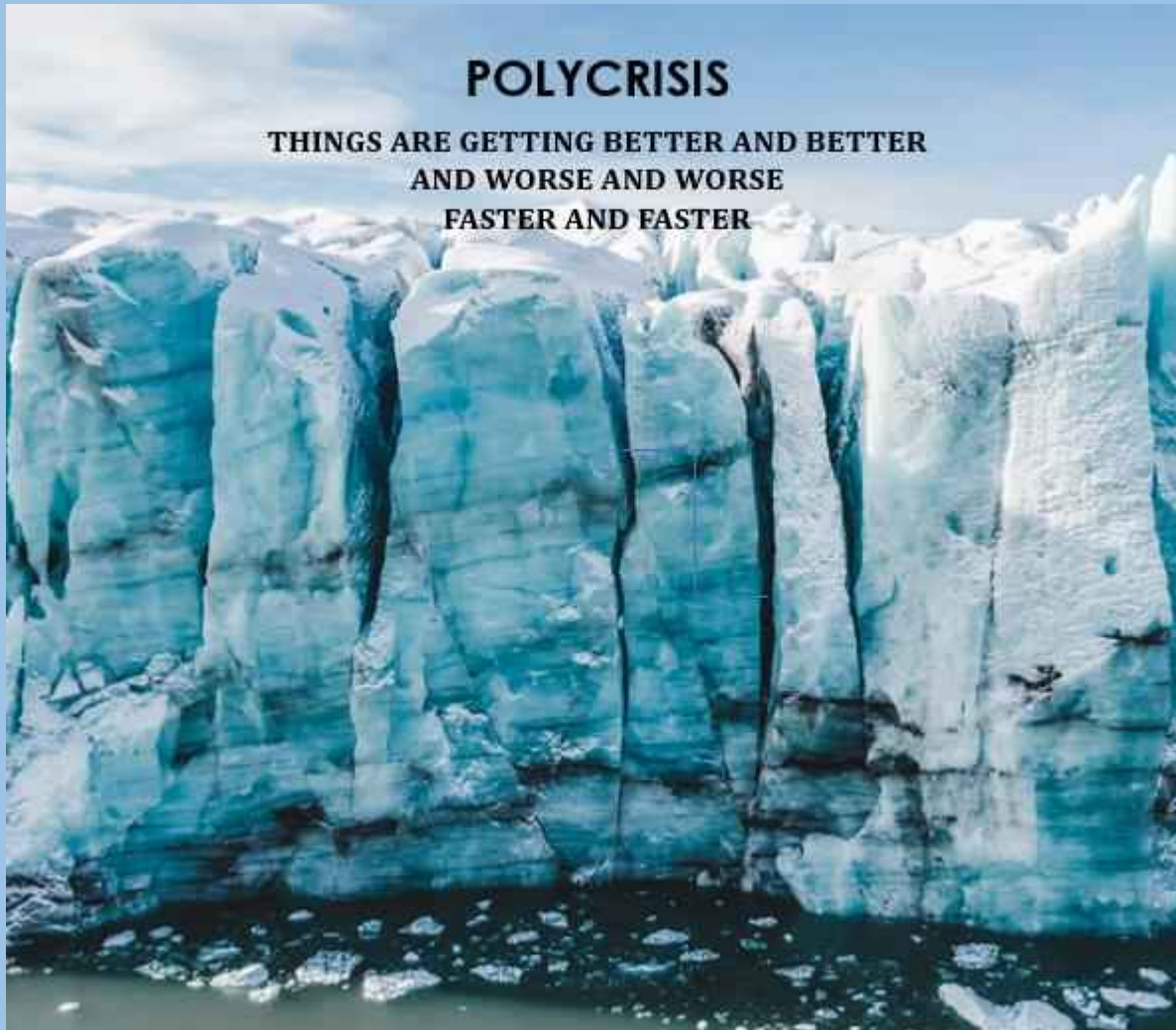


The New Ecozoic Reader

CRITICAL REFLECTIONS, STORIES, DREAM EXPERIENCES & PRACTICES FOR AN ECOLOGICAL AGE

Number 7, June 2023



The historic mission of our time is to reinvent the human at the species level, through critical reflection, within the community of life systems, in a time-developmental context, through story . . . shared dream experience [and practice].

—Thomas Berry, *The Great Work*

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Contents

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THIS ISSUE; POLYCRISIS; THE COLLAPSE OF COMPLEX SOCIETIES [1](#)

Herman Greene

SANITY IN THE TIME OF ECOLOGICAL BREAKDOWN AND COLLAPSE ... [7](#)

Jean Arnold

COLLAPSE, POLYCRISIS, DECLINE, CONTRACTION [17](#)

Alice Loyd

COLLAPSE AND DENIAL [22](#)

INEVITABLE AND UNSTOPPABLE

Michael Dowd

SHATTERING [27](#)

MY ONGOING EXPERIENCE OF A COLLAPSING WORLD

Michael Powell

BECOMING COLLAPSE-ABLE [39](#)

Alice Loyd

Back Cover: Twelve Understandings for the Ecozoic Era

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The editors of this issue are Herman Greene, Laurie Cone, and Paul Wright.

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The mission of the Center for Ecozoic Studies is to advance ecology and culture as the organizing principles of societies, through research, publications, education, events, arts, and action. CES emphasizes critical reflection, story, and shared dream experience as ways of enabling the creative advance needed to bring into being a new mode of human civilizational presence, and also of discerning the practical steps leading to the Ecozoic. CES understands the universe as meaningful, continuously evolving, and relational. In such a universe, the Ecozoic is not something to be arrived at, but something ever to be created. Its hallmarks are inclusiveness, interdependence, and appreciation; communion, differentiation, and subjectivity; and sensitivity, adaptability, and responsibility. It involves more just and cooperative relationships among humans, as well as transformed relationships of humans with the larger community of life.

THIS ISSUE; POLYCRISIS; THE COLLAPSE OF COMPLEX SOCIETIES

Herman Greene*

This issue is the first of a three-part series on where we humans are in human and planetary history. This issue is on collapse (endings), the following issue will be on cosmogenesis (beginnings), and the final issue will be on ecozoic practices (actions we can take to bring about a viable future for humans and the larger community of life systems).

The future is unpredictable. As the saying on the cover of this issue says, things are getting better and better for humans—in some ways (new technologies, growing economies, declining poverty, medical breakthroughs)—and they are getting worse and worse for humans and other species (loss of biodiversity, ecological degradation, ever-more-lethal weapons, aging infrastructure, authoritarianism, social divisions), all faster and faster. The nearly 300-year-old industrial age is a blip in the 300,000-year history of *Homo sapiens*, and a miniscule amount of the four-billion-year history of our planet. The “Great Acceleration” following World War II of human population growth, consumption, and communication is shorter still.

Ancient humans knew nature through their senses, stories, and customs; modern humans have largely lost these ways of knowing, at least at the conscious level, but have increasingly come to know nature through science—physics, chemistry, biology, ecology, Earth systems science. After centuries of seeking and in many ways achieving mastery of nature, humans are re-experiencing the limits of their ability to control. There is a growing fear that there are limits to growth and indeed we may already have passed them. Industrial civilization may be a house of cards.

Each of the authors in this issue feels that this may be the case—that our civilization is breaking down and hard times lie ahead. What is important is not, however, whether the way they are foreseeing collapse occurs in that way, but rather what are the implications of understanding the future this way.

The authors would argue it is ecologically, socially, and psychologically beneficial because it involves facing reality and leads to right action. This view is supported in a book that has influenced several of the authors of this issue, *Overshoot: The Ecological Basis of Revolutionary Change*, by William Catton,¹ which lays out, as he says, “the ecological facts of life.” Here are some of those facts:

Human society is inextricably part of the global biotic community, and in that community human dominance has had and is having destructive consequences.²

* Herman Greene is an editor of *The New Ecozoic Reader* and is the founder of CES.

¹ William Catton, *Overshoot: The Ecological Basis of Revolutionary Change* (Urbana, IL, The University of Illinois Press, 1982).

² *Ibid.*, 10.

All creatures human or otherwise impose a load upon their environment's ability to supply what they need and to absorb and transform what they excrete or discard. . . If the load increases until it exceeds the carrying capacity, overuse of environment *reduces* its carrying capacity [and] in time, reduce the load to match the shrinkage of carrying capacity.³

The past four centuries of magnificent progress were made possible by two non-repeatable achievements: (a) discovery of a second hemisphere [that is, colonialism], and (b) development of ways to exploit the planet's energy savings deposits, the fossil fuels.⁴

Catton describes our age as the "Age of Exuberance," an exuberance that is not warranted. Industrialism made us reliant on nonrenewable resources and we are exploiting them at increasing rates as they become less available, while still oddly believing that, with enough human ingenuity and technology, sources of energy and materials can limitlessly support growth. To the contrary, he argues, we are in a condition of de-civilization. The abundance we achieved and believed would increase gave us an illusory hope of a prosperous, harmonious human family, a hope that may have made democracy possible. The foreclosing of the conditions of the industrial age will cause not only physical strain but also social strain.

Catton advises us that

[hu]mankind must gamble on an uncertain future, for phenomenally high stakes. . . . *Ironically the less optimistic assumptions we let ourselves make about the human prospect, the greater our chances of minimizing future hardships for our species.* To keep from dehumanizing ourselves (and even gravitating toward genocide), we must stop demanding perpetual progress.⁵

In this spirit, in this issue

- Jean Arnold offers her art and words on sanity in a time of ecological breakdown and collapse.
- Alice Loyd expects industrialism's exploitation of the natural world to be its downfall, and explores how human success in this period of contraction will depend on the degree to which we can adapt to nature's limits.

³ Ibid., 4.

⁴ Ibid., 5-6.

⁵ Ibid., 9 (italics added).

- Michael Dowd tells the story of the influence Catton's *Overshoot* had on him, his recognition that the breakdown we are experiencing is not a set of problems to be solved for the biosphere has already crossed critical thresholds, and how living beyond denial of this breakdown, while sharing in the suffering of loss, offers the possibility of *post-doom* new life.
- Michael Powell then takes readers into the experiential reality of loss in his review of and reflection on Dahr Jamail's, *The End of Ice: Bearing Witness and Finding Meaning in the Path of Climate Disruption* (2019): Breakdown is not an analytical awareness, it is an inner experience that opens one to profound questioning and ecological conversion.
- Alice Loyd ends this issue by highlighting three human capacities to strengthen in order to become more collapse-ABLE.

Polycrisis

Polycrisis is a word you will read several times in this issue. It is an emerging term in the field of social-ecological inquiry. Just as we were completing this issue of the *Reader*, we came across Richard Heinberg's "MuseLetter #363: Polycrisis, Unraveling, Simplification, or Collapse."⁶

This led us to two important downloadable documents:

1. From the Post Carbon Institute: "Welcome to the Great Unraveling: Navigating the Polycrisis of Environmental and Social Breakdown"⁷; and
2. From the Cascade Institute: "Global Polycrisis: The causal mechanisms of crisis and entanglement."⁸

"Polycrisis," while coined decades ago,⁹ is thought to be a helpful neologism for understanding how we are not facing many separate crises each one of which can be addressed independently, but rather we are facing multiple interconnected and inter-causal crises no one of which can be addressed within the bounds of that crisis alone. Obvious examples of this are that the migration crisis is connected with the climate

⁶ Richard Heinberg, "Museletter #363: Polycrisis, Unraveling, Simplification, or Collapse," June 2023, <https://richardheinberg.com/museletter-363-polycrisis-unraveling-simplification-or-collapse>.

⁷ Asher Miller and Richard Heinberg, "Welcome to the Great Unraveling: Navigating the Polycrisis of Environmental and Social Breakdown, post carbon institute, June 15, 2023, <https://www.postcarbon.org/publications/welcome-to-the-great-unraveling/>.

⁸ Michael Lawrence, et al, Global Polycrisis: The causal mechanisms of crisis and entanglement," Cascade Institute, Version 1.0, Pre-print, June 2023, <https://cascadeinstitute.org/wp-content/uploads/2023/06/The-Causal-Mechanisms-of-Global-Polycrisis-v1.0-19June2023.pdf>.

⁹ For a collection of articles on Polycrisis, see "The Global Polycrisis: Cascading Crises, <https://omega.ngo/learn-more/the-global-polycrisis/> and <https://omega.ngo/category/polycrisis/>.

crisis, populism and authoritarianism are connected with inequality and cultural crises . . . which are connected with migration and climate change, and so on.

We highly commend to our readers Richard Heinberg's MuseLetter and the Post Carbon Institute's report on "The Great Unraveling." The latter updates Catton's work and explains why addressing climate change and other crises, such as inequality, racism, populism, and authoritarianism is so complex. The good news is that while no crisis can be solved alone, efforts in any crisis can have beneficial effects on other crises.

