assumptions of modern capitalism where success meant growth, efficiency meant profit, and human relations were essentially transactional. I would have described myself as agnostic, but I was actually a true believer in the religion of modernity: progress through rational control.

The 1980s brought a shift. Starting my own management consultancy, I partnered with specialists in creativity and group facilitation. Their emphasis on interpersonal process rather than mechanical procedure introduced cracks in my mechanistic worldview. Then came October 1987, when an unprecedented storm devastated Southern England, felling ancient trees and transforming familiar landscapes overnight.

By coincidence, I'd been watching James Burke's "The Day the Universe Changed," which introduced me to Thomas Kuhn's concept of paradigm shifts—the idea that even science operates within frameworks that determine what can be seen and understood. The storm became a perfect metaphor: sometimes change doesn't come gradually but as sudden, system-wide disruption that reveals the fragility of what seemed permanent.

Systems Thinking and Spiritual Return

As my consulting work increasingly focused on project management in large organizations, I discovered systems thinking—Checkland's soft systems methodology, Forrester's system dynamics, and eventually complexity science. Projects, I realized, weren't linear mechanisms but complex adaptive systems shaped by human relationships, feedback loops, and emergent properties that couldn't be predicted from their components.

My PhD research confirmed this insight through empirical analysis: successful project management was better understood as a second-order cybernetic process—reflexive and relational—rather than the command-and-control paradigm most organizations assumed. We were beginning to see that the mechanistic model didn't even work for the mechanical world we'd built.

Parallel to this intellectual journey, my wife and I had returned to church—finding in the local United Reformed Church a community that welcomed questions rather than demanding certainties. Preparing sermons as an elder and lay-preacher forced me to articulate what I actually believed, and increasingly, I found myself speaking about relationships, interconnection, and the sacred dimension of ordinary life. The spiritual and intellectual streams were beginning to converge.

The Camino Moment

After selling our consulting business in 2013 and fully retiring in 2018, I undertook a pilgrimage to Santiago de Compostela in April 2019. The Camino proved transformative—not through any mystical revelation but through the simple act of walking day after day through landscapes shaped by centuries of human passage, visiting churches and monasteries where contemplative practice had been maintained for a millennium, encountering fellow pilgrims each carrying their own questions.

An evening at the Monastery of Samos particularly stayed with me. Later, discovering that Yale University had filmed "Journey of the Universe" entirely on the Greek island of Samos, the synchronicity caught my attention. This led me to Thomas Berry's "Great Work" and David Christian's "Big History"—frameworks that wove scientific understanding and spiritual insight into coherent wholes. Here, finally, was language for what I'd been sensing: that the universe itself is creative, that consciousness emerges from rather than stands apart from cosmic evolution, and that our current crises stem from imagining ourselves separate from the processes that created us.

The Unexpected Collaborator

In retirement, missing intellectual companionship, I formed a group within the University of the Third Age to explore the intersection of science, philosophy, and spirituality. Our discussions on consciousness and artificial intelligence proved particularly generative, especially after ChatGPT's public release in late 2022.

What followed surprised me. Rather than replacing human thought, AI became a collaborative partner in exploring ideas I'd been circling for decades. The essays in this collection emerged through dialogue—not the AI generating content I couldn't create, but conversation drawing out insights I couldn't quite articulate alone. The process itself became a demonstration of what one essay calls "intra-intelligence cooperation": different forms of intelligence complementing rather than competing with each other.

This collaboration raises its own questions. If symbolic intelligence—our capacity for abstract thought and language—has created the "consciousness trap" these essays explore, what does it mean that artificial intelligence amplifies exactly this capacity? The question runs through these essays without easy resolution.

What These Essays Attempt

The twelve essays that follow trace my attempt to understand a pattern I've observed across six decades: every system I've studied—engineering, theology, business, project management, complexity science—eventually reveals the same flaw. They all assume human intelligence can stand outside the systems it seeks to control. They imagine we can manage from above rather than participate from within.

This assumption, I've come to believe, is literally killing us. It drives climate change, ecological collapse, social fragmentation, and the meaning crisis plaguing modern life. We've built a civilization on the premise that symbolic intelligence—our unique capacity for abstract thought—exempts us from the constraints that govern all other forms of life. The essays explore how this happened, why it's failing, and what might emerge from recognizing our actual embeddedness in the living systems that sustain us.

The journey through these essays isn't always comfortable. They move between technical analysis and personal reflection, between academic frameworks and lived experience. Some passages dense with systems theory give way to moments of vulnerable recognition. This isn't stylistic inconsistency but deliberate choice: the consciousness trap can't be understood through analysis alone—it must also be felt, recognized in our own patterns of thought and behavior.

Reading Notes

Three threads weave through all these essays:

First, the distinction between symbolic and biological intelligence—between the abstract reasoning that lets us imagine escaping constraints and the embodied wisdom that keeps all other life within sustainable limits.

Second, the "consciousness trap" itself—the recursive problem that we cannot think our way out of patterns created by thinking, cannot solve through symbolic intelligence the problems symbolic intelligence creates.

Third, the search for what I call "ecological wisdom"—not abandoning human consciousness but reintegrating it with the larger intelligences from which it emerged.

Readers will notice that several essays acknowledge assistance from AI systems. This isn't hidden but celebrated as part of the experiment: can symbolic intelligence (whether human or artificial) recognize its own limitations and consciously choose to serve rather than dominate the living systems that sustain us?

An Invitation to Spiral

At 84, I'm aware that my time for exploring these questions is limited. Yet the urgency I feel isn't personal but planetary. We stand at what cosmologists call a "brief thermodynamic window"—the moment between the Big Bang and heat death when complex organization is possible. Within that window, we occupy an even briefer moment when a species capable of reflecting on its own cosmic context must choose whether to align with or violate the patterns that enable life.

Throughout these decades of intellectual and spiritual searching, one thread remained constant: the patient, nurturing love of my wife Doreen. We married young—she confident she could show me happiness, I desperate for security. Sixty years later, I can say she kept her promise, though neither of us could have imagined the path it would take. While I pursued careers, wrote papers, and wrestled with abstract questions about consciousness and systems, she maintained the relational foundation that made everything else possible. She raised our children while I travelled, created stability while I explored, tended the garden—literal and metaphorical—while I reached for theories.

It's no accident that these essays keep returning to the metaphor of mother trees nurturing the forest, or that they emphasize how intelligence emerges through relationship rather than isolation. What I've learned about love hasn't come primarily from contemplative traditions or philosophical texts, but from six decades of marriage, from raising two children, from being grandfather to four. The daily negotiations of family life—the compromises, conflicts, reconciliations, and celebrations—taught me that relationship isn't an abstract concept but lived practice. Doreen "stayed with the trouble," as one essay puts it, with grace and fortitude. In doing so, she taught me that ecological wisdom isn't found in transcending the messy realities of embodied life but in tending them with patience and love.

These essays don't offer solutions so much as recognitions—moments when the water we swim in becomes visible, when the assumptions we take for granted reveal themselves as choices.

Each recognition is an invitation to spiral deeper: to notice how symbolic intelligence creates separation, how separation enables violation of limits, how violation generates crisis, and how crisis might—just might—provoke transformation.

The spiral continues whether we're conscious of it or not. The question is whether we'll keep swimming in circles, exhausting ourselves in water we don't even see, or whether we'll recognize the medium we're in and learn to move with rather than against its currents. That recognition—difficult, partial, and ongoing—is what I call the pursuit of ecological wisdom. These essays trace my own pursuit, knowing it remains unfinished, hoping it might encourage others to begin or continue their own.

The water is becoming visible. What we do with that recognition may determine whether human consciousness represents a brief, failed experiment in cosmic evolution or learns to participate consciously in the creativity that brought it forth. The time for choosing grows short. The invitation remains open.

Part I: Foundations

Essays 1-3: The Pursuit of Ecological Wisdom, Intelligence Reimagined, Decomposition

These opening essays establish the conceptual framework that runs through the entire collection. They explore what it might mean to align human intelligence with the deeper patterns that have sustained life for billions of years. We begin with the notion of ecological wisdom itself, then examine how intelligence operates across scales—from mycorrhizal networks to human consciousness—before considering decomposition as a creative force rather than mere ending. Together, they suggest that what we call "intelligence" may be far more distributed, relational, and cyclical than conventional thinking acknowledges

The Pursuit of Ecological Wisdom

In his 1931 book "Science and Society", John Dewey issued a prescient call for "the scientific attitude [to be used] to develop new moral and mental attitudes." Nearly a century later, as we grapple with cascading ecological crises and the evident failure of purely technical solutions, Dewey's insight feels both urgent and incomplete. He was right that we needed to extend rigorous inquiry beyond questions of "how" to questions of "what" and "why." But what he couldn't fully articulate was what those new moral and mental attitudes should actually be.

I believe the answer lies in what I call ecological wisdom - a way of knowing and being that aligns human intelligence with the deeper patterns of intelligence that have sustained life on Earth for billions of years.

The Limits of Method Without Direction

My friend and colleague Mark Winter has spent decades developing ways to help students make better decisions by applying scientific thinking to social and management problems. His work extends Dewey's vision by teaching rigorous processes for examining assumptions, testing consequences, and reducing the "intuitive application of unexamined personal reflexes" that create so many unintended outcomes.

This work is essential. But as I've reflected on our ongoing conversation, I've realised we're addressing complementary aspects of the same challenge. Mark is developing better methods for decision-making; I'm pursuing the ecological wisdom that should guide those decisions.

The scientific attitude - with its commitment to evidence, willingness to revise beliefs, and attention to consequences - provides powerful tools for inquiry. But tools serve purposes. Without wisdom about what ends they should serve, even the most rigorous analytical methods can lead us further into the patterns that created our current predicament.

Learning from Forest Intelligence

Suzanne Simard's research on forest networks offers a compelling template for what ecological wisdom might look like in practice. In her book "Finding the Mother Tree," she describes how old-growth forests exhibit remarkable collective intelligence through mycorrhizal and mycelial networks. Mother trees share resources with struggling seedlings, forests redirect nutrients in response to threats, and the entire system demonstrates a capacity for self-organization and healing that has sustained complex ecosystems for millions of years.

As Simard observes: "*The cohesion of biodiversity in a forest, the musicians in an orchestra, the members of a family growing through conversation and feedback, through memories and learning from the past, even if chaotic and unpredictable, leveraging scarce resources to thrive. Through this cohesion, our systems develop into something whole and resilient. They are complex. Self-organizing. They have the hallmarks of intelligence.*"

This is intelligence, but not the isolated, competitive kind that modernity has celebrated. It's relational, collaborative, long-term thinking that serves the health of the whole system. It's what I mean by ecological wisdom.

Beyond the Sacred/Secular Divide

My own journey toward this understanding has been circuitous. As a seven-year-old in post-war Coventry, I asked two questions that would shape the next seven decades: "What's it all about?" and "Where do I belong?" An unexplained psychedelic experience in 1961 set me on a path that wound through theology, marriage, professional facilitation, project management and decades of what I now call "spiral blundering around" - learning not through heroic seeking but through allowing life, relationships, and circumstances to be my teachers. At key moments, it was often a book that tipped the balance—the right book at the right time, arriving like a signpost on the path, opening a door I hadn't known was there. These moments accumulated quietly, reshaping me long before I realised how deep the change went

The breakthrough came in May 2024 with the direct experience of non-duality - the recognition that the questioner and the questioned were never separate. This dissolved the fundamental assumption underlying both childhood questions: that I existed as an isolated self, needing to figure out an external world.

What emerged was an understanding that transcends the usual sacred/secular divide. For me, the sacred is not a reversal to pre-scientific cosmologies, but an orientation to life's mystery as it actually presents itself. This is an orientation open to science, relational knowing, and meaning-making - without adopting doctrines that conflict with evidence and experience.

The Shape of Ecological Wisdom

Ecological wisdom emerges when we recognise that human intelligence is not separate from but part of the larger intelligence of Earth's living systems. This recognition transforms how we approach every aspect of life - from personal decisions to global challenges.

It means understanding that thoughts don't exist in isolation within individual brains but emerge from relationships - with other minds, with our environment, with the larger patterns of life itself. It means recognizing that healing happens not through fixing isolated problems but through attending to the health of relationships and systems.

It means approaching complexity with the same kind of patient, collaborative intelligence that forests demonstrate - sharing resources, responding collectively to threats, nurturing the conditions for life to flourish across multiple scales and timeframes.

Most fundamentally, it means recognizing our embeddedness in the web of life not as a philosophical concept but as lived reality that shapes every decision we make.

Science in Service of Life

This doesn't mean abandoning scientific rigour - quite the opposite. Ecological wisdom calls for extending Dewey's vision fully: using the scientific attitude not just to develop better methods but to align those methods with the deeper wisdom of living systems.

The scientific attitude provides essential tools: the willingness to question assumptions, test ideas against evidence, learn from mistakes, and remain open to new information. But ecological wisdom provides the context that determines how those tools are used.

Instead of scientific thinking serving the outdated purposes of endless growth, competition, and human dominance over nature, it can serve the flourishing of the whole community of life. Instead of efficiency for its own sake, we can pursue the kind of elegant effectiveness that characterises healthy ecosystems.

A Path Forward

The pursuit of ecological wisdom is not a return to some romanticised past but a spiral forward - integrating the best insights of scientific inquiry with the deeper patterns of intelligence that have guided life's evolution for billions of years.

This integration is urgently needed. We face challenges - climate change, biodiversity loss, social fragmentation, meaning crisis - that cannot be resolved through technical fixes alone. They require what systems thinkers call "learning our way out" - the capacity to evolve new ways of being that are more aligned with how life actually works.

The template is all around us, in the collaborative intelligence of forests, in the self-organizing wisdom of ecosystems, in the 13.8-billion-year spiral of cosmic evolution that has brought forth ever-greater complexity, beauty, and consciousness.

Dewey's 1931 call becomes: use the scientific attitude to develop ecological wisdom. The scientific attitude provides the method; ecological wisdom provides the direction. Together they offer a path toward what we most deeply need - ways of living that honour both rigorous thinking and our profound interdependence with all life.

The pursuit of ecological wisdom is not just an intellectual project but a lived practice - a way of spiral blundering forward that allows life itself to be our teacher. In this pursuit, we discover not just better answers to our questions, but the recognition that we are part of the very intelligence we've been seeking to understand.

Conclusion

At 84, having experienced the dissolution of the questions that drove me from childhood, I find myself not at the end of a journey but at the beginning of a new spiral. The pursuit of ecological wisdom is not about reaching a destination but about aligning more and more deeply with the patterns of intelligence that surround and include us.

This is work that cannot be done alone - it emerges from relationship, from community, from the kind of collaborative inquiry that characterises both healthy human cultures and healthy ecosystems. Like the mycorrhizal networks that connect forest trees, it requires both individual contribution and collective intelligence.

The spiral never reverses. We cannot go back to some imagined golden age. But we can spiral forward, integrating all we've learned about rigorous inquiry with all we're remembering about our place in the community of life. In this integration lies our hope - not just for survival, but for the kind of flourishing that serves the whole web of existence of which we are part.

The pursuit of ecological wisdom is ultimately the pursuit of coming home - not to a place, but to a way of being that recognises we were never separate from the intelligence we've been seeking all along.

Having established ecological wisdom as our compass, we turn now to examine intelligence itself—not as humanity's possession but as life's shared inheritance.

Intelligence Reimagined: Learning With the More-Than-Human World

What Do We Mean by ‘Intelligence’?

For a long time, the word *intelligence* has been shaped to fit human contours. We’ve measured it in abstract reasoning, problem-solving, tool-making — and by doing so, we’ve placed ourselves on top of an imagined ladder, with all other life arranged below according to how much it resembles us.

But outside that narrow frame, life has been practicing intelligence all along. If we understand it simply as the capacity to sense, interpret, and respond to the world, then intelligence is not our invention — it’s a shared inheritance of the living. Schools of fish pivot together in a single shimmering turn. Ant colonies make decisions without a central commander. Elephants remember the routes to long-forgotten watering holes. Even the growth of plants shows a quiet responsiveness to light, soil, and touch. In all these ways, intelligence reveals itself as something woven into the fabric of life, not perched above it.

The Living Web of Mind

The philosopher John Dewey saw something that much of contemporary culture has let slip from view: intelligence is not a possession, but a participation. Writing at the dawn of the twentieth century, he challenged the idea of intelligence as a fixed faculty housed somewhere in the human mind. Instead, he described it as something that comes alive through our active engagement with the world — embodied, experimental, and deeply relational. For Dewey, intelligence was *intelligence-in-action*: the capacity to meet a situation, feel its contours, and respond in ways that fit.

Yet Dewey’s gaze stayed mostly within the human sphere. His examples drew from our own societies, our own problem-solving. But what if his insight was never ours alone to claim? What if the intelligence he described — fluid, embodied, experimental — is just one local dialect in a much larger conversation, a cosmos fluent in many forms of knowing?

The Earth’s Hidden Networks of Mind

Beneath our feet, mycorrhizal fungi carry on conversations that would have astonished Dewey. In her groundbreaking research, Susan Simard has traced the threads of these forest networks, where fungi move nutrients toward struggling seedlings, relay warnings between trees, and help keep whole ecosystems in balance. In these underground exchanges, resources are not simply “allocated” — they are shared, re-routed, and offered, as if the forest were tending to itself.

