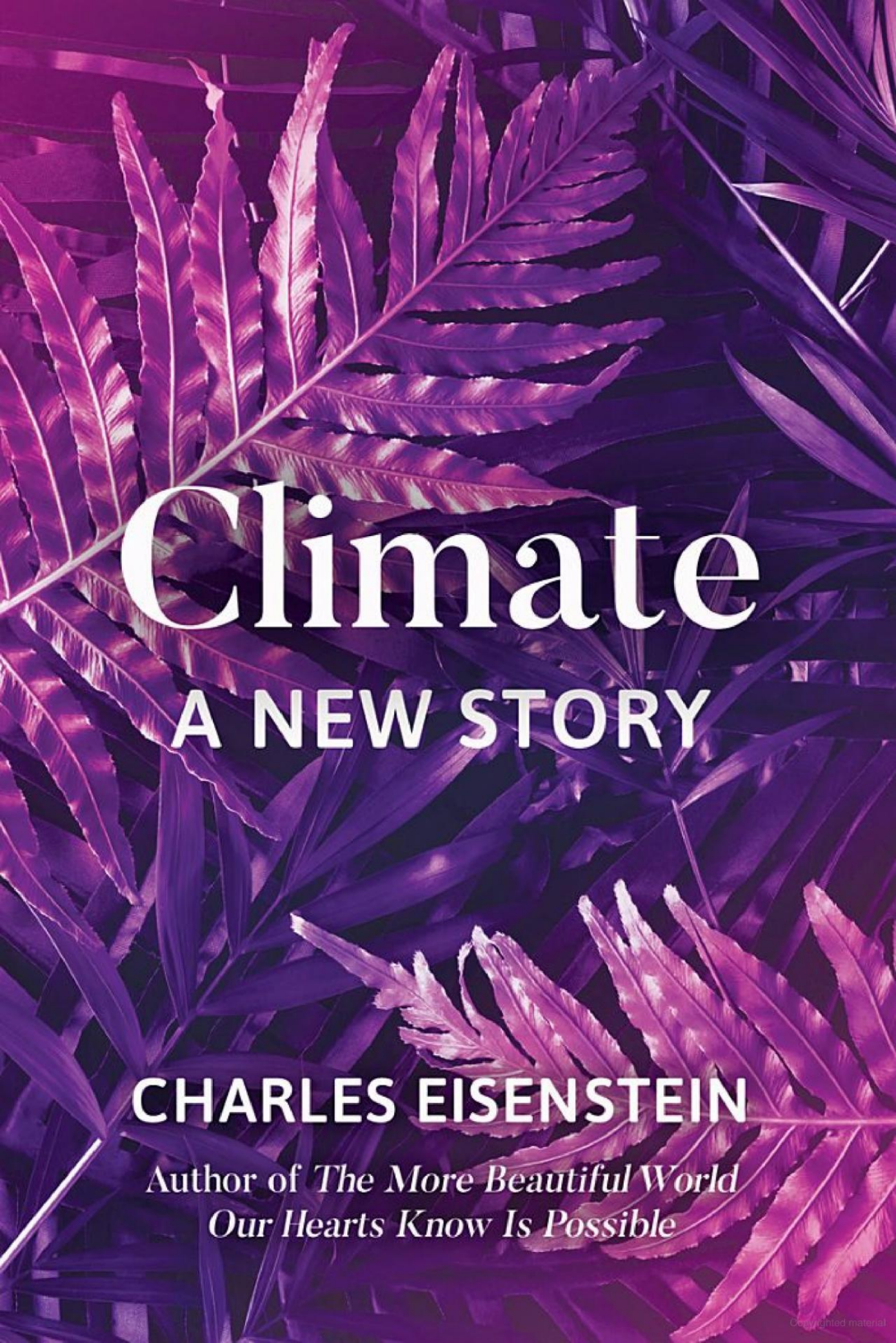

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Climate

A New Story

Charles Eisenstein

North Atlantic Books
Berkeley, California

Praise for *Climate—A New Story*

"There is nothing 'safe' in these writings; almost every chapter courts controversy. We as readers are the beneficiaries of this bravery. This is a message that must be heard loud and clear as we chart a path toward social and ecological renewal."
—Helena Norberg-Hodge, author and filmmaker of *Ancient Futures* and *The Economics of Happiness*

"This is a groundbreaking book. Eisenstein makes an inspiring, positive, and convincing case for a full and proper understanding of the present human predicament—a radical shift from a utilitarian worldview to an integral world view rooted in a sense of the sacred which recognizes the intrinsic value of nature and life."
—Satish Kumar, founder of Schumacher College and editor emeritus of *Resurgence & Ecologist*

"This book is brave enough, vulnerable enough, insightful enough to activate a truth buried deep within all of our hearts: that the planetary crisis we face today can only be transformed by a revolution of love. It calls each of us to break with our patterns of war thinking and realize our interconnectedness with all life on Earth."
—Jodie Evans, cofounder of Code Pink

"A clarion call to reconnect through love with our living Earth. Eisenstein offers a deeply analyzed and compelling case to collectively move past divisive reductionism, betwixt false Prophets of doom and false Profits of denial, towards a revitalization of reverential relations."
—Brock Dolman, Occidental Arts and Ecology Center, permaculture program, and WATER Institute director

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Prologue: Lost in a Maze

Once upon a time, a man was lost in a maze. How he got there is another story—to learn a mystery, perhaps, or to find a treasure. In any case, by now he has forgotten how or why he came to be there. He holds onto a faint memory of a sunlit realm, or a memory of a memory, that tells him that the maze isn't the whole of reality. He got there somehow, and there must be a way out. And lately it has become more and more painful to be inside. The maze is getting hotter and hotter, and he knows he will die if he doesn't find the exit soon. What was once an exciting exploration has become a monstrous trap.

Frantically he races around seeking the way out. Left, right, left, right, up and down, around in circles he runs, hitting dead ends and turning back, finding himself again and again back at his starting point. He begins to despair—after all that effort he has gotten nowhere.

A committee of voices in his head offers him advice: how to run faster, how to choose smarter. He heeds first one, then another, yet no matter how different the advice the result is always the same. Sometimes, amid the cacophony, he hears another voice as well, a quieter voice telling him, "Stop." "You aren't getting anywhere," it says. "Just stop."

The other voices respond with outrage, "You cannot stop. You cannot rest. Only by using your two feet will you ever get out of here, and the situation is urgent so you'd better move those feet fast. The window of opportunity is closing. Now is the time for action. After you get out, then it will be time to rest."

And so he runs all the faster, his head filled with new stratagems, pushing himself to an all-out effort. And once again, after many twists and turns, he finds himself back in the center of the maze.

This time he has to stop. Out of sheer exhaustion and despair, he collapses in a heap. The tumult of advice subsides, leaving his mind for once quiet, as happens when every option is exhausted and one just doesn't know what to do. Now he has a chance to ponder his wanderings, and in the empty space of his mental quiet, new realizations are born. He realizes that there has been a pattern to his wanderings. Perhaps he followed each left turn with a right turn. He also remembers running past small, dark passages that he ignored because they seemed unpromising. He remembers glimpsing secret doors that he was too much in a hurry to investigate. In quietude, he begins to understand the structure of the territory he has been racing in.

By now his heartbeat and breath have calmed along with his mind, and another sound comes into his awareness. It is a beautiful, musical sound that, he now realizes, has been there all along, drowned out by his pounding footsteps and ragged breathing. He knows that he must never lose touch with that sound

again.

The man begins to walk again, slowly this time. He knows that if he panics and starts running (understandable, since the crisis he's been trying to escape is real) then he will fall into old habits. Guided by his newfound understanding, he explores the small, dark passageways that he'd dismissed before. He enters the hidden doorways that take time to unlock. Sometimes these new doors and passages lead to dead ends too, but at least now there is hope. He is in new territory, unfamiliar territory. No longer is he endlessly finding himself back at his starting point. Now he is wandering for real.

As he leaves familiar territory farther behind, his understanding of the structure of that part of the maze becomes less and less useful. He faces choice points without a mental map. Should he turn left or right? At those moments he again stops, gets quiet, and listens, tuning in again to that musical sound that he keeps in his awareness. From which direction does the sound come through the most clearly? That is the direction he chooses.

Sometimes when he follows the music it seems to take him the wrong way. "That couldn't possibly be the way out," he thinks. But then the passage turns again, and he comes to trust more and more this sound that calls him.

Following the music, eventually the man reaches the final passageway, which he recognizes because of the daylight glow at the end of it. He emerges into the sunlit realm he always knew must exist; it is more beautiful than he ever dared imagine. And there he finds the source of the music. It is his Lover, who has been singing to him all this time.

1
A Crisis of Being

A Lost Truth

I still remember the event that made me into an environmentalist. I was seven or eight years old, standing outside with my father watching a large flock of starlings fly past. "That's a big flock of birds," I said.

My father told me then about the passenger pigeon, whose flocks once filled the skies, so vast that they stretched from horizon to horizon for hours on end. "They are extinct now," he told me. "People would just point their guns to the sky and shoot randomly, and the pigeons would fall. Now there aren't any left." I'd known about the dinosaurs before then, but that was the first time I really understood the meaning of the word "extinct."

I cried in my bed that night, and many nights thereafter. That was when I still knew how to cry—a capacity that, once extinguished through the brutality of teenage boyhood in the 1980s, was nearly as hard to resuscitate as it would be to bring the passenger pigeon back to earth.[1]

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[1] The reader will notice that I sometimes capitalize "Earth" and sometimes do not. When I refer to it as a planet, I capitalize it. When I refer to it as a realm of habitation, or as a synonym for ground, or in the sense of a place where life happens (any planet like ours would be an earth), I do not.

These two kinds of extinction are related. From what state of being do we extinguish other species, ruin earth and sea, and treat nature as a collection of resources to be allocated for maximum short-term benefit? It can come only from the constriction, numbing, and diversion of our capacity to feel empathy and love. No mere personal failing, this numbing is inseparable from the deep narratives that run our civilization, and the social systems that those narratives support.

Appearances to the contrary, it is neither folly nor myopia that sets us on a path of collective ruin. These are symptoms of a deeper malady. Would you say of the alcoholic that if he were only shown that drinking harms his health, relationships, and economic security, then his dismal future would scare him into quitting? Of course not. The foolish sacrifice of the future for a temporary surcease from the inner pain isn't driven by stupidity. Therefore, you can harangue him about the damage to his liver all you want, and maybe he'll say, "Yeah, you're right," and cut back for a few weeks, or he will promise to drink less, with every good intention. But nothing will really change. How similar that scenario is to the climate talks. We agree to cut back—and agree, at the same

time, to ignore the social and economic conditions that make cutting back impossible. Carbon emissions continue to grow after nearly three decades of climate talks and agreements. This pattern extends beyond the matters of climate. Species continue to perish, bat colonies and bee hives to collapse, forests to wither, coral reefs to bleach, and elephants and whales to die. No one wants to live on a barren planet, a sick planet, or a dying planet, yet like an addict we seem helpless to change course.

Like many clichés, "our addiction to fossil fuels" contains a lost truth. Usually I hear the phrase used in tones of condemnation or disgust (betraying the same lack of empathy that is part of the problem). But if we take the addiction metaphor seriously, we would next inquire as to what drives the addiction.

Some on the left say it is capitalism. Yet the Soviet Union committed grievous environmental damage as well; besides, capitalism (like communism) is itself embedded in more fundamental belief systems that are largely beneath the surface of our awareness. It is these that I intend to excavate in this book, hoping therefrom to derive precepts and strategies for ecological healing. I will describe how many of the efforts to fight climate change or save the environment are based on the same assumptions that drive us toward ruin. I will identify fundamental problems in what I'll call the Standard Narrative of climate change, and show how the framing of the problem is part of the problem. I will explain how solutions that come from that narrative risk making things worse. The maze thus revealed, I'll explore the dark passageways and secret doorways that the dominant discourse ignores, but that an alternative Story of the World illuminates.

It is not wrong ideas that drive addiction. Addiction arises in the presence of basic unmet needs. The food addict isn't really hungry for food; she is hungry for connection. The alcoholic is seeking just to feel okay for a while. The gambler yearns for liberation from economic or psychological confinement. The porn addict's true desire is for intimacy and acceptance. These (admittedly, trivialized) examples at least convey a general principle: Desire comes from unmet needs. When the true object of the desire is unavailable, the desire is displaced onto the most accessible substitute. What is the unmet need behind the addiction to fossil fuels?

In addiction theory there is a concept of addiction transfer: when the addict is forcibly deprived of the object of her addiction, she will transfer the addiction onto something else. Recipients of bariatric surgery who can no longer overeat might start drinking or gambling instead. Overeating, drinking, and gambling are symptoms of a deeper wound. Similarly, I will argue, the current environmentalist obsession with fossil fuels is also too narrow. Conceivably, we could find another fuel source and maintain the addiction to a system of economics and production that consumes the world.

What is it that we are really looking for in our quest for bigger, faster, and more? Later chapters on energy and agriculture make it clear that humanity's

problems do not stem from any quantitative lack—hunger for instance is nearly always a result of maldistribution. We seek through growth to meet other needs, needs that, because they are fundamentally qualitative, growth can never meet. Basic human desires for connection, community, beauty, sacredness, and intimacy are met with faux substitutes that temporarily numb but ultimately heighten the longing. The trauma of our deprivation drives our collective addictions. Ecological healing therefore requires our society to look beneath its consumptive symptoms and reorient toward qualitative development. To do so requires significant reprogramming, since our guiding narratives, from economic to scientific, embody quantitative thinking.

Ecological deterioration is but one aspect of an initiation ordeal propelling civilization into a new story, a next mythology. By a mythology, I mean the narratives from which we weave our understanding of who we are, what is real, what is possible, why we are here, how change happens, what is important, how to live life, how the world came to be what it is, and what ought to come next. Ecological degradation is an inevitable consequence of the mythology—I call it the Story of Separation—that has dominated the last several centuries (and to an extent the last several millennia). To paraphrase Einstein, it will not be averted from within that mythology.

The essence of the Story of Separation is the separate self in a world of other. Since I am separate from you, your well-being need not affect mine. In fact, cast into an objective external universe, more for you is less for me; naturally then we are in competition with each other. If I can win the competition and dominate you, I'll be better off and you worse. The same goes for humanity generally vis-à-vis nature. The more control we can exercise over the impersonal forces of nature, the better off we will be. The more intelligence we can impose upon a random, purposeless universe, the better the world will be. Our destiny, then, is to ascend beyond nature's original limits, to become its lords and masters. The universe, this story says, is but atoms and void, possessing none of the qualities of a self that we experience as human beings: intelligence, purpose, sentience, agency, and consciousness. It is up to us then, to bring these qualities to the dead building blocks of the universe, its generic particles and impersonal forces; to imprint human intelligence onto the inanimate world.