The Collapse of Complex Societies

To our knowledge no book is cited more in studies of societal or civilizational collapse, sometimes called "collapsology," than Joseph Tainter's *The Collapse of Complex Societies*.¹⁰ Tainter notes that much attention has been given to the history of the buildup of complex societies, but little to their collapse, which he says is a "recurring feature of human societies."¹¹ The objective of his work is to develop a general theory of societal collapse. Here follows a brief overview of certain elements of his thought.

Complex societies, dating back only about 6,000 years, are a relatively recent phenomenon in human history and yet they dominate our experience such that we think of them as normal. In earlier hunter-gatherer societies there were few distinct social roles. In our societies today there are tens of thousands of distinct roles. Complexity refers to

The size of a society, the number and distinctiveness of its parts, the variety of specialized social roles that it incorporates, the number of distinct social personalities present, and the variety of mechanisms for organizing these into a coherent, functioning whole. . . .

Two concepts important to understanding the nature of complexity are inequality and heterogeneity.¹²

As complexity increases, the amount of information that needs to be processed to coordinate the parts increases and laws to maintain the complex structures and order increase. In simpler societies, social units were small, autonomous, and largely self-sufficient and individuals in such societies were also largely self-reliant. In modern societies, states form the basic social unit.

In states, a ruling authority monopolizes sovereignty and delegates all power. The ruling class tends to be professional, and is largely divorced from the bonds of

¹⁰ Joseph Tainter, *The Collapse of Complex Societies* (Cambridge, UK: Cambridge University Press, 1988).

¹¹ Tainter, 5.

¹² *Ibid.*, 23.

kinship. This ruling class supplies the personnel for government, which is a specialized decision-making organization with a monopoly of force, and with the power to draft for war or work, levy and collect taxes, and decree and enforce laws. The government is legitimately constituted, which is to say that a common society-wide ideology exists that serves in part to validate the political organization of society. And states, of course, are in general larger and more populous than tribal societies, so that social categorization, stratification, and specialization are both possible and necessary.¹³

Notwithstanding this shared ideology and monopoly of force, states have a need to constantly reinforce their legitimacy and they are greatly concerned with maintaining their territorial integrity. Legitimacy is the belief by the populace that things are as they should be. When this declines states can replace legitimacy with coercion but this is a costly exercise. “Establishing moral validity is a much less costly and effective approach.”¹⁴ States have a center, the symbolic framework of society. “The center partakes of the sacred. And, in this sense, every state has an official religion.”¹⁵

Because individuals in complex societies are not autonomous and self-sufficient, the legitimacy of a state must also have a material basis. In other words states must satisfy the demands of their citizens for material well-being. “Output expectations are continuous, and impose on leadership a never-ending need to mobilize resources to maintain support.”¹⁶

Earlier states had a more sacred basis and order could be maintained by invoking supernatural sanctions. Modern states are increasingly secular and more dependent on the maintenance of a material base and on coercion through enforcement of both just and unjust laws.

Tainter defines collapse as a political process: “*A society has collapsed when it displays a rapid, significant loss of an established level of sociopolitical complexity.*”¹⁷ Collapse is evidenced in art, literature, and philosophy and also, among other things, in the loss of central control, investment in complexity, disintegration of regulation and integration, less flow of legitimate information, less coordination, loss of territorial control, and less sharing and trading and redistribution of resources. Cogently, Tainter observes that “Human societies, like all living systems, are maintained by a continuous flow of energy.”¹⁸ The energy needs of simple societies are far less than in complex societies and with increasing complexity energy demands grow. When marginal returns on increased complexity decline, a key to continued socioeconomic growth is to obtain a

¹³ Ibid., 26.

¹⁴ Ibid., 27

¹⁵ Ibid.

¹⁶ Ibid., 28.

¹⁷ Ibid., 4 (italics in the original).

¹⁸ Ibid., 91.

new energy subsidy, which in the industrial age occurred through the discovery and use of fossil fuels and atomic energy. Alternative energy, a return to sourcing energy largely from sun, wind, and water is proposed by many as the new energy subsidy. As explained by Asher and Heinberg, in “Welcome to the Great Unraveling,” however, this is unlikely to be the case.

This may be the biggest question of all for human societies, will there be enough energy to maintain and increase complexity? Still, in keeping with the wisdom of the concept of polycrisis, much more is involved to maintain the structures and legitimacies of societies and maintain and regenerate the ecological bases of societies.

We would not be alone, therefore, if we were experiencing societal collapse. As Tainter observes, it is a recurring feature of history. Yet, the stakes for societies and nature have never been as great as now. Humans have never faced collapse of societies and nature on a global scale.

Neither we of CES, nor the authors in this issue can persuade the public that we are in a condition of global collapse that will occur over the relatively short historical time period of a few decades. We can only point to symptoms and how they match up with overshoot on the one hand and the collapse of complex societies on the other. And we can share our wisdom on what is involved in becoming collapse-ABLE.

SANITY IN THE TIME OF ECOLOGICAL BREAKDOWN AND COLLAPSE

Jean Arnold*

INTRODUCTION

*This essay is my months-long, deep inquiry—through writing and painting—in responding to the following concerns raised by Geologist Father Thomas Berry. It is also a meditation on the essence of life. While I primarily define myself as a professional visual artist, I have been writing about issues of global breakdown for fifteen years—and thus my two disciplines have merged in this exploration. This visual essay is a deeply personal reflection moving from *Life to Overshoot*, then to *Sanity*, and finally toward *Ultimacy*.*

Father Thomas posed the right questions and pointed to the necessities for human transformation starting in the 1980s. He saw the threats and understood that humans were destroying our ecological underpinnings, and not, as commonly thought, enjoying a ride through an eternity of progress mediated by human cleverness and technologies.

In an early passage in his book *The Dream of the Earth*, Thomas called for the reinvention of the human “as a species within the community of life species. Our sense of reality and of value must consciously shift from an anthropocentric to a biocentric norm of reference.”¹

Importantly, “our sense of reality” determines how we experience life, the choices we make, and how we live. The closer we can hew to reality, the saner we will be. Seems obvious, yet the vast majority of the world operates under delusions that are destroying life and the Earth. Thomas rightly emphasized the needed shift from the aberration of anthropocentrism (human-centered) back to the wholeness of biocentrism (Earth-centered).

* Jean Arnold is a professional visual artist residing in Pullman, WA. She has exhibited her paintings and mixed media paperworks in numerous solo and group shows, regionally and nationally. Her work is found in many public, corporate, and private collections. She was included in a 2021 exhibit at the Missoula Art Museum, “EDGE OF THE ABYSS: ARTISTS PICTURING THE BERKELEY PIT.” She earned her MFA in 1999 from Northern Vermont University (previously Johnson State College), in conjunction with the Vermont Studio Center, where she received guidance from numerous artistic luminaries. After graduate school, she worked with the urban landscape (while moving through it via mass transit) for almost a decade. Then, her growing concerns about human impacts on the planet—while also living near one of the largest pit mines in the world in Salt Lake City—led her to work with large-scale mining imagery. In her various explorations, Jean Arnold is visually engaged with how humans impact the land around her. Jean is also Development Director of the [Association for the Tree of Life](#), which is focused on ecology / climate / energy and their systemic interrelationships.

¹ Thomas Berry, *The Dream of the Earth* (Sierra Club Books, 1990), 21.

Later in the book, he poses necessary but difficult questions to consider and respond to:

A radical reassessment of the human situation is needed, especially concerning those basic values that give to life some satisfactory meaning. We . . . must begin where everything begins in human affairs—with the basic story, our narrative of how things came to be, . . . and how the future can be given some satisfying direction.²

As an ardent scholar of world civilizations, Berry repeatedly called for a new beneficent civilization. *Whether this is even possible is the most pressing question of our fraught time.*

To explore Berry's questions, I begin in Parts I and II with relevant aspects of life and death. In Part III, I examine humanity's relationship to the web of life. In Parts IV and V, I consider the shift from biocentrism to anthropocentrism, and the consequences through the millennia. The devastation of global-scale extraction is a further result, described in Parts VI and VII.

The groundwork is now laid to explore Berry's question of an ecological civilization in Part VIII and overshoot in Part IX. Finally, we explore how we might relate to one another in Part X and to life itself in Part XI.

PART I. LIFE

“Tadpole Eggs,” oil on canvas, 8” x 9”

Tadpoles-to-be await their moment to burst forth. Mother frog lays many eggs, as few of her brood will survive to adulthood.

From its very origin fourteen billion years ago, the universe was geared for the possibility of life, in its evolution of intrinsic properties. But within the vast Milky Way, so far as we know only Earth has the right conditions for life. That the universe even exists is a marvel; but life emerging from lifeless matter is the fundamental miracle.

Life is a struggle for energy, which derives from our sun. Photosynthesis is the dance of plants with the sun, capturing its energy as the core of the food chain. Life competes for energy-rich carbon for growth and reproduction.



² Thomas Berry, *Dream of the Earth*, 124.

Life invented countless ways to hunt and to evade, and to compete and to cooperate. These counter-balancing forces drove evolution, bringing stunning diversity to life forms.³

Living is hard. Even on our livable Earth, difficult conditions inflict challenge and discomfort. Even so, life universally feels the urge to exist, to stay alive and experience the world.

PART II. MORTALITY

Existence is precious, of course, but temporary. In its very design, the universe supports life, but also requires breakdown of matter-energy into disorder, into chaos, into “entropy.” It is a great accomplishment of the cosmos that life captures the sun’s energy to create order and temporarily contain entropy. But entropy eventually prevails—all organisms break down and die.

The existence of life on Earth is a temporary gift, not eternal. Favorable conditions for life itself on Earth will eventually end—not a matter of if, but when. Indeed, several times in Earth’s history, life was nearly extinguished by massive disruptions, such as meteor strikes and series of supervolcanoes.

However, life’s existence is now threatened by one of its very own creatures.

PART III. SHATTERED WEB

“Shattered Web,” watercolor on canvas, 12” x 9”
How long can an orb hold together when its strands are repeatedly broken?

Fauna and flora, from bacteria to blue whales, have integral roles in the great “web of life.” Over eons, “life communities” evolved: interdependent members that dance in dynamic equilibrium.

Only recently, one genus, “*Homo*,” grew a big brain with unprecedented capacities.



³ While the role of competition’s role as a driver of evolution is emphasized, cooperation is equally (if not more) important. Cooperation is at the very cellular basis of life. Billions of years ago, certain cells merged symbiotically with new ways to capture energy. This allowed complex organisms to develop. Evolutionary biologist Lynn Margulis, maintained that symbiosis was the major driver of evolutionary change. Dick Teresi, “Lynn Margulis Says She’s Not Controversial, She’s Right,” *Discover Magazine* (June 16, 2011), <https://www.discovermagazine.com/the-sciences/discover-interview-lynn-margulis-says-shes-not-controversial-shes-right>.

Importantly, the big-brained *Homo sapiens* developed tribal culture—languages, beliefs, rituals, stories, and artistic expression. Humans are malleable, shaped by culture, not by any given instinct.

The big brain is a double-edged sword. Culture can convey truths that foster wisdom—or convey delusions that foster insanity. Humans can use their intelligence to either nurture the living world or to destroy it.

Humans gradually captured more energy as they invented better hunting techniques, tools, fire, cooking, clothing, shelter, and eventually agriculture. In controlling nature, anthropocentric humans lost the communion with the life's web, believing themselves superior to all other creatures. Over time, they have plundered the web and shattered its interrelationships.

PART IV. THE COSTS OF CIVILIZATION

Human societies impact nature. Even nomadic foragers shaped ecosystems, especially through fire. Yet the shift from nomadic hunter-gatherer cultures to settled agricultural civilization brought dangerous changes an order of magnitude greater.

Hunter-gatherers felt an “I-Thou” sense of respect and kinship with the life communities that supported them. Seed-sower cultures came to regard nature as an “it,” as resources for human advancement. Origin stories shifted from “sustainer Earth goddesses” to “dominator sky gods.” Values of nurturance-relatedness were diminished in favor of aggression-dominance.

Agriculture brought unprecedented impacts. Populations grew and massed in settled cities. Like parasites, cities import resources from surrounding lands—a defining characteristic of “civilization.” Land was plundered to grow food, to build settlements, and to extract metals. Growing cities and degraded land drove the expansion of kingdoms on the brutal road of conquest, enslavement, and genocide of Indigenous peoples.

Civilization expansion strategies eventually fall into “progress traps”⁴—ever-deepening, unsustainable commitments. These pyramid schemes eventually collapse when they exceed the land’s “carrying capacity,” that is, the ability to regenerate and support populations.

Innumerable civilizations have risen and inevitably have fallen over the last ten thousand years. By their very nature civilizations are not sustainable, and all previous civilizations have exemplified this reality.

