

Go Light

Gavin Van Horn

Baja California Sur, Mexico

Dawn meditation, perched cross-legged on a mesa, I absorb all the elements present on a vertical: the rocky earth of the cliff's edge, the expansive salt water, the cloud-shrouded sky, and the fiery Sun.

For the moment, a shadow of gray gauze prevails. But only for so long. All I must do is wait as Earth rotates. I know it's a perceptual deception: my anticipation feels as though it exerts a summoning force, as if my will were bound to others who are waiting. Waiting, waiting, waiting. A tremor of doubt passes through my head, some electric current of fire across a ganglion of synapses: Will it rise today? *Of course, it will.* But will it?



The elements preceded the planets. And in an inscrutable way, reaching back to before times, so did we. We are made of what we return to: matter born of stars, unearthed for a moment, and when, five billion years from now, the Sun stretches out, as those with understandings of vast timelines and cosmic phenomenon speculate, we—by which I mean the elemental molecules we call “we”—will once again be star cradled. Light.

In an elemental sense, earth precedes Earth. Water precedes oceans, rivers, and ice caps. Air precedes atmosphere. The cosmic fire, doula to galaxies, precedes it all, creating the conditions and

the possibility of life from light. The Greek philosopher Heraclitus (ca. 490 BCE)—remembered for his reasoning about the elements and described as “an inward-turned observer of the world, inventor of the first philosophical genres, the thought-compacted aphorism, [and] prose that could contend with poetry”—honored fire foremost among the elements.¹

If nonphilosophers have any reference point for Heraclitus, it might be his quasi-famous aphorism that one never steps into the same river twice. This emphasis on the flow of *relations* instead of the stasis of *things* upends object-oriented ways of thinking: a river is not a static entity but a being that is ever-changing. So, too, are human beings. But it was not water that Heraclitus lifted up as key to understanding the cosmos.

According to the philosopher Eva Brann, Heraclitus honored fire as “the root-element” because of the ways in which fire instantiates the process of transformation, acting as a kind of “cosmic currency” and “all-pervasive, everliving implicit medium that sometimes appears as an element on its own.”² As one of the rare surviving fragments of his words asserts: “This world-order (*kosmos*), the same for everything, was made neither by any one of the gods nor of men, but ever was and is and will be: an everliving Fire, kindled in measures and extinguished in measures.”³ Fire is the transformative, ever-living force that makes all elemental motion—and thus all forms of life—possible.

It is not merely fire’s ability to transform that is key to understanding this elemental, according to Brann. Viewed from another angle, fire represents a certain strife, a productive antagonism, holding everything together by a unity of opposites “*not* as their reconciliation... [but] of strenuous togetherness, of strained union, a relations that now degrades and then again vitalizes a world as a multiplicity.”⁴ The relations of fire to all else sets the world to “vitality vibrating” and thus “in its parts *and* as whole, a tautly vital, twangingly alive, strainingly static cosmos.”⁵



I wait, anticipation building. Because of the angle of Earth to Sun, fine gradations of light arrive first, peeling back layers of crepuscular predawn morning, spilling out a wash of sparks, turning a steely cobalt sea into a shimmer of rose, peach, and saffron. Everything seems to gradually light up from within, bioluminescent.

Then—there—fire. A white-gold lip of warmth emerges, flint against the tinder of sky. I don't simply see the sunlight. I feel it. The sun's flame reaches out and warms my arms, my knees, my cheeks, my forehead, my eyes. I am touched, literally touched, by radiations of nuclear fusion ninety-three million miles away.

An outpouring of light transmuted to energy—the internal fires of all green things—fuels what is possible on this planet. This sunlight, this local fire, fills the air with a life-giving force older than Earth, coursing through me, the saguaro, the tarantula, the pallid bat, the mesquite bean, the long-limbed grasshopper, the Colorado rock crumbling into the arroyo, the hummingbird, the ceaseless sleepless sea. This generative fire combines and recombines in elegant interlocking interlocutors who speak in thousands of tongues—even through the many beings who are tongueless but not noiseless, even if only their mineral presence redounds into the infinite sky, “vitaly vibrating,” liplessly humming a tune older than Earth.