The Story of Separation reverberates through every institution of the modern world. In other books I've described how it underlies money, law, medicine, science, technology, education, etc., and how these institutions might evolve under a different story.

This book also aims to describe and, I hope, accelerate the transition to a new (and in many ways ancient) story, with specific reference to climate change and the environmental crisis generally. A shift in mythology is more than a cognitive shift. In this book I will argue that the external changes we face are far more profound than merely switching industrial society to a zero-carbon fuel stock.

Every aspect of society, the economy, and the political system must come into alignment with a new story.[2]

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[2] I use the adjective "new" to mean "new for modern civilization as a guiding narrative." In fact it is not at all new. Not only did older, indigenous cultures hold some version of the Story of Interbeing, it inhabits Western civilization as well in the form of esoteric teachings, wisdom traditions, and cultural countercurrents. What would be new would be a mass civilization operating according to the principles of interbeing.

The name I like to use for the new story is Thich Nhat Hanh's term "interbeing." Although the word has Buddhist overtones, I do not profess to be a Buddhist, nor need the reader embrace Buddhism to appreciate the insights the concept allows.

Interbeing doesn't go so far as to say, "We're all one," but it does release the rigid boundaries of the discrete, separate self to say that existence is relational. Who I am depends on who you are. The world is part of me, just as I am part of it. What happens to the world is in some way happening to me. The state of the cultural climate or political climate affects the condition of the geo-climate. When one thing changes, everything else must change too. The qualities of a self (sentience, agency, purpose, an experience of being) are not confined to humans alone. And the results of our actions will come back to affect ourselves, inescapably.

Interbeing must be more than a philosophical concept if anything is going to change. It must be a way of seeing, a way of being, a strategic principle, and most of all a felt reality. Philosophical arguments alone will not establish it any more than appeals to prudence and reason will solve the ecological crisis.

When we restore the internal ecosystem, the fullness of our capacity to feel and to love, only then will there be hope of restoring the outer. Each level of healing proceeds apace, just as each form of extinction mirrors the rest. That is not to suggest we withdraw from outer activism in favor of inner cultivation. It is that love and empathy are the felt dimensions of the Story of Interbeing, and we cannot act effectively from that story, nor truly serve it, without their guidance. They are the song that will lead us out of the maze. To follow their guidance we must regain our listening capacity, which trauma and ideology have numbed and restricted to a very narrow bandwidth.

Then we will know how to change the systems that reify Separation by severing our ties to community, plants, animals, land, and life and replacing those ties with the technology-mediated, money-mediated, generic relationships of mass society. (Thus bereft, no wonder we always hunger for "more.")

Love is the expansion of self to include another. In love, your well-being is inseparable from my own. Your pain grieves me and your happiness gives me joy. The ideology of modernity circumscribes the scope of our love by assigning a narrow identity to the self and relegating the nonself to the status of mute, insensate objects or self-interested competitors. To care about others beyond

their utility to oneself becomes therefore something of a delusion, like loving your pet brick.[3] Perhaps that is why so much environmental rhetoric comes in the form of warnings that bad things will happen to us if we don't change our ways. We call arguments "rational" when they appeal to self-interest. This book will argue that rational reasons are not enough; that the ecological crisis is asking for a revolution of love.

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[3] Full disclosure: I have a special brick that I use for my *qigong* practice toward which, I must confess, I feel quite some affection. As for the irrationality of love, I'll quote a bit of doggerel from the science fiction writer Isaac Asimov. Do you detect as I do a note of abject defeat underneath its know-it-all cheekiness? Tell me why the stars do shine, Tell me why the ivy twines, Tell me what makes skies so blue, And I'll tell you why I love you. Nuclear fusion makes stars to shine, Tropisms make the ivy twine, Raleigh scattering make skies so blue, Testicular hormones are why I love you.

For the discrete and separate self in a world of other, love is irrational. Steeped in the logic of separation, the mind is ever in conflict with the heart. Not so, in the logic of interbeing, which recognizes that what happens to the other, to the incarcerated, to the bombed, to the trafficked, to the clear-cut, to the polluted, and to the extinguished is happening, in some sense, to the self as well. In the Story of Interbeing, heart and mind are reunited, and love is what the truth feels like.

If love is truth, then the source of our apparent myopia is clear. It is love benumbed. We do not see that what we devalue and destroy is part of ourselves. We do not see that we aren't merely conditionally dependent on the oceans, rainforests, and every living system on Earth for survival; that something more important than survival is at stake. It is our humanity. It is our full beingness. Love benumbed, we believe that we can inflict damage without suffering damage ourselves.

Of course, I would not write a book that were just a vague promise that love will save the world. How do we enact it systemically? How do we overcome what blocks it? How do we awaken our benumbed empathy? How do we translate the diagnosis I've offered into practical action on the level of politics and ecological healing? These questions are the subject of this book.

The Identity of "They"

Species extinction, as you know, did not end with the nineteenth century. The fate of the passenger pigeon foreshadowed the calamity that is now overtaking life on this planet, a calamity that has left none of us untouched. The calamity is the impoverishment of life, in every sense of that phrase. Extinction is one kind of impoverishment; the more general decline in biodiversity is another; so also with the spreading deserts on land and in the ocean and the general depletion of life even where it is green. Even when species don't go extinct, often they decline to small remnant populations, shrink to a small portion of their original range, lose subspecies and genetic diversity, and inhabit vastly simplified

ecosystems. This withering of biological life accompanies the impoverishment of human life and cultural vitality. All partake of the same crisis.

I recently made the acquaintance of a farmer in North Carolina whom I'll call Mike, a man of the earth whose family has been here for three hundred years. His thick accent, increasingly rare in this age of mass-media-induced linguistic homogenization, suggested conservative "Southern values." He was indeed full of bitterness, though not against the usual racial or liberal suspects; instead he launched into a tirade about the guvmint, chemtrails, the banks, the 9/11 conspiracy, the apathy of the "sheeple," and so on. "We the people have got to rise up and smash them," he said, but there was no fervor in his voice, only a leaden despair.

Tentatively, I broached the idea that the perpetrators of these crimes are themselves imprisoned in a world-story in which everything they do is necessary, right, and justified; and that we join them there when we adopt the paradigm of conquering evil through superior force. That is precisely what motivates the technologies of control, whether social, medical, material, or political, wielded by those we would overthrow. Besides, I said, if it comes down to a war to overthrow the tyrants, if it comes down to a contest of force, then we are doomed. They are the masters of war. They have the weapons: the guns, the bombs, the money, the surveillance state, the media, and the political machinery. If there is hope, there must be another way.

Perhaps this is why so many seasoned activists succumb to despair after decades of struggle. Dear reader, do you think we can beat the military-industrial-financial-agricultural-pharmaceutical-NGO-educational-political complex at its own game?[4] The modern environmental movement, and especially the climate change movement, has attempted just that, not only risking defeat but sometimes worsening the situation even in its victories. The ecological crisis is calling us to a deeper kind of revolution. Its strategy involves restoring what the modern worldview and its institutions have rendered nearly extinct: our felt understanding of the living intelligence and interconnectedness of all things. To not feel that, is to be not fully alive. It is to live in poverty.

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[4] I hope I haven't left anyone out—I don't wish to be rude.

Mike wasn't understanding me. He is an intelligent man, but it was as if something had possessed him; no matter what I said, he would pick up on one or two cue words to pour forth more bitterness. Obviously, I wasn't going to "defeat the enemy" by force of intellect (thus enacting the very same paradigm I was critiquing). When I saw what was happening, I stopped talking and listened. I listened not so much on a semantic level, but to the voice beneath the words and to all that voice carried. Finally I knew what to do. I asked him the same question I want to ask you: "What made you into an environmentalist?"

That is when the anger and bitterness gave way to grief. Mike told me about the ponds and streams and wild lands that he hunted and fished and swam and

roamed in his childhood, and how every single one of them had been destroyed by development: cordoned off, no-trespassed, filled in, cut down, paved over, and built up.

In other words, he became an environmentalist in the same way that I did, and, I am willing to guess, the same way you did. He became an environmentalist through experiences of beauty and loss.

"Would the guys ordering the chemtrails do it, if they could feel what you are feeling now?" I asked.

"No. They wouldn't be able to do it."

The truth of that moment Mike and I shared stands alongside the reality that, actually, they *would* be able to do it, that "they" in fact includes each one of us who participates in this civilization. A single moment of reverence, gratitude, or grief, however profound, is not enough to undo generations of programming, nor to extricate ourselves from an economy and society of ecocide. Are you able to get into your car, knowing the effect of emissions and oil spills and the geopolitics of oil extraction? I certainly am, and you probably are too. You might have a story about why it is okay, why in your case it is justified, or at least why *you* are okay for doing it. "I have no choice," you might think. Or "At least I feel bad about it. At least I'm opposed to it. At least I vote for people or donate money to organizations who are trying to change the system. Besides, I'm driving a hybrid." All kinds of reasons why it is okay to get into your car right now. Or maybe you don't think about it at all.

My point here is not that you are deluding yourself—you pathetic, self-justifying hypocrite! It is to illuminate the fallacy of our judgments and the war thinking that they engender. And it is to suggest that we are not normally feeling what Mike was describing, because we live in a system, an ideology, and probably a wounded psychology that allow full feeling only sporadically. The system numbs us; it also depends on our numbness.

I want us to transcend the language of "Is it okay?" entirely, and underneath it, "Am I okay?" This is the language of war turned inward. Along with defeating the enemy, we seek to conquer its internal projection: the greedy, hypocritical, dishonest, egotistical, self-serving parts of ourselves. In this campaign, self-disgust is considered an ally, the first sign of redemption, because now we are joining the good side, with parts of ourselves as the enemy. Dissociating from those parts, we imagine that we are making progress in overcoming them. Such great efforts we are making, such commendable progress.

Are we ever making progress though? Or is any progress merely in our ability to excuse, cloak, and rationalize the choices that don't fit the image of our ethics?

Corporations and governments do just that: they cloak, they excuse, they deny, and they make cosmetic, self-justifying changes to uphold a green image. We would like to blame greenwashing on corporate duplicity and greed—giving us an external enemy to fight—but (like our own self-justifications) I am afraid it is rooted in something much deeper.

In both cases, personal and political, to blame moral failings for the horrifying predicament of people and planet is a dangerous error that diverts attention away from systemic and ideological causes. It disguises a problem that we don't know how to solve as a problem that we do. We know, in theory at least, how to stop bad people from doing bad things. We can deter them, surveil them, imprison them, or kill them. We can fight them, and if we win the fight, the problem is solved.

Our political discourse is rife with good-versus-evil narratives. It is obvious to each side that they are good and the other side is evil (or some cipher therefor: sick, irrational, twisted, unethical, corrupt, "acting from the reptilian brain," etc.). Both sides agree on that. Therefore, both sides also agree on the strategic template for victory: arouse as much outrage and indignation as possible among the Good Folk so that they will rise up and cast down the Evil Folk. No wonder our civic discourse has degenerated into such polarized extremes.

That does not mean that I hold no opinion about which side is right in the political questions of our day. Nor am I saying that truth is a matter of opinion or that we create our reality. It is rather that those in our society typically misunderstand the causes of others' opinions and behavior.

To blame evil is to misdiagnose the problem. I explored this idea in depth in my last book; here I'll just ask you to insert yourself into the totality of the circumstances of a fracking executive. The "totality of circumstances" could include:

- The corporate culture
- The culture of the energy industry
- Performance pressure
- Economic pressures on the business, rooted in the economic system
- Years of attacks from hostile "enviros" who appear to you to be ignorant and misguided
- Stories of "American energy independence"
- Ideologies of progress, growth, and technology
- The perceptual set of Earth-as-thing
- Childhood "success" programming

What actions would you take from those conditions? What would be your hardest choices? Your most painful compromises?

What are your hardest choices and most painful compromises right now? Do you drive a car that burns gasoline? Did you drive somewhere when it was raining yesterday, when you really could have biked? Do you take energy-consuming hot showers? Do you tread on cement sidewalks? Do you use a cellphone containing conflict minerals? Do you use credit cards or banks who fund the pillage of nature? If so, someone out there probably thinks you are evil too. Exploiter! Hypocrite! Consumer of more than your share! You might sometimes think that about yourself too. Other times, you will have compassion for yourself, realizing that given your circumstances, your burdens, your traumas, and your limitations, you are doing the best you can.

Does this mean we might as well give up on change? No. It means we need to ask, What are the circumstances that give birth to the choices that are harming

the world? Engaging other people, we have to ask the question that defines compassion: What is it like to be you? The more we understand, the more we live in reality and the less we inhabit a fantasy world populated by our projections. You can go ahead and see your opponents as dastardly villains, but if that is not the truth of who they are, then you are living in a delusion. Focusing on the bad guys, we become blind to deeper, systemic causes, forever chasing false solutions that actually maintain the status quo.

Living in a delusion, we endlessly re-create its landscape; we repeatedly enact its roles and manufacture its dramas, racing along the same old paths of the maze. Even if we achieve temporary victory against the bad guys, the overall situation doesn't seem to change. We never get closer to the exit. What we normally achieve is, instead of victory, a strengthened conviction that we are in fact the good guys. That polarized view is one of the things we will have to give up if we are to launch the era of ecological healing. Are you prepared to sacrifice being the winner? Are you willing to sacrifice being one day proved right? Are you willing to stop seeing yourself on Team Good fighting Team Evil? Because that's one thing that both sides of any debate normally believe of themselves, and that is the template of "othering" that exemplifies and reinforces human separation from nature.

I ask these questions deliberately. I will argue in this book that all the positions on the spectrum of climate change opinion, from skepticism to catastrophism, are wrong. Like those who blame evil people for the world's evil, they operate in too shallow a causal framework. The totality of circumstances driving ecological degradation and climate derangement is greater than conventional opinion recognizes.

The Fight

None of the above is to deny that horrible things are happening to life on this planet. Someone is bulldozing the trees, draining the wetlands, bottom-trawling the fish, and polluting water, air, and soil. Each time, that someone is a human being.

Since most of the damage happens at the behest of large corporations, it seems reasonable to name them as the enemy. Expose their immoral behavior! Hold them to account! Deter their crimes with meaningful penalties! Get their money out of politics! Then we can at least reduce their worst excesses.

This argument is reasonable under current conditions, but it accepts as unchangeable the very things we must change. I'll offer some specifics later in the book; for now, a generality: fighting the enemy is futile when you inhabit a system that has the endless generation of enemies built into it. That is a recipe for endless war.