⁴ “A progress trap is the condition human societies experience when, in pursuing progress through human ingenuity, they inadvertently introduce problems that they do not have the resources or the political will to solve for fear of short-term losses in status, stability or quality of life. This prevents further progress and sometimes leads to societal collapse,” Wikipedia contributors, “Progress trap,” *Wikipedia, The Free Encyclopedia* (footnote and hyperlinks omitted). For an in-depth explanation of progress traps, see Ronald Wright, *A Short History of Progress* (Carroll & Graf, 2005).

PART V. ANTHROPOSPHERE

“Potash Ponds 1,” acrylic on canvas, 24” x 24”

We have converted over half of all land to human use—mostly in recent decades.

Through millennia, civilizations have advanced in size and complexity through colonialism, capitalism, and the scientific revolution.

The explosive power of oil, coal, and methane—harnessed as “energy slaves” to do the hard work—ushered in the “Great Acceleration”⁵ of human power. Fossil fuels built a globalized “industrial civilization,” with values of speed, efficiency, and mechanization. Because the tools and machines of industry magnify human power exponentially, William Catton coined the term “*Homo colossus*” for modern humans.⁶ Now fossil fuels are embedded in every aspect of human life.

Endless growth was enshrined in laws and economic structures. Nature’s abundance was used for human wealth, as a subset of the economy. Yet the economy actually derives from nature. Resource depletion has never been realistically considered, and now we are beginning to scrape the tarry dregs at the bottom of the barrel.

As the end result, humanity has turned the biosphere into an “anthroposphere”—converting life, land, and minerals into energy, stuff, and waste.



⁵ Will Steffen, et al., “The trajectory of the Anthropocene: The Great Acceleration,” *The Anthropocene Review* 2, no. 1 (2015), https://www.bpb.de/system/files/dokument_pdf/Steffen2015TheTrajectoryoftheAnthropoceneTheGreatAcceleration.pdf.

⁶ William Catton, *Overshoot: The Ecological Basis of Revolutionary Change* (Urbana, IL: University of Illinois Press, 1982). *Overshoot* is a definitive classic, one of the most important books of the 20th century. With profound implications, Catton applies the biological term overshoot to the human situation.

PART VI. RACING HEART

“Rare Earth Mining, Myanmar,” watercolor on paper, 7.5” x 15”

Militias control rare earth extraction in Myanmar, using child labor and suppressing local resistance.



Metal weapons and tools bestowed great powers to kingdoms and defined human eras of conquest: Copper Age, Bronze Age, Iron Age, and now the Fossil Fuel age.

Over time, the race to increasingly consume has demanded ever more complex schemes for extracting materials. Violence is inseparable from extraction—literally defined as the act of taking and removing by force.

Mining is hard, dangerous, dirty work. Mining’s harms abound: habitat loss, toxic tailings, ruination of ecosystems, militias, forced resettlements of local peoples, and slavery.

Extraction fuels the racing heart of this monster called industrial civilization. Extraction’s products—hydrocarbons, metals, minerals, and materials—circulate through the system, to provide the energy to “live” another day. Like a vampire, it sucks the life-force from the true body of life, never giving back.

But now civilization’s “nutrients” are running low and toxins are accumulating everywhere. It is fighting for its survival, requiring ever more extraction to feed its increasing appetite.

PART VII. RAVENOUS

“Shell and Mine,” watercolor and gouache on paper, 9” x 12”

The upward spiral of the shell-form is desacralized by the downward spiral of the pit mine.



The fate of a freshwater snail hangs precariously in the balance of the so-called “clean energy revolution.” The King’s River Pyrg is found only in springs at Thacker Pass, Nevada. A proposed lithium mine there would annihilate this snail.

“Low carbon energy” is hungry for a vast array of minerals, including lithium, cobalt, nickel, and rare earth minerals. Multiply the proposed Thacker Pass project several thousand-fold, with a global surge of mines, smelters, wind-solar siting, and infrastructure. What is the real motivation here: Is humanity trying to save the planet or save civilization?

PART VIII. IS BENEFICENCE POSSIBLE?

“Dissonance,” acrylic on canvas, 14” x 18”

Cognitive dissonance results when we are told that the massive destruction of the living world is on behalf of “green” technology to save the planet.



Our world is breaking down faster than expected in multiple, interactive crises. We face “predicaments,” not problems; there are no “solutions,” only responses. In the face of this, can humanity become a beneficent presence on the planet? Is a benign civilization possible?

An “ecological civilization” is simply impossible. Using non-renewable resources in order to attain “sustainability” within industrial civilization is a delusion. Electric cars, circular economies, carbon sequestration, green hydrogen, renewables, efficiencies, and large-scale regenerative agriculture are dependent on irreplaceable fossil fuels, extraction, and toxic processes, while providing no carbon reduction. They will harvest only further devastation.

The only sane course is drastic reductions in consumption. Yet the magical belief in technology's salvific powers still grips humanity.

PART IX. OVERSHOOT

“Malden 1: After the Inferno,” acrylic on canvas, 20” x 26”

A wildfire consumed the town of Malden, Washington in September 2022. Disasters are increasing everywhere.

In spite of technology's dead-end, we cannot return to simple, land-based lifeways. We are too far into “overshoot”—too many people are taking too much, thus far exceeding the biosphere's carrying capacity.⁷



Western civilization won the resource lottery when it invaded the Americas, Africa, and Asia. But now our global civilization has nowhere else to expand. Global industrial civilization has reached physical limits and its collapse is now underway. Progress traps are reaching their inescapable conclusions: Decline and breakdown are becoming obvious.

We are decades into abrupt climate change that will trigger mass die-offs and extinctions of plants, animals, and humans in this century. But climate chaos is merely one symptom of overshoot among many others: biodiversity loss, plastics, toxins, war, and so much more. Simply put, overshoot is omnipresent and determinative.

After ten-thousand years, the verdict is in: Anthropocentric, expanse-based civilization is destroying the living biosphere and humanity.

Certainly, individuals can practice local-scale regeneration, rewilding projects, and cooperative arrangements, but there's no way to scale up enough to alter the cumulative system excesses.

If one understands the sum or substance of our plight, how then does one live with meaning or purpose?

⁷ Catton, *Overshoot*, 17-74.

PART X. SANITY

To survive, life must respond to challenges. If humans remain closed off in delusional fantasies, then there can be no agreed-upon reality, and no possibility for cooperation. Perspectives grounded in physics, systems thinking, and Earth system science are required.

Contradictions loom. We love our gadgets, comforts, and conveniences. We are all unavoidably complicit since we cannot shed our dependence on this all-encompassing system.

We are innately competitive and selfish *and* we are cooperative and altruistic. Our civilization perpetuates competition for resources and locks us into negative patterns. For the vast part of human existence, we lived in cooperative, egalitarian bands. Only in the last phase did we take the aberrant direction, choosing “rupture-of-the-living-world,” over “rapture-with-the-living-world.”

We cannot return to our hunter-gatherer past. However, we can consider who these humans were before the rupture and emulate their virtues. Consider simplicity, gratitude, service, courage, and compassion. These virtues are especially needed in relating to those still in denial (nearly everyone), and in relating to ourselves.

We are all challenged by what is unfolding. A clear relationship to reality frees us from the hope vs fear wrestling match, as we come to face and accept what is inevitable and how we can respond. These are sane responses to the human predicament.

PART XI. ULTIMACY

“Milky Way,” watercolor and gouache, 9” x 12”

That the universe exists, and we exist in it, is worthy of awe and wonder.

In our long scientific quest, humans discovered that nature and the universe are far more majestic, brilliant, and mysterious than previously conceived.

The universe’s long evolutionary process began with a world of hydrogen. Eventually, fusion and evolution over fourteen-plus billion years led to human culture. Despite humanity’s long trail of destruction, Thomas Berry rejected the idea that the human is



an addendum or an intrusion and thus finds no real place in the story of the universe. In reality the human activates the most profound dimension of the

universe itself, its capacity to reflect on and celebrate itself in conscious self-awareness.⁸

“Religion” removed divinity from the Earthly realm, placing “God” in an otherworldly heaven. But ultimate vital force and intrinsic intelligence is found rooted in “communion” with the miracle of life—right here and now. This is the true “rapture” of souls: to feel the ecstasy of existence, even in the midst of this “apocalypse.”

In these challenging times, we need to ask ourselves: Can we experience life as a precious gift? What matters most to us in these uncertain times? What is our relationship to impermanency, the brevity of life? Who do we need to get complete with; what loose ends do we need to bind?

Our most important gift is existence itself. Life is ecstasy. Now is eternal. Drink these two elixirs. These are the gifts. Drink deep.

⁸ Berry, *Dream of the Earth*, 131.

COLLAPSE, POLYCRISIS, DECLINE, CONTRACTION

Alice Loyd*

Do I think today's economic, political, and social structures will collapse? Of course they will; all past civilizations have failed in time, and ours has reasons to break down that have never before existed. Our era, the Industrial Age, began and has succeeded by extracting and exploiting elements of Earth's functioning. As Earth's functioning is thus weakened and impaired, so eventually is our way of life weakened. The source of its strength will be an instrument of its downfall.

Four decades ago English environmental writer and thinker Edward Goldsmith explained succinctly the ingredients of industrial progress. "Economic growth . . . is biological and social contraction and deterioration. *They are just different sides of the same coin.* It is the biosphere, in fact—the real world—that is being industrialised."¹

As a result of its exploitative success, the present global economy is nearing the point when the resources it requires for growth are gone or financially unprofitable, and that means one by one the industries dependent on a scarce asset will fail. A full ending will take years to accomplish, however, and I think the right question at this point is not "is there hope we can avert collapse?" but rather "how will we manage the contraction that has already begun?"

In other words, what we can predict with certainty is contraction, and in the natural world we are surrounded by its signals.

- Global levels of human-made "forever chemicals" have made rainwater unsafe to drink worldwide—even in the most remote areas.²
- Almost all of the global population (99%) breathe air that exceeds WHO guideline limits and contains high levels of pollutants, with low- and middle-income countries suffering from the highest exposures.³

* Alice Loyd is a lifelong gardener who has been a climate educator since 2001. Organizations she has worked with include North Carolina Interfaith Power and Light, NC WARN, and the Center for Ecozoic Studies. She grows food and writes on environmental and spiritual issues as a member of an intentional community in Franklinville, North Carolina. Her forthcoming book, "Collapse-Able: Three Handbooks for Living Now and Later," is the basis for this article.

¹ Edward Goldsmith, "Deindustrializing Society," *The Ecologist* Vol. 7. No. 4, May 1977, downloadable at <https://www.resurgence.org/magazine/ecologist/issues1970-1979.html>.

² Karen Graham, "Global levels of 'forever chemicals' in rainwater make it unsafe to drink worldwide," Digital Journal, August 7, 2022, <https://www.digitaljournal.com/tech-science/global-levels-of-forever-chemicals-in-rainwater-make-it-unsafe-to-drink-worldwide/article>.

³ World Health Organization, "Air pollution," https://www.who.int/health-topics/air-pollution#tab=tab_1.

- Heat impacts are increasing fast in the developing world and may soon hit hard limits of human survivability.⁴
- Fertility rates are dropping, and on present trends the worldwide fertility rate would reach zero by 2045.⁵
- An Edinburgh-based research team says plankton, the tiny organisms that sustain life in the seas, has all but been wiped out in the equatorial Atlantic.⁶
- From April 1, 2022, to April 1, 2023, US beekeepers lost 48.2% of their managed hives to threats including the varroa mite and adverse weather.⁷
- Over the last 160 years more than 57 billion tons of soil have eroded in the US Midwest.⁸
- New research shows total ecosystem collapse is inevitable if the losses are not reversed.⁹

The myth of progress is the underlying worldview leading to these consequences.

The worldview that Goldsmith analyzes as the reason for wholesale acceptance of industrialism is one most *New Ecozoic Reader* subscribers have begun to question—at least in theory.

Let us begin by considering the main features of this world-view. Implicit to it is the notion that the world we live in is *imperfect*. . . . By means of science, technology, and industry, we have persuaded ourselves, it can be transformed into a veritable paradise.

. . .

⁴ Ben German and Andrew Freeman, “1 big thing: Heat waves taking humanitarian toll,” Axios Generate, October 11, 2022, <https://www.axios.com/newsletters/axios-generate-6050b879-81f7-4cb6-8a68-2e06951ce415.html>.

⁵ Kurt Cobb, “Are we missing something about the coming population decline?”, Resource Insights, June 11, 2023, <http://resourceinsights.blogspot.com/2023/06/are-we-missing-something-about-coming.html>.

⁶ “Equatorial Atlantic ‘pretty much dead’ says scientist as plankton wiped out,” Marine Industry News, July 18, 2022, <https://marineindustrynews.co.uk/atlantic-ocean-pretty-much-dead>.

