

Breathing In, Breathing Out: The Biological Foundation for Sustainable Economic and Social Life

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Abstract: The ecological crisis is a crisis of relationship, and the way forward lies in building more reciprocity, respect, and love into human relationships with each other and with the rest of nature. What is needed is a great economy of give-and-take in which what each takes in is balanced by what each gives out. Nature provides the model for this reciprocity in the biological process of breathing in and breathing out. The rhythm of the breath, found in every life form as well as in every larger community in which living beings participate, provides a powerful model for human decisions and actions in every arena of life. By copying the rhythm of the breath, humans can learn from the wisdom of nature's economy to revolutionize our relationships with one another and with the larger-than-human world. I discuss the economic model of the modern world and its devotion to linear increase and accumulation, or breathing in without limit, and how profoundly this pattern contradicts the reciprocal model of biological life. I offer historical examples of reciprocal economies among the Northwest Coast Indians in the potlatch ceremony and among ancient Israelites in the Year of Jubilee. I then offer examples of reciprocal practices that emphasize the breathing-out or giving-back half of the breath cycle and that can be practiced in daily life. I suggest that activities of any kind that engage people in giving back, such as showing appreciation, extending care, or pausing for meditation, contribute directly to sustainability because they address the giving-back half of the breath cycle, which is missing or underexplored in modern life.

Keywords: Animism, breathing, love, reciprocal economies, reciprocity, relational worldview, sustainability

Introduction

In the fall of 2013 I sat with several hundred other people in an auditorium in Boulder, Colorado, and watched a speaker take the podium to speak about the rights of nature. I'll never forget what happened next.

The speaker invited us all to become quiet and observe a moment of silence. In recent weeks, he explained, many bears had wandered into town raiding garbage cans. It was late autumn, and they were putting on last-minute weight before settling into their winter sleep. But the state has rules about bears in town, and the state's rules are strict. A bear who makes one or two visits into town will be relocated into the country, but a bear who is caught making a third trip to town will be killed. In the past four weeks a total of four bears had been killed for foraging in town.

The speaker asked us to spend one minute of silence in honor of these dead bears.

The auditorium grew quiet. One could almost hear puzzlement like a restless buzz circling the room: A moment of silence? For *bears*? It was likely the first time any of us had taken part in such a ritual.

I too felt the strangeness of the moment. I marveled that hundreds of human beings were paying silent witness to the bears. A ritual that is usually performed out of respect for human deaths was being performed on this night out of respect for bears. Our minute of silence would not bring the bears back; it would not right the skewed relations between bears and humans; it would not keep more bears from wandering into town. But what it did do was remind us all—by its very strangeness—that we are used to valuing the lives of humans and bears differently. It shook us for a moment out of our anthropocentric complacency, our habit of paying attention almost exclusively to human lives.

For that one minute we trained our attention on our more-than-human neighbors. Hundreds of us thought about bears. We recognized that we had made life more dangerous for several of them. We experienced appreciation for their lives and showed compassion for their deaths. We extended to the bears a form of respect that is usually reserved for humans, and in doing so we gave something back to bears. We gave them our love and regard.

That one minute of silence for the bears has remained with me because it is so emblematic both of our current ecological problem, the schism between humans and the rest of nature, and of its solution, an increased love and regard for our more-than-human neighbors. In what follows I discuss the ecological crisis as a crisis of relationship. I suggest that the way forward lies in building more respect and love into human relationships with the rest of nature, which by definition means moving toward reciprocity in all our exchanges with one another. What is needed is a great economy of give-and-take in which what each takes in is balanced by what each gives out.

Fortunately, a model for this reciprocity is near at hand. In the most intimate heart of nature that each person experiences, namely, within each person's body, lies the rhythm of breathing in and breathing out. The cycle of the breath, found as it is in every living organismⁱ as well as in every larger community in which living beings participate, provides a powerful model for human decisions and actions in every arena of life. By copying the rhythm of the breath, humans can learn from the wisdom of nature's economy to revolutionize our relationships with one another and with the larger-than-human world.

A Crisis of Relationship

The ecological crisis is at heart a crisis of relationship. Convinced that humans stand above other species because of a supposedly superior intelligence, the Western world took the lead in shaping legal, economic, and social systems founded on the idea that nature is a machine and that other creatures and forces are objects to be consumed or acted upon at human whim. This mechanistic use and abuse of other parts of nature, including other humans, has culminated in the present interrelated crises of climate change and mass extinctions as well as extreme inequality and social injustice. In the mechanistic system, the power of the law came to support the idea that humans could own other parts of nature, including other humans, and that nature was to be regarded first of all as a form of property. The law mandated using other beings or parts of nature rather than respecting or loving them as partners.