If that is to change, then one of the addictions—more fundamental than the addiction to fossil fuels—that we are going to have to give up is the addiction to

fighting. Then we can examine the ground conditions that produce an endless supply of enemies to fight.

The addiction to fighting draws from a perception of the world as composed of enemies: indifferent forces of nature tending toward entropy, and hostile competitors seeking to further their reproductive or economic self-interest over our own. In a world of competitors, well-being comes through domination. In a world of random natural forces, well-being comes through control. War is the mentality of control in its most extreme form. Kill the enemy—the weeds, the pests, the terrorists, the germs—and the problem is solved once and for all.

Except that it never is. World War I—the "war to end all wars"—was followed by another, even more horrific, soon after. Nor did evil disappear after the defeat of the Nazis or the fall of the Berlin Wall. The collapse of the Soviet Union was, however, a crisis for a society that had come to define itself through its enemies; thus followed a desperate search for a new enemy in the early 1990s that resulted in the feeble candidate of "Colombian drug lords" for a time before settling on "terror."

The War on Terror gave a new lease on life to a culture built on war-making; indeed it seemed to offer the prospect of permanent war. Unfortunately for the military-industrial complex, the public seems to be growing less terrified of terror, necessitating a series of new threats by which to maintain a climate of fear. It is hard to say that the scare campaigns of the last few years—Russian hackers, Islamic terror, Ebola, the Zika virus, Assad's chemical weapons, and Iran's nuclear program, to name a few—have not worked. The media at least clangs the alarm, and the public seems to have gone along with the policies that these campaigns justify, such as massive spraying programs in Florida to "combat Zika." However (and this may in part be a function of my countercultural social circles), I have not seen much actual fear about these things, nothing like the palpable dread of the Soviet Union that was nearly universal in my childhood. The public discounts pretty much anything the authorities say, including the fear-mongering. Its apathy permits the governing elites to pursue their programs of control, but no longer do they channel and harness real fear. Is anyone outside the political classes actually afraid of Iran, Bashar al-Assad, or Vladimir Putin? One suspects that neither are the politicians, though they may display a semblance of alarm as a political posture.

I bring up the waning power of scare tactics because the effort to halt ecological collapse uses many of these very same scare tactics. The primary climate change narrative is basically, "Trust us, bad things will happen if we don't hurry up and make big changes. It's almost too late—the enemy is at the gates!" I want to question the assumption that we can and should motivate the public with fear-based appeals to self-interest. What about the opposite? What about appeals to love? Is life on earth valuable or sacred in its own right, or only in its utility to ourselves?

Climate change activism abounds in war narratives, war metaphors, and war

strategies. The reason, aside from the deep-seated habits of the Story of Separation, is the desire to inspire the fervor and commitment that people display in wartime. Following the rhetorical template of war, we invoke an existential threat.

I don't think it is working. I hesitate to use the term "climate change" in my essay titles. The last time I did so, one reader wrote to me saying, "I almost didn't read your post because it had the words climate change in the title, and I'm just so sick of hearing the same thing over and over again."

Maybe we are becoming war-weary. Does it take more and more exhortation to goad you into joining another battle? Have you encountered burnout, when no new horror can stimulate you to the kind of engagement you practiced a few years ago? Burnout seems the downfall of activists, but as the story of the man lost in a maze implies, it can be a necessary initiation into a wholly different mode of engagement.

My friend Pat McCabe, a Diné (Navajo) woman and longtime student of the Lakota Way, puts it this way: "When you reach the end of your resource, then the magic happens." When we exhaust what we know, then what we don't know becomes possible.

Struck with grief at the ruin of life on earth, one might understandably take offense at any suggestion that we "give up the fight." To someone steeped in war mentality, to give up the fight means to withdraw from action. I'm suggesting we give up the fight in another sense: as the orienting principle of our efforts to heal the earth. There may still be battles, but we will access much greater power to heal when we frame the issue in terms of peace.

It is often observed that the last major war to unambiguously achieve its objectives was World War II. Since then, military conflicts have usually ended in stalemate, quagmire, or defeat for the stronger power. The failure of, for example, the U.S. war in Afghanistan is not due to inferior weaponry. It is that its weaponry is insufficient to its objective, which cannot be achieved by force. Guns and bombs cannot usually bring stability, "win hearts and minds," or make a country pro-American, unless it is an unambiguous case of saving people from evil despots or aggressors.[5] To justify war, we have to fit every situation into that storyline, as the media has tried to do in every conflict since Vietnam.

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[5] Some argue that the true objective of recent wars has been to sow chaos and destroy the ability of sovereign governments to resist neoliberal free trade policies and imperialist geopolitical objectives. In that analysis, some wars such as the one that dismembered Yugoslavia or destroyed Libya were a great success. Nonetheless, the point still applies that the tools of war are becoming impotent to achieve what we say and believe we want.

The same goes for nonmilitary wars. In my lifetime I've heard declarations of a War on Poverty, a War on Cancer, a War on Drugs, a War on Terror, a War on Hunger, and now a War on Climate Change. None of these have been any more efficacious than the War in Iraq.

If the "fight" against climate change is a war, it is clear which side is winning. Greenhouse gas emissions have relentlessly increased since they were first widely acknowledged as a problem in the late 1980s. Deforestation has also continued and in some places even accelerated since then. Nor has any progress been made in altering the basic fossil-fuel-dependent infrastructure of society. If war were the only answer, then we would have to respond by fighting even harder. If there is another way, then the habit of fighting becomes an obstacle to victory.

In the case of ecocide, the mentality of war is not only an obstacle to healing, it is an intimate part of the problem. War is based on a kind of reductionism: it reduces complex interconnected causes—that include oneself—to a simple, external cause called the enemy. Furthermore, it normally depends on the reduction of the enemy to a degraded caricature of a human being. The demonization and dehumanization of the enemy is little different from the desacralization of nature upon which ecocide depends. To render nature into an *other* undeserving of reverence and respect, an object to dominate, control, and subjugate, is of a kind with the dehumanization and exploitation of human beings.

Respect for nature is inseparable from respect for all beings, including the human. It is impossible to cultivate one without the other. Climate change, therefore, calls us to a greater transformation than a mere change in our energy sources. It calls us to transform the fundamental relationship between self and other, including but not limited to the relation between the collective self of humanity and its "other," nature.

The philosophically inclined reader may protest that self and other are not really separate, or that the human/nature distinction is an artificial, false, and destructive binary, an invention of the modern mind. Indeed, "nature" as a separate category suggests that we humans are unnatural and, therefore, potentially exempt from nature's laws. Whatever the underlying metaphysics, what is changing is our *mythology.* We never were separate from nature and never will be, but the dominant culture on earth has long imagined itself to be apart from nature and destined one day to transcend it. We have lived in a mythology of separation.

Part of the mythology of separation is a belief in nature-as-thing; in other words, the belief that only human beings are possessed of full selfhood. This is what licenses us to exploit the beings of nature for our own ends, much as dehumanization of brown people licensed lighter-skinned people to enslave them.

The dominant culture's recognition of who counts as a fully subjective, conscious, and worthy self has been expanding now for several hundred years. Two or three centuries ago, only a propertied white male was a full subject. Then that category was expanded to include all white males. Eventually it expanded again to include women as well, and people whose skin is not white. Then along

came the animal rights movement, which said that animals too have consciousness, subjectivity, and an inner life, and should not therefore be treated as mere brutes or meat-machines. More recently, remarkable scientific discoveries have emerged around plant intelligence, mycelial intelligence, soil intelligence, forest intelligence, and even the capacity of water to hold and transmit complex, dynamic patterns of information. These discoveries seem to be converging on the universal indigenous belief that everything is alive and aware.

Just as bigotry and ecocide both depend on the dehumanization or "de-selfing" of the other, so also is the reversal of both part of the same movement toward a Story of Interbeing. Again, that term goes beyond mere interconnectedness or interdependency, to say that we are existentially connected to all other beings and to the world at large. My very being partakes in your being, and in the being of the whales, the elephants, the forests, and the oceans. What happens to them happens as well to me, on some level. When a species goes extinct something dies in us too; we cannot escape the impoverishment of the world we live in.

This applies equally to ecological, economic, and political well-being. The days of colonialism and imperialism—in which the wealth of one nation was built on the plunder of others—are dwindling. The era of thinking that human wealth could be built on the plunder of nature is nearly over too. Certainly, the outward structures of both kinds of plunder seem as robust as ever, even expanding to new extremes. However, their ideological core has hollowed out. Our converging crises are initiating humanity into the new and ancient mythology of interbeing.

Later I will argue that the reality of the climate crisis is different from our common perception of it. Yet perceptions are important. The core truth of climate change is that we are at the end of an era. We are at the end of the Age of Separation. It is a transition that has been under way for three generations now, inaugurated by the most extreme of all possible technologies of control applied at the very pinnacle of Total War. I am speaking, of course, of the Bomb.

The Age of War properly came to an end in 1945, when for the first time in history human beings developed a weapon too terrible to use. It took two horrific applications of the atomic bomb to set the stage for decades of "mutually assured destruction," a glimmering of the evolutive realization that what we do to the Other, we do to ourselves. For the first time in history, total war between the great powers was impossible. Today, aside from an unregenerate minority, no one contemplates using nuclear weapons even in cases where retaliation is unlikely. Radioactive blowback makes large-scale use unthinkable, but there is another thing that holds us back too. We name it, perhaps, conscience or ethics, but history makes it tragically clear that conscience or ethics alone are not enough to stop the foolish and the horrific. No, something else has changed.

What has changed, I believe, is that the consciousness of interbeing is dawning

in the dominant civilization. What we do to the Other, we do to ourselves. This will be the defining understanding of the next civilization—if there is a next civilization. Right now we (usually in this book, when I say "we" I mean the dominant culture on this planet) are facing lesson number two in the curriculum of interbeing. Lesson one was the Bomb. Lesson two is climate change.

2
Beyond Climate Fundamentalism

Does Nothing Else Matter?

"Someday, Charles, you are going to have to decide if you want to be relevant."

So said to me a prominent environmentalist after hearing me describe the diverse fields of my activity and interest. What he meant was something like this:

> There is a shrinking window for climate action before irreversible feedback loops render human extinction inevitable. Therefore, the only relevant action you can take right now is to put 100 percent of your efforts into cutting greenhouse gas emissions as swiftly as possible by whatever means necessary. Your other interests are irrelevant. If we don't implement a meaningful carbon tax soon, then the healing of the relation between the masculine and feminine won't matter. Nor will saving the whales. Nor will ending the school-to-prison pipeline. Social justice, education, psych meds, holistic medicine, scientific anomalies, attachment parenting, community building, new economics, philosophy, history, cosmology, neo-Lamarckian biology, sacred plant medicines, nonviolent communication, plant intelligence, threatened languages, indigenous sovereignty, pansubjective metaphysics—none of the issues you write about matter unless they have a direct, significant, near-term impact on greenhouse gases. Once we've won that fight, we can turn our attention to those other things. So are you going to join the fight?

This pattern of thinking is called fundamentalism, and it closely parallels the dynamics of two defining institutions of our civilization: money and war. Fundamentalism reduces the complex to the simple and demands the sacrifice of the immediate, the human, or the personal in service to an overarching ulterior goal that trumps all. Disciplined by the promise of heavenly rewards or hellish punishments, the extreme religious fundamentalist shuts down his humanity in service to what his religion says God wants. Disciplined by economic exigency, millions of people sacrifice time, energy, family, and what they really care about in pursuit of money. Disciplined by an existential threat, a nation at war turns away from culture, leisure, civil liberties, and everything that is of no utility to the war effort.

Anyone who is wary of these institutions might also be wary of the standard climate change narrative, which lends itself to the same focus on a universal cause and the same mentality of sacrifice to an all-important end. If we agree

that the survival of humanity is at stake, then any means is justified, and any other cause—say reforming the prisons, housing the homeless, caring for the autistic, rescuing abused animals, or visiting your grandmother—becomes an unjustifiable distraction from the only important thing. Taken to its extreme, it requires that we harden our hearts to the needs in front of our faces. There is no time to waste! Everything is at stake! It's do or die! How similar to the logic of war. No wonder, as a community organizer just told me, there is such hostility toward environmentalists among inner-city and other impoverished populations. They are the ones whose needs are ignored and indeed who are sacrificed first in the war effort.

While this book is focused on the realm of ecological healing, it disengages from the rhetoric of "Nothing else is important compared to this." That's the rhetoric that has alienated so many working-class people and minorities from environmentalism, because it carries a patronizing message of "We know better than you do what you should be caring about." It invalidates their grievances. Because, really, what does racially biased stop-and-frisk policing and the criminalization of large segments of the population matter in the face of civilizational collapse? What does sweatshop labor or carcinogens in the water supply matter, when climate change might render Earth inhospitable to human life? Your concerns are not important. If we carry this belief, even without being so impolitic as to voice it, we are going to radiate a crusading energy that is attractive only to our fellow fundamentalists.

If we want to foster a broad social consensus to protect and heal the planet, then we need to undo this logic at the source. The mind that is steeped in Separation protests, "But it is true! None of these things are relevant if the atmosphere warms by ten degrees."[1] This belief depends on a world-story that does not recognize the intimate interconnectedness of all things. If we see reality as a collection of separate, causally dissociated phenomena, then of course it will seem that stopping gentrification in Brooklyn or sex trafficking in Haiti is frivolous in the face of climate change.

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[1] Degrees Celsius. In this book I will use the metric system unless otherwise noted. Actually I prefer traditional measures for everyday use, and the metric system for scientific applications. Traditional measures are less arbitrary; they relate to human experience (knuckles, feet, strides, a very cold or hot day, etc.). The metric system, in contrast, wipes out local and cultural differences and replaces them with a global standard. Like the commodification of nature and culture, this has been seen as progress.

From the Story of Interbeing, we intuit different kinds of cause and effect. We are not surprised that in a carceral society that locks up millions of its members, those outside the prisons lose their freedom too. We are not surprised that when a nation perpetrates violence around the world, that no amount of security, surveillance, walls, or fences can keep violence from sneaking back in, as domestic violence or self-destructive habits. And we are not surprised that environmental pollution and habitat degradation are mirrored in bodily illness

and the degradation of our inner landscapes. The illusion of separation has us think that one could conceivably thrive on a poisonous planet with the right air filters, water filters, EMF blockers, supplements, air conditioners, antibiotics, antifungals, bug zappers, and so on, replacing a world of nature with a world of technology. In interbeing, we know that health for one is impossible to sustain without health for all.