⁷ Olivia Rosane, “‘Very Troubling’: US Honeybees Just Suffered Second Deadliest Year on Record,” Common Dreams, <https://www.commondreams.org/news/2022-2023-was-the-second-deadliest-year-on-record-for-us-honeybees>.

⁸ Rachel Crowell, “More than 57 billion tons of soil have eroded in the U.S. Midwest,” ScienceNews, April 12, 2022, <https://www.sciencenews.org/article/soil-erosion-rate-us-midwest-unsustainable-usda>.

⁹ Damian Carrington, “Ecosystem collapse ‘inevitable’ unless wildlife losses reversed,” *The Guardian*, February 23, 2023, <https://www.theguardian.com/environment/2023/feb/24/ecosystem-collapse-wildlife-losses-permian-triassic-mass-extinction-study>.

This transformation is referred to misleadingly as development and the direction it is leading us in is referred to as progress.¹⁰

Thomas Berry also recognizes an underlying dissatisfaction with the kind of life Earth offers: “There seems to be in the western psyche a deep hidden rage against the human condition, an unwillingness to accept life under the conditions that life is granted us, a feeling of oppression by the normal human condition, a feeling that the pains of life and ultimately death are something that should not be, something that must be defeated.”¹¹ Berry, again: “We have been entranced with the progress myth . . . progress that would lead beyond the human condition to something infinitely better, to wonderland.”¹²

In the effort to escape from the real world, writes Goldsmith, “a new organisation of matter is building up: the technosphere or world of material goods and technological devices: or the *surrogate world*.”¹³ Since Goldsmith’s day, this buildup has reached enormous proportions. In 2020, the amount of anthropogenic mass created since 1900 exceeded the weight of all living global biomass. An impressive graphic illustrating this statistic depicts the scale of comparison, material by material, beginning with concrete, the largest.¹⁴

Because Goldsmith was writing to people who identified themselves as part of the world of automobiles and airplanes rather than the world of fishes and trees, he considered it necessary to explain:

Unfortunately, we are part of the real world not the surrogate one.¹⁵

I think the more privileged classes of the Global North do identify more with industrial life than with nature, and the threatened loss of modern conveniences may be of more concern than signs of contraction in the natural world. To lose services we’ve been buying with our participation in the economic system is a cause for worry, since most of us don’t know how to manage without them. Daily we access technologies we understand only well enough to press the right buttons or the proper pedals. We eat food we know little about, even if we can afford the label “organic.” We depend on life-extending medications we could not replicate if the pharmacies were to close. We turn

¹⁰ Goldsmith, “Deindustrializing Society,” 129.

¹¹ Thomas Berry, “Ethics and Ecology,” a paper delivered to the Harvard Seminar on Environmental Values, Harvard University, April 9, 1996, <https://intuerifarm.files.wordpress.com/2014/09/ethics-and-ecology2.pdf>.

¹² Berry, *The Dream of the Earth* (San Francisco: Sierra Club Books, 1988), 57.

¹³ Goldsmith, “Deindustrializing Society,” 129.

¹⁴ Bruno Venditti, author, and Zack Aboulazm, graphics/design, “Visualizing the Accumulation of Human-Made Mass on Earth,” *Elements Newsletter*, November 28, 2021, <https://elements.visualcapitalist.com/visualizing-the-accumulation-of-human-made-mass-on-earth/>.

¹⁵ Goldsmith, “Deindustrializing Society,” 131

on faucets from which water appears as if by magic. We board a plane and in four hours are in the arms of a loved one we would never see again if access depended on animal-powered transportation.

Because of the seriousness of our dependencies and the scarcity of alternatives—much less high-level planning and preparation for a succession economy—it would be callous of me to approach the topic of industrial-age breakdown with any attitude except sober anxiety. For almost all humans, privileged or not, the experience of contraction will be very hard.

I can't mourn the passing of a harmful way of life.

I face this decline with any degree of composure for several reasons. First, I recognize the harm this civilization is causing to the natural world. For the industrial economy to prosper, biological life must wane. My wellbeing is tied to the welfare of fishes and trees.

Second, I understand that the industrial way of life began and has succeeded by also exploiting human potential—spirit, mind, and body. We have been shaped to want comforts that consume the very things we cannot do without. To remedy that shaping I find it helpful to look at what I need rather than what I want. The more I acknowledge my essential biological needs, the more I release attachment to the benefits the industrial economy has given me. In other words, the more clearly I recognize the damage all natural beings have suffered, including myself, through the processes of industrial civilization, the less I value its advantages. To injure the vibrant bio-layer of Earth as it has done is more deadly to all life forms than any of us can comprehend, but the more we focus on our essential needs—clean water, air, and livable temperatures—the more easily we can release our hold on the system that must destroy all of these in order to prosper. The ease we have obtained through progress has been gained at a price too high. It has cost us the elements we need in order to thrive.

The third reason I face this passing somewhat calmly is my age and history. In childhood I experienced a less industrialized, less consumer-oriented, less financially affluent existence and saw the good of it. In my heart is the blueprint for a more handmade, localized way of life, and I've turned many of these memories into practice in adult years. Even though I've had one foot in the modern world, I never came to see a more Earth-friendly existence as unappealing. The worldview that Goldsmith analyzed as the reason for wholesale acceptance of industrialism is one I never fully shared.

Overriding the importance of these three factors, however, is another explanation: increasingly I take seriously my sense that all the world is sacred. I want to be caring in my relationship to each member of the Earth family. I want my appropriation of a being or feature to be necessary, and I want to convey my need and appreciation in a conscious way. When I ask the vegetable, the animal, the rock, the tree, or the mountain

to contribute to my wellbeing, I want to be sure I come from a caring rather than a “use” relationship.

For me to live at all does require taking or altering the life of another. That is the Earth story. One receives because another gives. The source of livelihood for Earth creatures is Earth’s creatures and Earth’s features. Gratitude and generosity—receiving and giving mindfully—is the spirit of the exchange in the ideal situation. And because our present situation is far from ideal for living in such a spirit, I can’t face contraction or even collapse without awareness of this benefit.

Sustainability means no depletion and no waste.

On a planet where everything is sacred, industrialism—even “green” industrialism—is far from ideal. From the beginning of this century most environmentalists have proposed replacing the fossil-fuel industrial system with an industrial system run on renewable power generation. Unfortunately this green vision is yet another technosphere, still based on extraction and exploitation, and so does not meet nature’s standard of sustainability. My environmental-educator daughter is the source of the best succinct explanation of where we are now, compared with where we need to be. She says, “In nature there is no depletion of what we call resources, and no waste.”¹⁶ That’s the rule by which we can measure our conduct, and the directive we can set for public policy. Humans can only survive if we adjust to the planet’s survival requirements. This we will do eventually, since as they say, “nature bats last,” but so far we haven’t found a way to stop the destruction and the waste yet keep our technological benefits.

I don’t see a way to accomplish the one without abandoning the other. Industrial benefits cost destruction and waste. Richard Heinberg, Senior Fellow of the Post Carbon Institute, working with David Fridley of Lawrence Berkeley National Laboratory, came to the conclusion that even if we could focus on climate change alone, technology cannot resolve that problem. He writes:

Nuclear power is too expensive and risky; meanwhile, solar and wind power both suffer from intermittency, which (once these sources begin to provide a large percentage of total electrical power) will require a combination of three strategies on a grand scale: energy storage, redundant production capacity, and demand adaptation. At the same time, we in industrial nations will have to adapt most of our current energy usage (which occurs in industrial processes, building heating, and transportation) to electricity. Altogether, the energy transition promises to be an enormous undertaking, unprecedented in its requirements for investment and substitution. When David and I stepped back to assess the enormity of the task, we could see no way to maintain current quantities of global energy production

¹⁶ Laurie Cone, HBSG Zoom conversation, Center for Ecozoic Studies, June 14, 2022.

during the transition, much less to increase energy supplies so as to power ongoing economic growth. The biggest transitional hurdle is scale: the world uses an enormous amount of energy currently; only if that quantity can be reduced significantly, especially in industrial nations, could we imagine a credible pathway toward a post-carbon future.¹⁷

Reducing energy consumption significantly is what policymakers dare not ask, and what wealthy and powerful energy consumers do not plan to offer. And anyway, climate change cannot be addressed separately from all the other pressing factors in our dilemma. As the wise among us have said, *everything* must change. I don't expect powerful institutions built on biological and social exploitation to shift in proportion to the urgency, or to move in step with the pace of what is now being called a polycrisis. We will not have the benefit of enlightened public policy or visionary leadership.

I see reasonable reasons to expect some positive outcomes.

Nevertheless, smaller-scale transitions will increasingly occur, largely beyond the view of corporate media. The questioning of fossil-fuel-era norms will spread, but almost silently as families and neighborhoods begin to adapt. Openness to the principle of living within limits will grow. The paradigms that shaped industrial culture will lose credibility. More and more people will learn from Indigenous wisdom. The work of human hands will become more respected, whereas narrow intellectual knowledge will prove just that—narrow—and insufficient for a period of institutional decline. Low-energy ways to thrive will be explored by warm-hearted, accurately informed people who will prove to be humanity's true stars and leaders.

I don't want to minimize the difficulty of the shifts we can expect. People who are not well, not well-off financially, and not young enough or old enough to handle the no-doubt greater personal demands involved—these have reason to fear the downfall of institutions and services that have made their lives more comfortable. Pain and distress will increase according to a person's physical, spiritual, and social difficulties. The weak and sick will need the care of stronger companions to manage such a transition, and everyone needs a village of helping partners. But most readers who take the time to learn some new but very old skills can find satisfaction in creating a worthwhile life even amid environmental, economic, and social upheaval, however it may be labeled.

¹⁷ Richard Heinberg, "Museletter #303, "Climate Change Isn't Our Biggest Environmental Problem, and Why Technology Won't Save Us," <https://richardheinberg.com/museletter-303-climate-change-isnt-our-biggest-environmental-problem-and-why-technology-wont-save-us>.

COLLAPSE AND DENIAL INEVITABLE AND UNSTOPPABLE

Michael Dowd*

Fifteen years have passed since I contributed an essay to the Center for Ecozoic Studies. “Thomas: My Great Oak” was the title of my tribute in 2008.¹ Since then, Thomas Berry has died (2009). And since then, my worldview has been utterly shaken and reshaped.

The exponential rise of ecological and climatic horrors galloping across Earth have forced my reckoning with reality as it really is. I no longer regard the future as an inevitable human-led progressive arc. Indeed, I now view the ongoing collapse of biospheric health and climate stability as unstoppable. A second-order effect is that the collapse of industrial civilization—already well underway—is unstoppable too.

That the ecological underpinnings of Thomas Berry’s worldview have now risen to the top puts me in the place of a Prodigal Son returning home. I am aware that my unnuanced anthropocentric portrayal of the epic of evolution was a disappointment for Thomas toward the end of his life. And I think I am not the only one who missed his cues about the ultimacy of *ecological* laws of life.

But I have returned, and I’d like to think Thomas would be nodding with assent and a kind of fatherly pride. Yes, Thomas, I understand. There is no evolutionary stability and certainly no “progress” or gains in biodiversity without healthy air, water, and soil. Yet, here we are. And human innovation, technology, and the market will not save us; indeed, *they are the main drivers of collapse and ecocide*. I know that, too. I recall you saying at an event, “I drove a car here to tell you how bad cars are for the environment.” I translate that now in my own evaluation of so-called “green solutions” as this: The poison is not the cure.

And there is no cure. Ironically, I learned the fundamental distinction between a problem to be solved and a predicament to be adapted to in a book that Thomas himself urged me to read, to borrow from his library in the summer of 1989 on my second visit

* Michael Dowd is a bestselling eco-theologian and “[post doom, no gloom](#)” educator whose book, *Thank God for Evolution*, was endorsed by [six Nobel Prize-winning scientists](#), [noted skeptics](#), and by [religious leaders](#) across the spectrum. He has delivered two TEDx talks, a program at the United Nations, and has spoken to some 3,000 religious and secular groups across North America. Rev. Dowd has also conducted three online conversation series: “[The Advent of Evolutionary Christianity](#)” (AUDIOS) in 2011, “[The Future Is Calling Us to Greatness](#)” (AUDIOS) in 2015, and “[Post Doom, No Gloom Conversations](#)” (AUDIOS) from 2019 to the present. His main work since 2022 is helping people of all ages understand our times and our predicament in ways that offer clarity over confusion, compassion over blame, and courageous love-in-action over desperate activism.

¹ Michael Dowd, *The Ecozoic Journal* 2 (2009), 82-83, https://ecozoicstudies.org/wp-content/uploads/2022/09/Dowd.M.The-Sheltering-Oak.EJ2_.2009.pdf.

to his Riverdale Center along the Hudson River. I did take other books, but not the one written by William Catton and published in 1980 that bore the title of *Overshoot*.²

I finally read *Overshoot* six years after Thomas died, and it changed everything. Coincidentally, Catton died two weeks before I began reading his book, and I couldn't put it down. Right away, I did have something useful to do with my new eyes: I helped his family's contribution of an obituary to be published. I also gathered an array of short tributes to Catton from the likes of Paul Ehrlich, Dave Foreman, Bill Rees, and others and then published those [on my own website](#).