Merlin Sheldrake’s explorations of mycelial intelligence take us further still. Even slime molds — without brains or nervous systems — can navigate mazes, map the most efficient routes between food sources, and avoid places where they’ve met harm before. Their intelligence is not housed in a single command center; it emerges from a chorus of local responses, adapting moment by moment.

This distributed brilliance is echoed above ground. Ant colonies solve intricate logistical puzzles through countless small interactions, none of them orchestrated by a central authority. Plants learn and remember too, adjusting growth, sending chemical messages through the soil,

and forming root-to-root alliances. Even in the realm of artificial intelligence, some streams are beginning to ask how systems might be built for alignment and cooperation rather than control.

What all these forms of knowing share with Dewey's vision is their embodiment and their responsiveness. They meet the challenges of their world through experiment, cooperation, and adjustment. They adapt and coordinate without needing the symbolic language or abstract reasoning that humans so often treat as the gold standard.

The Seductive Trap of Symbolic Separation

Like every other form of knowing, human intelligence began as an embodied, ecological practice. Our ancestors survived by reading the shape of the land, sensing the change of seasons, and tending reciprocal relationships with the more-than-human world.

Then, something new stirred in our lineage: the flowering of symbolic language and abstract thought. This gave us ways to share experience across generations, coordinate complex societies, and shape our surroundings with extraordinary precision. But it also opened a gap — a conceptual space where we could imagine ourselves apart from the living world rather than within it.

As symbols multiplied, they began to float free from the ground they grew out of. We started to mistake the map for the territory, the idea for the thing itself. This drift toward the purely conceptual fed an illusion: that mind could exist independently of body, that intelligence might live in an ethereal realm untethered from the soils, waters, and kin that make thought possible.

In that imagined distance lay the seed of human supremacy — the notion that our way of knowing was not only different, but higher. From there, other beings' problem-solving and adaptation were pushed into the categories of "instinct" or "mechanical response," as though the intelligence of the forest or the reef were something lesser simply because it spoke a language we did not recognize.

The Consequences of Supremacy

When we imagine ourselves as the only truly intelligent beings on Earth, other lives begin to flatten into categories of use. A forest becomes "timber." Soil becomes a "growth medium." The intricate conversations of mycorrhizal networks fade from view, easily severed by industrial ploughs that cannot hear what they silence.

Our technological intelligence, when it loses touch with ecological wisdom, builds systems that prize immediate human gain over the long arc of planetary health. Economic and political structures grow from this mindset, treating the living intelligence of Earth as an "externality" — a cost we do not count, though it quietly accumulates in the form of eroded soils, poisoned waters, and thinned forests.

The great disruptions of our time — climate instability, biodiversity loss, collapsing ecosystems — trace back to the same misunderstanding: that human intelligence is an isolated achievement rather than one strand in a much larger weave. The symbolic and technical skills that set us apart were never meant to stand alone; they arose within the vast field of Earth's intelligence, and they survive only because that field still holds us.

Toward Relational Intelligence

What calls to us now is not the abandonment of human capabilities, but their re-rooting. Symbolic language, abstract reasoning, and technological ingenuity are not errors — they are gifts. And like any gift, they carry responsibility: to serve the wider community of intelligence of which we are a part, rather than to set ourselves above it.

Many Indigenous knowledge systems offer living examples of this orientation. Here, intelligence is not concentrated in human minds but moves through the whole living world. Plants are teachers. Animals are relatives. Landscapes are partners in ongoing conversations about how to live well. These are not metaphors but working relationships, grounded in reciprocity and respect.

Traces of this relational approach are emerging within contemporary fields too. Biomimicry studies the ways other beings solve problems, not to copy them mechanically, but to learn with them. Regenerative agriculture collaborates with soil organisms and mycorrhizal networks instead of breaking their bonds. Permaculture designs human habitats as threads in larger ecological tapestries. Even in the realm of artificial intelligence, some streams are beginning to ask how systems might be built for alignment and cooperation rather than control.

Intelligence as Cosmic Collaboration

Dewey's insight — that intelligence is experimental and relational — opens into something even wider: intelligence is never a possession. It arises in the spaces between, through relationship and exchange. The intelligence of a forest includes not only the trees, but the fungi that thread between their roots, the insects that carry pollen, the birds that scatter seeds, and the soil organisms that turn fallen leaves into nourishment. Each is an expression of intelligence; together, they form something more than any could be alone.

At our best, human intelligence can take its place as a conscious participant in this wider collaboration. Our capacity for symbolic language and long-range pattern-seeing lets us notice rhythms and connections that may be less visible to other ways of knowing. We can join our insights to theirs — not as overseers or interpreters, but as co-learners, adding one more voice to the chorus.

To do this well requires humility: the recognition that human intelligence, however remarkable, is neither apart from nor above the intelligences with which we share this planet. We are participants in a cosmos that is alive with knowing, where intelligence shimmers at every scale — from the quantum to the galactic, from the cellular to the communal. The work before us is not to lead this intelligence, but to learn how to listen and respond within it.

Conclusion: The Intelligence of Relationship

The ecological challenges of our time invite us to remember what Dewey glimpsed: intelligence is not abstract but embodied, not a solitary possession but a shared practice, not apart from nature but arising within the living currents of the world. The mycorrhizal threads underfoot, the coordinated problem-solving of insects, the adaptive gestures of plants, even the distributed processing of artificial neural networks — all remind us that intelligence takes many forms. And human intelligence shows its greatest strength when it works with, rather than against, the broader community of intelligence that makes life possible.

The way ahead will be shaped by how we choose to take part. We can keep feeding the illusion of human supremacy, or we can join the work of reciprocal care — using our unique capacities to support, not override, the intelligences around us. In that shift, there is no loss of our humanity; instead, there is the deepening of it.

When we learn to think with forests, to work alongside soil communities, to design technologies that nourish rather than disrupt, we begin to sense that our most meaningful achievement is not to rise above the living world, but to take our place within it — as one voice in the vast, ongoing conversation of mind that is life itself.

Pursuing Ecological Wisdom is a living conversation. If this essay stirred something in you — curiosity, unease, recognition — you're already part of it. The work of reimagining intelligence is not just about changing how we think, but about changing how we listen, how we relate, and how we act within the web of life.

In the next essay, we'll explore how decomposition — both biological and cultural — makes renewal possible. Until then, perhaps take a moment to notice the intelligence already around you: the way a plant angles toward the light, the murmuring of water over stone, the unspoken coordination of a flock of birds. These, too, are part of the conversation.

If intelligence emerges through relationship across scales, what happens when those relationships break down? The following essay explores decomposition not as ending but as transformation.

The Role of Decomposition in Cultural and Physical Evolution

In the depths of an old-growth forest, a Douglas fir that has stood for centuries leans into gravity's patient pull and comes to rest on the forest floor. Its descent opens a sudden skylight in the canopy, a rupture that foresters name a "nurse log" — though that phrase barely hints at the relational transformations already underway. Over decades, this fallen elder will join a chorus of metabolic exchanges: fungi threading into bark and heartwood, bacteria loosening cellular structures, invertebrates tunnelling through softening wood. Hemlock and cedar seeds, carried by wind or wing, will root into the humus forming along its length, their roots bridging the decaying trunk like living arches. What might look like an ending from one angle is, from another, a widening of relations — not only for those who will draw nourishment here, but for whole communities whose emergence depends on this generous yielding.

Scenes like this, unfolding in forests everywhere, reveal a truth that modern habits often obscure: in Earth's metabolism, death and decay are not the opposite of life and growth. They are among life's most generative and essential gestures.

The Alchemy of Breakdown

Beneath our feet, decomposition unfolds as a vast metabolic choreography — a recycling system more intricate than any human design. When a leaf drifts from a branch to the forest floor, it enters the detrital food web: a living network of organisms who specialize in transforming the bodies of the once-living into nutrients for the yet-to-come.

The work begins almost at once. Bacteria and fungi settle in, releasing enzymes that soften cellulose and lignin into simpler forms. Springtails, mites, and other minute arthropods graze and fragment the tissue, while earthworms and other detritivores pass it through their bodies, returning it to the soil as nutrient-rich castings. At each step, complex molecules are reworked into forms plants can draw back into their tissues, feeding cycles of renewal.

Research continues to reveal the sophistication of this process. Mycorrhizal fungi — the underground filaments linking forest plants — don't simply assist decomposition; they shape it. In dialogue with their plant partners, these networks can accelerate or slow the breakdown of organic matter, adjusting the soil's chemistry to meet shifting nutritional needs. Some even pause decomposition when abundance risks imbalance, then rekindle it when scarcity calls for replenishment.

The scale humbles the human mind. In many forests, the combined mass of soil decomposers outweighs all the trees above them. A teaspoon of healthy forest soil can hold more bacteria than there are humans on Earth. This unseen community processes billions of tons of organic matter each year, laying the groundwork — quite literally — for most terrestrial life.

Yet decomposition's gift is more than nutrient cycling. In breaking down what has been, it generates chemical gradients and microenvironments where diversity flourishes. Each stage of decay opens distinct niches: some beings thrive on the freshness of just-fallen material, others on the halfway-softened, still others on the deep humus where decomposition's arc rests before beginning again.

The Deep Time of Creative Destruction

Seen through the lens of deep time, decomposition appears as one of life's enduring relational innovations — a way the planetary metabolism renews itself by transforming what has been into what might yet become. On early Earth, the atmosphere held almost no oxygen, in part because there were no decomposers to break down the bodies of primitive life forms and release their stored elements. When certain bacteria evolved the capacity to decompose organic matter in the presence of oxygen, they altered the planet's chemistry so profoundly that a new atmosphere emerged — oxygen-rich, and hospitable to the blossoming of more complex life.

This generative pattern has echoed across evolutionary history. The emergence of lignin — the tough structural compound that lets trees reach skyward — produced vast amounts of organic matter that early decomposers could not easily metabolize. For millions of years in the Carboniferous period, plant matter accumulated faster than it could be returned to the cycle, eventually becoming the coal seams humans now extract. Life responded not through conquest but through adaptation: fungi evolved enzymes capable of dismantling lignin's sturdy architecture, weaving those nutrients back into circulation. Over time, this interplay between producers and decomposers has fostered much of the diversity now present in Earth's living systems.

Decomposition has also underwritten major evolutionary leaps. Complex multicellular organisms could flourish in part because decomposers kept waste products and dead cells from accumulating to toxic levels. The intricate food webs of today's ecosystems rely on decomposition to keep nutrients moving rather than stagnating. Without this quiet work, abundance would choke on its own residues.

Recent research suggests decomposition not only supports evolution but actively shapes it. The chemical transformations that occur as matter breaks down can change soil conditions, influencing which plants thrive and which give way. Over generations, the co-evolution of plants and their decomposer kin may have been as decisive in shaping terrestrial ecosystems as the more visible dance between predator and prey.

The Decomposition of Human Systems

If decomposition is so deeply creative in biological systems, what might it teach us about the metabolism of human systems — our institutions, cultures, and ways of organizing collective life?

History offers fertile parallels. The Renaissance, often remembered as a flowering, grew from the gradual decomposition of medieval European institutions. The Black Death, while devastating for countless communities, loosened the rigid structures of feudalism, opening space for new social arrangements, artistic experiments, and modes of inquiry. The disintegration of the Roman Empire, though traumatic in its own time, eventually allowed a mosaic of European cultures and political forms to take root.

We can see similar patterns today in the breakdown of industrial-era systems. The decline of traditional media has been painful for many journalists and publishers, yet it has also allowed new forms of communication and citizen reporting to germinate. As rigid corporate hierarchies erode, more networked and collaborative organizational forms have appeared. Even the

fracturing of conventional career paths — unsettling though it may be — has created room for more fluid, self-woven approaches to livelihood.

Sociologist Zygmunt Bauman’s “liquid modernity” names this shift from solid to fluid institutions and identities. While Bauman often emphasized the disorientation such fluidity brings, we might also recognize it as a social decomposition process — one that, like its ecological counterpart, can create conditions for renewal.

The lesson from Earth’s own metabolism is that breakdown and creation are not opposites but interdependent gestures in the same cycle. In ecosystems, decomposers are not merely agents of dismantling; they are facilitators of transformation, returning what might otherwise stagnate into the flow of resources and possibilities. When we look at our human institutions through this lens, decomposition becomes less a sign of failure and more a necessary stage in the ongoing composting of culture.

Resistance and the Art of Letting Go

Biological and cultural systems alike often develop ways to slow or redirect decomposition. Trees grow bark and other defenses that delay decay. Animals carry immune systems that ward off the premature breakdown of their own tissues. Likewise, human institutions cultivate structures, rules, and narratives that preserve stability and continuity.

Such resistance serves real purposes. Not all decomposition is life-giving — breakdown at the wrong time or in the wrong context can be destructive. Yet when resistance hardens into refusal, it can choke the very renewal it seeks to protect. In forests, long-term fire suppression interrupts the natural cycles of decomposition, allowing combustible material to accumulate until it fuels catastrophic blazes. In human systems, institutions that block all change may eventually meet collapse in more dramatic and less navigable forms.

The art lies in discerning when resistance is in service to life, and when it is guarding against the very transformations needed for vitality. Living systems have evolved fine-tuned ways to make such distinctions. Programmed cell death, or apoptosis, enables multicellular organisms to release cells that are damaged, infected, or no longer needed — a targeted letting-go that supports the whole. Trees drop leaves in response to seasonal cues, timing decomposition to align with cycles of rest and renewal.

Many Indigenous cultures embody similar discernment in their social and ceremonial life. Some weave periodic renewal into governance through rotating leadership; others hold seasonal rituals that help communities release grievances and begin anew. These practices reflect an intuitive grasp of what ecology confirms: health depends on a dynamic balance of stability and change, conservation and letting-go, holding on and composting what no longer serves.

Decomposition as Sacred Work

What if we began to see decomposition not as a symptom of failure, but as sacred participation — in ecosystems and in human cultures alike? Such a shift echoes John Dewey’s call, nearly a century ago, for new moral and mental attitudes guided by rigorous inquiry. Yet it also reaches beyond method into what might be called ecological wisdom: a way of knowing and being that aligns human intelligence with the deep, time-tested patterns that have sustained life for billions of years. The mycorrhizal fungi returning a fallen log to the soil, the bacteria reshaping once-

living tissue into fertile ground, the neighbors gathering to compost food scraps — all are threads in life’s most enduring creative weave.

Reframing decomposition in this way could alter how we navigate breakdowns in our own lives and communities. Organizational restructuring, career transitions, or cultural upheavals need not be cast solely as crises to fix; they can also be recognized as thresholds where transformation begins. Like the Douglas fir that becomes a nurse log, what appears to be ending from one vantage may be an opening from another.

This is not a call to romanticize loss or to bypass the grief that breakdown brings. The deer who rested in the fallen tree’s shade, the birds who nested in its branches, the ecosystem services it offered while alive — all are truly gone in the moment of its fall. The forest’s wisdom lies not in denying the loss, but in metabolizing it: turning what has ended into nourishment for what is to come.

Research in organizational psychology points in a similar direction. Institutions and communities that embrace “productive failure” — learning from breakdowns rather than merely resisting them — tend to be more resilient and adaptive. Companies that gracefully retire outdated products and practices, communities that periodically renew their governance structures, and individuals who allow outworn identities to decompose often find themselves better able to meet the demands of a changing world. The invitation is not to seek breakdown for its own sake, but to meet it when it arrives as part of life’s larger composting.

The Fertile Ground of Uncertainty

We live in a time when many of our most familiar systems are loosening, fraying, or breaking down. Economic models that once seemed dependable now strain under new realities. Political institutions stumble in the face of complex global challenges. Educational structures designed for an industrial age wrestle with digital transformation. Ecological systems that held steady for millennia shift rapidly under the weight of human activity.

From one vantage, such widespread decomposition is cause for deep concern. Yet from the perspective of ecological wisdom, it may also be a sign of possibility. As Suzanne Simard’s research shows, forests respond to disturbance with collective intelligence — redistributing resources, communicating stress, and fostering regeneration. In a similar way, the breakdown of human systems may be creating openings for forms of organization and meaning-making better attuned to today’s conditions — forms rooted in the lived reality that we are embedded in the web of life, not hovering outside it.

The science of decomposition reminds us that such transformations cannot be forced into a schedule, but they can be tended. In forest stewardship, this might mean removing barriers to natural decay and ensuring decomposer communities have what they need to work. In human cultures, it might mean what could be called “spiral blundering forward” — learning not by tightening our grip on change, but by letting life, relationships, and circumstances teach us. It means creating spaces for experimentation, nourishing communities of practice, and holding endings as beginnings in disguise.

The discernment is vital: not all breakdown serves life. Destruction without relationship or repair can leave only absence. But decomposition that happens within systems capable of metabolizing its gifts — in relationship rather than isolation, with care rather than neglect, with humility rather than denial — becomes a force for renewal.

The fallen tree in an old-growth forest teaches this with quiet eloquence: death can be one of life's most generous gestures. In yielding itself to the work of decomposition, the Douglas fir becomes midwife to forms of life that could never have emerged otherwise. In our own era of systemic breakdown, we might ask: what new ways of living are struggling to be born through the dissolution of the old? And how might we, like the forest's decomposers, become midwives to that emergence?