If we want solidarity, we need to understand that genocide and ecocide, human degradation and ecological degradation, are part of the same fabric, and that neither will change without the other changing. It is not that we should pay attention to racial or class injustice with the strategic goal of bringing those people into environmental activism. It is to recognize that healing on any level contributes to healing on every level. Because we are unaccustomed to thinking holistically, it seems counterintuitive that starting a social enterprise that employs homeless people will help stop climate change; the causal links are not evident to our way of seeing. Our dominant system of knowledge production (science) operates by controlling variables, breaking wholes into parts, and establishing measurable, predictable causal mechanisms. Then the knowledge is culturally legitimate. But the causal threads that link homelessness to ecological ruin are neither measurable nor predictable. Indeed, a cynic, channeling Ebenezer Scrooge, might argue that rehabilitating homeless people worsens climate change by transforming them into consuming members of society.

Of course, it is possible to construct an argument that housing the homeless contributes to the health of the biosphere, but it will not easily fit into the language of climate policy, nor is it likely to convince Mr. Scrooge. However, when Scrooge undergoes a shift in consciousness and sees the world through the eyes of interbeing, he will expect that the two phenomena are related. Believing in an innate intelligence pervading all phenomena, he might surmise that a society inhospitable to its vulnerable members will be mirrored by a planet that is inhospitable to society. He will expect that the deep roots of homelessness are common with the deep roots of climate change. Instead of "fighting homelessness" he will seek to understand the bed from which it arises. He will understand that it is okay to devote himself to what stirs his compassion the most, confident that what he is doing is still "relevant" in the face of global crisis. And he will no longer operate from self-preservation and survival anxiety, because he will understand that his well-being is inseparable from that of all in his expanding circle of love.

The question to explore then is what induces a shift to the consciousness of interbeing? Scrooge's creator Charles Dickens knew. It is through a confrontation with beauty, suffering, and mortality. It is through a connection to what is real. One might call it an initiatory experience. Without it, the grip of self-preservation and survival anxiety never loosens. We might try to leverage those fears (through the threat of climate change) to motivate pro-environmental behavior, but invoking self-interest to solve a problem caused by runaway, blind self-interest merely adds fuel to the fire. We need the opposite:

to expand the circle of compassion to include every being on this earth.

The Perverse Consequences of Carbon Reductionism

Climate fundamentalism, translated into policy, bears consequences that are in direct opposition to what those policies seek to achieve. The main problem lies precisely in the aforementioned reductionism—to simplify a complicated matrix of causes into a single, identifiable cause. In today's environmental discourse, that cause is greenhouse gases, in particular carbon dioxide.

Like war thinking and money thinking, the problem with carbon reductionism is that it reduces "everything matters" to "one thing matters." In the words of Moreno and colleagues, "Once species and ecosystems have been entered into accounts, there is no need to look further into complexities, uncertainties and interlinkages ... trying to make reality and its contradictions fungible into carbon units entails cultural, symbolic and epistemic violence."[2]

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[2] Moreno et al. (2015).

Carbon reductionism sits comfortably within a broader, scientific reductionism. The indictment of science as reductionistic is often misunderstood to refer to its quest to explain the behavior of wholes by the properties of their parts. This quest, though, rests on a more insidious and more fundamental reductionism: that of the world into number. Its conceit is that someday, when everything has been ordered, classified, and measured, we will have penetrated every mystery and the world will finally be ours. This reduction of reality to quantity is a reduction of the infinite to the finite, the sacred to the mundane, and the qualitative to the quantitative. It is the abnegation of mystery, aspiring to encompass all of reality in its bounds.

The totalizing quest to capture the world in number never succeeds. Something always escapes the metrics and the models: the unmeasurable, the qualitative, and what seems irrelevant. Usually, the judgment as to what is relevant encodes the intellectual biases of those doing the measuring, and often the economic and political biases too. You might say that what is left out is our shadow. Like many things we ignore or suppress, it roars back in the form of perverse, unforeseeable consequences. Thus, although it is the epitome of rationality to make decisions by the numbers, the results often appear to be insane.

To see the problem, consider the Tehri Dam project on India's Bhagirathi River, completed in 2006. Constructed after decades of opposition by environmentalists and local residents, the dam submerged pristine ecosystems and ancient farms, displacing a hundred thousand villagers. Like countless other dams still being built in India, China, and Africa, it was touted for its contribution to greenhouse gas reduction and has been one of many dams to generate carbon trading credits. On a superficial level, it attained its measurable

objective. But what about the displaced villagers? It could be that in the particulars that are measured, their lives improved: perhaps each was rehabilitated in concrete apartments superior to their ancestral homes in terms of square meters, plumbing, and electrification. However, in terms of the lost traditions, severed social ties, lost memories, lost knowledge, and the uniqueness of each submerged place—in short, in terms of all that could not be measured, and all that was considered not worth measuring—human beings and nature suffered a grievous loss.

Adding injury to injury, in the long run it is doubtful whether the dam even reduced CO_2 levels. Before they were displaced, the villagers had nearly a zero carbon footprint, or perhaps a negative footprint given that traditional agricultural practices can sequester carbon in the ground. Following their displacement, the newly urbanized villagers had to adopt more carbon-intensive consumer lifestyles, eating food shipped in from distant places, getting jobs in the industrial economy. Further, each new hydroelectric dam contributes to a trend of industrialization, adding to an infrastructure that is always hungry for more. It didn't come in place of coal-fired plants; it came in addition to them.

Hydroelectric dams generate electricity without burning fossil fuels, it is true, and it is easy to compute the tons of CO_2 that would be emitted by equivalent coal- or gas-fired plants. It is much harder to compute the carbon storage capacity of the ecosystems submerged in the dam reservoir, or the methane released by inundated vegetation (although recent estimates put methane emissions from artificial reservoirs at 104 megatons annually—as much as all fossil fuel methane emissions combined).[3] Harder still to calculate would be the effects of trophic cascades initiated by the deprivation of organic sediments to fish and riparian ecosystems downstream. The sediment is essential to build deltas and prevent ocean encroachment.[4] Given wetlands' huge carbon sequestration potential, it is possible that (even within the carbon reductionism frame, not to mention the water frame I'll present later) dam removal contributes more to climate stability than dam building does. Our "science-based" opinion depends on what we include in our measurements.

[3] Magill (2014).

[4] Robbins (2017).

One unfortunate result of the fossil fuel divestment movement has been a giant land grab in Africa and South America, as investment capital turns toward biofuels plantations. Biofuels represent the most extreme possible form of reductionism: the reduction of living beings to heat. Along the way, existing peasant agriculture and ecosystems are also reduced—to jatropha or palm oil plantations, sugar cane plantations, woodchipping operations, and so on—even as diverse farm livelihoods are reduced to wage labor. By way of illustration, in the last decade controversy has erupted over the acquisition of vast tracts of

land in Ghana by European corporations for the purpose of planting jatropha, whose oil-rich seeds, while toxic to humans and animals, are an excellent biofuel feedstock. Jatropha requires large plantations (1,000+ hectares) to be economically viable, which must be cleared of existing vegetation. Usually, they must be cleared as well of existing smallholder farmers. Since most land in Ghana is communally owned, this requires making deals with traditional chiefs, often illiterate, who may not understand the legal ramifications of the documents they are thumbprinting, especially when they are accustomed to regarding land as a sacred being rather than a fungible commodity.

The result is massive disruption of traditional lifestyles, human rights abuses, hunger, and ecological degradation. In a story replayed around the world, one reads of farmers showing up one day at their fields only to be told they are trespassing, and must abandon years or decades of investment in the land. The biofuel companies say that only previously uncultivated land is used and (somewhat contradictorily) that farmers who are evicted are compensated, but these claims don't always coincide with facts on the ground. Traditional chiefs or other persons of influence may get hired by the biofuel companies, setting their interests against those of the community. The plantation jobs dangled in front of the community don't always materialize, nor are they sufficient to compensate for the lost food crops. In South America, peasants and environmentalists who resist land grabs and hydroelectric projects are sometimes targets of paramilitary death squads. None of these effects are visible in the spreadsheets that inform climate policymakers. What we don't count, we don't know.

But at least the biofuels result in less atmospheric CO_2, right? Well, not necessarily. It depends on how you do the math. Do you include the lost carbon sequestration potential of the ruined ecosystem? The carbon released by increased levels of soil erosion? The unpredictable effects of disruptions in the hydrological cycle? The effects of local farmers leaving the land for the cities, where they become consumers in the global food system? Ignore these and you will be able to maintain the belief that biofuels are a fine thing for the planet. No doubt, that is what the biofuels companies believe. These people are not evil; they, like most of us, live in a story that valorizes their choices. That is why we need to propagate a new story that values people and place, soil and water, biodiversity and life; the qualitative and the relational.

Climate arguments have also been invoked in favor of giant woodchipping operations that are destroying forests in the southeastern United States and Eastern Europe. Close examination reveals these arguments as bogus, but when the policy establishment is in the habit of trusting the numbers, it is vulnerable to biased numbers, especially when financial interests of politically powerful lobbies are involved. And so, enormous woodchipping machines lower their hoods over one treetop after another, roaring down upon each and, in a matter of seconds, converting a living being into "climate-friendly biofuel."[5]

[5] For an impressive video of these machines in action, see Blocker (2014).

The problem here is not with biofuels per se. The problem, as with many other technologies, comes mostly with industrial scale and blindness to local ecological effects of production. Similarly, we adopt photovoltaic and wind energy in the name of environmental health, counting the tons of carbon they replace while ignoring the toxic waste produced in PV panel and lithium-ion battery manufacture, and the birds and bats wind turbines kill. Those who bring up such issues are marginalized as nitpicking naysayers. All the more invisible are issues like adverse health effects from wind turbine noise (and who knows the effects of noise on wildlife?) or the climate consequences of what one indigenous person called "stealing the wind." What we don't know, we don't count.

To those wedded to the quantitative approach to problem-solving, any failure of quantification is to be remedied with even more quantification. Metrics-based thinking says that to remedy abuses of metrics, we need to extend them further, so that our measurements accurately encompass the uncounted emissions and lost sequestration. If only we could extend our measurements to totality, we would be able to make optimum decisions. But will our measurements ever be complete? No. Something will always be left out—the image of what we devalue.

What is typically measured is that which serves the economic and political interests, and unconscious biases, of those who commission the measurements. Then there are those things that we don't bother to measure because they are fundamentally unmeasurable, such as the sacredness of land, or of the water feeding the Ganges. Other cultures might say this river, that mountain, this forest is sacred. Is this just superstitious thinking that gets in the way of rational decision-making? Considering that our culture is ruining the planet whereas others, that had a sense of the sacred, lived sustainably on it for thousands of years, perhaps we should be cautious about imposing the value system encoded in our measuring onto the world.

By focusing on a measurable quantity, we devalue that which we cannot measure or choose not to measure. Such issues such as biodiversity, toxic pollution, radioactive waste, etc., not to mention social injustice and economic inequality, recede in urgency under the regime of carbon accountancy. Certainly one can make carbon-based arguments on all these issues, but to do so is to step onto dangerous ground. By saying "Stop the cement plant because of CO_2," you are also implying "If CO_2 weren't a problem, it would be fine." Right off the bat, you eliminate as allies anyone who doesn't believe in climate change. If global warming falls out of scientific favor, then all the environmental arguments pinned to it would collapse as well.

Imagine that you are trying to stop a strip mine by citing the fuel use of the equipment and the lost carbon sink of the forest that needs to be cleared, and the mining company says, "Okay, we're going to do this in the most green way

possible; we are going to fuel our bulldozers with biofuels, run our computers on solar power, and plant two trees for every tree we chop down." You get into a tangle of arithmetic, none of which touches the real reason you wanted to stop the mine—because you love that mountaintop, that forest, those waters that would be poisoned.

The failures of carbon-motivated policies have something in common—they emphasize the global over the local, the distant over the immediate, and the measurable over the qualitative. This oversight is part of a more general mentality that sacrifices what is precious, sacred, and immediate for a distant end. It is the mentality of instrumentalism that values other beings and the earth itself in terms of their utility for us; it is the hubris of believing we can predict and control the consequences of our actions; it is the trust in mathematical modeling that allows us to make decisions according to the numbers; it is the belief that we can identify a "cause"—a cause that is something and not everything—and that we can best understand reality by dissecting it and isolating variables.

Usually, making decisions "by the numbers" means making them according to financial considerations. Is it really a very deep change to take the same methods and mentality and apply them instead to some other number?

We are in familiar territory in addressing problems by attacking their isolable, direct causes. That again is the mentality of war—end crime by deterring the perpetrators, end evil by dominating the evildoers, end drug abuse by banning drugs, stop terrorism by killing the terrorists. But the world is more complicated than that. As the War on Crime, the War on Drugs, the War on Weeds, the War on Terrorism, and the War on Germs show us, causation is usually not linear. Crime, drugs, weeds, terrorism, and germs might be symptoms of a deeper, systemic disharmony. Poor soil invites weeds. A run-down body offers a salubrious environment for germs. Poverty breeds crime. Imperialism begets violent resistance. Alienation, hopelessness, loss of meaning, and disintegration of community foster drug addiction. To address the complex of deep causes is a lot more difficult than to find something to blame and attack it using the familiar reductionistic methods.

Climate change is the same. It is a symptomatic fever of a deeper disharmony, a disharmony that pervades all aspects of our civilization. The fundamentalist wants to reduce every thing to one thing. That is convenient, if you would rather not look at everything.

As with terrorism, drugs, or germs, if we crack down on the proximate cause without addressing the underlying condition, the symptoms will return in a new and more virulent form. Similarly, when we make decisions by the numbers, then that which is not measured, the excluded other, will come back to haunt us.

Earth is a complex living system whose homeostatic maintenance depends on the robust interaction of every living and nonliving subsystem. As I will argue later, the biggest threat to life on earth is not fossil fuel emissions, but the loss of

forests, soil, wetlands, and marine ecosystems. Life maintains life. When these relationships break down, the results are unpredictable: global warming, perhaps, or global cooling, or the increasingly unstable gyrations of a system spinning out of control. This is the threat we face, and because it is multifactorial and nonlinear, it cannot be overcome by simply reducing CO_2 emissions.

The Social Climate

While most environmentalists also care deeply about social justice, environmental narratives and particularly the climate narrative often suggest that social issues are of secondary importance compared to the grand mission to save the planet. Earlier I observed that this call for sacrifice to fight an overarching threat is identical to the way war is used to override social justice movements. "Stop whining—don't you know there's a war on?" My associate Marie Goodwin once asked a prominent climate crusader, "But don't you think community-building is also important today?" He replied, "Not really. If we don't put everything we've got into stopping climate change right now, we won't have any community to build." This pattern of thinking that climate change shares with war, I said, should make us alert. Now I am making a further point. It is not that "social justice is important too" (leaving unsaid, "but not as important as saving the planet"). It is that social healing is indispensable in ecological healing.