Pismo Beach, California

My finger hovers above the sand, hesitantly reaching toward—a shell? a creature? an alien? These castaways, seemingly everywhere, are strewn about the shoreline in unkempt bunches, matted rafts, and shipwrecked flotillas. Thousands of these 1.5- to 3-inch-long disc-shaped bodies disclose the undulating curvature of the tide line. My finger makes contact with a chitinous fin, firm but giving, that extends at a right angle above a clear oval stained a vivid indigo

around its circumference. Having grown up in Oklahoma, I suffer from a deficiency of marine biology knowledge. What or who lies at my feet is a mystery. I know enough to be in awe.



Velella velella, marvelous co-op of life. Photo by Gavin Van Horn.

I later discover these creatures are *Velella velella*, commonly referred to as by-the-wind sailors, their fates wedded to prevailing winds. The translucent fin I touch with my finger serves as their “sail,” secured and unyielding in its position yet making use of wind power to propel *Velella velella* across choppy open ocean. Most times, the strategy works in their favor. But if prevailing winds turn shoreward for long enough, their journey comes to an end, as it had for so many on this California beach.

I feel blown about at times, subject to prevailing winds, although I retain some small measure of control in adjusting my sail. More than *Velella velella*. I like to think so. Less metaphorically, humans have learned to harness the wind in various ways—from

sea travel to electrical grids. Harnessing the elements for our own ends is arguably something most creatures do, but *Homo faber*—the ones with opposable thumbs and the civilizations to show for it—too often act on the misperception that we’re the only actors in this earthen drama. We, the subjects, among a collection of objects; the only matter that matters. This has been the prevailing ideological wind in the West—religiously affirmed, scientifically rationalized—for centuries. Even as this wind drives us toward lonely shores.

Belying this anthropocentric bias, life has been shaping Life from its origins. Without such shaping—by which I mean exchange, fusion, collaboration, mutualism—we would not be here. Nor would oxygen (blessed be you, cyanobacteria, creator of oxygenated air), or soil (blessed be you, lichen, eroder of rock), or trees (blessed be you, fungal mycelia, for offering root systems until sky-reaching plants evolved their own). The Russian geochemist Vladimir Vernadsky (1863–1945) was one of the first scientists to recognize the protean, shaping power of life on a planetary scale—the ways in which living organisms *create the conditions* for still more diverse life. Vernadsky called this unifying, dynamic force “living matter,” a force powered by a Sun that has altered living conditions of the planet over evolutionary time. He also gave it a name: *biosphere*.⁶ This is the thin envelope, approximately twelve miles, top (atmosphere) to bottom (lithosphere), where life has elaborated upon itself. Increasingly in the past few decades, particularly with fresh discoveries about genetics and microbial doings, there has emerged a corresponding appreciation for the symbiotic composition of our bodies—the way life shapes Life in every body.

Mergers and collaboration and partnerships among organisms of entirely different kindoms are the norm when it comes to life shaping Life.⁷ The microbiologist Lynn Margulis (1938–2011), through her research and theories about endosymbiosis (particularly the mergers of bacteria to form animal and plant cells), made this view of life central to her work. Although her theories were initially resisted—perhaps because of the strong political and

cultural momentum that imagines humans as competing individuals—genetic research has borne them out.

But we need not own powerful microscopes to appreciate the way life reaches out to other life. If you are reading this outside, you may be sitting on a rock that is hosting what has been dubbed the “gateway organism” for appreciating life mergers that cut across kindoms: lichen.⁸ A collaboration of fungi and algae, lichen offer a classic example of the way organisms can become intertwined for the mutual benefit of the whole; in this case, with the fungi providing rootage and mineral sustenance and the algae providing a Sun-powered source of energy.