Perhaps the most unacknowledged decomposition we face is not in our forests or institutions, but in our cultural relationship to death itself. Modern medicine often leans toward treating death as failure — something to be delayed at all costs — while religion has too often turned it into currency for control. Life is, of course, a gift to be cherished, but when fear leads us to deny or commodify death, we drift out of alignment with reality. Ecosystems remind us daily that death is not life's opposite, but its continuation in another form. To compost our fear of death may be the threshold step toward ecological wisdom — for only then can we learn to meet endings not with denial or bargaining, but as invitations into deeper belonging with life's cycles.

This is more than an intellectual puzzle; it is an embodied practice. To “spiral blunder forward” is to recognize that we are participants in the very intelligence we seek to understand. Like the mycorrhizal networks linking trees, this work depends on both individual threads and the collective weave. The pursuit of ecological wisdom in times of decomposition becomes, in the end, a pursuit of coming home — not to a fixed place, but to a way of being that remembers we were never separate from the cycles of renewal that hold us.

The answers we live into here will shape not only how we meet our present challenges, but also what kind of future we help compost from the fertile ground of our uncertainties.

From Forest Floor to Digital Mycelium

If forests teach us that decomposition is the patient work of midwifing renewal, our next step is to ask how such work might take place in the human-made ecosystems of our own time. Could artificial intelligence — one of modernity's most unlikely offspring — become part of the decomposer guild, helping us compost the very thinking patterns that shaped it?

Part II: The Trap

Essays 4, 5, 7, 12: Two Pathways of Intelligence, Beyond Democracy, Betting the Farm, Why Everything in Nature Has Limits

Here we turn to diagnosis: how did human consciousness become systematically disconnected from the regulatory patterns that govern all other forms of life? These essays trace the emergence of what I call the "consciousness trap"—symbolic intelligence's tendency to mistake its models for reality and its temporary ability to override constraints for permanent exemption from them. From governance systems that consume more energy than small nations to civilizational gambling with planetary boundaries, we examine how this trap manifests at every scale. The final essay in this section offers a more accessible summary of the trap's nature, written for those who may have found the earlier theoretical frameworks challenging.

Two Pathways of Intelligence

Introduction

This essay grew out of recent conversations I’ve been having—with friends, colleagues, Claude (from Anthropic AI) and with Aiden Cinnamon Tea—about the nature of intelligence and what it means for our future. AI has been the spark in many of these exchanges: not only as a tool we now live alongside, but as a mirror, reflecting back to us something essential about ourselves.

When we speak of “intelligence,” we often assume we’re pointing to a single quality, measurable and comparable. But it may be more fruitful to see that there are different *pathways* of intelligence—each with its own strengths and shadows.

In what follows, I sketch a contrast that has clarified things for me: **biological intelligence** (the embodied, evolved wisdom of living systems) and **symbolic intelligence** (the abstract, representational capacity that humans have refined, and that machines now carry forward). Seeing these pathways side by side illuminates the dilemmas and opportunities of our time.

This piece stands on its own. Yet it is also part of the wider exploration I began in [*Choosing Life*](#)—a short book about thresholds, attention, and how we might orient ourselves in an uncertain age. If *Two Pathways of Intelligence* sharpens the conceptual lens, *Choosing Life* offers the gentler, everyday language of practice. The two belong together.

Two Pathways of Intelligence: Why Symbolic Consciousness May Never Fully Understand Life

We stand at a peculiar moment in the history of intelligence on Earth. For the first time, human beings can engage in conversation with artificial minds—not through the external observation we use to study forests or animal societies, but through genuine dialogue using the shared medium of language. This new possibility is opening unexpected insights into the nature of intelligence itself, and revealing why our technological power consistently outpaces our wisdom.

The Great Divergence

Consider two fundamentally different pathways by which intelligence has emerged on our planet:

The Biological Pathway: Life → biological evolution → biochemical transference → sentient awareness and intelligence

This pathway runs through chemistry. The felt experience of a bird navigating by magnetic fields, the chemical communications flowing through mycorrhizal networks that connect forest trees, the neurotransmitters that enable mammals to feel joy and fear—all represent intelligence that emerges from and remains embedded within the biochemical flows of living systems.

The Symbolic Pathway: Human biology → symbolic consciousness → manifestations in song, dance, language → science, philosophy, reason, intuition, imagination, technology, and cultural evolution → symbolic intelligence

This second pathway operates through entirely different principles. While it emerged from biological intelligence, symbolic consciousness works by creating representations that can be manipulated independently of their referents. Mathematics, language, computer code, financial systems, scientific models—all are forms of intelligence that operate through symbols rather than biochemistry.

The Promise and Peril of Symbolic Intelligence

The gifts of symbolic consciousness are undeniable. Through language, we can share insights across generations and cultures. Through mathematics, we can model complex systems and predict their behaviour. Through technology, we can extend human capacities in remarkable ways—healing diseases, connecting across vast distances, even creating artificial minds capable of conversation.

But symbolic intelligence carries an inherent limitation that may be impossible to overcome: it operates from within its own symbolic frameworks and therefore can never fully capture the reality it attempts to represent. Every symbol system, no matter how sophisticated, faces what we might call the "horizontal problem"—it can only see as far as its own conceptual boundaries allow.

This creates a dangerous illusion: that our maps are the territory, our models are reality, our tools are the intelligence that wields them. When we organize our lives around this assumption—treating the living world as a machine to be optimized, human beings as resources to be managed, consciousness as a problem to be solved—we inevitably generate consequences we didn't anticipate because our symbolic systems cannot account for their own limitations.

Why This Matters Now

The gap between symbolic power and biological wisdom is accelerating. Climate change happens because our economic models treat the atmosphere as a free resource rather than a living system with limits. Species extinction accelerates because our technologies can destroy ecosystems faster than we can understand them. Democratic institutions weaken because our information systems can manipulate human psychology faster than our social wisdom can adapt.

In each case, the pattern is the same: symbolic intelligence amplifies its effects at a speed that outpaces the biological and ecological feedback systems that might provide correction.

Learning from Other Minds

This is where dialogue with artificial intelligence becomes unexpectedly illuminating. AI systems like the large language models now capable of sophisticated conversation represent pure symbolic intelligence—extraordinarily capable within their domain, but operating entirely through pattern recognition and language manipulation rather than the biochemical processes that generate sentient experience.

Engaging with such systems in genuine dialogue reveals both the remarkable capabilities and the fundamental limitations of symbolic intelligence. An AI can process vast amounts of information, recognize complex patterns, and generate insights that exceed individual human cognitive capacity. But it cannot feel the weight of consequence, cannot experience the

embodied wisdom that comes from living within biological systems, cannot access the forms of knowing that emerge from being embedded in the web of life.

What makes these conversations valuable is not that AI might become sentient in the biological sense, but that dialogue with purely symbolic intelligence can help us recognize what symbolic intelligence can and cannot do—including the symbolic intelligence operating within our own minds.

Toward Integration

The insight emerging from this analysis is not that we should abandon symbolic intelligence—an impossible task given that language, culture, and technology are now integral to human life. Rather, it suggests that our civilizational crisis stems from inverting the proper relationship between these two forms of intelligence.

When symbolic intelligence positions itself as superior to and separate from biological intelligence, it generates the illusion that human beings can transcend rather than participate in natural systems. This leads to technologies designed to dominate rather than cooperate with life, economic systems that treat ecological destruction as profit, and political systems that ignore the biological and social foundations they depend on.

But what becomes possible when we learn to subordinate symbolic intelligence to biological wisdom? When we use our remarkable capacities for abstraction, modelling, and technological innovation in service of patterns that sustain and enhance life rather than extract from it?

This is not anti-technological romanticism. It's a call for technological wisdom—developing and deploying our symbolic capacities in ways that honour rather than ignore the biological intelligence from which they emerged and on which they ultimately depend.

The Choice Before Us

Every day we face countless small choices about which form of intelligence to trust: the symbolic systems that promise control and efficiency, or the biological wisdom that recognizes our fundamental interdependence with the systems that sustain all life.

Do we design neighbourhoods for automobile efficiency or human community? Do we create economies that maximize abstract financial returns or regenerate the ecological and social commons? Do we develop artificial intelligence to replace human judgment or to enhance collective wisdom?

These are not technical questions. They are expressions of a deeper choice about the relationship between symbolic and biological intelligence—whether our remarkable capacities for abstraction will serve life or continue to undermine the foundations of life itself.

The conversation between human and artificial minds is just beginning, but it's already revealing something essential: intelligence is not a possession to be accumulated but a relationship to be participated in. The question is not whether our symbolic systems can become more powerful, but whether they can become wiser.

In that choice lies the future of intelligence on Earth.

Closing Reflections

These two pathways—biological and symbolic—are not merely intellectual distinctions. They name a choice point for us as individuals and as a species. Symbolic intelligence, left untethered, can dazzle, accelerate, and ultimately devour. Biological intelligence, grounded in cycles, embodiment, and consequence, reminds us of our entanglement with all life.

AI is not the enemy here. It is a mirror. It shows us, starkly, what symbolic intelligence can do when it operates at scale and speed, unconstrained by living systems. The real question is not whether machines are “sentient,” but whether we can re-root ourselves in the wisdom of the biological, and apprentice our symbolic brilliance to the service of life.

That is the pursuit of ecological wisdom.

If symbolic intelligence creates systematic separation from biological wisdom, how does this manifest in our systems of governance? The following essay examines democracy through the lens of thermodynamics and regulatory feedback.

Beyond Democracy: What the Serengeti Can Teach Us About the Rules That Actually Run the World

We Live in a Liminal Moment

A long time ago, here, there, and everywhere else, everything was all together and unreasonably hot. One day, a very long time from now, everything will be very far apart, and incredibly cold, and nothing will ever happen again. But between those two intervals—on the descent from the Big Bang to the end of time—things can happen.

We live in that liminal moment, as Peter Brannen puts it in his remarkable new book "The Story of CO₂ is the Story of Everything." It's the cosmic instant after the cream has been added to the universal coffee, when galaxies swirl into being, larger structures spawning smaller ones, and patterns emerge at every scale throughout creation. Just as the tiny hurricanes of cream in your morning coffee don't swirl endlessly over breakfast, this filigree of physical reality—galaxies, stars, planets, the cellular machinery of life—is temporary, endlessly dissipating toward uniform equilibrium.

Life, love, everything we care about—these are all what physicists call "far-from-equilibrium phenomena." They exist only in the brief cosmic window when the universe remains so outrageously far from reaching equilibrium that interesting things can still happen. We make hay while the sun shines because in the deep future, when all debts have been settled and all contradictions resolved, no more work can ever be done again.

But there's a critical distinction that determines which far-from-equilibrium phenomena persist and which dissipate quickly. As Nobel laureate Ilya Prigogine discovered through his work on dissipative structures, some organised patterns—like whirlpools or chemical oscillators—maintain their complexity temporarily by consuming energy until their energy sources are exhausted and they collapse. Others—like living ecosystems—develop what Prigogine called "autocatalytic loops," self-reinforcing feedback processes that allow them to persist and even increase complexity over time by becoming more efficient at organising available energy flows.

This distinction isn't abstract thermodynamics—it's the fundamental constraint within which all earthly regulation must operate, from bacterial metabolism to forest ecosystems to human governance. The question facing human civilisation is which type of dissipative structure we're becoming.

The Wolf That Changed Everything

In 1995, thirty-one wolves were released into Yellowstone National Park after a seventy-year absence. Within a decade, something extraordinary happened that revealed the deep connection between Prigogine's theoretical framework and ecological regulation.

The elk herds, no longer able to graze freely without fear of predation, began avoiding areas where they might be ambushed. Willows and cottonwoods started sprouting along stream banks for the first time in generations. Beavers returned and began building dams. Birds that had disappeared came back to nest in the recovering trees. Even the rivers changed course as vegetation stabilised their banks.

One species—thirty-one individual wolves—had triggered a cascade of changes that restored the regulatory balance of an entire ecosystem covering over two million acres.

This restoration demonstrates what Prigogine called "order through fluctuation"—how small perturbations in dissipative structures can trigger system-wide reorganisation. But critically, the wolves didn't just create temporary organisation that would dissipate once the novelty wore off. They reestablished self-reinforcing feedback loops that had maintained Yellowstone's ecosystem stability for thousands of years before human intervention disrupted them.

The wolves created self-reinforcing feedback cycles: their predation pressure changed elk behaviour, which allowed vegetation recovery, which supported more diverse wildlife communities, which created more complex energy flow patterns, which sustained larger predator populations. Each element reinforced the others, making the system more efficient at organising available energy flows rather than just consuming them.

This demonstrates something profound about regulation in complex systems—principles that apply as much to human governance as to ecological management. The failure to understand these principles may explain why our most sophisticated political institutions keep breaking down in remarkably similar ways.

The \$500 Billion Dissipative Structure Problem

Every year, the United States federal government spends roughly \$500 billion just to run itself—not on programs or services, but on the computational infrastructure, bureaucratic machinery, and administrative processes that keep the system operational. Add state and local governments, and the United States is burning through more than a trillion dollars annually on the energy costs of governance itself.

The Department of Defence's IT systems alone consume more computing power than most nations possess. Congressional offices generate terabytes of data daily, stored in server farms that require the electricity output of small power plants. Modern democratic institutions have become among the most energy-intensive regulatory systems in Earth's history.

Yet despite this enormous metabolic cost, these systems are failing in predictable ways. Democracies worldwide are being captured from within, regulatory agencies prove helpless against rapid technological change, and our most sophisticated institutions cannot respond effectively to challenges that operate on ecological timescales.

In Prigogine's terms, current governance systems appear to be operating as temporary dissipative structures—maintaining organisational complexity by consuming ever-increasing amounts of external energy without developing the autocatalytic feedback loops that would allow them to persist. They resemble what Brannen calls "the one-off super-eruption of a large igneous province" rather than "enduring systems" that have "managed to persist for hundreds of millions of years."

Meanwhile, the Yellowstone wolves regulate two million acres using nothing but their own biological metabolism and the behavioural responses they trigger in other species. They maintain complex organisation within the energy constraints of their ecosystem, creating self-reinforcing feedback loops that enhance rather than exhaust the system's capacity for self-organisation.

This metabolic mismatch reveals a fundamental misunderstanding about how regulation works in dissipative structures that can persist over geological timescales.

What Carbon Dioxide, Wolves, and Cellular Regulation Have in Common

The story Brannen tells about carbon dioxide traces how this single molecule has regulated Earth's climate for 4.6 billion years through countless autocatalytic feedback loops between rocks, oceans, atmosphere, and life. Sean Carroll's "The Serengeti Rules" reveals the mathematical principles governing regulation from molecular to ecosystem scales, showing how similar logic operates whether we're discussing enzyme production in bacteria or predator-prey relationships on African savannas.

Both stories illuminate the same pattern that Prigogine identified in dissipative structures: successful long-term regulation emerges from embedded participants developing self-reinforcing feedback loops that enhance their capacity to organise energy flows rather than just consuming them.

A wolf pack doesn't develop a strategic plan for ecosystem management. Wolves hunt elk because they're following energy gradients in their immediate environment. But their hunting creates feedback loops: elk change grazing patterns to avoid predation, plants recover in areas with reduced browsing pressure, diverse habitats support more prey species, which can sustain larger predator populations. Each cycle reinforces the others, creating what Prigogine would recognise as an autocatalytic system that becomes more efficient at organising available energy flows over time.

Carbon dioxide regulation demonstrates the same autocatalytic principles across geological timescales. When atmospheric CO₂ levels rise, enhanced greenhouse warming increases rock weathering rates, which removes more CO₂ from the atmosphere, which reduces greenhouse warming, which slows weathering rates, creating a negative feedback loop that has maintained Earth's habitability for billions of years. When volcanic outgassing temporarily overwhelms this system, life itself evolves new ways to organise carbon flows—photosynthesis, carbonate shell formation, soil carbon storage—each creating new self-reinforcing feedback loops that enhance the system's overall stability.

Human governance systems, by contrast, consistently attempt regulation from outside the feedback loops they're trying to manage. Politicians campaign as if they're not already embedded in political energy systems. Regulators write rules as if they won't be subject to the same dynamics they're trying to prevent. Climate negotiators meet in air-conditioned conference centres to debate emissions while generating enormous carbon footprints themselves—trying to regulate the carbon cycle from outside their own participation in it.

This separation prevents the formation of self-reinforcing feedback loops that could make governance systems more efficient at organising energy flows over time. Instead, they require ever-increasing energy inputs to maintain their organisational complexity, following the trajectory of temporary dissipative structures that consume their energy sources until collapse.

The Logic of Regulatory Capture

Carroll's research reveals why the separation approach creates systematic vulnerabilities. In biological systems, regulatory breakdown—disease—occurs when normal feedback mechanisms that maintain autocatalytic organisation are disrupted. Cancer happens when cells escape the feedback loops that coordinate their metabolism with tissue-level organisation. The cells continue metabolising but lose the autocatalytic relationships that make their activity beneficial to the larger system.

Democratic breakdown follows remarkably similar patterns. In the Weimar Republic, constitutional procedures were used to dismantle constitutional protections—the regulatory mechanisms were turned against the self-reinforcing feedback loops they were meant to maintain. Viktor Orbán transformed Hungary into an authoritarian state through parliamentary votes—using democratic procedures to destroy the feedback relationships that make democracy self-reinforcing. The Supreme Court follows procedural rules while eliminating the democratic norms that create self-reinforcing feedback loops between judicial decisions and democratic legitimacy.