First and most obviously, it is indispensable because it is hard to effectively enact love for others when one is hurting desperately oneself. A hurting person usually passes on that hurt to those they love, helplessly. Contrary to what the more fortunate among us might think, when the alcoholic man abuses his children it is not because he loves them less than we love our own children. As with a hurting person, so with a hurting society. We cannot expect a miserable, oppressed populace to exercise much care for anything outside its immediate survival and security. While the poor are kept in a state of survival anxiety through sheer deprivation, the rich suffer poverty of another kind: lack of community, connection, meaning, and intimacy, which can cause severe psychological stress even in conditions of material plenty.

Most human suffering on this planet comes not from unavoidable tragedies like accidents and natural disasters, but from human beings themselves. Human trafficking and sweatshop labor, political violence and domestic abuse, racial oppression and gender violence, poverty and war ... all co-arise with our systems, our perceptions, and our narratives. These narratives are born of trauma and give birth to trauma.

Herein lies a link between economic justice, social justice, and the environment. We will continue to abuse our fellow beings, even our own Mother Earth, as long as we carry unhealed social traumas. This does not mean "heal our traumas first before we try to heal the environment." It is to recognize that

social healing and ecological healing are the same work. Neither is to be privileged over the other; neither can succeed without the other.

From the causal logic of interbeing—morphic resonance—it is easy to understand how a society that exploits and abuses its most vulnerable will also exploit and abuse nature. To take care of vulnerable people generates a field of care that facilitates care for other vulnerable beings. A caring society is one that is habituated to asking, "Who is being left out? Who is suffering? Who is unrecognized in their gifts? Whose needs are not being met?" These are the questions that must guide an ecological society as well as a just society.

The term "social justice" may be too narrow to encompass the kinds of social healing that must happen for us to be able to fully enact our love for the planet. Traditional areas of social activism that aim to address racism, poverty, inequality, misogyny, and so forth are important but they leave unchallenged key institutions like education, medicine, money, and property, often engaging them only in terms of equal access. It is a very tepid form of activism to strive for the equal application of existing systems, when the systems themselves are inherently oppressive whatever the race, gender, or sexual orientation of their subjects.

Is what feminists want, that women have equal representation in the ranks of polluters, vulture fund CEOs, sweatshop owners, and slumlords? Is what Black Lives Matter activists want, that the school-to-prison pipeline be open as widely to whites as to blacks in a punishment-oriented carceral society? I suppose if we take the current system for granted, then the answer would be yes. If we take for granted a horrible concentration of wealth, then certainly all races should have equal odds of being in the elite or the underclass. If we take for granted a global war machine, then I suppose women should be allowed to be generals just as men are. If we take for granted a planet-wrecking economy, then female, gay, black, disabled, and transgendered people should be just as welcome at its helm as white males.

While they surely would protest at the above suppositions, the liberal media upholds them implicitly by celebrating every time a female superhero gets to kick ass in a film, or a government appoints black, gay, or female people to high positions. But the original feminist and racial justice radicals had a bigger vision than winning equality in the existing system. The feminists didn't want just to have equal status in the patriarchy; they wanted to transform the whole system. Civil rights leaders like Malcolm X and Martin Luther King Jr. didn't just want African American men to be treated equally in the United States military; they wanted to end militarism and imperialism altogether. But today, a neutered mainstream version of both civil rights and feminism settles for an anodyne ideal of equality, shifting the occupants of our power structures around but leaving the structures themselves intact. They seem not to realize that these structures necessitate inequality, whether delineated by race, gender, or some other distinction. An exploitative system requires some people to be exploited.

Racial prejudice, male chauvinism, nationalism, etc., enable and justify such a system, but eliminating these forms of bigotry won't change the underlying dynamics. Someone else will be exploited instead.

I visit this issue for two reasons. First, I want to make clear that social justice must be more than the usual grab bag of identity politics issues. The kind of social healing we need requires the massive overhaul, probably the total reformation, of our systems of medicine, education, birth, death, law, money, and government. Second, the same pattern of reaching for superficial changes that don't disturb the underlying system afflicts environmentalism just as much as it does social justice. So, just as a company can hire black, female, and LBGTQ executives at headquarters to administer a supply chain that exploits dark-skinned people in overseas factories and believe itself to be progressive, so also can it offset its carbon emissions by paying into a reforestation fund, all the while sourcing environmentally toxic products, and still call itself green.

The point is not to condemn the green rationalizations of corporations (or you or me); it is to illuminate the mindset of fundamentalism that enables those rationalizations. Fundamentalism of all kinds is a disengagement from the complexity of the real world, and I am afraid it is ascendant in many realms, not only religion. I even see it in various theories in alternative medicine, in the form of the Great Revelation of the One True Cause of all disease. (It's parasites! Inflammation! Stress! Acidosis! Trauma!) Fundamentalism offers certainty, a lockdown of thought into a few prescribed pathways. The rush to The Cause, the retreat to unquestioned axioms taken on faith, does not serve us in a time of the disintegration of so much of what we thought we knew.

If we continue to uphold climate fundamentalism, then the symptomatic fever of climate change will only worsen, whatever macroscopic measures we take to address its proximate causes. We might get the numbers down (temperature, greenhouse gases); yet, like the patient who goes to the doctor and is told, "The tests all say you are healthy," the disease will emerge in what we choose not to measure, what we cannot measure, or what is unmeasurable. We have to go beneath symptoms, and restore the foundation of ecological health: the soil, the water, the trees, and fungi, the bacteria, and every species and ecosystem and human culture on earth.

The Rush to a Cause

"That estuary used to be full of kelp and eels when we were kids," said Stella. "It was full of all kinds of wildlife. Crabs, clams, horseshoe crabs—there was a mussel bed right over there—one time I was swimming in that bend and came face to face with an eel."

That is what my wife told me on a visit to the estuary where the Narrow River meets the Narragansett Bay in Rhode Island, one of her haunts when she was growing up. It is a picturesque spot, surrounded by trees and sandy beaches, and

I wouldn't have known that it is a seriously degraded ecosystem if Stella hadn't told me what it was like when she was a child.

Neither of us knows the reason why the eels disappeared. We shared a moment of sadness, and then Stella recalled another memory that somehow seemed to explain it. She and her friend Beverly would sometimes visit that part of the beach on what they called "rescue missions." Groups of marauding boys would come and flip over all the horseshoe crabs that had crawled onto the sand, leaving them to die there helplessly. Stella and Beverly would flip them rightside-up again. "Whoever was doing it had no reason to whatsoever," she said. "It was senseless killing."

This is the kind of story that makes me feel like I've detoured onto the wrong planet.

We didn't see any horseshoe crabs on this visit. They are a rare sight here now. I don't know if that is because people killed too many of them, or because we are "harvesting" too much of their blood for hemocyanin. Or maybe it is because of the general deterioration of the ecosystem, or pesticide runoff, agricultural runoff, land development, pharmaceutical residues, changing patterns of rainfall caused by development or climate change.... Maybe the horseshoe crabs are sensitive to one of these, or maybe the creatures they eat are, or it could be that the sensitive one is a mollusk that serves a role in the reproductive cycle of a microorganism that keeps another microorganism in check that infects the horseshoe crab.

I feel quite sure that whatever the scientific explanation for the die-off of the horseshoe crabs and eels, the real reason is the senseless killing Stella described. I mean not so much the killing part, but the senseless part—the paralysis of our sensing function and the atrophy of our empathy. We feel not what we do.

The crabs and kelp and eels are all gone. The mind searches for the cause—to understand, to blame, and then to fix—but in a complex nonlinear system, it is often impossible to isolate causes.

This quality of complex systems collides with our culture's general approach to problem-solving, which is first to identify the cause, the culprit, the germ, the pest, the bad guy, the disease, the wrong idea, or the bad personal quality, and second to dominate, defeat, or destroy that culprit. Problem: crime; solution: lock up the criminals. Problem: terrorist acts; solution: kill the terrorists. Problem: immigration; solution: keep out the immigrants. Problem: Lyme Disease; solution: identify the pathogen and find a way to kill it. Problem: racism; solution: shame the racists and illegalize racist acts. Problem: ignorance; solution: education. Problem: gun violence; solution: control guns. Problem: climate change; solution: reduce carbon emissions. Problem: obesity; solution: eat less and burn more calories.

You can see from the above examples how reductionistic thinking pervades the entire political spectrum, or certainly mainstream liberalism and

conservatism. When no proximate cause is obvious, we tend to feel uncomfortable, often to the extent of finding some reasonable candidate for "the cause" and going to war against that. The recent spate of mass shootings in America is a case in point. Liberals blame guns and advocate gun control; conservatives blame Islam, immigrants, or Black Lives Matter and advocate crackdowns on those. And of course, both sides especially like to blame each other.

Superficially it is obvious that you can't have mass shootings without guns, just as it is obvious that allowing civilian access to military assault weapons makes those shootings more deadly. However, to focus attention on gun availability bypasses more troubling questions that don't admit easy solutions. Where does all that hatred and rage come from? What social conditions give rise to it? The furious debate about gun control so monopolizes U.S. political attention that these questions languish on the intellectual margins. If we do not address them, does taking away the guns really do much good? Someone could use a bomb, a truck, poison ... is the solution then a complete lockdown of society, the imposing of ubiquitous and ever-increasing surveillance, security, and control? That is the solution we've been pursuing my whole lifetime, but I haven't noticed people feeling any safer.

Perhaps what we are facing in the multiple crises converging upon us is a breakdown in our basic problem-solving strategy, which itself rests on the deeper narratives of the Story of Separation.

Learning of the die-off of the estuary, I myself felt the impulse to find the culprit, to find someone to hate and something to blame. I wish solving our problems were that easy! If we could identify one thing as *the* cause, the solution would be so much more accessible. But what is comfortable is not always true. What if the cause is a thousand interrelated things that implicate all of us and how we live? What if it is something so all-encompassing and so intertwined with life as we know it, that when we glimpse its enormity we know not what to do?

That moment of humble, powerless unknowing, where the sadness of an ongoing loss washes through us and we cannot escape into facile solutioneering, is a powerful and necessary moment. It has the power to reach into us deeply enough to wipe away frozen ways of seeing and ingrained patterns of response. It gives us fresh eyes, and it loosens the tentacles of fear that hold us in normality. The ready solution can be like a narcotic, diverting attention from the pain without healing the wound.

You may have noticed this narcotic effect, the quick escape into "Let's do something about it." Of course, in those instances where cause and effect is simple and we know exactly what to do, then the quick escape is the right one. If you have a splinter in your foot, remove the splinter. But most situations are more complicated than that, including the ecological crisis on this planet. In those cases, the habit of rushing to the most convenient, superficially obvious

causal agent distracts us from a more meaningful response. It prevents us from looking underneath, and underneath, and underneath.

What is underneath the callous cruelty of those horseshoe crab flippers? What is underneath the massive use of lawn chemicals? What is underneath the huge suburban McMansions? The system of chemical agriculture? The overfishing of the coastal waters? We get to the foundational systems, stories, and psychologies of our civilization.

Am I saying never to take direct action because after all, the systemic roots are unfathomably deep? No. Where the unknowing, perplexity, and grief take us is to a place where we can act on multiple levels simultaneously because we see each dimension of cause within a bigger picture and we don't jump to easy, false solutions.

The Mother of All Causes

When I wondered about the cause of the estuary die-off, a hypothesis may have jumped into your mind—climate change, the culprit *du jour* for nearly every environmental problem. *If we could identify one thing as* the *cause, the solution would be so much more accessible.*

As I was doing research for this book, I googled "effect of soil erosion on climate change," and the first ten pages of results showed the converse of my search—the effect of climate change on soil erosion. I did the same for biodiversity, with the same result. Whether or not it is true that climate change exacerbates other environmental problems, the rush to name a unitary cause of a complex problem should give us pause. The pattern is familiar. It is none other than war thinking, which also depends on identifying a unitary cause of a complex problem. That cause is called the enemy, and the solution is to defeat that enemy.

Carbon reductionism is like "germ reductionism" in medicine. What is the cause of, say, strep throat? Well, obviously it is the streptococcus bacterium, right? Problem: germ; solution: kill the germ. On one level this may be accurate, but consider what this approach renders invisible and leaves out. First, it leaves out the question why one person exposed to the germ gets sick, and another does not. Especially if someone gets repeated infections of strep, it might be more useful to see the germ not as the cause, but as one of the symptoms of the disease. It also ignores the effects of repeated antibiotic treatment, and whether that might somehow contribute to vulnerability to reinfection. (This is not idle speculation, in light of recent science establishing the relationship between body ecology and immunity. Body ecology—which includes a healthy gut microbiome—is seriously disrupted by antibiotics.)

In medicine, focusing on the immediate, linear cause of a disease can vitiate the possibility of a real cure, whether on an individual or epidemiological level. Consider a disease that looms far larger than strep in our collective

consciousness today: Lyme Disease. Seeing it as an infection by a tick-borne spirochete, the appropriate technologies of control are obvious: avoid or destroy ticks, and kill the spirochete. To see the problem in another way can be very inconvenient or disruptive to the systems that embed the usual control-based responses. What is the real "cause" of Lyme? I don't know, but it could include the following:

- Compromised immunity that leaves the body vulnerable to numerous viral coinfections (against which antibiotics are useless)
- The explosion of deer tick populations due to increasing "edgelands" and loss of deep forest caused by suburban development
- Exploding deer populations caused by the extermination of wolves and cougars
- Declining forest health and understory degradation caused by pollution, repeated clear-cutting, and again predator extermination (deer destroy the forest understory when their numbers are unchecked by predation), which in turn devastates biodiversity and allows overgrowth of species like ticks
- Decline of pheasant and other tick-eating birds, because of historical overhunting, roadkill, and understory destruction
- Widespread aerial spraying of insecticides to control gypsy moth caterpillars and other insects, decimating insect-eating birds
- The exteriorization of modern fear of nature; it is as if nature responds to our locking children in the safety of indoors by saying, "Okay, I'll give you something to be afraid of for real."

We can dig deeper and deeper. What is the cause of suburbanization? What is the cause of pollution? What is the mentality behind the extermination of top predators and the spraying of forests? Complex, nonlinear causal relationships connect these phenomena. For instance, the othering of nature encourages suburbanization, but it is also the other way around. Cut off from direct relationship to the land, the suburbanite who buys food grown thousands of miles away and needn't even tread the soil to move from place to place will of course see nature as a spectacle or a threat.

One might even say that "the cause" of Lyme is everything and anything. Even the locution "the cause" is part of the problem, as it implies the separability of interdependently co-arising phenomena. I could even say the cause of Lyme Disease is modern children's storybooks that present us from a young age with anthropomorphized animals wearing human clothes, living modern lives, and thinking human thoughts. Such storybooks entice us to take other beings on our terms and not theirs, and obscure the fact that the human normality that the storybook animals are playacting is extinguishing the actual habitats of those animals in the real world.