Following that effort, I had time to explore more than just the entrance to the tunnel of doom. I came to terms with the ecological underpinnings of everything. But I did not become a mere doomer. You see, Catton modeled a spiritually enticing generosity of soul or blamelessness, even equanimity. And there was always a sense that the doom tunnel was not the end of the journey. No matter how distant, I could see there was light on the other side.

Where Catton's book ended I began my own path of continuing forward, with the help of others, in shaping a psychologically sound and still actionable worldview that we now refer to collectively as Post-Doom, No Gloom. Our past and ongoing efforts are archived on a website: postdoom.com. There you will find some ninety video interviews with my co-explorers, plus teaching slide videos of my own. There, too, you will find these definitions:

Doom (definition):

1. A natural feeling of dread or disgust upon realizing that our predicament stems from technological progress and economic growth, rather than offering a way out.
2. Anxiety and fear arising from living in a corrupt, dysfunctional civilization leading to a mass extinction.
3. The midpoint between denial and regeneration, with or without our involvement.

Post-doom (definition):

1. The state that emerges when we remember who we are and how we got here, accept the inevitable, honor our grief, and prioritize actions that support the future and nourish our souls.
2. A fierce and fearless reverence for life, accompanied by profound gratitude amidst abrupt climate mayhem and the collapsing harmony of society, biosphere health, and business as usual.

² William Catton, *Overshoot: The Ecological Basis of Revolutionary Change* (Urbana, IL: University of Illinois Press, 1980).

3. Living meaningfully, compassionately, and courageously, regardless of circumstances.

As well, the post-doom website offers up plenty of natural and human sciences to become aware of and consider — which leads to a sense of inevitability, that:

Biospheric and civilizational collapse are not “problems” to be solved. They are predicaments to be accepted and worked within. The biosphere has already crossed critical thresholds, tipping points that trigger self-reinforcing feedbacks that further the ecological damage. These include the loss of Arctic sea ice, rapid melting of Greenland and West Antarctic ice sheets, the transition of Canada’s and Russia’s boreal forests and the Amazon rainforest from carbon sinks to carbon sources, and the release of methane from permafrost and underwater hydrates.

Each of these points of no return exacerbates climate change. Climate impacts on agriculture, on supply chains, on water availability, on human health, on business-as-usual, and ultimately on political stability all interact within systems of interconnected systems.

Collapse is thus inevitable and unstoppable. So is denial, at least to some degree and probably for most people. After all, why would anyone be willing to trade hope for doom, if they are given no opportunity to sense light at the end of the tunnel?

Thomas Berry knew all this before any of us in the following generations had even an inkling. Here, in this issue of the *New Ecozoic Reader*, is our opportunity to reconsider the nuances in his speech and writings — and to extend our reflections to include the books on his own shelves that he recommended along the way.

My own current contributions to our communal great work include having recorded an [audio version of Catton’s 1980 book, *Overshoot*](#). It is freely downloadable from Soundcloud. There you will also find [other audio recordings](#) I have made (with author permissions) of many stellar works in the field.

Then, too, perhaps spoken word, and [conversation](#) is a more appealing way to explore uncomfortable perspectives, while hearing emotional nuances and the range of human responses — from unresolved fears to present-moment gratitude for the small human and natural blessings that still abound. I especially recommend the more pastoral and emotionally supportive videos and weekly [Collapse Acceptance Alliance](#) zoom calls.

I shall close with two prescient quotes, one from William Catton and the other from Thomas Berry:

Human society is inextricably part of a global biotic community, and in that community human dominance has had and is having self-destructive consequences.

—William R. Catton, Jr.

The most difficult transition to make is from an anthropocentric to a biocentric norm of progress. If there is to be any true progress, then the entire life community must progress. Any “progress” of the human at the expense of the larger life community must ultimately lead to a diminishment of human life itself.

—Thomas Berry

SHATTERING MY ONGOING EXPERIENCE OF A COLLAPSING WORLD

Michael Powell*

Every single worst-case prediction made by the Intergovernmental Panel on Climate Change (IPCC) about the rise in temperatures, extreme weather, sea levels, and the increasing CO₂ content in the atmosphere has fallen short of reality.

–Dahr Jamail, *The End of Ice*

In December 2019, six months after I retired and four months after my 65th birthday, I was shattered by my two-week-long, deeply experiential reading of *The End of Ice: Bearing Witness and Finding Meaning in the Path of Climate Disruption* by Dahr Jamail.¹ My initial grieving, which lasted for more than three months, allowed me to absorb what I viscerally was experiencing. In going back through every page of the book for the first time since reading it over three years ago, the feelings evoked by the author then came through again. As I write this article, I am two months short of my 69th birthday.

I have pulled a number of expert “testimony” statements from *The End of Ice*. They are referenced by page number(s) following each passage. As you read this article, and as you may read the book at some future time, dive into the author’s energy, his experience of the situations humanity and other species are faced with due to climate disruption. Enter into the experience of the various ecological science experts as they state their understanding of what is happening. Feel the emotions churn within you when you come to realize *the depth of our self-inflicted predicaments; we cannot go*

* Michael Powell’s past work, across education, government, nonprofit, and profit sectors includes organizational change and development, employee and volunteer training, grant writing, public service, teaching, and political engagement. He has two master’s degrees, one in Organizational Management, the other in Conscious Evolution. Since retiring in June 2019, his new “work” is, at heart, building relationship to release the hidden capacities that exist in everyone. He is conscientiously evolving an ethic of deeper caring and learning that serves others, beginning with loving our living Earth and being deeply grateful for the life our Earth provides. To continue his learning, Michael is studying for a Doctor of Ministry in Evolutionary Ecological Spirituality. He seeks to create psychological, cultural, and social spaces/refuges that honor and explore the deep pain and suffering we feel for our world through our love for one another. His major volunteer service is with the Franciscan Renewal Center’s Care for Creation Ministry and social justice efforts and the Center for Ecozoic Studies.

¹ Dahr Jamail, *The End of Ice: Bearing Witness and Finding Meaning in the Path of Climate Disruption* (New York, The New Press, 2019). All page numbers cited in this article refer to this book. The quotations of scientists in this article, are quotes recorded by Jamail and then included in this book. In other words they are the scientist’s words quoted by Jamail.

back to the 1980s and change where we are now; and we must live without hope in the shallow sense as we decide what we will give our lives to now.

This article highlights Jamail's deeply personal and comprehensively informed reporting of how climate disruption is sundering our world. The conversations with scientists and others he presents in this book brought me into moments of painful reckoning with the ecological damage resulting from climate disruption. My persona and image were shattered. Regardless of my ecological awareness and activism, too much of how I currently lived was business as usual.

"*Shattered.*" I have yet to come up with a different term to describe my experience. I came to understand well the truth of what Aldo Leopold said in *A Sand County Almanac*,

An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise.²

Jamail knew the truth of this too when he wrote:

I regularly found myself not knowing what to do with the information on an emotional level. While I was grateful that I was, in operating like a scout, getting to peer into the future and see where the world was going, the apocalyptic information was often too much to hold. It became imperative that I spent time out on the planet. When I was home in between my research trips, I spent every weekend venturing up into the mountains in nearby Olympic National Park. Listening to birdsong and the wind sift through the tops of forests never failed to provide respite from bearing witness to ecocide. . . .

Simply getting lost in studying the face of a mountain or noting the incremental changes in orange light on a distant mountain peak as the sun set brought me much needed solace and perspective. These regular respites were long, slow deep breaths that sustained me, as the deeper into the information my work took me the worse the news became. (p. 146)

² Aldo Leopold, *A Sand County Almanac with Essays on Conservation from Round River* New York: Oxford University Press, 1991), 197.

The End of Ice

The End of Ice asks the questions and tells the story of the research that led me to an ecological conversion. It consists of an introduction, eight chapters, and a conclusion titled “Presence.”

Chapter 1: Denali:

Jamail speaks of mountains and glaciers. As an accomplished mountaineer, he has seen and researched the “evidence of dramatic climatic shifts [that have been] in front of all of us for decades. Most people in the so-called developed world are not connected enough to a place on the planet to notice. They are unaware of the dire ramifications of what [the shifts] mean, both for the planet and for our species” (p. 21).

Jamail states, “Becoming aware of the wounds climate disruption has caused to the mountains and the glaciers I have come to cherish over the years felt like watching a dear friend struggling with a terminal illness. . . . What I had learned . . . about the rapid glacial melt rates around the globe was overwhelming” (p. 21).

Chapter 2: Time Becomes Unfrozen

“Alaska’s glaciers are losing an estimated 75 billion tons of ice every year” (p. 36). Dr. Mike Loso, a “glacial geologist” with the Wrangell-St. Elias National Park and Preserve in Alaska states,

I ask myself, as a park steward, how to manage the park’s resources for future generations. We can’t manage the climate back to where it was. So, we are standing by watching the diminishment of our glaciers without any tools to do anything about it. If the Park Service can’t stop the change, we at least have to bear witness to it. I am trying to tell this story to the people who have no idea as to the seriousness of these changes. (p. 36)

Dr. Dan Fagre, a United States Geological Survey (USGS) research ecologist and lead for the USGS Benchmark Glacier Program based at Glacier National Park, observes, “Ice is not just melting, it is collapsing” (p. 39). “The glaciers are going away, it is going to be pretty soon, and it’s going to be a big deal because they have been here for seven thousand years” (p. 45). All glaciers will be gone in the contiguous United States within a few decades (p. 45). “The impact on future available water needs from mountain ecosystems is great as these ecosystems provide 85% of all the water humans need, not to mention other species” (p. 45).

Dr. Farge explains “Earth has a resilient system that has been through much worse than what we have caused—volcanism, ice ages, etc. ‘So many of these things will recover,’ he says of the glaciers and forests vanishing before our eyes. ‘But not in the time frame that includes humans. . . . It is tough to watch the thing you study disappear” (p. 41).

Chapter 3: Canary in the Coal Mine

Chapter 3 is about oceans and marine life in northern Alaska. It contains reports on the rapid decline of fur seals, halibut, snow crab, and many other species in the area.

Bruce Wright, scientist with the Aleutian Pribilof Islands Association and formerly with the National Marine Fisheries Services and National Oceanic and Atmospheric Administration, states, “We’re not going to stop this train wreck. We are not even trying to slow down the production of CO₂ in the atmosphere” (p. 71). He describes a time when the planet experienced mass extinction events: “They were driven by ocean acidity. . . . The Permian mass extinction, approximately 252 million years ago, where 90% of the species were wiped out, that is what we are looking at right now” (p. 73).

Chapter 4: Farewell Coral

“Coral reef ecosystems cover less than 2% of Earth’s ocean floor yet are home to 25% of all marine species. Some reports show that coral reefs even surpass rain forests in terms of biodiversity. Without coral the entire oceanic ecosystem takes a turn for the worse” (p. 79). “Oceans continue to absorb over 90 percent of the excess heat trapped by greenhouse gases in the atmosphere” (p. 63); and ocean warming is impacting coral through coral bleaching. We are killing off coral reefs at a breakneck pace. Half of the planet’s coral has been lost. Some species of coral will survive, but the colorful and diverse coral discovered through scuba diving will be but a memory (p. 80).

Dr. Laurie Raymundo, coral ecologist with the University of Guam Marine Lab, is concerned. She states, “We are losing [coral and associated life] before we even actually know fully what we are losing. And this is a global issue, because we know loss of diversity makes the system less stable” (p. 87).

“If you took all the heat humans generated between the years 1955 and 2010 and placed it in the atmosphere instead of the oceans, global temperatures would have risen a staggering 97°F” (p. 94).

Chapter 5: The Coming Atlantis

Jamail highlights the uniqueness of the Everglades:

There is no other land/seascape in the world like the Everglades. It is a synergy of worlds, where both tropical and temperate species from the Caribbean and North America meet and flourish. The entire national park is one massive subtropical wetland, the only one of its kind in the United States. It is part of the Kissimmee-Lake Okeechobee-Everglades watershed, a giant drainage basin covering 11,000 square miles. (p. 101)

Along with the Everglades, two other national parks, Biscayne and Dry Tortugas, are located in South Florida, and also Big Cypress National Preserve. These four areas total 2.46 million acres. Projections by Dr. Ben Kirtman of the University of Miami, one of the leading sea level experts in the world, indicate that by 2050, sea levels are projected to increase by one to nearly three feet (p. 104). If so, these areas may be completely submerged.