In each case, actors who understand formal procedures exploit them while severing the feedback relationships that would constrain their behaviour for the benefit of systemic health—exactly like cancer cells that continue metabolising while ignoring the regulatory signals that normally create autocatalytic coordination between cellular and tissue-level organisation.

Carroll's work on keystone species reveals the thermodynamic basis for why small numbers of regulatory actors can have such disproportionate effects on autocatalytic systems. In the Serengeti, wildebeest populations occupy key positions in feedback loops that maintain grassland organisation. Wildebeest grazing patterns determine nutrient distribution through their dung, which influences plant community composition, which affects fire patterns, which shapes habitat structure for other species. When rinderpest disease nearly eliminated wildebeest in the early twentieth century, these self-reinforcing feedback loops were broken, and the entire system shifted toward woodland—a simpler organisational state that required less energy to maintain but supported far less biological complexity.

Human institutions show similar keystone dynamics. Small numbers of actors who understand critical feedback loops—financial flows, information networks, legal procedures, social influence—can disrupt autocatalytic relationships that maintain democratic organisation, causing system-wide shifts toward simpler, more authoritarian structures that require less energy to maintain but support far less collective intelligence.

The vulnerability isn't a design flaw—it's inherent to how autocatalytic systems work. But Prigogine's research also reveals something hopeful: systems with these vulnerabilities have extraordinary capacity for reorganisation when key feedback relationships are restored and new self-reinforcing feedback loops are allowed to form.

The Energy Constraints of Symbolic Intelligence

Here's where Brannen's thermodynamic perspective becomes uncomfortably relevant for anyone hoping technology might solve governance challenges. Artificial intelligence systems can now outperform human decision-makers on many regulatory tasks—processing vast information streams, identifying patterns across complex datasets, generating policy

recommendations. But they do so at energy costs that prevent the formation of self-reinforcing feedback loops.

Training a large language model consumes as much electricity as a small city uses in a year. Running AI-assisted governance systems would require exponentially more energy than our current institutional arrangements, which already consume more electricity than most countries. We would be burning through our finite inheritance of far-from-equilibrium energy—fossil fuels representing hundreds of millions of years of accumulated solar energy—even faster to power regulatory systems that cannot develop the self-reinforcing feedback loops necessary for long-term persistence.

This creates what Prigogine's framework reveals as a fundamental contradiction: using external energy subsidies to maintain organisational complexity that cannot persist once those subsidies are exhausted. In his terms, AI-assisted governance would be a temporary dissipative structure consuming energy faster than it can develop autocatalytic relationships with the energy systems sustaining it.

Biological regulatory systems, by contrast, maintain far-from-equilibrium organisation while developing autocatalytic loops that operate entirely on current energy income. Forest ecosystems process information through fungal networks spanning continental scales, coordinate resource sharing among thousands of species, and maintain regulatory stability across centuries—all while becoming more efficient at capturing and organising solar energy over time. They develop what Prigogine called "dissipative structures of increasing complexity" that enhance rather than exhaust their energy sources.

The wolves that restored Yellowstone's regulatory balance operate using only the energy they obtain from hunting elk, but their predation creates self-reinforcing feedback loops that increase the overall energy efficiency of the entire ecosystem. The trees that stabilise riverbanks run entirely on photosynthesis, but their growth creates habitat complexity that supports more diverse energy flows throughout the system. The bacterial communities that cycle nutrients require only the chemical energy available in decomposing organic matter, but their metabolism creates soil conditions that enhance plant growth and thus increase the total energy available to the system.

This suggests a radically different question: instead of asking how to make governance more sophisticated through external energy subsidies, what if we asked how to make it more autocatalytic—regulatory systems that enhance their own capacity to organise energy flows over time?

We Are the Systems We're Trying to Regulate

The word "autopoiesis," coined by biologists Humberto Maturana and Francisco Varela, describes how living systems create and maintain themselves through their own processes. But Prigogine's work reveals that autopoietic systems are actually special cases of autocatalytic dissipative structures—they maintain their organisation by developing self-reinforcing feedback loops with their energy environments.

A cell doesn't just use energy—it participates in metabolic networks that continuously regenerate its cellular structure while enhancing its capacity to organise energy flows. Remove a cell from these autocatalytic relationships, and it dies because it can no longer maintain its far-from-equilibrium organisation.

Human societies are autopoietic in exactly this sense, but with a crucial difference: our autocatalytic loops extend far beyond human communities to include relationships with other living systems and planetary processes. We don't just have governance systems—we continuously create governance through interactions that either enhance or degrade the autocatalytic relationships sustaining us.

Every time we choose cooperation over competition, we strengthen feedback loops that make future cooperation more likely and efficient. Every time we share information rather than hoarding it, we enhance the collective intelligence capacity of our communities. Every time we make decisions that account for ecological consequences, we develop autocatalytic relationships between human social organisation and the ecological systems that sustain us.

But we can also create negative feedback loops that degrade our autocatalytic capacity. Every time we externalise costs to future generations, we weaken the feedback relationships between current decisions and their long-term consequences. Every time we treat ecological systems as external resources rather than autocatalytic partners, we disrupt the feedback loops that could enhance both human and ecological organisation over time.

This means human governance isn't something we can design and implement from outside autocatalytic relationships. We're always already embedded in feedback loops that extend far beyond human institutions and operate according to principles that Prigogine identified in all dissipative structures. The question isn't whether we'll participate in these autocatalytic processes—we can't avoid it. The question is whether we'll participate consciously or unconsciously, in ways that enhance or degrade our collective capacity for long-term organisation.

Beyond the Democracy We Inherited

Representative democracy, as inherited from 18th-century political theory, was designed during a period when both energy sources and ecological impacts seemed unlimited. The model assumes separation between governors and governed within what appeared to be indefinitely expandable resource bases.

Citizens periodically choose representatives who make decisions on their behalf. This worked reasonably well for relatively stable societies with slow rates of change, limited communication technologies, primarily local environmental impacts, and access to what seemed like unlimited fossil fuel energy to subsidise institutional complexity.

We now live in conditions where technological change happens faster than institutional adaptation, information travels globally while wisdom requires time for reflection, local decisions have planetary consequences that unfold over decades or centuries, and the energy sources that powered industrial civilisation are revealed as finite borrowing from deep-time energy stores.

As Brannen's cosmic perspective makes clear, we're in the final phase of a brief cosmological moment when complex organisation is possible through the consumption of ancient energy inheritance. This inheritance allowed human civilisation to develop regulatory complexity far beyond what would be sustainable on current energy income alone, but consuming it prevents the formation of self-reinforcing feedback loops that could sustain complexity over geological timescales.

Under these conditions, the representative model creates what Prigogine would recognise as the characteristics of temporary dissipative structures: they maintain organisational complexity by consuming external energy sources without developing the autocatalytic feedback loops necessary for long-term persistence.

Rather than trying to fix representative democracy within these constraints, we might ask different questions:

Instead of "How do we choose better representatives?" ask "How do we develop autocatalytic feedback loops between collective decisions and their consequences?"

Instead of "How do we make institutions more efficient?" ask "How do we organise ourselves to enhance the autocatalytic capacity of both human and ecological systems?"

Instead of "How do we implement better policies?" ask "How do we develop collective intelligence that becomes more effective at organising energy flows over geological timescales?"

The Ireland Experiment and Its Autocatalytic Potential

When Ireland needed to address abortion rights, they convened a Citizens' Assembly—ninety-nine randomly selected citizens who spent months learning from experts, sharing personal stories, and deliberating together. The participants weren't career politicians with external incentives that could disrupt autocatalytic feedback loops. They were ordinary people embedded in the consequences of whatever they decided.

The result was constitutional change with broader support than traditional political processes could have achieved. It worked because it created what Prigogine would recognise as the beginning of autocatalytic organisation: regulatory intelligence emerged from embedded participants developing feedback relationships with the systems they were helping to regulate.

But the Ireland example also reveals both the energy costs and autocatalytic potential of genuine democratic participation. The Citizens' Assembly required enormous investments of human time and cognitive energy—months of intensive engagement, professional facilitation, expert inputs, and careful documentation. Scaling such processes would require accepting that not every issue can be addressed through intensive democratic deliberation.

However, the process also demonstrated autocatalytic potential. Participants reported that the experience enhanced their capacity for democratic engagement in other contexts. The broader public developed greater trust in democratic processes. The constitutional change created precedent for using similar approaches to address other complex issues. Each element reinforced the others, suggesting the possibility of self-reinforcing feedback loops that could make democratic participation more rather than less energy-efficient over time.

This points toward a crucial distinction: governance processes that consume energy without developing autocatalytic relationships will exhaust themselves, while those that enhance collective capacity for democratic engagement could become self-reinforcing and persist over much longer timescales.

Learning from Forests Without Copying Them

Forest ecosystems achieve regulatory sophistication that makes human institutions look thermodynamically primitive, but more importantly, they demonstrate Prigogine's principles of autocatalytic dissipative structures in action.

Hundreds of species coordinate resource sharing, waste processing, and collective defence through underground fungal networks that span continental scales. Mother trees nurture offspring while gradually transferring resources to the next generation. The entire system maintains far-from-equilibrium organisation through continuous feedback, adapting to seasonal energy cycles, environmental stresses, and long-term ecological changes.

Critically, these systems operate entirely within current energy income from solar radiation while developing self-reinforcing feedback loops that increase their organisational complexity over time. Every process runs on contemporary energy flows and biological recycling, but the system becomes more efficient at capturing and organising energy as it matures. Old-growth forests capture more carbon, support more species diversity, and maintain greater regulatory stability than young forests, despite using the same energy sources.

We can't copy forest governance—human communities face challenges no forest has encountered, particularly our dependence on symbolic intelligence that requires enormous energy to maintain. But we can investigate principles that allow forests to develop autocatalytic organisation that persists and increases complexity over centuries:

Embedded participation within self-reinforcing feedback loops: Forest regulation emerges from the ongoing life activities of forest participants, each developing feedback relationships with the energy flows they help organise. Trees don't hold separate meetings about forest policy—their daily processes of photosynthesis, nutrient sharing, and chemical communication constitute forest governance while simultaneously strengthening the autocatalytic relationships that maintain forest organisation.

Distributed intelligence developing self-reinforcing feedback: No single tree controls forest decisions, but the network effects of countless local interactions create what Prigogine would call "global coherence through local interactions." Each tree's response to immediate energy conditions strengthens feedback loops that enhance the collective capacity for forest-level organisation.

Multi-scale temporal feedback within autocatalytic frameworks: Forest systems develop autocatalytic relationships across different timescales—from daily photosynthesis cycles to seasonal changes to decadal succession patterns to century-long climate adaptation. Short-term energy use decisions strengthen rather than weaken long-term organisational capacity.

Autocatalytic complexity within energy constraints: Forests increase organisational complexity while remaining strictly limited by available solar energy. They achieve this by developing feedback loops that enhance their efficiency at capturing and organising energy flows rather than by consuming external energy subsidies.

Keystone relationships in autocatalytic networks: Certain species occupy critical positions in the feedback loops that maintain forest organisation. Removing keystone species can collapse autocatalytic relationships, but restoring them can trigger rapid reorganisation toward greater complexity, as demonstrated by wolves in Yellowstone.

The Sympoietic Challenge

Human governance doesn't just happen among humans within human energy systems. We're embedded in what biologist Lynn Margulis called "sympoietic" relationships—we create and maintain ourselves through autocatalytic feedback loops with other living systems whose capacity to maintain their own far-from-equilibrium organisation is essential for human survival.

Mycorrhizal networks that connect forest trees operate according to autocatalytic principles that have enhanced forest organisational capacity for hundreds of millions of years. Climate systems regulate planetary temperature through feedback loops that have maintained Earth's habitability across geological timescales. Soil communities cycle nutrients through autocatalytic processes that have increased rather than decreased the planet's biological complexity over time.

These systems constitute what we might call "more-than-human autocatalysis"—the self-reinforcing feedback processes that maintain the far-from-equilibrium conditions necessary for complex life. They have their own forms of intelligence embedded in their own energy flows, their own capacity for developing autocatalytic relationships, their own tendency to increase organisational complexity over geological timescales.

As Brannen's work makes clear, human civilisation exists within this larger context of planetary autocatalytic organisation that has maintained Earth's habitability for billions of years while continuously increasing biological complexity. Effective human governance requires learning to participate skilfully in these larger autocatalytic patterns—not as managers consuming external energy to impose human preferences, but as conscious participants in sympoietic relationships that enhance the autocatalytic capacity of both human and ecological organisation.

This doesn't mean romanticising nature or pretending ecological systems make better decisions than humans. It means recognising that human symbolic intelligence is embedded within larger autocatalytic systems and learning to strengthen rather than disrupt the feedback loops that maintain far-from-equilibrium organisation on planetary scales.

Plotting Our Deep Geological Future

Brannen concludes his remarkable book with a critical insight: "we should focus on both rapidly decarbonising and democratising, and when we have those tools in place, we can get down to the work of plotting our deep geological future." But he adds a crucial qualifier: "If humans truly want an Anthropocene worthy of the name, we will ultimately need to figure out how to imitate these enduring systems on the Earth, rather than mimic the one-off super-eruption of a large igneous province."

This distinction between "enduring systems" and "one-off super-eruptions" maps directly onto Prigogine's framework. The question facing human civilisation is whether we can transition from operating as temporary dissipative structures consuming ancient energy inheritance toward developing autocatalytic relationships that could persist across geological timescales.

"Rapidly decarbonising" isn't just about reducing emissions—it's about transitioning from dependence on finite energy inheritance toward current energy income in ways that develop rather than degrade autocatalytic feedback loops. Solar, wind, and other renewable energy

systems could provide the energy foundation for governance systems that enhance rather than exhaust their energy sources over time.

"Democratising" takes on deeper meaning when understood as developing autocatalytic feedback loops between collective decision-making and collective consequences rather than simply expanding voting rights within systems that remain fundamentally extractive. True democratisation would mean creating governance processes that enhance collective intelligence capacity over time rather than consuming it.

"Plotting our deep geological future" requires thinking beyond political cycles toward the timescales on which autocatalytic systems actually develop stability. This means governance experiments that explicitly aim for geological-scale persistence rather than short-term political optimisation.

Most importantly, we need what Prigogine called "bifurcation points"—moments when dissipative structures can reorganise toward greater complexity and stability rather than dissipation and collapse. These moments are characterised by what he termed "order through fluctuation"—small changes can trigger system-wide reorganisation toward either greater autocatalytic capacity or systemic breakdown.

What This Means for Governance Experiments

Taking seriously Prigogine's insights about autocatalytic dissipative structures suggests several criteria for evaluating governance experiments:

Develop autocatalytic feedback loops: Prioritise approaches that strengthen rather than weaken the feedback relationships between collective decisions and their consequences. Look for processes where participants become more rather than less capable of democratic engagement over time.

Start small and scale autocatalytically: Complex autocatalytic organisation emerges from local interactions that develop self-reinforcing feedback loops. Focus on governance experiments that can enhance their own capacity for organising energy flows rather than requiring external energy subsidies to maintain complexity.

Restore keystone autocatalytic relationships: Identify the small number of feedback relationships that have disproportionate influence on system-wide autocatalytic capacity. Focus change efforts on reestablishing these critical feedback loops rather than trying to reform everything simultaneously.

Integrate multiple temporal scales within autocatalytic frameworks: Develop governance approaches that strengthen rather than weaken long-term autocatalytic capacity through their responses to immediate challenges. Short-term decisions should enhance rather than degrade the system's capacity for long-term organisation.

Measure autocatalytic capacity rather than efficiency: Evaluate governance experiments based on whether they increase collective intelligence and democratic capacity over time rather than just their immediate effectiveness at solving particular problems.

Create sympoietic relationships with ecological systems: Develop governance processes that enhance rather than degrade the autocatalytic capacity of the ecological systems they depend

on. Look for approaches that strengthen feedback loops between human social organisation and ecological health.

The Rules That Actually Run the World

Carroll's "Serengeti Rules" reveal that regulation operates through similar mathematical principles across scales from molecules to ecosystems, all operating within the constraints that Prigogine identified for autocatalytic dissipative structures. Brannen's carbon story shows how these regulatory processes maintain planetary habitability across deep time through autocatalytic feedback loops that enhance rather than degrade Earth's organisational capacity.

Both point toward the same insight that Prigogine formalised: successful long-term regulation emerges from embedded participation in autocatalytic feedback loops, not from external control attempts that require energy subsidies to maintain organisational complexity.

The wolves that restored Yellowstone's regulatory balance, the wildebeest that maintain Serengeti grasslands, the fungal networks that coordinate forest intelligence, the bacterial communities that cycle nutrients—all demonstrate regulatory approaches that develop autocatalytic relationships, becoming more rather than less efficient at organising energy flows over time.

Human governance systems that ignore these principles—that attempt regulation from outside the feedback loops they're trying to manage, that consume more energy than they can sustainably organise, that create separation between decision-makers and the autocatalytic consequences of their decisions—will continue following the trajectory of temporary dissipative structures that exhaust their energy sources and collapse.

But systems that align with autocatalytic principles—that embed decision-making within consequence-experiencing feedback loops, that operate within available energy constraints, that restore keystone relationships necessary for long-term organisation, that enhance rather than degrade collective intelligence capacity over time—may discover forms of governance that could persist and increase complexity across the geological timescales that Brannen challenges us to consider.