By-the-wind sailors are their own kind of lichenlike collective. A hydrozoan colony, the sailors embody the paradigm of life shaping Life. Three different kinds of polyps, with specialties in defense, feeding, and reproduction—constitute *Velella velella*. These hang from a chitinous, water-repellent plate with gas-filled pockets of their own creation (their raft, if you will). The polymorphic colonial arrangement means that nutrients are distributed evenly among the polyps, which share tissues with adjoining polyps, forming an “individual” by-the-wind sailor—less a single sailor than an entire crew. Also physiologically noteworthy, some polyps host microscopic, photosynthetic unicellular algae (zooxanthellae) in their tissues. By virtue of this arrangement, the sailors have a backup, light-powered food source in case the zooplankton pickings are slim at sea.

The encounter with *Velella velella* evokes in me a double dose of astonishment.

The first is due to meeting a creature by happenstance, on an ordinary walk on the beach, with whom I had no idea I shared this planet. Naturalistically inclined, I tend to get familiar with what is around, lulled into a sense of general knowledge, and then *bam!* a creature from a dream, a being that looks sprung from the pages of a fairy tale or another planet’s bestiary appears at my feet, reminding me of how little I know, how many creatures I have yet to—and may never—encounter. At my feet is mystery.

The second dose of astonishment comes from discovering how calling *Velella velella* a creature—as though that word were a singular noun—is a misnomer. By-the-wind sailors are a co-op, a collective of various forms of life joined together to create an indigo-dipped hydrozoan that navigates vast oceans without a central nervous system. If I didn't think it would cause others to worry over my sanity, I should walk around slack-jawed all the time because of collective creatures such as *Velella velella*.

I initially stumbled across by-the-wind sailors, this astonishment, without any idea that these were one of Life's many experiments. But here's the open secret: every being, every single being, is a collective, a collaboration of partnerships. The biologist Scott F. Gilbert has been outspoken about this, highlighting that the notion of an individual self is a conceptual construct not a biological reality. Humans are unexceptional in this respect, for, as he points out, 90 percent of the cells that human bodies comprise are bacterial, and metagenomic sequencing reveals that the human gut is “a persistent partnership with over 150 species of bacteria,” with around a thousand major bacteria groups in our gut microbiome. Instead of individual selves, we should be regarded as “holobionts,” a multicellular eukaryote plus its colonies of persistent symbionts.⁹

Such relationships between kingdoms are found everywhere among species, fascinating worlds within worlds of startling chimeric composition—from coral reefs, to nematodes, to termites who can digest the cellulose in wood only because of their gut bacteria (who themselves are composed of five different species), to promiscuous fungal associations within forests, to Hawaiian bobtail squids and their luminescent microbial symbionts.¹⁰ “For animals, as well as plants, there have never been individuals,” Gilbert and his colleagues assert. With a nod to the “gateway organism” for understanding symbiosis, they conclude, “We are all lichens.”¹¹

Lichens and coral reefs, Australian termites and bobtail squids, *Velella velella* and *Homo sapiens*—all are expressions of life constantly shaping Life. And because all creatures on this planet

directly (plants) or indirectly (all that depends on plants) gain their energy—their food—from the Sun, it might be said that life shapes Life because *light* shapes Life.¹²

Baja California Sur, Mexico

And what is light? Of course, familiarity with light might lead us to assume we know what it is, more or less, for we are bathed in it daily. Try for a moment to describe it, really describe it, and we may quickly falter.¹³ Particle and wave; energy field. We have our words: *Quanta. Photon. Vibration.* Light carries energy that can displace electrons. It is granular; it oscillates; it is curved by the pull of gravitational fields. It strikes our eye as different colors. A prism can refract and separate these different bands of color, as can raindrops when the angle is just right, giving us those miracle light shows known as rainbows.

Staring in awe at such a colorful apparition, we may be inspired to ask, “What is color?” and nod our heads when a distinguished theoretical physicist such as Carlo Rovelli replies: “Put simply, it is the frequency (the speed of oscillation) of the electromagnetic wave light is. If the wave vibrates more rapidly, the light is bluer. If it vibrates a little more slowly, the light is redder. Color as we perceive it is our psychophysical reaction of the nerve signal generated by the receptors of our eyes, which distinguish electromagnetic waves of different frequencies.”¹⁴ But then we might think, “Wait,” and begin shaking our befuddled heads back and forth instead of nodding them. And then, wonder upon wonder, we are reminded that *all* matter, not just light, is energetically vibrating. Even the stone we think is mute. Again, Rovelli: “If we look at a stone, it stays still. But if we could see its atoms, we would observe them to be always now here and there, in ceaseless vibration. Quantum mechanics reveals to us that the more we look at the detail of the world, the less constant it is. The world is not made up of tiny pebbles. It is a world of vibrations,