Now I am not saying that one should never address an obvious, linear cause, just as I am not saying that there is never a time for a fight. I am warning, rather, of the habit and conditioned response of addressing all problems in this way.

In ecology, which is the study of relationships and not things, every cause is also a symptom. Let's take for example the steep decline of seagrass meadows, which are biodiversity hotspots and sequester more carbon per hectare than nearly any other ecosystem. Seagrass die-off is a cause of carbon loss and acidification, and it is a symptom of:

- Proliferation of herbivorous mollusks and crustaceans, caused by the overfishing of larger predatory fish
- Eutrophication and algae blooms, caused by excess agricultural runoff
- High levels of silt that reduces seagrass's access to sunlight, which is a consequence of soil erosion, which is a consequence of modern agricultural practices, logging, and development

According to a friend who works with "watermen" (mostly crabbers) on the Chesapeake Bay, seagrass, shellfish, and crabs experience a massive die-off every time there is a hurricane or severe influx of highly sedimented freshwater into the bay. These irregular disruptions keep the ecosystems ever precarious. Well, that wasn't much of a problem a few centuries ago, because:

- Intact wetlands could absorb massive amounts of rainfall.
- Beaver dams along all the small tributaries to the bay slowed runoff and trapped sediment.
- Deforestation and tillage had not exposed bare topsoil to erosion.

Clearly, protecting and restoring seagrass is more than a matter of roping off protected areas, because seagrass is in relationship with everything that lives, including ourselves. Nor will our normal find-an-enemy strategy save the seagrass. It is tempting and convenient to blame the problem on "more intense hurricanes caused by global warming," ignoring the complex of causes that intimately involves ourselves and the way we live. It is also easier to blame the watermen for their supposed greed, ignoring the complex economic causes (in which, again, we all participate) that drive the relentless conversion of nature into commodity into money. Our intellectual habit is to find the One Cause, our scientific programming is to measure it, and our political gearing is to attack it. When the One Cause is global, we cross our fingers and hand over responsibility and power to distant global institutions. They'll take care of it. We hope. But too often, blaming climate change means not doing anything at all.

Like most binary distinctions, that between symptom and cause breaks down under close scrutiny. Yet the distinction is still useful. Causes are symptoms and symptoms are causes, yes. So let us name as "symptom" that aspect of the cause/symptom complex that presents itself most obviously to our attention. To

us, Lyme is calling most loudly. To another culture, the most alarming change might be the disappearance of the dogwoods in the mid-Atlantic forests, or perhaps some change in the songs of birds that you and I would never notice. Thus, what we observe to be happening in the world says as much about ourselves as it does about the world. It reveals what we think is important, significant, valuable, and sacred, and what is irrelevant or useless too. Put another way, what we see reveals how we see.

Nerdy aside: I am not in this book (or anywhere) taking the postmodern position that reality and truth are human cultural constructions—that how we see is the only determinant of what we see, or that there is no is-ness outside human seeing. Maybe the postmodern philosophers are right that there are no facts, but only meanings loaded with power dynamics, gender and racial oppression, etc. But what they cannot countenance is that we humans are not the only meaning-makers, not the only authors, not the only full subjective agents. Our ways of seeing, our stories and our myths, come from a source beyond our comprehension.

Among the many causal narratives available to apprehend Lyme, or climate change, or any other issue, our culture chooses the one that best preserves the status quo. The dominant culture adopts the narrative that sustains its dominance.

People tend to conceptualize problems in such a way as to validate the tools that are familiar and available to them. If all you have is a hammer, everything looks like a nail. If all you have are antibiotics, you will always look for the germ. If all you have is the mindset of war, then you will always look first for an enemy.

Our society's most potent and familiar tool is the quantitative methods of science. That is therefore how we frame the problem of climate change. We use numbers (such as average global temperatures) to prove it is happening, other numbers (CO_2 emissions) to formulate responses, and yet other numbers (embedded in computer modeling) to forecast the future and guide policy. But is this the only tool? Is this even the right tool? We might doubt it, given the damage industrial civilization has caused the planet depends on the same regime of quantification. Through science we describe the world in numbers and mathematical relationships. Through technology we apply those numbers to the control of the material world. Through industry we convert the world into commodities, characterized by numerical specifications. Through economics we further convert all things into another number called its value.

We would like to solve climate change with methods and mindsets that are familiar to us, for to do so would preserve the foundation of society as we know it. These methods and mindsets, the quantified worldview, tell us that we can fix the situation by eliminating fossil fuels. Unfortunately, as I will discuss later, the mere elimination of fossil fuels will not deliver us from the ecological crisis. A deeper revolution is afoot.

Eliminating fossil fuels does not represent as thorough a change as the change required to halt ecocide here, there, and everywhere. Conceivably, we could eliminate carbon emissions by finding alternative fuel sources to power industrial civilization. It may be unrealistic upon deeper investigation, but it is at least conceivable that our basic way of life could continue more or less unchanged. Not so for ecosystem destruction generally, which implicates everything upon which modern technological society depends: mines, quarries, agricultural chemicals, pharmaceuticals, military technology, global transport, electronics, telecommunications, and so on. All of these must evolve into their next incarnation; some may even become obsolete.

The Place Where Commitment Lives

The equation of "green" with "low carbon," which maps a complex matrix of causes onto a single quantifiable variable, leads us to think that sustainability can mean to sustain life as we know it, life as it has been. It justifies and motivates the operating paradigms of green growth and sustainable development, which are essential to preserving our present economic system with its endless appetite for more resources. For that matter, it allows us to continue seeing the planet as composed of said "resources"—things that are here for us to use—as long as we exploit them in a way that doesn't generate greenhouse gases. And, crucially, it contributes to an attitude of humanity in the driver's seat, managing planet Earth like a machine, controlling the inputs and measuring the outputs. It invites a linear response to a nonlinear problem. But Earth is not a machine; it is alive, and it will remain hospitable to life only if we treat it as such.

In coming chapters I will present evidence that the climate effects of deforestation, industrial agriculture, wetlands destruction, biodiversity loss, overfishing, and other maltreatment of land and sea are far greater than most scientists had believed; by the same token, the capacity of intact ecosystems to modulate climate is much greater than had been appreciated. This means that even if we cut carbon emissions to zero, if we don't also reverse ongoing ecocide on the local level everywhere, the climate will still die a death of a million cuts.

Contrary to the presupposition implied in my aforementioned Google search results, the health of the global depends on the health of the local. The most important global policies would be those that create conditions where we can restore and protect millions of local ecosystems. Today it is often the opposite; for example, global free trade treaties permit corporations to sue governments for lost profits from local environmental protections.

When we cast ecological healing in global terms, our gaze wanders away from the places we have loved and lost, the places that are sick and dying, the places we care about that are tangible and experientially known and real to us. It goes instead to distant times and places, and our local loves become at best instruments toward a larger end.

Why was Stella sad to see her beloved estuary depleted of life? Was it that it no longer grows kelp that will sequester carbon and mitigate climate change? Of course not. If so, it would be no great loss. It could be offset by planting a kelp farm or a forest somewhere else, or perhaps by installing giant carbon-sucking machines in every city. Then Stella would be happy, right?

My friend Seppi Garrett told me how he took his son fishing in the Conodoguinet Creek, his favorite haunt as a boy. To his alarm, he found out that the creek is impaired and people are warned not to let children get into the water. So he thought, "I'll take him to the Yellow Breeches river instead," only to discover that it is impaired as well. He said, "Then of course there is the Susquehanna. I feel so sad when I go there and see oil slicks on the water in the places I used to wade chest-deep to go fishing when I was a kid." Seppi's grief, indignation, and anger are driving him to become a kind of freelance applied ecologist, part of a movement of people who assist the recovery of damaged areas by accelerating succession, redirecting water, and altering species composition. We need millions of people to do that, to listen closely to land, to develop a relationship with it, and to put themselves at its service. Where does that level of commitment come from? Again I will ask, does the oil slick provoke Seppi's grief because it signifies fossil fuel burning that generates carbon dioxide?

You can see how the dominant global carbon narrative is not necessary to generate environmental zeal, even for those who accept it as true. All the more, for the climate change skeptics we'll visit in the next chapter.

I am sure something stirred in you reading Seppi's words, even if your own special childhood place was the woods not the river. When we transmit our love of earth, mountain, water, and sea to others, and stir the grief over what has been lost; when we hold ourselves and others in the rawness of loss without jumping right away to reflexive postures of solution and blame, we are penetrated deep to the place where commitment lives.

This does not mean we don't face a global ecological crisis. We do, and it far transcends what we call climate change. However, if everyone focused their love, care, and commitment on protecting and regenerating their local places, while respecting the local places of others, then a side effect would be the resolution of the climate crisis. If we strove to heal and protect every estuary, every forest, every wetlands, every piece of damaged and desertified land, every coral reef, every lake, and every mountain, not only would most drilling, fracking, and pipelining have to stop, but the biosphere would become far more resilient too.

3
The Climate Spectrum and Beyond

Which Side Am I On?

The foregoing critique of the dominant climate change narrative may have the reader wondering which side I am on. That is always the most important question in a war. Do I, in spite of my critique of reductionism, still affirm the basic principle that carbon emissions pose a grave and immediate threat to the climate? Or am I, instead, a "climate change denier"? Which side am I on in the "fight" against climate change?

As I elaborate the critique I began in the last chapter, it will become clear that this is the wrong question: wrong in its emphasis, wrong in its implications, and wrong in the worldview that underlies it. For now I will say that this book takes a position that is both skeptical and alarmist. It is skeptical of certain aspects of the dominant narrative of climate change, while affirming that human activity is alarmingly destabilizing the ecosphere. If anything, I tend toward an extreme view of the gravity of the ecological crisis. The prescriptions herein partially align with conventional climate advocacy, and in some respects far exceed it, albeit for different reasons and from different motivation. I hope, therefore, my arguments will be persuasive even to those who disbelieve in anthropogenic global warming (AGW). For AGW believers, this book may offer new political and material strategies for addressing climate change as part of a broader ecological regeneration.

What you will see as I deconstruct the conventional spectrum of opinion on climate change is that the dynamics of the debate obscure something more important than which side is right. As with many polarizing issues, it is the hidden assumptions, shared by both sides and questioned by neither, that are most significant and most potent in taking us into new territory.

These hidden assumptions include agreements about what is significant as well as agreements on what not to talk about. To give an example from another realm, in the political debate on immigration, one side says to keep them out, the other side says let them in, and eventually governments institute a policy somewhere in the middle. But neither side asks, "What are the policies that make life in other places so unlivable that people risk their lives and separate from their families to emigrate?" Both sides agree not to talk about military imperialism, neoliberal trade policies, and the global debt regime, or are not even conscious of them. Yet without a change on that level, the immigration issue will never be resolved. The furious mainstream debate draws all the attention away from the underlying causes and toward the superficial

symptoms. Therefore, it perpetuates the status quo.

Most polarized conversations are like this, whether in politics or within communities or couples. They are part of a holding pattern that absorbs and squanders the energy of discontent, leaving the real issue untouched. Usually, the real issue is more uncomfortable, because it involves not only the demonized opponent, but oneself as well.

Here is a map of the conventional spectrum of opinion on climate change, which as you will see includes positions that seem extreme and mutually opposed. They are not. However acutely opposed they may seem, hidden agreements unite them, and it is these hidden agreements that make the problem unsolvable. Where we need to go, and where the ecological crisis will eventually take us, is off this spectrum entirely.

1. **Climate change skepticism.** This says either that climate change, especially global warming, is not happening, or that if it is happening it has little to do with human activity, or that if it is attributable to human activity it isn't dangerous. Sometimes all three positions appear on the same skeptic website. Recently, even modest departures from climate orthodoxy draw the epithet "denialism."
2. **Techno-optimism.** Climate change is another of the challenges we will overcome in the triumphant onward march of technology. Through geoengineering and alternative energy technologies, we will bring down greenhouse gas levels and find other ways to cool the atmosphere. Human creativity is limitless; there is no problem we can't solve if we put our minds to it. What is needed is simply to turn our focus to these problems, to incentivize their solutions, and thereby to unite science and finance toward the meeting of humanity's newest challenge.
3. **Climate orthodoxy.** The burning of fossil fuels poses a grave threat to humanity and the planet. If we do not act quickly to cut emissions and limit warming to 2°C, the future will bring rising sea levels; extreme weather, floods, and droughts; crop failures; famine and mass migrations; and devastation to marine and land ecosystems. Therefore, we need to wean ourselves off fossil fuels as quickly as possible, transition to carbon-neutral energy technologies, and encourage economic policies of sustainable development and green growth. The window for action is shrinking; there is no time to waste.
4. **Climate justice and systems change.** This viewpoint is a step toward a deeper radicalism. It says that climate change is inextricably linked to our economic system and various institutions of social oppression. Climate change isn't only an environmental issue, it is a social, racial, and economic issue; moreover, the system's dependency on the profits from a fossil-fuel-based industrial economy means that climate change can be addressed only by changing capitalism as we know it.

5. **Climate catastrophism.** This viewpoint basically says that it is already too late to prevent catastrophic climate change, except perhaps with an immediate response far beyond anything that is politically conceivable today (and perhaps not even then). The more moderate prognosticators foresee a dramatic collapse of society: a population crash, sociopolitical upheaval, and a major regress in technological levels. Those on the more extreme end predict temperature rises of 6–10°C within the next few decades, which would mean the end of civilization and possibly the extinction of the human species. Some such as Guy McPherson predict human extinction within ten years.[1]

[1] Early in 2017 I heard him predicting with confidence human extinction in two to four years.

What could possibly unite such disparate viewpoints? First, they share a focus on greenhouse gases and global temperatures. On one end of the spectrum, it is that they aren't a problem; on the other, that they spell the end of civilization. All agree with the general consensus that puts climate change and carbon at the heart of environmentalism.

Accordingly, the skeptics (most of them anyway, but not all) throw out the baby of care for nature with the bathwater of the standard AGW narrative. Similarly, alarmists unwittingly demote other environmental issues (not to mention social issues) to secondary importance in their focus on AGW.

The intensity and ubiquity of the conversation around this issue sucks the air out of the room for issues like wildlife conservation, habitat preservation, toxic and nuclear waste, soil erosion, aquifer depletion, and so on. Tragically, as I will argue, it is precisely these other issues that are the hidden drivers of climate instability. Climate change is a symptom of ecosystem degradation, a process that goes back at least five thousand years and has reached peak intensity today. It arises from the basic relationship that has prevailed between civilization and nature.