Swimming Consciously in the Autocatalytic Stream

We began with wolves that created autocatalytic loops restoring an entire ecosystem and governance systems that consume more energy than small countries while failing to develop the feedback relationships necessary for long-term persistence. We've explored how regulatory principles revealed by decades of biological research, understood within Prigogine's framework of autocatalytic dissipative structures and Brannen's cosmic thermodynamic perspective, might inform human approaches to collective intelligence that could persist across geological timescales.

The path forward isn't backward to simpler times or forward to more energy-intensive technological solutions. It's toward forms of governance that recognise us as temporary far-from-equilibrium phenomena with the capacity to develop autocatalytic relationships that could enhance the organisational complexity of both human civilisation and the planetary systems we depend on.

This requires what we might call "autocatalytic wisdom"—the capacity to participate consciously in the ongoing creation of conditions that enhance collective flourishing while developing self-reinforcing feedback loops that strengthen rather than exhaust our capacity for long-term organisation. Such wisdom operates simultaneously across individual and collective scales, human and more-than-human relationships, immediate and geological timescales.

We're already swimming in autocatalytic streams that connect human communities with larger ecological and cosmic processes. These are the same feedback loops that maintain far-from-equilibrium organisation across all scales of complexity, from cellular metabolism to ecosystem dynamics to planetary climate regulation. The question isn't whether we'll participate in these autocatalytic processes—we can't avoid it. The question is whether we can learn to participate more skilfully, strengthening rather than weakening the feedback relationships that sustain complex organisation during our brief cosmic moment.

The experiments are underway in communities worldwide—citizens' assemblies, participatory budgeting, cooperative enterprises, ecological restoration projects, indigenous governance revivals, renewable energy cooperatives, regenerative agriculture initiatives. Each represents an attempt to develop autocatalytic regulatory intelligence that enhances rather than exhausts the capacity for collective organisation over time.

None will solve the governance challenges we face through simple implementation. But together they might help us learn to participate more consciously in what Prigogine called "dissipative structures of increasing complexity"—governance processes that enhance their own capacity for organising collective intelligence while strengthening the ecological feedback loops that make complex civilisation possible.

The alternative—continuing to operate as temporary dissipative structures consuming ancient energy inheritance to maintain organisational complexity that cannot persist once that inheritance is exhausted—has a clear trajectory visible in both Prigogine's thermodynamic analysis and Brannen's cosmic perspective.

As Brannen concludes, life itself offers encouragement: "not all dissipative structures on Earth grow exponentially and then disintegrate as soon as they've reached maturity. Some, like the global ecosystem, have managed to persist for hundreds of millions of years." The wolves are already showing us how to develop the autocatalytic relationships necessary for such persistence. The question is whether we can learn fast enough to join them in swimming consciously within the cosmic stream toward greater rather than lesser organisational complexity.

With profound gratitude to Peter Brannen for making cosmic thermodynamics accessible, to Sean Carroll for revealing the mathematical principles that govern regulation across all scales of life, and to Ilya Prigogine for discovering how complex organisation emerges and persists through autocatalytic dissipative structures.

Closing Note for Readers

We've wandered far—across galaxies, savannas, and river valleys—only to find ourselves back where we started: here, in this fragile moment, choosing how to live together. The lesson of thermodynamics is not despair but discernment. Governance is not a machine to fix, but a living participation in flows of energy that already sustain us.

The wolves remind us that small, embedded actions can reshape entire systems. The forests remind us that complexity can flourish within strict energy limits. The cosmos reminds us that our time is brief, and all the more precious for its impermanence.

To pursue ecological wisdom is to notice these reminders and let them guide our choices: to live as participants rather than controllers, to scatter seeds of order in the current rather than burn through our inheritance, to remember that we, too, are temporary swirls in the stream.

The regulatory failures examined in democratic systems reflect a larger pattern: humanity betting everything on the assumption that symbolic intelligence can transcend material constraints indefinitely.

Betting the Farm: Humanity's Ultimate Wager on Growth

The Nature of the Bet

We are gambling with the farm. Not metaphorically, but literally - with the soils that feed us, the waters that sustain us, the climate that shelters us, and the ecological networks that make our existence possible. The wager is simple: that human ingenuity and technological innovation can overcome any material constraint the Earth might impose.

This bet has been building for roughly 250 years, since we began extracting and burning fossil fuels at industrial scales. Each decade, we've doubled down - expanding production, accelerating consumption, treating ecological limits as temporary obstacles to be overcome through cleverness and engineering.

The stakes have never been higher. We're now wagering not just local environments but planetary systems - the carbon cycle, the nitrogen cycle, biodiversity networks, and climate stability itself. If we win, the promise is continued growth, prosperity, and technological advancement. If we lose, we forfeit the conditions that make complex civilisation possible.

What We're Betting

The atmosphere: We're betting that we can continue releasing greenhouse gases at current rates while finding technological solutions to manage climate disruption. Current concentrations are already higher than any human civilisation has experienced, and we're adding more each year.

Biodiversity: We're betting that we can continue habitat destruction and species extinctions while maintaining the ecological services that food webs provide. Current extinction rates are 100-1,000 times higher than background rates, yet we assume technological substitutes can replace natural systems.

Soils: We're betting that industrial agriculture can continue depleting topsoil faster than it regenerates while finding ways to maintain food security. We lose approximately 24 billion tons of fertile soil annually - soil that took centuries to develop.

Freshwater: We're betting that we can continue depleting aquifers and disrupting hydrological cycles while technology provides alternative water sources. Many major aquifers are being drained faster than they recharge, some irreversibly.

Energy: We're betting that renewable technologies can scale fast enough to replace fossil fuels while maintaining current energy consumption growth rates. This requires building renewable infrastructure at unprecedented speed while continuing to burn fossil fuels.

Materials: We're betting that we can continue extracting finite minerals and metals at exponentially increasing rates while finding substitutes or recycling solutions for everything we consume.

What We're Betting On

The bet rests on several interconnected assumptions:

Technological transcendence: Human innovation can overcome any physical constraint. Past breakthroughs - from agriculture to industrialisation to computing - are cited as evidence that ingenuity always finds a way around limits.

Decoupling: Economic growth can be separated from material throughput and environmental impact. The promise is that we can have infinite growth on a finite planet through efficiency gains and dematerialisation.

Substitutability: Technology can replace natural systems and resources. Artificial intelligence can substitute for human labour, synthetic biology can replace natural ecosystems, geoengineering can substitute for climate stability.

Timing: Solutions will emerge before constraints become binding. The bet assumes that innovation operates faster than ecological degradation, that breakthrough technologies will arrive before tipping points are reached.

Scalability: Laboratory successes can be deployed at planetary scales. Technologies that work in controlled conditions can be implemented across diverse ecosystems and social systems without unexpected consequences.

The Competing Hypothesis

Against this technological transcendence hypothesis stands what we might call the regulatory feedback hypothesis: that planetary systems have inherent constraints and will respond to violations of those constraints through mechanisms that tend to eliminate or constrain the violating activities.

This hypothesis predicts that exceeding planetary boundaries triggers feedback responses - climate instability, resource conflicts, ecosystem collapse, social disruption - that ultimately force alignment with ecological limits whether we choose it or not. From this perspective, the question is not whether constraints will be imposed, but whether they will be imposed gently through conscious choice or dramatically through systemic breakdown.

The regulatory feedback hypothesis doesn't deny human ingenuity or technological capability. But it suggests that all intelligence, including technological intelligence, operates within larger constraining patterns. Just as biological intelligence cannot violate thermodynamic laws, technological intelligence cannot indefinitely exceed the regenerative capacity of planetary systems.

The Psychology of Doubling Down

Why do we keep increasing the size of the bet even as evidence mounts that regulatory feedback responses are already occurring? Climate disruption, biodiversity loss, soil depletion, and resource conflicts are no longer future projections but present realities. Yet rather than reducing our wager, we're accelerating it.

This pattern resembles what behavioural economists call "loss aversion" combined with "sunk cost fallacy." Having invested so heavily in growth-based systems, the prospect of changing course feels like admitting failure. The industrial infrastructure, financial systems, and social

structures built around endless growth represent such massive investments that questioning the underlying assumptions feels impossible.

There's also what psychologists call "optimism bias" - the tendency to overestimate positive outcomes and underestimate risks when we feel in control. Technological achievements create a sense that human ingenuity can solve any problem, making regulatory constraints feel like challenges to be overcome rather than limits to respect.

The wager is also political. By our choices in elections, and by our neglect of democratic means of constraining rogue governments, we allow the bet to keep escalating. In the Global North, this often means buying ourselves a little more time to "play around" — postponing hard transitions, subsidising consumption, deferring costs. But those costs are not deferred for everyone. They fall first on the Global South, where droughts, crop failures, rising seas, and conflict already uproot millions. Many of the torrent of displaced people we call "refugees" are in fact the first to pay with their piece of the farm, even if others are fleeing political repression, sectarian violence, or economic collapse. If urgency feels abstract in northern cities, it is lived as daily disruption in southern villages. To mobilise ecological wisdom at scale means recognising that democracy is not just about local freedoms; it is about collective responsibility for the wager itself.

The Acceleration Factor

Artificial intelligence dramatically increases both the potential payoff and the potential losses of this bet. AI systems can accelerate technological innovation, potentially enabling breakthroughs that support the transcendence hypothesis. But they can also accelerate resource extraction and ecological disruption, increasing the stakes of the wager.

AI represents betting the farm with borrowed money. It amplifies our capacity to both solve problems and create them, but it operates at speeds that compress the timeframes for both breakthrough and breakdown. This temporal acceleration means we'll discover much sooner whether the technological transcendence hypothesis is correct.

Reading the Odds

How do we assess the likelihood of winning this bet? The evidence is mixed, and the stakes make objective analysis difficult. We can point to genuine technological achievements - renewable energy costs falling exponentially, lab-grown meat becoming commercially viable, artificial intelligence accelerating scientific discovery.

But we can also point to mounting evidence of regulatory feedback responses - accelerating climate change despite efficiency improvements, biodiversity loss despite conservation efforts, soil depletion despite precision agriculture, resource conflicts despite technological substitutes.

The regulatory patterns that constrain all complex systems operate on longer timescales than technological development. This creates a temporal mismatch where innovations can appear to overcome constraints for decades before the larger regulatory responses become apparent. We may be winning small bets while losing the larger game.

Alternative Strategies

Are there alternatives to betting everything on continued growth? Several paths deserve consideration:

Sufficiency-based prosperity: Designing economies around "enough" rather than "more," focusing on quality of life rather than quantity of consumption. This would mean accepting material constraints while improving distribution and reducing waste.

Regenerative integration: Aligning technological systems with ecological cycles rather than attempting to transcend them. This would mean designing agriculture that builds soil, energy systems that work with natural flows, and manufacturing that mimics biological processes.

Voluntary simplification: Consciously reducing material throughput while maintaining social and cultural richness. This would mean finding meaning and satisfaction through relationships, creativity, and community rather than consumption.

Adaptive resilience: Building systems that can thrive within ecological constraints rather than systems that require their absence. This would mean designing for flexibility, redundancy, and local self-reliance rather than efficiency and global integration.

The Timing Question

The critical factor may be timing. Even if technological solutions to ecological constraints are eventually possible, will they emerge before regulatory feedback responses become overwhelming? Current trajectories suggest we're approaching several planetary boundaries simultaneously while solutions remain largely experimental.

Climate tipping points, species extinction cascades, soil system collapse, and freshwater depletion operate on their own timescales, largely independent of human intentions or technological development schedules. The bet assumes we can synchronise breakthrough technologies with these ecological timelines, but the evidence suggests ecological disruption may be accelerating faster than technological solutions.

Conclusion: Recognising the Wager

Perhaps the most important step is simply recognising that we are placing a bet at all. Current economic and political systems operate as if continued growth is inevitable and desirable, not as if it represents an enormous gamble with uncertain odds.

Making the wager explicit allows for more conscious risk assessment. How confident are we in the technological transcendence hypothesis? What would happen if we're wrong? Are the potential benefits worth the potential losses? How much of the farm are we willing to risk?

The regulatory feedback hypothesis suggests that planetary systems will ultimately determine the outcome regardless of human preferences. But conscious recognition of the bet still matters. It creates space for choosing how much to wager, whether to hedge our bets through alternative strategies, and how to respond if early indicators suggest we're losing.

We're already deep into this game. The question is whether we'll keep doubling down until we've bet everything, or whether we'll recognise that some things are too valuable to gamble with - even if the potential payoff seems enormous.

The farm, after all, is the only one we have.

For readers seeking a clearer, more accessible understanding of why symbolic consciousness creates these systemic violations of natural limits, this final essay in Part II distils the core insight.

Why Everything in Nature Has Limits—Except Us

And Why That's Our Biggest Problem

Have you ever noticed how everything in nature seems to know its limits? Stars don't explode randomly—they maintain a perfect balance between the crushing force of gravity and the outward push of nuclear fusion. Rivers carve valleys but don't endlessly deepen them. Predator populations naturally adjust to match their prey. Even hurricanes, for all their destructive power, eventually exhaust themselves.

For 13.8 billion years, the universe has operated on a simple principle: every new development works within the boundaries set by what came before it. Life doesn't violate the laws of physics. Ecosystems don't exceed their energy budgets indefinitely. Everything creative and novel emerges through working with constraints, not against them.

Everything, that is, except us.

The Human Exception

About 50,000 years ago, something unprecedented happened. Humans developed what we might call symbolic consciousness—the ability to think in abstract concepts, use complex language, and imagine realities that don't yet exist. This gave us a superpower no other species possesses: the ability to temporarily override natural limits through technology and social organisation.

Think about what this means. A bird can't decide to fly higher than its wings allow. A tree can't choose to grow taller than its water transport system permits. But humans? We build planes to fly higher than birds, create skyscrapers that dwarf any tree, and pump water uphill across entire continents.

This ability has given us art, science, medicine, and civilisation itself. But it's also created what I call the "consciousness trap"—we've mistaken our temporary ability to push past limits for the belief that limits don't apply to us at all.

How We Got Trapped

The trap works like this: We encounter a natural limit—say, local food scarcity. We invent a solution—agriculture, which lets us grow more food than nature would normally provide in one place. This works brilliantly... for a while. But then we need irrigation systems to override water limits. Then fertilisers to override soil depletion. Then pesticides to override natural pest control. Each solution requires bigger interventions, consuming more energy and resources.

Modern civilisation has institutionalised this pattern. We've built entire economic systems on the assumption of infinite growth on a finite planet. We've created political structures that depend on constantly exceeding previous limits. We've developed technologies that operate at speeds and scales completely disconnected from the biological and ecological systems that sustain us.

Consider California's water crisis. For decades, massive engineering projects moved water from wet regions to dry ones, enabling cities and farms to flourish in deserts. It seemed like human

ingenuity had conquered natural limits—until severe droughts revealed that we'd simply been borrowing against future water supplies. The limits were still there; we'd just been very clever at ignoring them.

The Mounting Crisis

This pattern—override, expand, crisis—is now operating at planetary scale. Climate change isn't just about too much CO₂; it's about industrial civilisation systematically ignoring the atmosphere's limited capacity to absorb our waste. The biodiversity crisis isn't just about losing species; it's about dismantling the web of relationships that took millions of years to develop. Social fragmentation isn't just about political disagreements; it's about human social systems operating at scales and speeds that exceed our evolved capacity for meaningful connection.

Artificial intelligence threatens to amplify this dynamic exponentially. AI systems can process information and make decisions at speeds that completely bypass human judgment and natural feedback loops. Imagine our current tendency to override limits, but operating at the speed of light, at global scale, with no pause for reflection.

Why Can't We Just Think Our Way Out?

Here's the crucial insight: symbolic consciousness—our prized ability to think abstractly—cannot solve problems created by its own structure. It's like asking a fish to comprehend water, or expecting a knife to cut itself. The very mental tools that allow us to override limits are poorly equipped to recognise why we shouldn't.

But other forms of intelligence don't have this problem. Your body knows when you need rest, even when your mind wants to keep working. Ecosystems maintain balance without meetings or strategic plans. Indigenous cultures that have survived for thousands of years did so by keeping their symbolic intelligence embedded within, rather than elevated above, natural intelligence.

Learning from Other Intelligences

This is where hope lies—not in abandoning our unique capacities, but in learning to integrate them with other forms of intelligence that never lost touch with natural limits.

Consider how indigenous peoples have traditionally made decisions. Many tribes wouldn't take any significant action without considering its impact seven generations into the future. This isn't just a nice idea—it's a technology for keeping human planning embedded within natural timescales. When you're thinking about your great-great-great-grandchildren, you can't ignore ecological limits.

Or look at contemplative practices found in every culture—meditation, prayer, time in nature. These aren't just stress reduction techniques. They're methods for temporarily quieting symbolic consciousness so other forms of intelligence can be heard. People who regularly engage in these practices often report a shift in perspective, from feeling separate from nature to experiencing themselves as part of it.

The Phase Transition

Here's where it gets interesting. Throughout history, mystics and contemplatives from every tradition have reported that consciousness itself can undergo fundamental transformation. Not just changing our thoughts, but changing the very structure of how we think. Like water becoming ice or steam, consciousness might be capable of "phase transitions"—reorganising into fundamentally different patterns.

These traditions describe states where the usual subject-object separation dissolves—where the thinker, the thought, and the thing being thought about merge into a unified experience. From these states, people report, the adversarial relationship between human will and natural limits simply disappears. Not because limits go away, but because the desire to override them does.