Addressing the present crisis will require changing our patterns of relating. It will mean moving away from relationships based on use, which evidence a mechanistic worldview, and toward relationships based on reciprocity. It will mean, in other words, moving toward a relational worldview.

A Relational Worldview

In a relational worldview every other creature and part of nature, including every other human, is considered worthy of relationship. Every being *deserves respect*, defined here as “deserving of reciprocity” and more broadly as “deserving of regard and care and love.” Respect in both of these senses in a mechanistic worldview is considered appropriate for persons but not for things.

In a relational worldview there is no such division between “persons” and “things,” for there are no “things.” Every being is an actor; every point has a perspective; and even rocks may show purpose. In the poetic language of LeGuin, “Rocks have their dreams, and the earth changes” (LeGuin 1999, 167). In more animistic forms of a relational worldview, every being, no matter its physical shape (or lack of it, as in spirit beings) may be regarded as a person and may interact as a person (Harvey 2006; Bird-David 1999; Viveiros de Castro, 1998); this is my own view. Other advocates of a relational worldview speak of “subjects” rather than “objects,” such as philosopher Thomas Berry, who keenly observed that the universe needs to be regarded as a “community of subjects” rather than a “collection of objects” (Berry 1999, 16).ⁱⁱ

I came to an animist worldview through my own experiences of relating with trees, animals, plants, and creeks (Stuckey 2010; Stuckey 2012). I was given words for this view through the works of indigenous scholars (Sanchez 1993; Deloria 1994 and 2001; Hogan 1995; Vásquez 1998; Salmón 2000; Fixico 2003; King 2003; Stewart-Harawira 2005; and others) as well through the works of anthropologists of “new animism” (Rose 1996; Viveiros de Castro, 1998; Bird-David 1999; Morrison 2000; Hallowell 2002 [1960]; Harvey 2006; Ingold 2006; and others).

Because I begin with a relational worldview, and specifically an animist one, I try to use terms consistent with it, such as *ecocommunity* or *land-community* (Leopold 1949) rather than *ecosystem*, and *relational education* rather than *place-based education*. Impersonal words like *ecosystem* show how much they owe to a mechanistic worldview, whereas terms such as *ecocommunity* and *land-community* conjure the many-personalities, complex relationships among living beings that people experience in communities. Similarly, *place-based education* gestures toward an awareness of the complex ecocommunity but stays within an impersonal, mechanistic frame rather than naming *relationships* with more-than-human others and within ecocommunities as the focus of a curriculum.

It is the sociality of the world that the mechanistic view forbade; mechanism prevented humans from regarding animals, trees, and creeks as capable of relationship (Stuckey 2013). In a relational worldview, there is no separation between “nature” and “society” or between “social” and “ecological” spheres or activities. In a relational worldview, all beings take part in the wider society of interrelationships, and every activity, from eating to expelling waste to building dwellings, is a social one.

An ontological claim resides in my choice of language. Choosing a relational worldview over a mechanistic one involves claiming that reality—nature—is *more like* a social network of living personalities interacting in complex relationships than like a group of human artifacts such as lushly colored silk scarves. No matter how beautiful the scarves, they remain inanimate; they do not grow or die, they do not self-organize or reproduce, they do not interact with one another. If worldviews are approximations of reality, then it is crucial to choose a worldview that is consistent with the living and dying and interacting of nature’s beings; any other choice will prove unsustainable in the long run. A worldview based in sociality and relationality has been the choice of many indigenous and traditional cultures, but it was a worldview explicitly rejected by modern Western people.ⁱⁱⁱ

Breathing In and Breathing Out: The Cyclical Flows of the Ecocommunity

Healing the schism between humans and the rest of the natural world, including other humans, involves moving from using others for gain (the mechanistic view) toward building reciprocal relationships with others (the relational view). Fortunately, the model for reciprocal exchanges lies right under our noses, literally. It is the model of breathing in and breathing out.

Coming from the field of religious studies, where I was used to thinking of the breath as an individual process, something that one can focus on in meditation, I was jolted a number of years ago by an earth scientist into thinking about the breathing that takes place in ecocommunities as wholes. I was attending a forestry conference in northern California, and specifically a session on creeks, to further my interest in urban creek restoration. The speaker was James Kirchner, then teaching earth sciences at UC Berkeley, who studied forests through observing their streams.

Kirchner stated that throughout most of the year stream flows are highest at midnight and lowest at midday. Creeks keep up this predictable daily rhythm, surging in the middle of the night and subsiding at noon, because of transpiration, the process by which trees siphon water up through their roots and breathe it out through their needles or leaves. The higher the ambient temperature, the more moisture evaporates from a tree's leaves, which lowers the water pressure in a tree's canopy and causes it to suck more water up from the ground through its roots. A large mature tree may breathe a hundred gallons of water a day out of its leaves, which means every large mature tree is drinking that much water from the soil. Most of its drinking takes place in daylight hours because of warmer temperatures, and with all that water devoted to transpiration, less of it is available for the nearby creek. At night when the air temperature cools, transpiration slows, which means that more water remains in the ground to flow into and down the creek.