a continuous fluctuation, a microscopic swarming of fleeting microevents.”¹⁵

The generative source of these vibrations, our local plasmic storm of light, lies safely ninety-three million miles away, emitting all the necessary energy and more to keep the grand experiment of life on this planet going.



I am staring up at the stars, my back held by the sand. Silica—transmogrified to glass with enough fire—can be fashioned into the lens of a telescope with which to look further into the sky. On the other end of the size spectrum, a hand lens was recently gifted to me by a friend. The first time I turned it upon a flower blossom, my mouth fell open. The living geometry, the vividness of color, the surfaces—ripples, bounce, and bump—unseen but now clearly visible with just a bit of magnification were breathtaking. Another day, roaming along the wrack and funk of tideline, I turned the hand lens toward the sand: each grain a different hue, each crystal its own prised reflecting pool. A beach that once seemed uniform to my naked eye became a multiverse.

At this moment, lying on a Mexican beach, I have come to bathe in the night sky. The sand serves as a cradle, and my “ceiling” is covered in clusters, milky streams, and singular blazes. If I turn my head, out on my peripheral: more stars, beyond the ones accounted for.¹⁶ I gaze into a sky spangled with countless stars, thin pinpricks of light reaching across expanses so vast, there’s no point using numbers. “Can you count the sand on the shore? Can you name the stars in the sky?” Such questions were one of God’s rhetorical humbling tactics for an overwhelmed Job: “Can you bind the chains of the Pleiades? Can you loosen Orion’s belt?” (38:31).

No—I can’t even allow my eyes to linger on the hunter’s star-studded belt for long before I move onto the next bit of firelight that shines. I receive a different message from the one intended for

a starstruck Job: we are stardust. We are also bacteria, algal bloom, protist, archaea, fungus. Hybrid beings, aliens to ourselves, strangers in a strange land. Yet home. Home. Home. With all our fellow travelers. We, little balls of fire. Self-ablazement on a pair of legs. We are life shaping Life. Light shaping Life. As the aforementioned Lynn Margulis and her son Dorion Sagan put it, humans “redistribute and concentrate oxygen, hydrogen, nitrogen, carbon, sulfur, phosphorus, and other elements of Earth’s crust into two-legged, upright forms that have an amazing propensity to wander across, dig into, and in countless other ways alter Earth’s surface. We are walking, talking minerals.”¹⁷ Walking wildness. Light shaping Life. I feather the sand out under my fingertips, considering the minerals on either side of the porous boundary of my skin. Earthy earthmovers, we are.

Still, the sky beckons. I reach up my hand to touch the light. It’s an involuntary move. Rationally, I know it brings me no closer. I am a child wanting to reach back, to grip an unseen finger, a Sistine Chapel motion unfrozen. This basic gesture, this reaching out, must be tied to human curiosity, our desire not only to know but also, if we are able, to love; to touch and be touched by. Too often, the controlling grasp, the clutching fist instead of the open palm, has completed the motion. We live in times bent by an extractive desire to possess, to make *mine*.

But what of the open palm? Turning to look out in awe, at the vast, shared, unfathomable sky of distance, of light-years, of other worlds—might this humbly turn us toward Life here and now, where we can apprehend the elemental sharing of kinship in bone, breath, blood, metabolism, metaphysics—raised from earth, but never far from it, kept by gravity’s embrace from spinning off into space, sharing the firelight of this one star in this spiral arm of a galaxy among galaxies among galaxies among galaxies. I lift my eyes and feel reverence for what is at my feet, what makes my feet possible. I am Earth bound and Earth liberated. I cast my shining eyes above so that each step on the ground becomes more precious to me.