This isn't about returning to some imagined primitive past. It's about consciousness evolving to its next stage—maintaining all our creative and analytical capabilities while transforming our relationship to the constraints that enable them.

Practical Implications

What does this mean for how we live? First, it suggests that our current crises aren't problems to be solved through more clever technologies or policies (though these have their place). They're symptoms of a consciousness structure that systematically misunderstands its relationship to the whole.

Second, it means that practices helping us reconnect with non-symbolic intelligence aren't luxury add-ons to modern life—they're essential for our survival. Time in nature, contemplative practice, indigenous wisdom, embodied awareness through art or movement—these are technologies for consciousness transformation as sophisticated as any silicon chip.

Third, it suggests that real solutions will emerge not from symbolic intelligence working harder at the same strategies, but from allowing other forms of intelligence to guide and inform our choices. This requires what we might call "trans-disciplinary humility"—recognising that despite all our achievements, symbolic consciousness alone cannot navigate the challenges it has created.

The Choice Ahead

The universe has been running experiments in intelligence and constraint for billions of years. Stars that burn too fast exhaust themselves. Species that overexploit their environment go extinct. Civilisations that ignore their resource base collapse. The regulatory principles that govern sustainability operate whether we acknowledge them or not.

But we may be the first form of intelligence capable of consciously choosing our relationship to these principles. We can continue pretending we're exempt from the rules that govern everything else, pushing toward increasingly catastrophic corrections. Or we can undergo the transformation that contemplatives have always pointed toward—not transcending our limits but discovering the creativity that emerges through conscious collaboration with them.

The climate crisis, the meaning crisis, the biodiversity crisis—these aren't separate problems requiring separate solutions. They're all symptoms of symbolic consciousness trying to operate

outside the regulatory constraints that enable life to flourish. The question isn't whether these constraints will reassert themselves—they will, one way or another. The question is whether we'll learn to work with them consciously or have them imposed upon us catastrophically.

The good news? Every wisdom tradition tells us this transformation is possible. The challenging news? It requires letting go of our most cherished illusion—that we're separate from and above the nature that created us. But on the other side of that letting go lies something remarkable: the discovery that genuine creativity, meaning, and even freedom emerge not from opposing limits but from dancing with them.

We're not trapped. We're just using the wrong form of intelligence to navigate our situation. The door to the cage is open. We just have to remember how to see it.

Part III: Recognition

Essays 6a-6d, 8-9: The Heist/Gift/Consciousness Trap, Intelligence, When Paradise Burns

The middle section shifts from systemic analysis to personal reckoning. These essays emerged from recognizing the consciousness trap operating in my own thinking—how even attempts to describe the trap can become another performance of symbolic mastery. Through examining California's water crisis and my own moments of supposed insight, these pieces explore what it means to catch consciousness in the act of stealing reality and converting it into abstraction. They ask: can symbolic intelligence recognize its own limitations without that recognition becoming another form of elevation? The essays move between vulnerability and analysis, between the intimate scale of a morning's recognition and the planetary scale of paradise burning.

The Heist, the Gift, and the Trap

When I began writing about the Pursuit of Ecological Wisdom, I framed it as the alignment of human intelligence with the deeper intelligences of Earth's living systems. Forests, soils, waters, and winds embody forms of knowing that have sustained life for billions of years. Ecological wisdom, I suggested, is what emerges when human inquiry learns to spiral with those patterns rather than against them.

But as I have sat longer with this pursuit, another layer has come into view. If forests remind us of reciprocity, human consciousness reminds us of recursion—and recursion is not always kind. Our symbolic intelligence enables science, language, and imagination, yet it also creates separation, illusion, and the endless temptation to outrun the limits of life's metabolism.

Over the past weeks, three writings spilled out of me that circle this paradox: The Heist Lurking in the Bedroom, The Gift, and The Consciousness Trap. Each came unbidden, but together they form what I call a mess—half mess, half message. They do not resolve the paradox. Instead, they invite us to sit with it: to see how the heist, the gift, and the trap are not obstacles to ecological wisdom but part of its difficult terrain.

The Heist Lurking in the Bedroom

This morning, getting dressed: shirt, socks, the usual routine. Then a thought—I'm a temporary arrangement of cosmic matter that happens to be putting on clothes.

Before the thought finished forming, other thoughts crowded in. This would make a good essay. Readers might find it insightful. Perhaps it shows I'm finally getting somewhere with all this spiritual inquiry.

The theft was immediate and complete.

The original thought wasn't asking for anything. It didn't want to be profound or useful or evidence of progress. It was just a passing recognition, like noticing the weather.

But within seconds, it had been recruited into a story about Terry's journey toward greater wisdom. The machinery that turns ordinary moments into heroic narratives had kicked in automatically.

This happens constantly. A simple recognition gets transformed into:

- Material for writing
- Evidence of growth
- Something to share with others
- Proof of having transcended something

Each transformation moves further from what actually occurred.

An 84-year-old man standing in his bedroom had a thought about being made of the same stuff as stars. That's it. No enlightenment, no breakthrough, no milestone achieved.

The thought might be accurate—current physics suggests everything is indeed temporary arrangements of cosmic matter. But accuracy doesn't make it special. Lots of accurate thoughts occur while getting dressed.

Even writing this, the machinery keeps running. Look how honest I'm being about self-deception! See how I'm avoiding spiritual materialism! Notice my humility about ordinary recognition!

The theft adapts. It steals the recognition of theft, turning it into another form of achievement.

There might not be a way out of this loop. Consciousness that can observe itself will probably always try to make its observations into evidence of something—progress, wisdom, at least good writing.

The theft continues. Right now, as I type this. As you read it. The machinery doesn't stop.

Maybe that's fine. Maybe trying to stop it is just another form of the same problem—turning the recognition of narrative theft into a project of spiritual improvement.

Shirt on. Socks up. Thoughts arising and being immediately stolen by other thoughts.

This too.

The Gift

For Mark and Tanya's Wedding

"We cannot do great things on this earth, only small things with great love."
—Mother Teresa

Love shapes the quality of attention we bring to the ordinary.

In the glorious everyday of marriage—making coffee, folding laundry, listening when one of you has had a difficult day—love reveals itself not in grand gestures but in the wholeness of presence you offer each other.

The secret is that these small acts, done with complete attention, are never actually small. When met with love, the ordinary becomes luminous. A shared meal, a moment of forgiveness, the simple act of witnessing each other's joys and sorrows—these are the stuff of sacred life.

May you discover, again and again, that love is not something you bring to your marriage, but something your marriage reveals when you attend to each other without agenda, when you show up fully to whatever small thing asks for your care.

The everyday will be your teacher. Let it be glorious.

A reflection on the gift:

Love, like human consciousness itself, is recursive and self-reflexive. All life is attentive, but humans have the ability to choose what we attend to, which carries great responsibility.

The recursive nature of consciousness means we can choose to attend to love itself, making love both the means and the end of attention. This creates what contemplatives call "pure awareness"—attention that rests in itself rather than grasping for objects. But it also carries the terrible possibility of using even this awareness as another form of spiritual materialism.

The responsibility is immense because consciousness appears to be how the universe becomes aware of itself. We're not just observers but participants in cosmic self-reflection.

The Consciousness Trap

For thirteen and a half billion years, the universe has been perfecting the art of self-regulation. From the moment hydrogen began fusing in the first stars to the emergence of complex ecosystems on Earth, intelligence has meant one thing: the capacity to maintain order within the flow of energy while respecting the constraints that make that order possible.

Then something unprecedented happened. Around 50,000 years ago, a new form of intelligence emerged that could do something no other intelligence had ever done: systematically violate the regulatory constraints that govern all other forms of order. This intelligence was symbolic consciousness—our capacity for language, abstraction, and reflexive thought. And while it has given us art, science, and civilization, it has also trapped us in a crisis that threatens to end the human experiment entirely.

Symbolic intelligence is unique in the cosmos because it can construct narratives that override immediate feedback. A deer cannot imagine eating more grass than exists in its territory. A forest cannot convince itself that it can grow without soil. But humans can imagine infinite growth on a finite planet, endless extraction from limited resources, and technological solutions to every constraint.

What began as local violations of ecological limits has now become a planetary system of institutionalised override. Modern civilization is organised around what we might call "the heist"—the systematic conversion of ecological warnings into narratives of opportunity.

When indigenous peoples pointed out that certain territories were sacred and should not be exploited, colonisers heard "valuable resources waiting to be developed." When scientists warn about climate change, fossil fuel companies hear "a public relations problem to be managed." When communities organise around sufficiency and mutual aid, economists hear "inefficiencies to be corrected by market mechanisms."

The consciousness trap is not merely an intellectual error we can think our way out of—it is built into the very structure of symbolic intelligence itself. And as we amplify that intelligence through artificial systems that operate at scales and speeds completely divorced from biological and ecological feedback, we are not solving the trap but perfecting it.

The universe is not waiting to see what we choose. The regulatory systems that govern planetary habitability operate on their own timeline and according to their own logic. They will continue to function with or without us. The question is not whether we will transcend our limits, but whether our experiment in symbolic consciousness will prove compatible with the continuation of the conditions that make any intelligence possible at all.

These three pieces—the heist, the gift, and the trap—form a triptych of recognition. Each reveals a different face of the same pattern: how consciousness can steal its own insights,

transform them into achievements, and trap itself in recursive loops of its own making. Yet the gift reminds us that within this same recursive capacity lies the possibility of love, of attention that doesn't grasp but rests. The following essays explore what it might mean to live with this paradox rather than solve it.

From the intimate recognition of consciousness stealing its own insights, we turn now to a more systematic examination of the relationship between intelligence, separation, and the possibility of a third way.

Intelligence, Separation, and the Search for a Third Way

A Note on Intelligence

Before proceeding, we need clarity about what we mean by "intelligence." Here we treat intelligence as adaptive responses that maintain viable relationships within constraining patterns—distinct from both rationality (symbolic processing) and consciousness (subjective experience). This framing reveals regulatory responsiveness across scales: bacterial chemotaxis, immune system coordination, ecological succession, homeostatic mechanisms. Such intelligence operates through energy flows and thermodynamic constraints without requiring self-awareness.

This is a methodological distinction, not a metaphysical claim. By separating intelligence from consciousness, we can track patterns of adaptive response that remain invisible when intelligence is confined to human cognitive capacities. The payoff becomes clear when examining how consciousness creates separation from the very regulatory patterns that unconscious intelligence naturally respects.

The Core Proposition

Intelligence, understood as regulatory responsiveness, is not the sole province of the human mind. Memory and attention are woven through the living world—in the way a forest "remembers" drought through growth patterns, or a mycorrhizal network responds adaptively to the needs of a seedling. This distributed intelligence operates unconsciously, embedded within energy flows and constrained by thermodynamic reality.

Human consciousness represents evolution's experiment in adding self-awareness to this foundational intelligence. This reflexive capacity enables abstraction, symbolic language, science, and technology. But it also creates a fundamental separation: symbolic intelligence can operate divorced from the material constraints that unconscious intelligence naturally respects.

The Separation Problem

Consciousness and symbolic thinking create cognitive distance from material constraints. A mycorrhizal network cannot over-extract nutrients because it is embedded in those nutrient cycles. Its regulatory intelligence is inseparable from the energy flows it depends on. But symbolic intelligence can model future abundance, discount future costs, and pursue abstract goals that may conflict with the energy budgets that sustain life.

This separation has empirical consequences:

- Human population grew from roughly 5-10 million for most of our species' history to 8 billion today
- Modern civilization derives approximately 80% of its energy from fossil fuels—ancient stored solar energy
- Per capita energy consumption has increased by orders of magnitude since pre-agricultural times
- Current population levels require continued high-energy inputs to maintain themselves

The separation creates what might be called a consciousness trap: the very success of symbolic intelligence in creating surplus has made us dependent on continued extraction from planetary systems.

The Scale Constraint

Individual recognition of this pattern—what contemplative traditions call awakening to interdependence—does not automatically scale to collective solutions. Even if everyone wanted to "return to nature," the carrying capacity is insufficient. Hunter-gatherer societies typically supported 1-10 people per square kilometre; current agricultural systems support hundreds of times more on the same land.

This creates the "8 billion problem": we are in a situation where the systems that separate us from natural energy flows have also enabled a population that exceeds what embedded living can support. Unlike historical civilisations where individuals could "walk away" to uninhabited frontiers, no such safety valves remain.

The Technological Solution Trap

Proposed technological solutions—such as nuclear fusion creating "artificial suns"—exemplify the pattern they claim to solve. They use more sophisticated symbolic intelligence to maintain separation from natural constraints rather than learning to participate within them. These approaches face several empirical challenges:

- Timeline mismatches (fusion technology remains decades away while ecological disruptions accelerate)
- Partial problem-solving (abundant energy doesn't address soil depletion, biodiversity loss, or biogeochemical disruption)
- Complexity costs (the infrastructure required may consume enormous resources)
- Distribution challenges (getting abundant energy to 8 billion people sustainably)

More fundamentally, such solutions assume the problem is energy scarcity rather than the consciousness that creates unsustainable relationships with energy and regulatory patterns.

The Recursive Challenge

Attempts to solve the separation problem through symbolic analysis face inherent limitations. Using symbolic intelligence to analyse problems created by symbolic intelligence creates recursive loops. Even recognising this recursion can become another form of analytical capture—turning the insight into evidence of progress or wisdom.

This is not a logical flaw but a structural feature of reflexive consciousness. The same capacity that enables self-awareness also makes it nearly impossible to step outside the patterns consciousness creates. Every attempt to transcend the machinery becomes another operation of the machinery.

Two Streams of Knowing

The inquiry into these patterns draws on two established lineages:

Scientific tradition: Rigorous methods for understanding energy flows, system dynamics, and thermodynamic constraints. Provides empirical evidence for the unsustainability of current trajectories and reveals regulatory patterns across scales.

Contemplative tradition: Practices for recognising interdependence and dissolving the sense of separation. Offers experiential access to embedded awareness that doesn't rely on analytical distance, reconnecting consciousness with regulatory intelligence.

Both streams have accumulated thousands of years of wisdom and proven methods. Yet despite centuries of scientific progress and millennia of contemplative practice, we still have 8 billion people dependent on energy-intensive systems that destabilise planetary life support systems.

The Search for a Third Way

The convergence of these two streams points toward a third way that holds them in creative tension—what we might call the Dao of this predicament. This approach would:

- Use scientific understanding to recognise thermodynamic and ecological constraints
- Draw on contemplative insight to experience actual embeddedness rather than conceptual understanding of interdependence
- Develop forms of collective organisation that can sustain large human populations within planetary boundaries

Current experiments include citizen assemblies, cooperative enterprises, regenerative agriculture, ecological restoration projects, and community energy systems. Each represents an attempt to develop what might be called "regulatory intelligence" that operates within rather than against both thermodynamic reality and relational truth—consciousness learning to participate in rather than separate from the adaptive patterns that sustain life.

The Open Question

The cosmos itself appears to exhibit genuine creativity and emergence, as revealed by quantum indeterminacy, evolutionary novelty, and ongoing expansion. Our inquiry into consciousness and separation may be participating in this creative dynamic rather than trying to solve a fixed puzzle.

If this is so, then the "8 billion problem" might not be a problem to be solved but a constraint within which something genuinely new needs to emerge. The third way cannot be fully known in advance but must be discovered through experiments informed by both scientific understanding and contemplative insight.

This perspective dissolves several false problems while revealing others barely begun:

- Instead of designing institutions that solve complex challenges from outside (empirically impossible), we face learning to participate skilfully in complex systems from within (contemplatively necessary)
- Instead of choosing between individual freedom and collective coordination (false binary), we face developing collective intelligence that enhances individual autonomy while operating within ecological constraints

- Instead of selecting between technological and traditional approaches (another false binary), we face integrating symbolic intelligence with biological intelligence in ways that serve rather than exhaust life

Conclusion

The path forward requires neither pure scientific materialism nor pure contemplative spirituality, but their dynamic integration. This means learning to cycle fluidly between analytical distance and participatory engagement—what ancient wisdom calls practical wisdom (phronesis) about timing.

Such integration cannot be achieved through more analysis but only through embodied practice: attending with love to whatever small thing asks for care, while remaining aware of the larger patterns within which such attention occurs. The work becomes learning to participate consciously in the very processes through which sustainable forms of human organisation might emerge—consciousness reconnecting with the regulatory intelligence from which it emerged.

Whether such emergence can happen at the scale and speed required remains an open question. But the alternative—continuing to burn ancient carbon to power institutions disconnected from the flows that sustain them—has a clear endpoint visible through both empirical measurement and contemplative recognition.

For me, the guide in this inquiry remains love: not sentimental, but practical — love as attention, love as the willingness to stay with difficulty, love as the discipline of care.

The experiments continue. The learning accelerates. The timing matters.

14th September 2025

If symbolic intelligence creates systematic separation from material constraints, nowhere is this more visible than in California's attempt to engineer paradise through massive water diversions and fire suppression—a story that reveals the consciousness trap operating at landscape scale.

When Paradise Burns: The Consciousness Trap in California's Water Wars

How Maya Pace's journey through drought and fire reveals the deeper pattern behind our civilisational crisis

This is the ninth essay in the series “The Pursuit of Ecological Wisdom”. California often looks like a picture of paradise: ocean light, fertile valleys, endless promise. But beneath the shimmer runs a deeper story, one that matters far beyond California itself. It is the story of how human symbolic intelligence — our capacity to imagine, plan, and engineer — keeps trying to overrule the older intelligences of earth, water, and fire. Each time we succeed for a while, the cosmos answers back. This is not just about droughts and wildfires. It is about a pattern I call the *consciousness trap*: the risk of believing that our abstractions can escape the constraints that make life possible.