Deep adaptation to these near-term threats is required. Kirtman says that now is the time to start planning:

How are you going to relocate people? How are you going to recapture certain property in order to return it to its natural environment? How are you going to change building codes? All of these things and others take a tremendous amount of time and public buy-in. We're talking about twenty-year time horizons that are required for that kind of infrastructure." (p. 110)

Dr. Harold Wanless, professor and chair of the Department of Geological Science at University of Miami, exclaims "We have gone off the cliff. 93.4% of the global warming heat we have produced is in the oceans, and half of that went in since just 1997. That is unbelievable. If we had only got a hold of this in the '80s we'd have less than half the problem we have now" (p. 115).

"[He] is taken aback by the general public's business as usual mindset. With population increasing, with industrialization ongoing, and with sad exuberance about opening the Arctic as an opportunity to get more oil and gas, shouldn't we be thinking, 'Oh my God, what have we done?'" (p. 115). Wanless asserts that the IPCC sea level rise projections are skewed too low because they underestimate the amount of melting in Greenland and the Antarctic (p. 116).

As an example of business as usual, the Nuclear Regulatory Commission approved Florida Power & Light's "plans to build two brand new nuclear power reactors, as well as store radioactive material and waste in an area below aquifers already contaminated by

saltwater. The aquifers are Miami's single largest source of drinking water and supply water to 2.7 million people" (p. 119, footnote omitted).

Jamail asks Dr. Philip Stoddard, mayor of South Miami and a professor in the Department of Biological Sciences of Florida International University in Miami, how he deals with climate disruption emotionally and psychologically. He responds, "The vernacular term for this is 'mindfuck.' . . . How do you get your head around this? The place you grew up in will not be there. The world you know will be gone. That is a hard thing to accept" (p. 125). Mayor Stoddard looks up the political ladder and asks, "What kind of morality allows [administrators and legislators] to ignore what is going to happen?" (p. 125).

Chapter 6: The Fate of the Forests

Dr. Craig Allen, USGS research ecologist at Bandelier National Monument, knows more about trees than anyone Jamail has come across. He reports many examples of higher tree mortality in forests around the world with trees made vulnerable and dying due to climate disruption and says, "I think we are flying blind about the fate of forests on planet Earth" (p. 137).

David Peterson, a US Forest Service research biologist based out of the Pacific Northwest Research Station, says, "90 percent of the forests across the western United States have been cut down at least once, sometimes twice. This means that you are working with a landscape already highly altered by human activity" (pp.138-139).

Dr. Phil Townsend, a professor of forest and wildlife ecology at the University of Wisconsin-Madison, says "mountain pine beetles have destroyed ten times the area that fire has in any one year, and the monetary damage they have caused is eight to ten times greater than fires because the area is so vast" (p. 144). The beetle population is prevalent due to reduced snowpack, moisture, and lack of colder temperatures which kill the mountain beetle larvae (p. 144).

"A 2016 study showed that when large number of trees die from drought, heat, deforestation, and insect infestations in North America, it can, for example, negatively affect the climate of forests in Siberia. This is possible because changes in one place can ricochet to shift climate in another place because everything is connected via the atmosphere" (p. 147, footnote omitted).

Dr. Nate Stephenson, a USGS research ecologist associated with the Western Mountain Initiative, does research on the Sequoia National Park. He first felt grief over climate disruption back in the mid-1990s when he "got it on a visceral level that it wasn't going to be possible to maintain the parks as they are for future generations" (p. 150). He says, "We're seeing things happen we've never seen before. We are documenting things that have never been documented before" (p. 152).

Chapter 7: The Fuses are Lit

Chapter 7 concerns the fate of the Amazon rain forest:

The largest rain forest in the world, the Amazon, is a system dominated by water. Generating half its own rainfall and holding 20 percent of all the world's rivers within its borders, it covers an area two-thirds the size of the contiguous forty-eight United States. There are more than eleven hundred tributaries of the Amazon River alone, with seventeen of them more than one thousand miles long. (p. 158)

Dr. Thomas Lovejoy has worked in the Brazilian Amazon since 1965 [until his death in 2021] and has the nickname of “the godfather of biodiversity” (p. 159). In 1980, Lovejoy wrote that “hundreds of thousands of species will perish, and this reduction of 10 to 20 percent of the Earth's biota will occur in about half a human's life span. . . . This reduction of the biological diversity of the planet is the most basic issue of our time” (p. 160, footnote omitted).

“Around the world 1.5 acres of rain forest are lost every second” (p. 167). “The UN held its first environmental conference in 1972. . . . By 1988 the Intergovernmental Panel on Climate Change (IPCC) was formed to provide policy-relevant information about climate change to global decision-makers. IPCC consensus reports have been published in 1990, 1995, 2001, 2007, and 2014 [and in 2023]. . . . None of the reports have led to any real policy change” (p. 168).

Dr. Rita Mesquita, biologist and researcher with the Instituto Nacional de Pesquisas da Amazônia (INPA), the largest research institute for the Amazon, “believes the root cause of climate disruption is humanity's lack of connection to the planet” (p. 171). She chooses not to have children because, “I don't have a future to offer them. I don't think we are going to win this battle. I think we are really done” (p. 172).

Mesquita's husband is Dr. Mario Cohn-Haft, a staff scientist and curator of birds at INPA. What bothers him is that people “don't understand what they are doing. . . . How can anyone not want to understand the world we live in?” (p. 174).

Warwick Manfrinato, director of Brazil's Department of Protected Areas, believes:

What is required is a shift of awareness toward our being part of nature. Humans are not the apex. We need to respect complexity in order to survive as a species. Everybody and everything wins, or everybody and everything loses. Our contribution is the awareness of the complexity, and the protection of that. If we are of service to nature, then we provide the benefits to all other living things on the planet.” (p.176)

Later he says, “You belong to [a place of nature] because it belongs to you. The land belongs to me, not because I own it but because I belong to the land” (p.178). Jamail quotes Lovejoy again at the end of this chapter: “In the Amazon we witness the awe-inspiring wholeness of a living Earth, upon which our human existence depends entirely” (p. 179).

Chapter 8: The End at the Top of the World

“These kind, warm, gentle people and their culture will not be long for this place.” This observation was made of the Indigenous people of Utqiagvik (formerly Barrow), who live in the northern-most incorporated area in the United States, 1,300 miles from the North Pole. Summers have never been warmer or longer. Climate disruption is having an impact on their hunting and gathering way of life due to excessive heat (p. 185).

This is a problem because “according to a NASA report, over hundreds of millennia, ‘Arctic permafrost soils have accumulated vast stores of organic carbon’—an estimated 1,400 to 1,850 gigatons, compared to 850 gigatons of carbon in the Earth’s atmosphere” (p. 189, footnote omitted). Dr. Vladimir Romanovsky, a professor of geophysics at the University of Alaska-Fairbanks who specializes in permafrost says, “assuming changes continue as they have been for the last thirty years, the permafrost on the North Slope will hit 0° C [32°F] by 2050 or 2060 at the latest” (p. 191). And this means that as the permafrost thaws stored carbon and methane will be released into the air.

Permafrost in the interior of Alaska and in Siberia is already beginning to thaw (p. 191). Permafrost also exists under the Arctic seas. Permafrost is already melting under the Barents Sea and this could happen in the Arctic’s other shallow seas, including the Chukchi, Beaufort, and Bering Seas, and also the Kara, the Laptev, and the East Siberian Sea (pp. 196-197).

A further concern is methane hydrates on the Arctic seabed, which “contain the equivalent of one thousand to five thousand gigatons of carbon. The lower estimate of a thousand gigatons is still roughly one hundred times the total carbon equivalent that humans release in the atmosphere annually by burning fossil fuels” (p. 199).

Rapid release of methane will accelerate global warming.

Over a five-year cycle, methane can trap up to a hundred times more heat than carbon dioxide, and thirty-five times as much over a hundred-year time scale, making it a far more potent greenhouse gas in both the short and long terms” (p. 194, footnote omitted).

[According to Dr. Ira Leifer,] an academic researcher who specializes in bubble-related oceanographic processes (such as subsea bubble plumes emanating from the ocean floor), remote satellite sensing, and air pollution, “Over a ten year-timescale, methane globally dominates climate change” (p. 194).

Leifer also says that even if humans were immediately to stop producing CO₂, the heat already in the oceans would affect thawing in the Arctic for hundreds of years (p. 200).

When these warmer currents begin to have their full impact on the East Siberian Sea, underneath which the brunt of known methane deposits are stored, it will have a 'positive forcing' on global climate. This coupled with ongoing human forcing from CO₂ emission, will push the global system past tipping points that haven't even been identified yet. . . .

Right now there is no reason that global climate couldn't push past tipping points that mean only 1 billion people can live on the planet. (p. 200, italics added)

All of this is overwhelming to take in. With this accumulation of knowledge presented in *The End of Ice*, Jamail reflects, "I thought about how it's over, how it's already too late, about how any real struggle to stop or even mitigate what was already upon us and what we were doing felt pointless" (p.207).

This is when my soul cried. I pondered the eventuality that only one billion people would remain alive. That would mean seven billion people will have died through the 21st century. I couldn't wrap my mind around that figure.

When I was a young adult, I used to state cavalierly, "Oh Earth will survive, even if we don't," without any real empathy and compassion about what I was saying. I had been hiding behind a persona of rational reasoning mixed with apocalyptic concerns, thereby deadening the impact of the suffering climate disruption could bring.

What will we be going through as we attempt to re-imagine and re-invent the human as a species?

Conclusion: Presence

Disrespect for nature is leading to our own destruction. By desecrating the biosphere with our pollution and bringing about Earth's sixth mass extinction of species around the planet, we are setting ourselves up for what Jamail believes will be our own extinction. This is a direct result of our inability to understand our part in the natural world. As he was coming to these realizations, he also began to realize the need to share his own grief with others about what was happening to nature (p. 212).

Jamail nearly lost a dear friend named Duane, one of the world's oldest living quadriplegics, in the course of writing *The End of Ice*. He thought of his grief for the planet and what he should do in relation to the loss he had felt as Duane struggled to breathe:

Reflecting on what is happening to the planet, I realize that the intimacy I shared when I thought I was losing my best friend is the intimacy we should have with the Earth. When I thought I was losing Duane, I did not want to leave anything in my heart for him left unsaid, nor were there any wrongs left to make right. In an analogous way, we may be watching Earth dying, so we each get to ask ourselves: *What am I called forth to do at this time?* Buddhist monk Thich Nhat Hanh has written how the most precious gift we can offer others is our presence. . . .

Given that the Earth may well be dying, we may be ready to stand up to protect what we love. An extraordinary alchemy can take place when people follow their inner directives to stand up and face squarely the dire odds of biosphere survival. These actions involve extraordinary outer and inner courage, which can nurture a profound activism. The gifts provided by the crisis at hand are the conditions to make possible widespread shifts in political identity, purpose, and consciousness. . . .

We should be asking ourselves, “How shall I use this precious time?” (pp. 215-216, italics added)

My Response to *The End of Ice*

In this time of great uncertainty, one program I facilitate weekly is called “Contemplation in the Desert,” as I live in the Phoenix, Arizona metro region. Through the Care for Creation Ministry at the Franciscan Renewal Center people come and join us outside on the grounds and we listen deeply and reflect on writings that speak of Earth loving, and our loving Earth, thereby building our loving relationship more deeply and gratefully. Within our time together, people also wander the sacred grounds and experience their holy moment as they reflect on their miracle of creation. This ground within the Renewal Center becomes one’s place to stand with nature.

The program is part of a greater personal realization that others will also be affected when the realization comes that our suffering from climate disruption reflects a true impasse, and new ways of living are necessary to embrace and adapt to the suffering through love. Thomas Berry stated that we need to “re-invent” the human by developing new, transformational ways of living values that restructure the human experience, so human living is within and aligned to the framework our Living Earth provides for life to thrive. Trying to force nature into submitting to human will doesn’t work in the long run as demonstrated by the tremendously damaging consequential feedback loops in play that are leading to the great damage and suffering described in *The End of Ice*.

Emmanuel Vaughan-Lee says, “We have arrived at a threshold: a liminal space where the world we have known is coming undone and new configurations are still taking place. In this moment of great loss, possibility, and transformation, what are the stories we need to orient ourselves within our shifting landscapes?” How do we tell and

include each other in the stories needed to create the living psycho-social-cultural-ecological scaffolding from which to thrive in a new landscape of interconnected reality and wholeness, infused and imbued by and with Love?

Dahr Jamail offers insights through the practice of presence that enables one to see things as they are. My scaffolding through the many insights I have gained from this experience is to “start from wholeness.” How broad and deep are the perspectives I can lightly hold, connecting them to gain a greater appreciation of what is in the moment. This is not an exercise in thinking hard. The intention/effort is feeling, living one’s way into the spaciousness that exists, leaning into the love that is creating a new place from which to see what is real, the awareness and compassion to serve life, and loving our neighbors, all of our neighbors, human and non-human beings, as ourselves.