I am running fingers through cool sand, tapping across my kinship with stardust. My mineral skin, aswirl with other lives. And these distant stars seem to beam well wishes from afar, across black night. When I occasionally drift beyond the gravitational pull of my mind, I hear a cricket trilling in the dark—*pweet pweet pweet*. Let me tell you something, earthling to earthling: this sound makes all that dark around me light.

Morro Strand State Beach, California

At my feet, a pile of by-the-wind sailors. A gull plucks one from the sand, trundles to a freshwater stream, washes and moistens the hydrozoan and swallows them down.

What of this elemental life? We always are living it, being lived by the elements, these essential, powerful forces of earth, air, water, fire. The question, I think, is whether we are conscious of it; and being conscious of it, what do these forces, responsible for but indifferent to individual well-being, ask us to be conscientious of? How can we live in appropriate reciprocity, giving something of ourselves in gratitude for the forces that gift us with life? If we can't ever properly return the primal gift of the Sun's fire, then what steps, what orientation, what North Star shall we set our course by as we sail our elemental vessels into the unknown seas ahead?

“To climb these coming crests / one word to you, to / you and your children: / *stay together* / *learn the flowers* / *go light*,” admonishes the Buddhist prose-poet Gary Snyder.¹⁸ He seems to know—as we gaze about at the unraveling of living beings, standing at the foot of a mountain of wicked problems—that we're up against egoic monsters of our own creation. So he offers a few words of advice: on community (*stay together*), on collaborating with nonhuman kin (*learn the flowers*), and a bit of instruction for how to do that (*go light*). Best keep things simple and close at hand. No need to come up with salvific plans, technological conquests, or ride into space in search of new worlds when the old problems remain intact.

Go light. I once thought Snyder meant traveling without unnecessary burdens, unencumbered, taking only what one needs and no more. Go light. As he says elsewhere, we “must try to live without causing unnecessary harm, not just to fellow humans but to all beings. We must try not to be stingy, or to exploit others. There will be enough pain in the world as it is.”¹⁹ I’m no longer certain that traveling simply was the only meaning Snyder imagined when he placed those two words together, *go light*.

As a scatterer of darkness, as a force of life, light holds a central place in religious stories and philosophical teachings around the world. From divine presence to the Buddha’s enlightenment to Plato’s Allegory of the Cave, the comfort and clarity of light provides powerful metaphors for the journey from ignorance or delusion to clear-sighted wisdom. One stunning example, in which light is equated with consciousness itself, can be found in the “Great Forest Teaching,” a seventy-century BCE Indian scripture from the *Upanishads*. The text recounts an exchange between the wealthy King Janaka and the renowned sage Yājñavalkya, in which Janaka fires a series of questions at the sage, beginning with the question “What light does a person have?” The sage responds with the obvious: “The sun. By the light of the sun, a person sits, goes about, does his work, and returns.” But Janaka presses him further. When the sun sets, then what? The moon, of course. And without either? Fire. And without fire, then what light does a person have? “Speech,” the wise sage replies, noting that even when one can’t see one’s own hand, a voice can light one’s way. But the king is not yet content. In the absence of all those—sun, moon, fire, speech—what light does a person have? “The self,” the sage responds. “It is by the light of the self that [a person] sits, goes about, does his work, and returns.” The “inner light” of consciousness allows a person to perceive the world; it illuminates what can be known.²⁰

Perhaps Snyder’s directive to “go light” could be characterized as a joyful elemental response: to join our consciousness—our inner light—with the greater luminosity of Life as it is expressed

through our fellow earthlings. To touch and be touched. To keep awakening to the elemental wonders that sustain us. Go light.