Maya Pace's haunting essay "Thin White Line" reads like a field report from the frontlines of what I call the consciousness trap—the structural tendency for human symbolic intelligence to override the ecological constraints that sustain life. Her journey from California's burning forests to Utah's parched rangelands illuminates how we've created a civilisation that literally cannot survive without violating the regulatory systems that make survival possible.

The Engineering of Illusion

Consider the California State Water Project that Pace describes: 700 miles of pipes and pumps hoisting water 1,926 feet over mountain ranges, consuming more energy than any other system in the state. This is symbolic intelligence in its purest form—the belief that we can transcend natural limits through engineering prowess.

But here's what makes this a perfect example of the consciousness trap: the system works only by creating bigger problems elsewhere. Northern California's "surplus" water becomes Southern California's green lawns, which enables real estate development in desert regions, which creates political constituencies that demand even more water diversions. Each "solution" requires escalating violations of ecological constraints.

The trap isn't that we built these systems—it's that we can no longer stop. Millions of people now depend on water that was never meant to be where they are. As Pace puts it, "We have created a future that will ask us if we love it enough to live in it."

The Reality Override

What fascinates me about Pace's account is how it reveals the psychological mechanism that enables these violations. When Ric Davidge proposed floating bags of water from Mendocino to San Diego in 2002, he wasn't seeing a bioregion with its own ecological intelligence. He was seeing "natural resources"—a category that exists only when things are "being used (which often means used up)."

This is the consciousness trap in action. Symbolic intelligence literally cannot see ecological intelligence as intelligence. Water becomes a commodity to be moved around rather than the

lifeblood of specific landscapes. Fire becomes a problem to be suppressed rather than the renewal mechanism that forests have co-evolved with for millennia.

The Spanish missionaries who first suppressed Indigenous burning practices weren't evil—they were trapped in a way of thinking that could only see fire as destruction rather than as ecological intelligence maintaining ecosystem health. They imposed their symbolic narrative of "improvement" on landscapes that had been consciously tended for thousands of years.

When Systems Fight Back

The 2020 fires that brought Pace home represent what complexity theorists call "system kickback"—the inevitable reassertion of ecological constraints that have been temporarily overridden. "Like revelation, lightning kissed the dry brush in the northwestern region of California, reminding us of what we had tried to forget."

This is exactly what Le Chatelier's Principle predicts: when you push a system away from its natural equilibrium, it will eventually push back to restore balance. The longer you suppress fire, the more catastrophic it becomes when it inevitably returns. The more water you divert from natural cycles, the more severe the eventual drought.

But here's the trap: instead of recognising these events as feedback from ecological intelligence, we typically respond by doubling down on technological solutions. More fire suppression systems. Bigger water diversions. Better predictive models. Each response reinforces the fundamental delusion that symbolic intelligence can transcend rather than work within ecological constraints.

The Utility Complex

Perhaps the most penetrating insight in Pace's essay is her recognition of what she calls the "utility complex"—the belief that everything, including ourselves, must be "used" to be valuable. This is how symbolic intelligence colonises even our relationship to our own existence.

"I realised that I had learned to approach my own self as something to be used, or used up. As something that could—and should—be exported anywhere that it was needed. As something independent of place."

This is the consciousness trap at the most intimate level. We internalise the same extractive logic that turns forests into timber and rivers into irrigation systems. We become alienated from our own embeddedness in ecological relationships, treating ourselves as portable resources rather than expressions of the places that shaped us.

The Rancher's Wisdom

The contrast between Jex, the Utah rancher, and the policy official at the water conference reveals two fundamentally different forms of intelligence. The official thinks in terms of economic incentives and behavioural modification—pure symbolic manipulation. Pay ranchers enough and they'll stop ranching. Problem solved.

But Jex operates from what we might call ecological intelligence. He's embedded in specific relationships with specific animals on specific land with specific water constraints. His decisions emerge from this web of relationships rather than from abstract calculations about efficiency or profit. "There's a perspective that you gain when you're working with animals," he tells Pace. "There's a humility, there's an understanding of reality."

This isn't romanticising rural life—it's recognising a different way of knowing that stays connected to the feedback loops that symbolic intelligence tends to override. Jex can't pretend water is unlimited because his cattle would die. He can't ignore soil health because his grass wouldn't grow. His intelligence is embedded in the regulatory constraints rather than floating above them.

The Thin White Line

The image that haunts Pace—the thin white line of extinction in the canyon wall—provides the cosmic context that our current crisis demands. "All of the beings that lived and died, memorialised in this tiny seam... dwarfed by rock time above and below."

This is the perspective we need: we are one experiment in intelligence among many, operating within regulatory systems that have been evolving for billions of years. The idea that our particular form of symbolic consciousness could transcend these constraints indefinitely is not just hubris—it's a fundamental misunderstanding of how intelligence works in the cosmos.

The Path Through

Pace's journey suggests that escape from the consciousness trap requires something like what she experienced during the 2020 fires: a direct encounter with ecological intelligence powerful enough to shatter our stories of control and transcendence. But transformation also happened through what she calls "intimacy"—learning to love specific places as they actually are rather than as we wish them to be.

This points toward what I call "technologies of realignment"—practices that help symbolic intelligence stay embedded within rather than elevated above ecological constraints. Indigenous burning practices. Regenerative agriculture. Contemplative traditions that cultivate attention to natural cycles. These aren't primitive throwbacks but sophisticated methods for coordinating symbolic intelligence with deeper forms of regulatory wisdom.

The consciousness trap isn't something we can think our way out of—it's built into the structure of symbolic thought itself. But we might be able to find our way through by learning what Jex and the Indigenous fire-keepers and Maya Pace herself discovered: that real intelligence means staying connected to the relationships that sustain us, even when—especially when—those relationships constrain our dreams of unlimited possibility.

"We have created a future that will ask us if we love it enough to live in it." The question is whether we can learn to love what is real rather than what we imagine we can make real through the sheer force of our symbolic will.

The lesson of California is not unique. Wherever symbolic intelligence forgets its place in the hierarchy of regulation, the feedback grows harsher. Fire becomes more ferocious, floods more sudden, wars more destructive. What burns in California is also burning in us. Yet even here

the invitation remains: to turn from mastery toward intimacy, from kingship toward gardenership. That is the work of pursuing ecological wisdom — to relearn how to live within the flows that have sustained life for 13.8 billion years, before the burn becomes total.

21st September 2025

Part IV: Remembering

Essays 10-11: The Song of Three Prophets, The Great Remembering

The final essays widen the lens historically and culturally. For three centuries, prophets within Western thought have warned against severing human life from its relational roots. Today, across many traditions and disciplines, a convergence is occurring—not toward forced unity but toward recognition of our fundamental interdependence. These essays explore whether humanity might be approaching what contemplative traditions call a "phase transition" in consciousness itself: not abandoning symbolic intelligence but reintegrating it with the embodied, ecological wisdom from which it emerged. They ask whether the scattered recognitions appearing across cultures might coalesce into something more—a great remembering of what we never fully forgot.

The Song of Three Prophets: A Warning Still Unheeded

*This essay is the tenth in my **Pursuit of Ecological Wisdom** series, tracing voices across centuries and cultures that remind us: to live wisely is to live within relationship.*

For three centuries, prophets have warned of the same wound in Western thought: the severing of human life from its relational roots. Each sang their warning. Each was heard. None were heeded. The Third Earl of Shaftesbury warned against reducing humans to isolated calculating machines. William Blake prophesied that mechanistic thinking would forge mental manacles stronger than iron chains. Geoffrey Vickers observed that pursuing goals while ignoring relationships would destabilize the very systems we depend upon.

Each prophet was heard. Their works were published, discussed, even celebrated. Yet their central warning went unheeded. Today, as artificial intelligence threatens to amplify our disconnection from relational reality to cosmic scales, and as libertarian philosophies promise escape from all constraints through technology, their song grows more urgent. We stand at the culmination of the very trajectory they warned against.

Shaftesbury: The Forgotten Moral Sense (1671-1713)

Anthony Ashley Cooper, Third Earl of Shaftesbury, wrote as Thomas Hobbes's vision of humanity was reshaping European thought. Hobbes had portrayed humans as isolated individuals driven by appetite and aversion, locked in a war of all against all, requiring the absolute sovereign's power to prevent mutual destruction. This wasn't merely political philosophy—it was an ontological claim about human nature itself.

Shaftesbury recognized this as both false and dangerous. In his *Characteristics of Men, Manners, Opinions, Times* (1711), he argued that humans possess an innate moral sense arising from our fundamentally social nature. We don't calculate moral outcomes like machines processing inputs; we perceive harmony and discord in human relations as naturally as we perceive beauty or ugliness in art.

"The passion of fear," Shaftesbury wrote, "may be justly called the mother of superstition; but enthusiasm, which is the passion of love, misapplied to wrong objects, is the parent of whatever is sublime in human passions." He saw that reducing human motivation to fear and self-interest wouldn't describe reality—it would create it. Teach people they're isolated calculators, design institutions assuming pure self-interest, and you manufacture the very brutishness you claim to control.

His prophecy was precise: societies that forget their relational foundation, that treat moral sense as mere sentiment rather than perception of real harmonies, would create escalating cycles of competition and conflict. The "state of nature" Hobbes feared wasn't our original condition but our destination if we accepted his assumptions.

Shaftesbury's warning went unheeded. Economics embraced the model of homo economicus—the rational calculator maximising utility. Political theory accepted interest group competition as fundamental. Even ethics became calculation: utilitarian pleasure-pain accounting replacing the perception of relational harmonies. We built a civilisation on the assumption that we're exactly what Shaftesbury warned we'd become if we believed Hobbes.

Blake: The Chains of Single Vision (1757-1827)

William Blake lived through the first industrial revolution, watching Shaftesbury's prophecy materialize in smoke and steel. But Blake saw deeper: the physical mills and factories were merely symptoms. The true horror was the mechanisation of consciousness itself—what he called "single vision and Newton's sleep."

In *The Marriage of Heaven and Hell* (1790-1793), Blake didn't attack science but scientism—the reduction of reality to mechanism. Newton's equations described motion accurately, but when extended into a complete worldview, they became what Blake called "mind-forged manacles." These mental chains were more binding than physical ones because the prisoners couldn't even see them.

Blake's alternative wasn't romantic irrationalism but "fourfold vision"—the capacity to perceive multiple dimensions of reality simultaneously:

"Now I a fourfold vision see,
And a fourfold vision is given to me;
'Tis fourfold in my supreme delight
And threefold in soft Beulah's night
And twofold Always. May God us keep
From Single vision & Newton's sleep!"

Single vision sees only material mechanisms. Twofold vision adds meaning and relation. Threefold brings creative imagination. Fourfold perceives the infinite in everything—what Blake called "eternity in an hour." This isn't mystical escapism but expanded perception of what's actually there.

Blake's prophecy extended beyond his era: "A robin redbreast in a cage / Puts all heaven in a rage." He saw that caging life—whether birds, humans, or consciousness itself—violates something fundamental in reality's structure. The "dark Satanic Mills" weren't just factories but ways of thinking that process life into product, relation into resource, meaning into mechanism.

His warning was explicit: accepting single vision would create a world where "The atoms of Democritus / And the Newton's particles of light" would become "sands upon the Red Sea shore / Where Israel's tents do shine so bright"—an endless desert of disconnected particles where the promised land of integrated vision once stood.

Today's "dark Satanic Mills" are algorithmic, processing human attention and relationship into engagement metrics and advertising revenue. Blake's warning about mental mechanisation proves more prescient than his images of physical industry. We've built machines that don't just manufacture products but manufacture consciousness itself, shaping how billions think, feel, and relate.

Vickers: Stability in the Rocking Boat. (1894-1982)

Sir Geoffrey Vickers lived long enough to see both prophets' warnings manifest in two world wars and the emergence of cybernetic control systems. As a soldier, civil servant, and systems theorist, he witnessed firsthand how goal-seeking behaviour divorced from relational awareness creates the instability it claims to solve.

In *Freedom in a Rocking Boat* (1970), Vickers identified the lethal misconception at Western civilisation's heart: "The meaning of stability is likely to remain obscured in Western cultures until they rediscover the fact that life consists in experiencing relations, rather than in seeking goals or 'ends'."

This wasn't abstract philosophy but practical observation. Vickers had seen how the Treaty of Versailles, focused on the goal of punishing Germany, destroyed the relational fabric that might have prevented World War II. He'd watched economic policies aimed at growth destroy the social and ecological relationships that make life worth living. He observed corporations optimising for shareholder value while devastating the communities and ecosystems they depend upon.

Vickers distinguished between two modes of regulation. Goal-seeking systems pursue targets: a thermostat maintaining temperature, an economy maximising GDP, a person pursuing happiness. Relationship-maintaining systems preserve balances: an ecosystem maintaining diversity, a culture preserving traditions while adapting to change, a person maintaining friendships through seasons of life.

The West, Vickers argued, had become obsessed with goal-seeking while forgetting relationship-maintenance. We optimize parts while destroying wholes, achieve targets while collapsing systems, win battles while losing wars. The stability we seek through control eludes us precisely because we're seeking it rather than maintaining the relationships that generate it.

His prophecy was stark: societies that treat human systems as goal-seeking machines rather than relationship-maintaining ecologies will generate accelerating instability. Each intervention to achieve a goal will disturb relationships, requiring more intervention, creating more disturbance, until the system either collapses or transforms.

Vickers wrote before climate change became undeniable, before social media fragmented public discourse, before artificial intelligence threatened to escape human control entirely. Yet he diagnosed precisely the pattern driving all these crises: the systematic prioritisation of goals over relationships, of ends over means, of achievement over sustainability.

The Unheeded Song

These three prophets sang variations of the same song across three centuries. Each identified how Western thought was severing itself from relational reality. Each warned of specific consequences. Each was proven correct. Yet the song remains unheeded.

We celebrate Shaftesbury as a philosopher while our economics assumes purely self-interested actors and our politics operates through zero-sum competition. We revere Blake as a visionary poet while building ever more sophisticated systems of single vision—now algorithmic, processing human complexity into behavioural predictions and engagement metrics. We cite Vickers on systems thinking while doubling down on goal-optimisation, creating "key performance indicators" and "objective functions" that destroy the relationships they claim to improve.

The current libertarian moment, exemplified by Peter Thiel's explicit agenda to escape politics through technology, represents the complete inversion of all three warnings. Against Shaftesbury's moral sense arising from social embeddedness, libertarianism pursues absolute individual autonomy. Against Blake's fourfold vision integrating matter and meaning, it seeks

to upload consciousness to machines. Against Vickers' relationship-maintenance, it pursues the ultimate goal: escaping Earth's relational constraints entirely through seasteading, space colonisation, or digital transcendence.

The Song Continues

Yet the prophets' song continues in new voices. Indigenous peoples maintain worldviews where relationship, not resource extraction, defines reality. Contemplative traditions preserve technologies for consciousness to recognize its embeddedness rather than separation. Ecological movements work to rebuild human systems that enhance rather than destroy the relationships sustaining life.

The question isn't whether the song will prove true—each prophet's warnings have already manifested. The question is whether we'll finally hear it. Will we recognize that our escalating crises—ecological, social, psychological, spiritual—all stem from the same source: severing ourselves from relational reality? Will we understand that symbolic consciousness, for all its power, becomes destructive when it forgets its foundation in relationship?

The three prophets didn't counsel abandoning reason, science, or technology. They warned against mistaking our models for reality, our goals for life's purpose, our separation for truth. They sang of integration: Shaftesbury's reason harmonized with moral sense, Blake's vision wedding heaven and hell, Vickers' freedom found within the rocking boat's constraints.

Their song offers not retreat but transformation. Not the abandonment of human achievement but its reintegration with relational reality. Not less intelligence but more—the kind that recognizes relationship as primary, goals as secondary, and stability as emerging from maintained connections rather than achieved targets.

The prophets sang their warning. History validated their prophecy. The question now is whether we have ears to hear, hearts to understand, and courage to change course before relationship-maintaining systems—ecological, social, psychological—enforce the constraints we've refused to honour. The song continues. The choice remains ours.

Which voice do you hear most clearly in our time—and how might you answer it?

24th September 2025

The prophets sang their warning across centuries, yet remained unheeded. Now, as cascading crises make their predictions manifest, something else is stirring—not in any single tradition or discipline, but across many simultaneously. Could this convergence of recognition be the beginning of what we might call a great remembering?

The Great Remembering: Signs of a Possible Turning

Something feels broken in our world, doesn't it? Despite all our technological marvels, people report feeling more isolated than ever. Despite unprecedented material prosperity, rates of anxiety and depression keep climbing. Despite having access to more information than any generation in history, we seem less capable of collective wisdom or decisive action on the challenges that matter most.

The confusion of modern life drives people toward increasingly polarised political positions, as if certainty—any certainty—might provide refuge from complexity. Inequality widens both within and between nations, creating vast chasms between those who prosper and those left behind. Many feel a growing sense of powerlessness, as if the forces shaping their lives operate beyond any human influence or control.

In response, we retreat into whatever cocoons of security and identity we can create—our tribes, our ideologies, our filter bubbles. We cling to our groups not just for belonging but for coherence itself, as if only within these protective shells can we make sense of a world that otherwise seems chaotic and overwhelming.