Jamail states,

My acceptance of our probable decline opens into a more intimate and heartfelt union with life itself. The price of this opening is the repeated embracing of my own grief. Grief is something I move through, to territory on the other side. This means falling in love with the Earth in a way I never thought possible. It means opening to the innate intelligence of the heart. I am grieving, yet I have never felt more alive. (p. 219)

In experiencing this, Jamail is showing how he has become “committed in his bones to being with Earth, no matter what, to the end” (p. 220).

He adds, “To live well involves making amends to the Earth by finding gratitude [for everything the Earth gives us]” (p. 219); and also living well means “living in community with others who are remaking themselves and their lifestyle in accord with *what is*” (p. 220).

Jamail’s final interview in *The End of Ice* is with Stan Rushworth, elder of Cherokee descent, teacher of Native American literature and critical thinking classes focused on Indigenous perspectives. Rushworth says,

The dire position we’re in now is solid evidence that the predominant civilization does not have a handle on all the interrelationships between humans and what we call the natural world. . . . We simply do not have a big enough or right-minded vision. Because of this, we need to allow for something we cannot understand. This is not about hope, but more, humility, and carefully considered action within that humility, and much deeper listening. (p. 221)

Each person must find their own agency and from that place decide upon their proper course of action. (p. 224)

Jamail closes with this reflection:

While Western colonialist culture believes in “rights,” Indigenous cultures teach “obligations” that we are born into: obligations to those who came before, to those who will come after, and to the Earth itself. When I orient myself around the question “what are my obligations,” the deeper question immediately arises: “From this moment on, knowing what is happening to the planet, *to what do I devote my life?*” (p. 225).

I feel those obligations.

Daily I ask, “To what do I devote my life *now?*”

BECOMING COLLAPSE-ABLE

*Alice Loyd**

In the past five years my writing has moved away from educating about humanity's onslaught of the natural world and my advocacy away from proposing resolutions to that onslaught. People who have been paying attention—people who care—have been advised. My interest has shifted now to helping privileged North Americans prepare to deal with the ecosystem's responses. We have been part of the era of damage; now we are in the era of surviving the consequences. In particular I want to help younger people see the decline of a far-from-perfect system through a wider lens, one that includes not only such experiences as a person of my age might offer, but also the perspective of non-industrial cultures today and throughout human history.

In addition, I am less concerned now about what is happening in national politics, and more focused on our power to act within a smaller circle. In my view our current opportunity is to reorganize our lives so that we can meet our true needs and those of our neighbors with our own strength and knowledge. There are less exploitative ways to do most of the daily tasks that make our lives comfortable. We can learn these ways, as thinkers and planners have been urging us to do since the 1970s, when the most visible threat to industrial progress was peak oil.

John Michael Greer captures the enthusiasm of the visionaries of those days.

In the world of the twenty-first century, appropriate-tech mavens argued, the chief abundant energy and resources that supported the extravagant machinery of twentieth-century industrial nations would inevitably run short. Before that happened, a new breed of technology had to be invented and put into production. The new technologies they hoped to pioneer would use energy and resources sparingly; they would work with the cycles of nature rather than against them; they would meet human needs without placing unsustainable burdens on the biosphere. All over the world in those days, you could find little non-profits on shoestring budgets and small companies run by basement entrepreneurs hard at work making that dream a reality.¹

These people hoped to create the means to move smoothly from industrialization into ecological civilization. They envisioned a world that, while it was marked by observing limits, could power the essential aspects of modern life. I am looking at a 1975 compilation of such projects now: a book in which twelve pioneers discuss their own

* Alice Loyd's forthcoming book, "Collapse-Able: Three Handbooks for Living Now and Later," is the basis for this article.

¹ John Michael Greer, *Green Wizardry* (Gabriola Island, BC Canada: New Society Publishers, 2013), viii.

designs for small-scale energy systems to use sun, wind, water, methane gas, and wood to produce energy to power the home.² I was part of that movement, though as an adopter, not an inventor. My library was filled with books on passive solar construction, organic farming and gardening, and manual tools such as a bicycle-pedaled water pump and the “two-woman saw.” I studied alternate energy resources in order to advocate for them with politicians and utility commissioners.

Fifty years ago there was time to think big about new technologies. I believe we have lost most of that opportunity. We have not yet lost the ability to examine our situation, however, and we can invent new patterns that will make our lives more tranquil as now-common amenities disappear. The primary power we now have, as I have said, is in our own hands. We can move from being consumers toward becoming producers, and we can work in partnership with nature rather than in the mode of exploitation.

The preparation, then, for moving with power into a time of economic, social, and environmental decline begins at the most personal level. First, we need a spiritual foundation that will carry us through adversity. If you have lived through hardship earlier in your life, you may have found that level of anchorage. Now is the time to strengthen spiritual muscles and align more strongly with the forces of life. We are not born and then abandoned by the planet that birthed us. We have roots—however you may name them—that bind each of us to the core of existence. We are inextricably tied into the flow of life in this universe, even if the humans around us fail to mirror that connection. We need to find these roots now, in order to be ready for whatever comes.

Second, we need human agents who can demonstrate the connection on the physical plane. A human is meant to live in the company of other caring humans from birth to death. Just as the other-than-human Earth web is intricately interwoven with a role for each member—none more worthy than another—so also the human community must be woven if humans are to thrive. The emphasis on individuals in our culture is an aberration, an abnormality in the history of the race. For a child to be normal within the ancient pattern, it must be nurtured in a nest of human guardians and teachers; and for those adults to behave trustworthily toward a child or toward each other, they must have had the same upbringing. The results of generations of more modern, “civilized” child rearing are not pretty. If we often do not feel safe among our fellow humans, this is one explanation.

But we can create safe alliances. Humans come with forty thousand years of aptitude for cooperation and caring. The past several thousand years marked by societal distrust have not erased the tendency to draw toward each other, as every disaster proves. It will take re-training and then practice for most mature Westerners to bond firmly with others in common cause, but this is exactly what we must intend and then accomplish if we are to manage the upheaval that will accompany the disintegration of economic and

² Carol Hopping Stoner, ed., *Producing Your Own Power* (New York: Random House, 1975).

natural environments. We will need each other more than ever, even as threats to social cohesion accumulate.

Third, we could be facing a world without either the services we are accustomed to having others perform for us, or the internet where we watch Do-It-Yourself YouTube videos. Only in the affluent nations of the Global North have typical humans lost the knowledge to grow food, obtain water without expert assistance, and manage sanitation, for example. In the near future, I think most of us will need to take more responsibility for the day's ordinary survival tasks, and while we will benefit by exchanging services with each other, I think we will lose the option to remain ignorant about how to meet basic bodily needs. One of the attractions of the intentional community where I chose to live is the nearby folk school,³ where old skills are taught by practitioners committed to preserving them.

This part of adaptation will be a hard adjustment in developed nations, where most people will meet it with fear and resistance. Speaking as an octogenarian raised in the Great Depression and World War II, I have to say I am puzzled at the attitude toward work considered menial that I find in many of my same-age peers. It is as if the post-war 1950s advertisements, with their glamorous depictions of labor-saving devices and chemicals, caused two generations of Americans to aim to rise above the duties that accompany being a human animal. Instead they were glad to put on Sunday clothes every day to go to the office or leave home to operate or repair machinery in someone else's shop, factory, or farm. They preferred to "get a job" so they could pay others to attend to anything regarded as lowly.

That stance is appropriate for people with serious physical limitations, but for able-bodied, mentally competent adults to disdain the ordinary work done past and present by most of the humans on the planet falls into some category of pretentiousness.

To thrive in this era of disruption we will need strong hearts and spirits.

The people who see the difficulties ahead and yet feel prepared may not be the ones with a year's supply of food in metal cans or a shelf with rotated bottles of water. The old man who sits by the window in his wheelchair may live with that degree of serenity, or the tired nurse, rushing each day to catch the morning bus. They can face hardship without living in fear because they have spiritual strength, which is an internal possession. A strong-hearted person with deep inner resources is ready to deal with either prosperity or adversity. For that person, a collapse in the exterior world would certainly be disturbing, but it would not be an insurmountable event.

³ Vicky Eiben, "A Brief History of Folk Schools," Folk Education Association of America, Spring 2015, <https://folkschoolalliance.org/a-brief-history-of-folk-schools/>.

If you put your soul against this oar with me,
the power that made the universe will enter your sinew
from a source not outside your limbs, but from a holy realm
that lives in us.⁴

So spoke Jalāl ad-Dīn Mohammad Rūmī, thirteenth-century Persian poet, Islamic scholar, and Sufi mystic. All of the resources of an endlessly creative capacity are here to sustain us. Our society has not encouraged us to explore the intangible features of ourselves or of nature, partly because prevailing philosophy has maintained they do not exist, since they cannot be quantified. Their existence is an internal phenomenon to be observed only by the one who experiences them.

As a result of this atmosphere of denial, our spirits may be atrophied. To strengthen them we must enter their realm and explore it for ourselves. When we do, our spiritual leanings will remain superficial if we merely accept the ideas others have offered. If your path can be labeled, it is probably someone else's path, not your own. Someone else's path is fine as a starting place. From there you can find out for yourself the implications of that teaching.

I shall speak of nothing of which I have no experience, either in my own life or in observation of others, or which the Lord has not taught me in prayer.⁵

St. Teresa of Avila, the great Spanish mystic and reformer, wrote those words over four centuries ago. As she did, I am encouraging you to explore your spirit's capacities for yourself. To the extent you do, your spiritual orientation will not merely be intellectual assent; it will arise from your unique journey. No matter where you start, if you continue to follow your heart, you may find yourself outside the boundaries of the tradition in which you began.

The understanding that has become the foundation of my own spiritual life came while I was sitting in church when I was eight years old. Unrelated to anything happening around me, I suddenly realized that fairness was something that did not have to be seen to be real. I saw with certainty that while I might not be treated fairly myself, fairness was a real thing that could not be destroyed. Through that one insight—that fairness is firmly in place despite appearances to the contrary—I knew that the world is good and that its goodness will endure, no matter what.

⁴ Jalāl ad-Dīn Mohammad Rūmī, "That Lives in Us," in *Love Poems from God: Twelve Sacred Voices from the East and West*, trans. by Daniel Ladinsky, Poet Seers, <https://www.poetseers.org/the-poetseers/rumi/1-2-2/>.

⁵ Teresa, Saint, of Avila, Prologue, *The Way of Perfection*, trans. E. Allison Peers, <https://cat.xula.edu/tpr/works/perfection/>.

When Thomas Berry was twelve years old, he had an experience similarly formational.

It was an early afternoon in May when I first looked down over the scene and saw the meadow. The field was covered with lilies rising above the thick grass. A magic moment, this experience gave to my life something, I know not what, that seems to explain my life at a more profound level than almost any other experience I can remember.

This early experience, it seems, has become normative for me throughout the range of my thinking. Whatever preserves and enhances this meadow in the natural cycles of its transformation is good; what is opposed to this meadow or negates it is not good. My life orientation is that simple.⁶

Aldo Leopold offers the same standard in *A Sand County Almanac*: “A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise.”⁷ This measurement of good and bad does not answer all questions, of course. What might seem to help one part of the biotic community might hurt another, and I lack the knowledge to know always how my actions might affect the entirety. In most cases we know toward which direction an act “tends,” though, to use Leopold’s term, and our commitment to the world’s innate goodness can guide us through many perils.

To make the turn, we will also need the support of community.

The problems our society faces are immense and complex. My path through complexity is to look for fundamental causes, and in my view the absence of deep connections underlies most of the problems.

- The perception that humans are more worthy than the rest of nature—loss of connection—has resulted in a way of life that harms nature.
- The perception that some humans are more worthy than other humans—loss of connection—has resulted in a way of life that harms other humans.

To repair the harms, humans must realize our unity with all other humans and with other-than-human nature—and deepen our connections.

Every human I meet is the product of an ancestry we share. All the people of our world were formed in the deeps of time by the same evolutionary process. Anatomically

⁶ Thomas Berry, *The Great Work* (New York: Bell Tower, 1999), 13.

⁷ Aldo Leopold, *A Sand County Almanac* (New York: Ballantine, 1970), 262.

modern *Homo sapiens* has been present on planet Earth for at least 300,000 years.⁸ For almost all that time we survived as what anthropologists call immediate-return hunter gatherers, meaning we lived on current, not stored, food supplies. During this period we evolved the basic traits that make us human. We traveled in small bands where virtues like altruism, sharing, and the preservation of nature were essential to group survival. Our societies were sustainable and egalitarian. We still have it in us to live that way. We are human.