gratitudes

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notes

1. Eva Brann, *The Logos of Heraclitus: The First Philosopher of the West on Its Most Interesting Term* (Philadelphia: Paul Dry Books, 2011), 4.
2. Brann, 53, 58, 60.
3. Brann reminds readers that all of the “fragments” that survive of Heraclitus’s words are found in other texts, typically later Greek philosophers who quoted his words, sometimes to deride his views or interpret them as supporting their own ideas. We have no original document to check for accuracy, no collection of sayings as a single work to point to, although his aphoristic style does lend itself well to short quotations.
4. Brann, 80.
5. Brann, 89.
6. Vladimir I. Vernadsky, *The Biosphere* (New York: Copernicus, 1998).
7. I here intentionally adopt the word *kindoms*—instead of *kingdoms*—to highlight the lateral hybridization of life-forms, as relatives, as oppose to the monarchical and strongly divided hierarchies implied by the latter term.
8. The phrase “gateway organism” comes from Merlin Sheldrake, who himself has written one of the more fascinating books on fungal symbioses and their implications for thinking about life: *Entangled Life: How Fungi Make Our Worlds, Change Our Minds & Shape Our Futures* (New York: Random House, 2020). The quote is from p. 73, amid his fabulous chapter on lichens, entitled “The Intimacy of Strangers.” Sheldrake writes, “It is no longer possible to conceive of any organism—humans included—as distinct from the microbial communities they share a body with.... Our bodies, like those of all other organisms, are dwelling places. Life is nested biomes all the way down” (91).
9. Scott F. Gilbert, Jan Sapp, and Alfred I. Tauber, “A Symbiotic View of Life: We Have Never Been Individuals,” *Quarterly Review of Biology* 87, no. 4 (December 2012): 325–41.
10. In addition to Gilbert, Sapp, and Tauber, for further examples of symbiotic relationships and their key role in organismal development, evolution, and immunology, I would point readers toward the remarkable anthology *Arts of Living on a Damaged Planet* (Minneapolis, MN: University of Minnesota Press, 2017), edited by Anna Tsing, Heather Swanson, Elain Gan, and Nils Bubandt, and particularly to the essays by Donna Haraway, Margaret McFall-Ngai, and Scott F. Gilbert.

11. Gilbert, Sap, Tauber, “A Symbiotic View of Life,” 336.
12. The astute reader might object here, citing as exceptions chemosynthetic organisms living near hydrothermal vents on the ocean floor or nonphotosynthetic plants, such as ghostly pipestems. True enough that there are other means than photosynthesis to provide fuel for living beings, but in both these cases it might be argued that the Sun provides a proximate source of energy. In the case of pipestem, they rely on fungal relationships that tie their nutrient intake to trees. For chemosynthetic organisms, one could reasonably point to the fact that, without the Sun’s heat, there would be no liquid water (Earth would be a frozen ball of rock and ice) and hence no hydrothermal vents for extremophiles that rely on chemosynthesis.
13. If you feel flummoxed by the question, you’re in good company. Einstein himself, late in his life, admitted, “All these fifty years of pondering have not brought me any closer to answering the question—what are light quanta?” Perhaps St. Symeon, an Eastern Orthodox monk who lived in the eleventh century, was right to cast a broad net: “O Light that none can name, for it is altogether nameless. O Light with many names, for it is at work in all things.... How do you mingle yourself with grass?” Both of these quotations can be found in Bruce Watson’s excellent historical account of the human fascination with light, *Light: A Radiant History from Creation to the Quantum Age* (New York: Bloomsbury, 2016), 191, 193.
14. Carlo Rovelli, *Reality Is Not What It Seems: The Journey to Quantum Gravity* (New York: Riverhead Books, 2017), 60.
15. Rovelli, 132.
16. We can see faint stars better when not looking directly at them due to the distribution of rods and cones in the human eye. The technique for using one’s peripheral view and thus relying on black-and-white sensitive rod cells is something astronomers call “averted vision.”
17. Lynn Margulis and Dorion Sagan, *What Is Life?* (Berkeley: University of California Press, 1995), 49.
18. Gary Snyder, “For the Children,” in *Turtle Island* (New York: New Directions, 1974).
19. Gary Snyder, *The Practice of the Wild* (New York: Counterpoint Press, 2010), 4.
20. This story is retold in Evan Thompson, *Waking, Dreaming, Being: Self and Consciousness in Neuroscience, Meditation, and Philosophy* (New York: Columbia University Press, 2015), 2–3. Thompson goes on to describe different kinds of consciousness, including dream states, which Yājñavalkya explores in the Upanishadic text.