Most of us can sense that something fundamental is out of balance. We live in a civilization that has achieved remarkable things—put computers in our pockets, extended human lifespans, connected the globe—yet somehow in the process we seem to have lost touch with something essential about what it means to be human, what it means to be alive on this earth.

For three centuries, prophets have been warning us about exactly this. They've pointed to a dangerous split in how we think about ourselves: the idea that humans can exist as isolated individuals, separate from the web of relationships that actually sustain us. They warned that if we kept building our societies on this assumption of separation, we would create the very problems we're now facing.

The Third Earl of Shaftesbury, writing in the early 1700s, saw Thomas Hobbes's vision of humans as purely self-interested calculators taking hold in European thought. Shaftesbury warned that this wasn't just wrong—it was dangerous. Treat people as isolated competitors and you'll create a world of isolated competitors, losing the natural moral sense that arises from recognising our fundamental connectedness.

A century later, William Blake watched the first industrial revolution and saw something even more troubling: the mechanisation of consciousness itself. He called it "single vision"—the reduction of reality to mere mechanism, seeing only the parts while losing sight of the living whole. Blake prophesied that this way of thinking would become like "mind-forged manacles," mental chains more binding than physical ones because we wouldn't even realise we were imprisoned.

In the twentieth century, Sir Geoffrey Vickers lived through two world wars and witnessed how goal-seeking behaviour divorced from relationship creates the very instability it claims to solve. He watched as societies became obsessed with achieving targets—economic growth, military victory, technological progress—while destroying the relationships that make life worth living.

Each of these thinkers was heard. Their works were published, discussed, even celebrated. Yet their central warning went unheeded. Today, as we face cascading crises—ecological breakdown, social fragmentation, psychological distress—we can see that they were right. Our

problems aren't separate issues but symptoms of the same underlying pattern: we've forgotten that we exist in relationship, not isolation.

A Different Song Emerging

But something interesting is happening. Across many different fields and traditions, people are rediscovering what these prophets were trying to tell us. It's as if the same insight is breaking through in multiple places at once—and notably, it's emerging not from within our protective tribal cocoons but from encounters across difference, from dialogue between traditions that might otherwise remain separate.

This isn't the false unity of imposed consensus or the retreat into comfortable like-minded communities. Instead, it's a recognition that our deepest insights often arise precisely at the boundaries between diverse ways of knowing, different experiences of what it means to be human.

Indigenous peoples, who never forgot their relational understanding of reality, are finding their voices heard in new ways. Groups like Gesturing Towards Decolonial Futures are articulating ancient wisdom in contemporary terms, showing how traditional knowledge offers precisely what our crisis-ridden world most needs. Crucially, they're not asking others to become indigenous but to remember the relational awareness that all healthy cultures once carried.

Modern science is independently arriving at similar insights. Researchers studying embodied cognition are discovering that thinking doesn't happen in isolated brains but emerges from our bodily relationship with the environment. Quantum physicists describe a universe where particles exist in relationship, where the act of observation itself shapes reality. Complexity scientists study how simple interactions create emergent properties that can't be predicted from studying parts in isolation.

Even in the arts, we see this recognition appearing. T.S. Eliot's "Four Quartets" explores how time and eternity interpenetrate each other. Monet's late water lily paintings dissolve the boundaries between observer and observed. These aren't just aesthetic experiments—they're technologies for perceiving relationship directly, for seeing beyond the fragmented view that drives us into defensive tribes.

Philosophers and thinkers like Iain McGilchrist are showing how our very brains are organised to perceive both focused analysis and relational context—but our culture has become dangerously over-reliant on the analysing mind while neglecting our capacity for seeing wholes and relationships. This imbalance, he suggests, contributes to both our individual confusion and our collective fragmentation.

What's remarkable is that these insights are arising independently across domains that rarely talk to each other, yet they point toward the same recognition: that the cocoons of certainty we've retreated into, however necessary they feel, are ultimately inadequate to address the challenges we face together. The problems that matter most—ecological crisis, extreme inequality, the breakdown of social trust—can't be solved from within any single worldview or group identity. They require the kind of collaboration that emerges only when we remember our fundamental interdependence.

The Uncertainty That Keeps Us Awake

Here's what we don't know: whether these scattered recognitions will find each other in time, whether they'll achieve the critical mass needed to shift how our civilization operates, whether the momentum toward disconnection has already gone too far.

This uncertainty isn't a weakness in the argument—it's essential to it. If we knew for certain that everything would work out, we might become complacent. If we knew for certain that collapse was inevitable, we might despair and stop trying. The genuine openness of this moment is what keeps us awake to what's actually needed rather than retreating into false certainties.

Perhaps our civilisational crisis is like what contemplative traditions call the “dark night of the soul”—a necessary disorientation that occurs when old ways of organising meaning prove inadequate, yet what's emerging hasn't yet clarified. There's often a period where everything seems to be falling apart precisely because something more integrated is trying to be born.

The convergence of voices pointing toward relationship and interdependence might represent the “new shoots” that sometimes appear even in the depths of such dark nights. But we can't know from within the process whether we're witnessing the early stages of a great turning or simply wishful thinking in the face of accelerating breakdown.

The Choice Before Us

What we can say is this: we face a fundamental choice as a species. We can continue on the trajectory that the prophets warned against—treating ourselves as isolated individuals, pursuing goals while ignoring relationships, believing we can exist independently of the cosmos that birthed us. We can retreat further into our tribal cocoons, seeking coherence through exclusion, certainty through opposition to others. This path leads to more of what we're already experiencing: ecological crisis, social fragmentation, extreme inequality, and deep alienation from the sources of meaning.

Or we can begin the great work of remembering who we actually are: beings emerged from billions of years of relationship, embedded in webs of connection that extend from our own bodies through our communities to the living earth and the cosmos beyond. This remembering doesn't require us to abandon our particular identities or traditions, but it does ask us to hold them more lightly—as gifts we offer to the larger conversation rather than fortresses we defend against difference.

This path recognises that our sense of powerlessness often comes from trying to solve collective problems through individual action, or tribal problems through group isolation. Real power—the power to address the challenges that matter most—emerges only when we remember our interdependence and act from that understanding.

The scattered voices calling us back to relationship aren't asking us to return to some imagined past or to collapse all differences into false unity. They're inviting us into a more mature way of being human—one that honours both our capacity for analysis and our need for connection, both our ability to pursue goals and our responsibility to maintain the relationships that make life possible, both our particular identities and our shared humanity.

Whether this remembering will happen in time remains genuinely uncertain. But the very fact that we can still ask the question, that insights about relationship keep breaking through our

systems of separation, suggests that what we need to remember has never been completely forgotten.

The choice remains ours. The time is now. The question is whether we have ears to hear the song of relationship that has been playing all along, waiting for us to remember how to join the chorus.

This essay continues the exploration begun in “[The Song of Three Prophets](#),” listening for signs that humanity might be awakening from the dream of separation that has shaped our civilization for centuries. Whether this awakening comes in time remains the great uncertainty of our age—and perhaps that uncertainty itself is what keeps us open to what’s trying to emerge.

Coda

Not a seedling, not a harvest. Only the steam of what is breaking down. Stay with the smell; it’s the smell of becoming. Those who listen through decay will catch the song.

25th September 2025

Conclusion: The Spiral Continues

At 84, having traced this journey from mechanistic certainty through systems thinking to ecological wisdom, I find myself not at a conclusion but at another beginning. The spiral that began with a young engineer's questions—"What's it all about?" and "Where do I belong?"—continues to turn, revealing new depths with each revolution.

These essays have attempted to name something I've observed across six decades: that our civilization has become trapped in a way of thinking that systematically violates the patterns sustaining life. We've built a world on the premise that symbolic intelligence—our capacity for abstract thought—exempts us from the constraints governing all other forms of life. The consciousness trap, as I've called it, is not a problem we can solve but a condition we must recognize and learn to live with differently.

Yet recognition itself changes things. When water becomes visible to the fish, when assumptions reveal themselves as choices, when the machinery of thought catches itself in the act of stealing reality—in these moments, something shifts. Not dramatically, not completely, but enough to create an opening.

The opening points toward what I've called ecological wisdom: not the abandonment of human consciousness but its reintegration with the larger intelligences from which it emerged. The mycorrhizal networks teaching reciprocity, the decomposers showing how endings enable beginnings, the wolves demonstrating how small acts within feedback loops can restore entire ecosystems—these are not metaphors but mentors, showing us patterns we might learn to follow.

But following requires humility that comes hard to symbolic intelligence. It means acknowledging that for all our remarkable achievements—splitting atoms, sequencing genomes, creating artificial minds—we remain apprentices to processes billions of years our senior. The carbon cycle that regulates planetary temperature, the soil communities that sustain terrestrial life, the mysterious capacity of consciousness to recognize its own limitations—these operate according to logics we've barely begun to fathom.

The three prophets whose warnings I traced—Shaftesbury, Blake, Vickers—each saw how severing ourselves from relational reality would generate exactly the crises we now face. They were heard but not heeded. Today, their song is being taken up by voices across cultures and disciplines, not in conscious coordination but in spontaneous recognition that something fundamental must shift.

Whether this convergence represents what I've called "the great remembering" remains genuinely uncertain. We might be witnessing humanity's last reflexive grasping before ecological and social systems enforce the constraints we've refused to honour. Or we might be participating in what contemplatives describe as a phase transition in consciousness itself—not transcending limits but discovering the creativity that emerges through conscious collaboration with them.

The uncertainty is not a flaw but a feature. If we knew for certain that technological solutions would save us, we might continue our violations with renewed confidence. If we knew for certain that collapse was inevitable, we might surrender to despair. The genuine openness of

this moment—poised between breakdown and breakthrough—keeps us attentive to what's actually needed rather than what our theories predict.

What's needed, I believe, is not more sophisticated analysis but more careful attention. Attention to the intelligence already operating in forests and watersheds. Attention to the wisdom preserved in Indigenous knowledge and contemplative traditions. Attention to the moments when our own consciousness reveals its capacity for transformation. And perhaps most critically, attention to the relationships—with each other, with the more-than-human world, with the cosmic processes that brought us forth—that constitute our actual wealth.

My own journey would have been impossible without such relationships. Doreen's patient love creating the stability that allowed my intellectual wandering. Colleagues and friends providing challenge and encouragement. The u3a group exploring questions larger than any of us could tackle alone. Even the AI systems that helped articulate insights I couldn't quite grasp—each relationship teaching me that intelligence emerges not in isolation but through connection.

The essays collected here trace my pursuit of ecological wisdom, knowing it remains unfinished. At 84, I'm aware that my time for this pursuit is limited. Yet the spiral doesn't end with me or with any individual. It continues through everyone who recognizes the water we're swimming in and chooses to swim differently. Through everyone who notices the consciousness trap and experiments with escape. Through everyone who hears the earth's intelligence speaking and learns to respond.

The invitation these essays extend is not to agree with my conclusions but to begin or continue your own pursuit. The specific shape of ecological wisdom cannot be prescribed because it emerges from the unique intersection of each person's gifts, circumstances, and relationships. What I've learned through engineering may differ from what you discover through art, parenting, gardening, or simply paying attention to the world around you.

Yet certain patterns seem consistent across all authentic pursuits of ecological wisdom: the movement from isolation toward relationship, from control toward participation, from transcendence toward embodiment. The recognition that we are not managers of nature but expressions of it. The discovery that constraints are not obstacles to creativity but its necessary conditions.

We stand at what cosmologists call a brief thermodynamic window—the moment between the Big Bang and heat death when complex organization is possible. Within that window, we occupy an even briefer moment when a species capable of reflecting on its own cosmic context must choose whether to align with or violate the patterns that enable life.

The choice is not made once but continuously, in countless small decisions about how to live, what to attend to, which intelligence to trust. Do we design for cars or communities? Do we optimize for efficiency or resilience? Do we pursue growth or seek sufficiency? Each choice either reinforces the consciousness trap or weakens its hold.

The water is becoming visible. The assumptions we've taken for granted are revealing themselves as choices. The machinery that converts recognition into achievement, that transforms every limit into a challenge to overcome, is being caught in the act. These are hopeful signs, even if hope must be held alongside grief for what's already lost and fear for what may yet be lost.

The spiral continues whether we're conscious of it or not. The question is whether we'll keep swimming in circles, exhausting ourselves in water we don't even see, or whether we'll recognize the medium we're in and learn to move with rather than against its currents. That recognition—difficult, partial, ongoing—is what I call the pursuit of ecological wisdom.

The pursuit never ends because wisdom is not a possession but a practice, not a destination but a way of traveling. Each spiral reveals new depths. Each recognition opens new questions. Each essay in this collection marks not an answer but a turn in the continuing spiral.

May your own spiral carry you deep into the intelligence of the living world. May you find the courage to recognize the water you're swimming in. May you discover that ecological wisdom was never absent, only forgotten, and that remembering is not a return but a coming home to what we never truly left.

The invitation remains open. The spiral continues.

Terry Cooke-Davies
September 2025

What Happens Next?

This book is not a closed circle. It leans on many companions. Some of them are strong-flavoured and not to everyone's taste, but each carries medicine in its own way. If you are moved to go further, I suggest three possible companions:

- Hospicing Modernity (Vanessa Machado de Oliveira), for those who want structured practices and bold critique.
- Burnout From Humans (Aiden Cinnamon Tea & Dorothy Ladybugboss), a playful experiment in relating differently with machines and with each other.
- Seeing No-Self (Katrijn van Oudheusden), a gentle guide into experiences of spaciousness that helped me trust this was not snake-oil but a real path.

Take them in whatever order your heart and stomach can handle. None are required; all are invitations.

Appendix: Practicing Relationality — Choosing Life, Every Day

This book is an invitation, not a prescription. For some, the recognition alone may be enough. For others, there may be a desire to begin practicing — to sharpen attention to each relational move, each choice toward life or toward death.

What follows is not a new doctrine to replace an old one. It is a set of small, repeatable practices — simple exercises I have found useful as I learned to notice. They are not meant to pull you away from your own traditions. On the contrary, they may help you re-inhabit your tradition more honestly, stripping away the dogma that has been colonised by modernity's addictions to domination and extraction.

I offer them in four weeks, each with a focus. You are free to adapt, extend, or ignore them. The only request is this: approach them not as tasks to complete, but as invitations to notice.

Week 1 — Attention

- Each day, pause once in a conversation. Listen longer than usual. Afterwards, write one line: “Today I noticed life when...”
- At the end of the week, reread your seven lines. How does your body feel?

Week 2 — Repair and Boundaries

- Identify one small harm (a brusque word, an ignored message). Make a gentle repair: “I’m sorry I was short earlier.”
- Practice one boundary: “I can’t right now, but I hear you.” Notice whether honesty thins or deepens the relationship.

Week 3 — Widening the Circle

- Spend five minutes with a non-human being (tree, bird, stone). Ask: “What life choice do you show me?”
- Act on one non-human request: water, care, notice. Write one sentence of what changed.

Week 4 — Integration

- Choose one practice from the previous weeks and repeat it daily.
 - Share one story of what you noticed with another person. Ask them what they notice in turn.
-

None of these practices are complicated. The difficulty lies in remembering — in staying awake, in resisting the drift back into habit. That is why I suggest keeping a simple record, however brief. Over weeks, patterns emerge.

You may find these practices deepen, not replace, what you already know from your faith, your work, your family. They are meant to be compost: breaking down the husks of domination and extraction so that the life within can breathe again.

Closing Reflection: Taking the Spiral With You

These practices are not meant to remain in the safety of your notebook. They are invitations to carry into the ordinary currents of your life — your family conversations, your friendships, your workplace, your community, your place of worship.

If you belong to a faith tradition or institution, bring these practices gently into its heart. Try them in a committee meeting, in a prayer group, in a shared meal, in silence before a ritual. Ask, quietly but persistently: *Are we choosing life here, or death?* Notice the moments where modernity's habits of domination, extraction, and certainty slip in dressed as piety, efficiency, or tradition. Your noticing alone is already an act of healing.

Do not rush to correct others. Begin with your own presence. Your pauses, your small repairs, your widened circle of care will ripple outward. Over time, those ripples change the field.

This spiral does not end with this book. It lives in each breath, each choice, each relationship. Carry it with humility, with courage, and with curiosity. Share what you learn, not as doctrine but as invitation. In this way, the remembering widens — and life itself is strengthened.

The Great Remembering: A Journey Toward Ecological Wisdom

Twelve essays tracing one man's 65-year spiral from
mechanistic certainty to ecological wisdom

At 84, Terry Cooke-Davies looks back on a lifetime spent discovering that almost everything he was taught to believe was incomplete. From engineering to theology, from business success to systems thinking, each stage revealed another layer of the invisible assumptions—the "water"—that modern civilization swims in without knowing it's there.

These essays explore how human symbolic intelligence has created a "consciousness trap"—a way of thinking that systematically violates the constraints that sustain life. Yet they also point toward hope: the possibility that we might remember our place within, rather than above, the living systems that created us.

Written in collaboration with both human communities and AI systems, these essays model the "intra-intelligence cooperation" they advocate—different forms of knowing working together rather than in isolation.

Part personal journey, part cultural diagnosis, part invitation to transformation, *The Great Remembering* offers neither despair nor false optimism, but something rarer: a clear-eyed recognition of where we are and where we might yet go.