I begin with the research because I have needed reassurance about human beings, and the findings on this front are positive. For several decades scientists have been documenting, through experiments and close examination of real-life events, that *Homo sapiens* from the first months is oriented toward helpfulness and co-operation. In 2020 Brian Hare and Vanessa Woods, researchers at Duke University's Center for Cognitive Neuroscience, published *The Survival of the Friendliest: Understanding Our Origins and Rediscovering Our Common Humanity*. In it they conclude, "Cooperation is the key to our survival as a species because it increases our evolutionary fitness." They write,

What allowed us to thrive while other humans went extinct was a kind of cognitive superpower: a particular type of friendliness called cooperative communication. We are experts at working together with other people, even strangers. We can communicate with someone we've never met about a shared goal and work together to accomplish it. . . . We develop all these skills before we can walk or talk, and they are the gateway to a sophisticated social and cultural world.⁹

Cultural training can put limits on this native altruism. Neoliberal politicians believe that free market capitalism is right, and if government regulates industry in order to protect humans and the rest of nature, they oppose that policy. When a religious teaching says homosexuality is wrong, an adherent might rescue a gay man run over by a car but vote against laws that safeguard that same person's employment status.

In industrialized nations many of us lack everyday experience with great depth of interconnection. But there are still people in North America who have grown up within solid community, and in Zimbabwe I frequently met Africans who, when I said, "Good morning, how are you?" answered, "I'm well if you're well."

Our individualistic culture has isolated us from each other to such an extent that I could answer "I'm fine" speaking as only myself, without acknowledging that this is not

⁸ Jean-Jacques Hublin et al, "New fossils from Jebel Irhoud, Morocco and the pan-African origin of *Homo sapiens*," *Nature*, <https://www.nature.com/articles/s41586-018-0166-3>.

⁹ Brian Hare and Vanessa Woods, *Survival of the Friendliest: Understanding Our Origins and Rediscovering Our Common Humanity* (New York: Random House, 2020), sample pages on <https://www.amazon.com/Survival-Friendliest-Understanding-Rediscovering-Humanity/dp/0399590684/?asin=0399590684&revisionId=&format=4&depth=1>.

possible. It is not possible for me to be fine as an individual if others are not fine. Not only are we not separate from the rest of what we have been taught to call the environment—not only could we not breathe one breath without its presence and support, neither are we in reality separate from any other human. For this reason, I believe our preparation for the next period includes acknowledging these ties and beginning to live from this embeddedness. As I try to remember that I am a part of the air, water, and land of Earth, likewise I try to be aware that when I rise in the morning, a part of me is in the house of my neighbor, and in some unavailable-to-the-senses way, she is in mine. Or something like that.

This is what Thich Nhat Hanh is saying in his poem “Please Call Me By My True Names,”¹⁰

the rhythm of my heart is the birth and death
of all that are alive.
I am the frog swimming happily
in the clear water of a pond,
and I am the grass-snake
that silently feeds itself on the frog.

“I’m well if you’re well.” Most Indigenous cultures cultivate a sense of mutual obligation and responsibility from a young age. In sub-Saharan Africa the perspective generally known as ubuntu (the word for humanity in the Zulu language of South Africa) says that “none of the community members would be what he or she is without the community. Thus, naturally the community takes precedence over the individual without underestimating individual personal rights.”¹¹

For those of us born into an individualistic culture, the mores of communalism must be learned. I may want to live in community, I may believe village-mindedness is the best way to relate to my neighbors, and yet my words and actions may make it hard for me to realize that goal. Wanting to play fair, trying not to ruffle feathers, and meeting the world with a smile are not enough. We are products of a culture that has not treated people well. We have good genes, but we carry wounds.

In *The Different Drum*, Scott Peck describes his experiences working with groups that wanted to come together in a closer way. He reports that invariably they begin with the best of intentions. Participants greet each other, find subjects in common, and begin to get acquainted. But after this period which he calls pseudo-community, they run into trouble. They encounter seemingly irreconcilable differences. They are not as happy,

¹⁰ Thich Nhat Hanh, *Call Me by My True Names: The Collected Poetry of Thich Nhat Hanh* (Berkeley, CA: Parallax Press, 2001).

¹¹ Joe Teffo, *The Concept of Ubuntu as a Cohesive Moral Value* (Pretoria South Africa: Ubuntu School of Philosophy, 1994), 12, referenced by Leonard Tumaini Chuwa, *Interpreting the Culture of Ubuntu*, <https://dsc.duq.edu/cgi/viewcontent.cgi?article=1421&context=etd>.

they do not know how to proceed, they may be sorry they came. He calls it the period of chaos—impasse. At that point he would tell them they were getting nowhere toward their goal of closeness. He would use the term emptiness for the state each would have to attain before the group could move together into real community. He writes, “I tell them simply that they need to empty themselves of barriers to communication. And I am able to use their behavior during chaos to point out to them specific things—feelings, assumptions, ideas, and motives—that have so filled their minds as to make them as impervious as billiard balls.”¹²

The barriers to communication Peck mentions include:

Expectations and preconceptions: trying to fit others into a preconceived mold

Prejudices: judging people before we know them

Ideological or theological rigidity: feeling superior based on categories of belief

The need to heal, convert, fix, or solve: assuming that differences are unacceptable

The need to control: trying to insure the desired outcome.

Distancing habits arise as defenses, and I believe we develop them only because at one time they were needed. A child comes into the world without affectations; they are acquired in order to manage real conditions. Once we become adults we need them in fewer situations, and yet they are not easily shed. Peck writes, “Giving them up is a sacrificial process. Consequently the stage of emptiness in community development is a time of sacrifice.”

Child-rearing practices that Americans consider appropriate, such as making behavioral demands, may nevertheless intimidate the developing human. We can contrast typical upbringing in our society with reports of researchers studying contemporary hunter-gatherers’ treatment of children. Peter Gray writes,

Their treatment of children is very much in line with their treatment of adults. They do not use power-assertive methods to control behavior; they believe that each person’s needs are equally important; and they believe that each person, regardless of age, knows best what his or her own needs are. Moreover, just as is the case with adults, children are not dependent on any specific other individuals,

¹² M. Scott Peck, *The Different Drum: Community Making and Peace* (New York: Simon and Schuster, 1988) viewed at Chapter V, <https://securerusercontent.com/198.71.233.111/45e.6eb.myftpupload.com/wp-content/uploads/2019/04/The-Different-Drum-Chapter-5.pdf> .

but upon the band as a whole, and this greatly reduces the opportunity for any specific individuals, including their parents, to dominate them.¹³

The most helpful strategy I have found for moving toward others respectfully was developed by Marshall Rosenberg. He calls it Nonviolent Communication or NVC, and says the goal is “to strengthen our ability to remain human, even under trying conditions. . . . All that has been integrated into NVC has been known for centuries. The intent is to remind us about what we already know—about how we humans were meant to relate to one another.”¹⁴

Even within our current circumstances we should be able to form a mini-village—an alliance that has the potential to hang together through hard times. If things start coming down all around and customary public services begin to fail, I think it will take a group of nearby others to help us meet our daily needs. In every neighborhood there are likely to be a few people willing to pool resources and look together for ways to deal with the worsening circumstances. We can prepare ourselves to become valuable members of such informal alignments. A group like this can be a realistic step toward avoiding social breakdown.

I want to belong to a village whose members use their differences to work as equals toward mutually chosen goals that will take time and effort to achieve.

Self-provisioning offers the chance to live in greater harmony with the rest of nature.

If we have developed a sound spiritual practice and formed alliances in which belonging and helping others offer the social and emotional sustenance humans must have from cradle to grave, then we are positioned to take the third step of preparation to live well amid radical upheaval. We are ready to acquire the knowledge of how to provide basic life requirements for ourselves and our neighbors.

In a period of economic and ecological contraction we will do more work that directly meets our most pressing needs. We will do this not only for the lack of money but due to the absence of humans ready to do tasks for us—because those humans will be busy taking care of their own needs. If we are wise, we will of course exchange services, but based on relationship, not money. In such a situation, we will be more bound together than before, due to our need for what others know or have the strength and talent to do. We will share not only out of desire for physical support but also for pleasure and social satisfaction.

¹³ Peter Gray, “Play as a Foundation for Hunter-Gatherer Social Existence,” *American Journal of Play* 1, no. 4 (2009): 508, <https://www.journalofplay.org/sites/www.journalofplay.org/files/pdf-articles/1-4-article-hunter-gatherer-social-existence.pdf>.

¹⁴ Marshall B. Rosenberg, *Non-Violent Communication: A Language of Life* (Encinitas, CA: PuddleDancer Press, 2015), 3.

In developed countries most people who can afford it have been paying someone else to grow their food, bring water to their homes, and take away sewage, garbage, and recycling either from their residences or a nearby convenience center. These services meet basic human needs, and yet I would guess at least two of the three functions are almost complete mysteries to many readers. Food comes from the store, water comes through faucets, and excrement goes out through toilets. End of knowledge.

Most of the rest of the world is not so ignorant. Outside industrialized countries—and inside many of them—people know how to obtain food other than from the grocery store, find water other than at the home sink, and manage toilet functions other than by peeing in potable water. If the day comes when “someone else” is not there to take away the trash, or if the food grown “somewhere else” is not accessible, or if the pipes no longer bring in water and take away sewage, I want to be ready to do it myself. I must, in order to remain healthy. These are basic human skills.

We may have an interval in which to study and acquire knowledge about how to live without the machines, materials, and services of our present circumstances. If we are wise, we will spend part of that learning period seeking out information about how nature manages to accomplish so much, squandering nothing. Only by aligning ourselves with this biological reality will we be able to move toward a stable future for ourselves and other living creatures.

People will find it much easier to manage if they have moderate purchasing power, adequate time, access to suitable land, and favorable climatic conditions—and neighbors who share the predicament and the desire to cooperate. Fewer and fewer will have all of these advantages as circumstances deteriorate, however, and this is the point of trying to become “collapse-able”—prepared for a larger measure of self-provision. By definition an era of decline will put into a state of need many who have been accustomed to individual adequacy. Going forward we will likely have to survive with less than we thought we had to have, and we may find we did not have to have it.

And if additional troubles arrive to make everything harder than we can predict, and yet somehow we must manage the essential tasks of producing food, obtaining clean water, and providing sanitation, we will need strong spirits and deep relationships to sustain us. We will need all the assets humans have developed through millennia of evolution.

Twelve Understandings for the Ecozoic Era

The Nature of the Universe

1. **The Unity of the Universe.** The universe as a whole is an interacting community of beings inseparably related in space and time. From its beginning, the universe has had a psychic-spiritual as well as a physical dimension. The universe is a communion of subjects, not a collection of objects.
2. **Modes of Expression.** The universe expresses itself at all levels through communion (intimacy, interrelatedness), differentiation (diversity), and subjectivity (interiority, self-organization).
3. **Cosmogogenesis.** The universe is a creative, emergent, evolutionary reality that has developed and is still developing through a sequence of irreversible transformations.

Earth and Its Current Dilemma

4. **Earth.** Earth is a one-time endowment in the unfolding story of the universe.
5. **The Current Dilemma.** The effects of human activity on Earth have become so pervasive and invasive that the survival and health of the Earth community now rest on decisions being made and actions being taken by humans.
6. **Transition to the Ecozoic Era.** There is a need to move from the current technozoic period where Earth is seen as resource for the benefit of humans, to an Ecozoic era where the well-being of the entire Earth community is the primary concern.

Three Key Building Blocks

7. **The New Story.** The New Story, the narrative of the evolutionary development of the universe, offers a new understanding of the cosmos and of the role of humans in the universe process.

8. **Bioregionalism.** Bioregionalism, care for Earth in its naturally occurring, relatively self-supporting geo-biological divisions, reorients human activity in developing sustainable modes of living, building inclusive human community, caring for other species, and preserving the health of Earth on which all life depends.

9. **Ecological Spirituality.** Ecological Spirituality, presence to the primal mystery and value of Earth as a single sacred community, provides a basis for revitalizing religious experience, healing human psyches, and maintaining both diversity and unity in the emerging Earth community.

Special Contributors to the Ecozoic Era

10. **Women, Indigenous People, Science, and Humanistic and Religious Traditions.** The wisdoms of women, Indigenous people, science, and classical humanistic and religious traditions will have important roles to play in redefining concepts of value, meaning, and fulfillment, and in setting norms of conduct for the Ecozoic era.

11. **The Earth Charter.*** The Earth Charter provides a comprehensive set of values and principles for the realization of the Ecozoic era.

The Great Work

12. **The Great Work.** The epic task, or "Great Work," of our time is to bring into being the Ecozoic era. It is a task in which everyone is involved and from which no one is exempt. On it the fate of Earth depends, and in it lies the hope of the future.

*The Earth Charter may be viewed at www.EarthCharter.org



2516 Winningham Road
Chapel Hill, North Carolina 27516 USA
ecozoic.studies@gmail.com
www.ecozoicstudies.org