Climate change is inviting us to forge a different kind of relationship, one that holds the planet and all of its places, ecosystems, and species sacred—not only in our conception and philosophy, but in our material relationship. Nothing less will deliver us from the environmental crisis that we face. Specifically, we need to turn our primary attention toward healing soil, water, and biodiversity, region by region and place by place. Endless photovoltaic arrays on ruined land are not going to solve the problem. We must enact a civilization-wide unifying purpose: to restore beauty, health, and life to all that has suffered during the Ascent of Humanity.

Across the spectrum, carbon dominates the conversation. Most (but again, not all) skeptics seem to want the environmental problem to go away altogether, and hope that by refuting climate change we will once again have unlimited license to pillage the planet. The climate fundamentalists, despite their general

sympathy for other environmental causes, instigate a perversely similar banishment of other environmental issues that gives implicit license to any sort of ecological pillage that doesn't generate CO_2.

I am suggesting here that the frame of the debate is itself part of the problem. The "frame of the debate"—drawing from the Story of Separation—includes:

- A conception of nature as "environment" and thus separate from ourselves
- The assumption that climate is governed primarily by global geomechanical processes (solar radiation, atmospheric gases, Earth's rotation, polar/equatorial heat differentials, etc.) and not by life processes
- A mechanistic view of nature as an incredibly complicated machine
- The primacy of a quantitative approach to knowledge
- Valuing other beings based on instrumental utilitarianism—their use-value to ourselves
- The belief that human beings are the only fully conscious, subjective agents on this planet

In overt and subtle ways, these assumptions inform climate science and policy today, from the formulation of basic research questions, to the political arguments about climate, to priorities in funding, technology, agriculture, and industry. They are shared by alarmists and skeptics alike, which is not surprising since the same assumptions also underpin civilization as we know it. The problem and the current modes of solution come from the same place. That is why a different framing is needed.

To put it in more shocking terms, it doesn't matter if the skeptics are right or not, because the assumptions on which the debate is based are already enough to doom us to a dystopian future. I would like therefore to offer a new "frame of the debate":

- Earth is a living organism.
- Each biome, local ecosystem, and species contributes in unique ways to the health and resiliency of the whole; they are the organs and tissues of the Gaian organism.
- All beings—plants and animals, soil, rivers, oceans, mountains, forests, etc.—deserve respect as alive, sentient subjects and not mere things.
- Any damage to the integrity of the planet or the beings on it *inevitably* damages human beings as well, whether or not the causal pathways for that damage are visible.
- Similarly, a healthy planet will benefit the physical and spiritual health of humanity.

- The psychic climate comprising our beliefs, relationships, and myths is intimately connected to the atmospheric climate.
- Likewise, the political climate and social climate are co-resonant with the atmospheric climate.
- The purpose of humanity is to contribute our gifts to the beauty, aliveness, and evolution of Earth.

The converging crises of our time, including the ecological crisis, are an initiation for our civilization. The belief system I just outlined awaits us on the other side of that initiation.

Can you imagine what a society would look like that embodied these beliefs in its agriculture, technology, and economics? Current "green" policies would seem paltry in comparison. Today, the policy ship of environmentalism must sail against the current of the Story of Separation. Pulling the oars furiously, the environmental movement stirs up a mighty froth, yet for all its progress through the water, the ship is carried backward by the current; the overall condition of the planet continues to worsen. Fifty years after the Clean Air Act, pollution planetwide is worse than ever. Forty years after the Clean Water Act, the ocean's plastic outweighs its fish. Forty years after the Endangered Species Act, biodiversity on earth is in precipitous decline. And after several decades of climate accords, climate derangement continues to intensify.

Is the solution to pull even harder on the oars? If the current is unchangeable, that would be the only hope. Here is where the metaphor breaks down, because the current is not some arbitrary force of nature or human nature, as if we were genetically disposed to destroy the world. No, the current is composed of systems created by human beings: first and foremost the financial system, and also our systems of government, science, technology, education, and religion. What human beings have created, they can uncreate.

How to uncreate them is no trivial matter. We should be skeptical of save-the-world narratives; historically, such quests have done more harm than good. Inevitably, and especially when they demand urgent action, they draw from the existing ingredients at our disposal: existing institutions of political power, existing economic mechanisms, existing modes of technology, and existing ways of thinking. To organize quick action on a large scale usually involves giving more power to institutions that wield power already. We need to look beyond existing institutions, ways of thinking, technologies, and economic mechanisms, all of which are intrinsic to the problem. Uncertainty lies ahead, new social territory in which we will discover unsuspected modes and expressions of human creativity.

I can, however, offer a guiding principle. Our system moves according to a deeper current still; namely, our civilizational mythology: the stories, meanings, perceptions, and agreements that constitute what we think to be reality. The world's healing must and will come from outside the mythology of Separation

that brought us to the present impasse.

A Visit to the World of Skepticism

The us-versus-them drama that our culture seems automatically to reenact appears not only as the "fight against climate change" but also, in the search for an identifiable enemy, as a battle against those who doubt or deny that climate change is real. The thinking goes as follows: if only the unholy alliance among fossil fuel companies, their financiers and investors, their political allies, and a small minority of venal academics could be overcome, we would be able to take meaningful, swift action to halt climate change. The identity of the enemy is clear. We can settle in to the familiar operating framework of the fight.

A nearly universal tactic in warfare is the dehumanization of the enemy. Accordingly, the Standard Narrative of climate change activism says that those who disbelieve in anthropogenic climate change must not be in full possession of their mental or moral faculties. They are greedy, they are corrupt, they are delusional, they are in denial; they are hypocrites, liars, and psychopaths. Otherwise, how could they ignore the overwhelming evidence, the "settled science," the consensus of "97 percent of climate scientists"? It seems inconceivable and outrageous.

Trusting that I myself am not a hypocrite, liar, or psychopath, and am in possession of at least some fraction of my mental and moral faculties, I decided to explore the views of climate skeptics more deeply.

The climate skeptic camp turns the above accusations around and speaks of the incompetence and corruption of mainstream climate scientists. (Its more sophisticated adherents emphasize groupthink, publishing and funding bias, and political pressure as the main mechanisms by which orthodoxy is enforced.) In response to the label "climate denialism" they name the mainstream "climate alarmism."

It may seem from the above that I am leaning toward the side of the skeptics in drawing what may look to the believer like a false equivalency. After all, in World War II the Nazis and the Allies demonized each other as well, but that doesn't make the two sides equivalent. There were good guys and bad guys in that war (right?); all the more so in this one, where the survival of humanity is at stake.[2] To hint at the possible legitimacy of the enemy's position or to criticize the rationale for war is already an act of betrayal—"rendering aid and comfort to the enemy" it was called during the Bush administration's War on Terror. Likewise, it is an act of betrayal not to take sides. Such is the mentality of war.

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[2] I'm quoting the standard narrative of World War II here. In reality, while there were clearly bad guys, it is not so clear that there were any good guys. The war against the Axis powers was inextricably tied in its historical origins and execution to American imperial ambitions; the defeat of even worse imperial powers was a happy side effect.

In wartime, pacifists draw more hostility and contempt than the enemy does. Why? Because the pacifist questions the validity of the roles people identify with and the story they live in. They pose an existential threat—not to survival, but to identity.

In my exploration of the skeptic position, I adopted a kind of deliberate naïveté, rejecting *both* sides' characterization of the other and temporarily assuming that most parties to the debate are, albeit imperfectly, competent, intelligent, and sincere. I chose various of the main lines of the standard climate narrative and then read extensively the best skeptical blogs and websites I could find, to see what they actually say about what seems to be overwhelming evidence for global warming. I also read the best and most patient rebuttals I could find of the skeptics' arguments. Let me share a representative sample of my adventure, with my responses suitably exaggerated for dramatic effect.

I started with what looks like incontrovertible proof of AGW (anthropogenic global warming): Michael Mann's "hockey stick" graph showing a rapid acceleration in global temperature in the twentieth century. In the graph, centuries of relatively stable temperatures precede a rapid warming closely congruent to the increase in atmospheric CO_2. You can't argue with the numbers. Certainly, correlation does not prove causation, but the absence of any other explanation for such a drastic, unprecedented rise makes a causal link likely, particularly in light of the greenhouse effect of CO_2. How could an intelligent person sincerely doubt such strong evidence?

I decided to find out. The climate skeptics claim that there are serious flaws in the statistical methods used to construct the hockey stick graph.[3] They criticize both current and historical data as unreliable, incomplete, and heavily "adjusted" always with a bias toward demonstrating recent warming—old numbers adjusted lower, recent numbers adjusted higher. The tree ring proxy data, they say, doesn't take into account that slower tree growth might be due to less CO_2 or less rainfall, not colder temperatures.[4] Current data they also claim to be unreliable due to urban heat island effects—compared to the past, an inordinate number of weather stations are located near air conditioning vents, parking lots, airports, water treatment plants, and other heat sources.[5] Moreover, raw data is adjusted upward in a process called homogenization.[6] If one weather station is giving results that are out of line with neighboring stations, its data is homogenized under the assumption that it is subject to a malfunction or microclimatic influences—but usually, the skeptics say, the ones giving lower readings are adjusted upward, often in comparison to stations that are subject to the warmer temperatures resulting from the presence of buildings or asphalt. These problems have led some researchers to look at alternative temperature datasets gathered by satellites, which aren't subject to the vagaries of widely distributed surface temperature readings. After all, theoretical models of greenhouse effects predict warming of the entire troposphere. These alternative datasets, say the skeptics, agree closely with each other and show a

much slower temperature rise than the surface temperature data upon which the recent part of the hockey stick is built. In any event, present temperatures are still lower than during the Medieval Warm Period, which is the subject of repeated attempts to revise out of existence. Furthermore, say the skeptics, historical carbon dioxide levels follow and do not precede temperature increases, and often are not correlated at all. Ice core reconstructions of CO_2 use data from which data points have been removed when they contradict the standard narrative, on the grounds that they must have been contaminated.

[3]See, for example, Muller (2004) and for a more polemic take, see Krüger (2013). For a simplified summary of the basic statistical criticism, see Moriarty (2010).

[4] Moriarty (2010).

[5] See Watts (2009).

[6] For a reasonable presentation of this contention, see Steele (2013).

My goodness—how could I have been such a fool as to believe the party line peddled by Big Science? I'd been duped along with everyone else into believing the orthodoxy. How could I have been taken in?

Just to make sure, I'll look at what mainstream climatologists say in response. Hold on here—things are not as the skeptics claim. The critics of the hockey stick are using one or two insignificant errors to throw out the entire paper; besides, the errors were corrected in the 2008 version of the paper. Since the original paper was published, other peer-reviewed research using numerous other proxies has confirmed again and again that the last two decades are the hottest in two thousand years.[7] There are now many, many "hockey stick" reconstructions of Paleoclimate data, all more or less consistent with Michael Mann's.

[7] Moriarty (2010).

As for the satellite data, the skeptics don't realize that the orbital decay of the satellites introduces a spurious cooling effect that would have to be corrected for. You can't trust the raw temperature readings. Second, temperature readings are also skewed by "diurnal drift." Third, the satellites aren't really measuring temperature; they are measuring microwaves emitted by atmospheric oxygen, which is only indirectly a function of temperature. Fourth, the charts I'd been looking at rely on weighted averages of various levels of the troposphere that are weighted in a way that might exaggerate cooling; moreover, data from different types of sensors must be combined and fitted to a single scale. In any case, scientists took the discrepancies seriously, but when they investigated the reasons and adjusted the data, the result was that satellite data matches surface temperature data and theoretical models quite closely. Moreover, there are actually five satellite datasets, and the skeptics always display the one that

shows the least warming—even though that one correlates the least closely with weather balloon data, another source of troposphere temperature measurements.[8]

[8] Foster (2016).

Historical CO_2 levels, says the mainstream, only appear to follow temperature rises because rising temperatures kick off a positive feedback cycle, amplifying what would otherwise be minor warming.

As for the heat island effect and the data adjustments, says the mainstream, these have been handled very scrupulously in order to remove distortions in the raw data.[9] Besides, rural and urban weather stations are consistent in the degree of warming they show.[10] The same goes for the carbon dioxide levels in ice cores. Scientists had very good scientific reasons for eliminating outlier data points that could not be correct, since there is no possible mechanism by which CO_2 could have been at those levels. To ignore the lengthy conversations within the community of scientists and issue an armchair opinion that they have connived to manipulate the results according to some preconceived "agenda" is an insult to the scientists and reveals a profound lack of understanding about how science is really done.

[9] For a partial explanation of how this is done, see: Hausfather and Menn (2013).

[10] Mothincarnate (2015).

Wow, I'm sure glad I read these rebuttals by real scientists who aren't on the payroll of the fossil fuel industry before I let any climate denialism infiltrate this book. I'd nearly been taken in by the deniers. Who do I think I am, anyway, to imagine that I know better than the climate scientists who have spent decades studying the topic? How arrogant to think that in a couple weeks of doing "research" on the internet I could find some obvious way they are wrong, and that they lacked the brains or integrity to see. I feel ashamed to have doubted them.

In the interests of due diligence, I'll see if the skeptics respond. They do. The 2008 version of Mann's paper, they say, contains the same basic flaws as the original, and other "hockey stick" studies use the same problematic temperature proxies. They claim that the reason that rural weather stations show the same upward trend as urban stations is that while defined as rural, many are also subject to significant urbanization. They say that in fact, the orbital decay factor was corrected for twenty years ago and in any case affected only the lower troposphere readings, which are not at issue here. Diurnal drift has been corrected for as well. The microwave emissions are a better measure of temperature than the electronic resistance method used for surface recordings. The climate establishment is constantly "adjusting the data" every time it doesn't fit their narrative or models, each "adjustment," of course, being in the

upward direction. The datasets that conform to the weather balloon readings and demonstrate greater warming do so because they include data from a satellite that was not corrected for calibration drift, and then adjust the data for diurnal drift according to a climate model rather than empirical data.[11]

[11] Spencer (2016).

It looks like I was taken in again, bamboozled by the authoritative-seeming dismissals of the minority position without really understanding the science behind it.

What becomes apparent in this back-and-forth is that in the end I am probably unable to make my choice of belief on purely evidentiary grounds. When I pursued the question of temperature readings a bit further, I got mired in a morass of technical minutiae about atmospheric physics, statistical methods, and so forth that I lack the scientific background to easily understand. Mind you, I am scientifically literate and have a degree in mathematics from Yale University. If I can't judge the issue on its merits, how can the average citizen? Moreover, as the disagreements among those who *do* have the scientific background demonstrate, educating myself further still might not resolve the issue. I am left with a nonevidentiary choice of whom to trust.

Unless you are a climatologist, meteorologist, or atmospheric physicist, you are in the same boat I am. Belief in anthropogenic global warming hinges mostly on whether one accepts the authority and integrity of the scientific establishment, including the soundness of academic publishing, the impartiality of peer review and funding, and resistance of individual scientists and institutions to confirmation bias. For many people, especially liberals and progressives, science is the only trustworthy institution remaining in our society. To doubt anthropogenic climate change is to question the very source of legitimate truth in our culture; as well, it is to question the other institutions that draw their legitimacy from science.[12] That is why, especially in the United States, those who disbelieve in climate change are generally members of the religious right who also disbelieve in other, even more fundamental, scientific theories. If you already believe that evolutionary theory is a vast unholy conspiracy to deny the biblical creation story, it isn't much of a stretch to disbelieve in climate change as well. There is some truth in the derisive association of climate doubters with flat earth believers.[13] The truth is not in the derision though, because what is happening is not that they are silly or stupid. It is that they are rebelling against the dominant culture's primary epistemic authority.

[12] By science here I am not intending to impugn the Scientific Method itself, only whether the institutions of science uphold it faithfully. Whether their failure to faithfully uphold it reflects deeper epistemological and ontological problems is another matter. The Scientific Method carries tacit metaphysical assumptions (such as an observer-independent objective reality) that are untestable from within its assumption-set. The apparent failure to uphold

the objective pursuit of truth in its institutions may be an irremediable reflection of the limitations of its metaphysical foundation, rather than a conditional shortcoming that could in principle be eliminated through reforms to peer review, academic practices, more stringent replication of experiments, and so forth.

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[13] I know several very intelligent people who believe the earth is flat. The recent popularity of Flat Earth Theory reflects a growing public alienation from the scientific establishment. Most commentators attribute this either to the arrogance and poor communication skills of scientists, to the inaccessibility of highly specialized scientific language, or to the stupidity and ignorance of the public. Another possibility, though, is the scientific establishment has earned this distrust through its alliance with the Establishment generally, whether economic or ideological. P.S. I think Earth is round. P.P.S. To the extent, that is, that the objective "is" of identity is ontologically valid.

Another factor that might predispose someone to disbelieve climate change is that it might conflict with deeply held economic, social, or political views. Unsurprisingly, most climate change doubters hold conservative political opinions. They typically oppose government regulation of business and see climate change as a dangerous justification for increased regulation. They usually favor unbridled exploitation of "natural resources," deriding the idea that nature poses any limits to human growth that technology cannot overcome. They are usually pro-nuclear power, pro-fracking, pro-offshore drilling, pro-coal mining, and in favor of bringing industrial development to the entire planet. Quite often (though not always), their position that we aren't harming the climate is of a piece with their position that we aren't harming the environment generally; that we shouldn't worry too much about GMOs, chemical waste, nuclear waste, plastic in the oceans, pesticides, pharmaceutical waste, habitat destruction, and so forth. Furthermore, climate-change-doubting blogs and especially their comments sections are often peppered with Islamophobic sentiments (the government is using the climate change hoax to distract us from the real threat: Islam!) and other alt-right canards.

Here, in short, are two nonevidentiary reasons to believe in anthropogenic climate change: faith in the institution of science, and the bad company of those who doubt it's happening.

So what was the final result of my descent into the world of climate skepticism? If you are still waiting for the answer to "Which side am I on?" I'm afraid you'll have to wait a little longer (until the end of this chapter). One thing I found in my excursion, however, is that each side is mistaken in the characterization of the other. The skeptic side, while certainly surrounded by a penumbra of ignorance, pseudoscience, and worse, is home to many reasonable, scientifically literate individuals who endure intense hostility for articulating heterodox viewpoints. The "War on Evil" approach to combating climate skeptics (starting with the poisonous slur "climate denier") is based on false premises. While I think that they sometimes overlook or minimize data that doesn't support their position, prominent dissidents like Judith Curry, John Christy, Roy Spencer, Jim Steele, and Stephen McIntyre are neither corrupt,

stupid, nor insincere, and at least some of them are also passionate environmentalists who care deeply about the ongoing degradation of nature. Moreover, at least from the perspective of a layman who has looked at both sides, some of their criticisms have merit. Whether or not the mainstream view is right, science and the public would benefit from a more respectful and less dogmatic engagement with the skeptics.

The skeptics' derisive view of establishment scientists is also wrong. It is obvious to me when I speak with climate scientists and read scientific papers that these people are also, generally speaking, scrupulous, conscientious scientists who care deeply about the planet. When skeptical bloggers accuse them of being part of an evil conspiracy, of criminal negligence, financial corruption, or hidden "political agendas"; when they bandy about degrading caricatures of "greenies" and "enviros," they undermine the credibility of any legitimate criticisms they may have.

Furthermore, many skeptics who are not trained scientists are frequently guilty of intellectual sloppiness of the grossest kind, which suggests that *they* are the ones with a political agenda. They uncritically embrace flimsy evidence and arguments that serve their desired conclusions. To give a representative example, I came across an authoritative-looking graph of ice core proxy temperatures going back thousands of years, apparently from ten thousand years before present to today, showing that temperatures during the Minoan Warming, Roman Warming, and Medieval Warming were much higher than present temperatures.[14] It was presented in a right-wing blog that essentially said, "The climate establishment must be idiotic or corrupt, when their own data shows that present temperatures are far below historical periods." The comments section was a chorus of agreement. It was an impressive graph, so I went to look at the information source, which was a peer-reviewed paper by R. B. Alley.[15] There I saw that the graph created by the blogger was highly misleading, because the data series from which it drew only went up to 1905 (which would make sense since ice cores are not useful proxies for very recent temperatures). Yet the graph was labeled to look as if it went up to the present day. All it showed, then, is that historical temperatures were much higher than they were in 1905—before modern emissions-caused warming is supposed to have begun.[16]

[14] I do not want to reproduce the graph, because I'm afraid someone will use it without context. You can easily find it on the internet by searching for "GISP2 Ice Core Temperature Data Last 10,000 Years."

[15] Alley (2000).

[16] This sloppiness obscures the fact that the Minoan, Roman, and Medieval Warm Periods were probably warmer than present temperatures.

Of course, the behavior of a cadre of scientifically untrained and politically

motivated followers doesn't entail that the skeptics' arguments are without merit. It should caution us to proceed carefully though, and to be aware of confirmation bias—our own as well as that of others. Confirmation bias refers to the tendency to prefer evidence that conforms to an existing belief and to interpret evidence in a way that supports that belief. So, the right-wing bloggers embraced that graph without subjecting it to any scrutiny whatever, even though a cursory check of the underlying data revealed it as bogus.

The more ego attachment one has to one's opinions, the greater the likelihood of confirmation bias. Signs of this ego attachment include self-righteousness, smugness, and contempt for those who disagree. I am sorry to say that I see a lot of all three in the writings of both sides, leading me to have little trust for either. Go read the blogs and comments sections of each side and ask yourself whether these people would be open to being wrong.

Now you, dear reader, may think yourself relatively free of confirmation bias, but notice how you respond when you read something critical of your position on climate change. Don't you subject it to much greater scrutiny than you would something that supports your position? Who is that guy? Was it in a peer-reviewed journal? Is he funded by oil companies? Let me find something that debunks it.... From that mindset, it takes only the most superficial rebuttal, character assassination, unsubstantiated accusation, etc., to cause the believer to dismiss the criticism. By the same token, you will probably give a free pass to articles that confirm your position. You won't bother to look at the unadjusted raw data, to question the fidelity of proxy temperatures, and so on. Generalize this tendency, and we have a society of increasingly noncommunicating reality bubbles, warring with each other even as their hidden agreements go unexamined, and their shared interests neglected.

The End of the World

A politically progressive friend described her experience of spending a week with her in-laws, who consumed a steady diet of Fox News. By the end of the week, she said, she understood how it seemed to them that anyone who voted for Hillary Clinton must be an idiot. The conservative media creates its own reality bubble.

The same might be said for the world of climate skepticism, and for its mirror opposite, the world of climate catastrophism. I encourage the reader to spend some time in each of these reality bubbles. Anchored by scientists and writers like Guy McPherson, Paul Ehrlich, Paul Beckwith, David Wallace-Wells, and Malcolm Light, the catastrophist camp criticizes mainstream climate science along many of the same lines as the skeptics do. It says that scientists ignore data that doesn't fit their worldview, or for which they are psychologically unprepared. Even when they do realize that it is already too late, political expediency induces them to tone down their forecasts; privately, they are much more pessimistic than their public statements indicate. IPCC reports are

similarly watered down under political pressure. The truth, they say, is that we are doomed.

Oddly enough, climate skeptics and climate catastrophists come to a similar place of inaction from entirely opposite directions. What does it matter, when one party disengages because they think there is no problem, and the other disengages because they think there's no solution?

Apocalyptic thinking in general fosters a complicity with the very systems that it critiques. Seemingly radical, the catastrophist position is in practical terms completely compatible with the continuation of business-as-usual. Making a similar point, the scholar Eileen Crist writes:

> Indeed fatalism is a mind-set that strengthens the trends that generate it by fostering compliance to those very trends. The compliance that fatalism effects is invisible to the fatalistic thinker, who does not regard him or herself as a conformist, but simply as a realist.[17]

[17] Crist (2007), 54.

The "realism" upon which so much climate discussion is based takes for granted many of the same beliefs and systems that are generating the crisis to begin with. What we believe to be real, though, may be a projection of the story we live under. As for the systems, humans created all of them. Humans can change all of them.

Catastrophist prognostications of doom range from massive disruptions that would render the tropics uninhabitable and devastate food supplies, all the way to near-term extinction of human beings (in my lifetime) or even a runaway greenhouse effect that would make Earth like Venus. I invite the reader to browse Guy McPherson's website, "Nature Bats Last," for a catalog of the scientific evidence behind their position. Basically, near-term extinction depends on positive feedback loops that accelerate climate change. For example:

- Arctic warming melts undersea methane hydrates, releasing methane into the atmosphere and causing more warming.
- The same occurs for stores of methane and carbon dioxide in permafrost.
- Hotter temperatures generate more water vapor, which traps more heat.
- Arctic ice melt decreases albedo (reflectivity), generating more warming from the sun.
- Warming causes shifting climatic patterns, leading to forest fires and peat fires, creating soot that dirties the snow, causing faster melting.
- Methane release from bodies of freshwater increases with higher temperatures.
- More atmospheric CO_2 leads to more carbonic acid in the rain, which

dissolves calcium carbonate rocks, releasing more CO_2 into the air.

Most of the alarm centers on methane. According to Malcolm Light, the methane under the Arctic Ocean alone is a hundred times greater than that sufficient to instigate a major extinction event.[18] If even 1 percent is released, it would cause a 10°C rise in global temperature—enough to ensure the demise of all vertebrates.

[18] Light (2014).

And, say the catastrophists, this is already well under way and irreversible. The feedbacks are already in place. The Arctic will soon be ice-free. The Larsen B and Larsen C ice shelves are on the verge of collapse. The West Antarctic Ice Sheet is losing 150 cubic kilometers of ice per year. The oceans are warming at twice the rate previously thought. Sea level rise has gone exponential.

I will not repeat the previous exercise and walk the reader through the mainstream responses to these points, the responses to the responses, and so forth. Methane levels haven't risen as quickly as the catastrophists predict. Yes, they have—the methane has gone to a higher atmospheric layer than where the measurements are taken. No, they haven't—that claim is speculation based on sketchy data. Yes, they have...

I seriously recommend the interested reader spend a solid week reading catastrophist literature, and another solid week reading skeptic literature (the website *Watts Up With That?* is a good place to start, or Matt Ridley's essay "The Climate Wars' Damage to Science").[19] It is amazing how intelligent human beings, all sourcing information from what we call science, can come to such dramatically opposed conclusions. What's going on here? Each camp wields various psychological and political theories to explain the intransigence of the other. Each side is certain that the science is with themselves.

[19] Ridley (2015). Perhaps in an effort to establish its credibility, this essay indicts as pseudoscience other deviations from conventional opinion, such as belief in homeopathy or the dangers of genetically modified food.

For reasons that will become apparent in this book, I do not accept the catastrophist narrative. It does, however, have three important truths to offer.

First, a great dying is indeed under way on this planet, and human activity is responsible for it. Most people and institutions have their heads in the sand and do not see it or allow themselves to feel it.

Second, we are indeed facing the end of the world. Not the literal end of civilization or the human species, but a transition so profound that on the other side of it, it will seem like we are living in a different world. That is how deep the changes must go for the ecological crisis to be resolved. We face an initiation, a metamorphosis, into a new kind of civilization. From this place, what is possible, practical, and realistic changes as well. Our successful graduation to a new world

is by no means guaranteed; nonetheless, the catastrophists are channeling the truth of a possibility. They see the necessity of a death phase, the dying of our present collective self; they do not see the rebirth. And that is normal. In a true initiatory ordeal, often there is a moment when there seems no hope of ever making it through.

Third, the catastrophists are right that conventional means, methods, and mindsets are far insufficient to the task of healing the planet. The catastrophists are like the voice that tells the man in the maze, "Just stop." They do not recognize that after this stopping a new compass becomes available, a song that can guide us out. The situation is hopeless, yes—but only from within the logic and worldview that entrap us. That worldview (which has generated the crisis to begin with) renders us impotent, because its solution set is entirely insufficient to the task at hand.

Many of my readers have probably had at least one experience in their lives that violated what they'd believed to be possible. A precognitive dream, a healing of an "incurable" disease, an uncannily accurate psychic reading, an amazing synchronicity, an encounter with a UFO—something that implied "reality is much bigger than we've been told." If you are one of them, I ask: Does your despair take that into account? Or do you exclude such considerations from your "realism"?

Ironically, some catastrophists in their despair have indeed hit upon a significant theme of the song that can lead us out. They are saying that since it is hopeless, we might as well dedicate our lives to love, beauty, and life. Yes! That is the starting point, because our current predicament is the result of a long history of denying love, beauty, and life. The revolution is love. What becomes possible then?

Translated into practical action, this change of heart is ultimately more important to healing the climate than the things the conventional alarmists are calling for. It is as if giving up on saving the world opens us up to doing the things that will save the world.

The Institution of Science

If the skeptical "right" and doomsaying "left" are both trapped in reality-tunneling confirmation bias, perhaps we should flee to the center: the standard climate change narrative. This is comfortable territory, staked out by our society's primary epistemic authority, science.

The problem is, the dynamics that afflict the two extremes afflict the middle as well. Over the last few years, a growing chorus of insider critics have been exposing serious flaws in scientific funding, publishing, and research, leading some to go so far as to say, "Science is broken."[20]

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[20] Belluz and Hoffman (2015).