Every creek therefore surges at night and subsides by day. "Following the stream flow," Kirchner concluded, "gives us a way of watching the whole watershed breathing in and breathing out."

Kirchner's words astonished me. Not just a nice way to meditate, watching the breath was literally a key to studying forests—watching the fluctuations in stream flows and transpiration over time.

Breathing is the fundamental act of life. Every organism breathes in one form of energy and breathes out another. Breathing in oxygen, breathing out carbon dioxide: this is the human form, which we share with other mammals as well as birds, fish, reptiles, and insects. Trees and plants, of course, do the opposite: breathing in carbon dioxide, breathing out oxygen. Anaerobic organisms breathe in other substances, such as sulfur, and breathe out sulfides. Some bacteria breathe in carbon dioxide and breathe out acetic acid. The substances may vary, but the activity is universal: every living being—and every cell within each living being—breathes in and breathes out, taking in energy, expelling waste. Breathing is the rhythm upon which all living rides.

Furthermore, the respiration of all living beings, like their eating and expelling, generates no true waste. In the wisdom of the land-community, what one kind of organism expels as waste becomes food for other kinds. All is used, all is cycled and recycled in the great give-and-take economy of nature. The sustainability of the whole community depends on this giving and taking

in equal measure, this great breathing in and breathing out of each part of the ecocommunity and the community as a whole.

Breathing In and In and In: The Linear Economy

Contrast the cyclical flows of breathing in and breathing out with the linear direction of the modern global economy. Modern economic activities try to move one direction only—toward increase or limitless growth.

The economic process itself is a linear one: extracting natural resources, manufacturing products, consuming those products, and throwing them away—what Leonard calls the “Take-Make-Waste” economy (Leonard 2010). This linear economy is now widely recognized as the driver of current ecological crises. Its monomaniacal pursuit of increase shows its disregard for the breathing-out half of the living cycle, the half that involves giving back, giving out, and eventually dying. The linear economy rests on a model of reality (nature) as an inexhaustible, undying entity—a machine—rather than an organismic community that functions sustainably through give-and-take, with each member respecting the gifts and physical limits of every other member.

Furthermore, in current corporate law, every for-profit corporation exists to earn money for its shareholders, a process that is imagined as continuing in perpetuity. Corporate law mandates that a company pursue the interests of its shareholders, defined as financial gain (Hinkley 2002). This financial gain is expected to be not merely income to sustain the company’s activities but rather profit—a surplus flowing toward shareholders. The profit is intended to increase (limitless growth in amount), and it is intended to increase continually—that is, forever (limitless growth through time). By definition, a process of limitless growth departs from the life cycle that all living beings experience of coming into being, growing, flourishing, and then dying. As Daly and Cobb wrote long ago, “If money balances can grow forever . . . then . . . so can pigs and cars and haircuts” (Daly and Cobb 1994, 37). As Mirowski (1989) showed, such a system of economics fits a nineteenth-century model of reality based on Newtonian mechanics (see also Foley 2006).

An economy committed to endlessly expanding wealth is an economy that must grow forever. The current social consensus in favor of limitless growth for the economy as a whole also defies the biological reality of breathing in and out. As ecological economists such as Daly and Townsend have asked for decades (1993, 267), how can economic growth go on forever when it takes place in the context of Earth, “which is finite, nongrowing, and materially closed”? The economic systems of human beings, functioning as subsets of the Earth ecocommunity, must follow the rules of the larger ecocommunity. Though some ecological economists argue that certain kinds of growth may be sustainable over the long term (Ekins 2000), most are studying how to guide human activities toward the paradigm shift of a steady-state economy (Daly and Farley 2011). These economists are in the minority; the prevailing consensus remains that the

neoclassical model of unlimited growth is both desirable and feasible, an attitude that has been called “economists’ total abstraction from nature” (Daly and Farley 2011, xxi).

Breathing In and In and In: Daily Life

In modern Western cultures, we love the breathing in. We love it so much we want it to go on forever. Even this very brief glance at the economy shows how much we love the getting, the consuming, the seizing, the buying, the collecting, the growing, the increasing. We love it so much we have a distinct fear of breathing out. The modern world remains devoted to ideals of linear increase and limitless growth. Modern capitalism cannot fathom giving much of anything away, let alone giving away—breathing out—in equal measure to breathing in.

Our fear of breathing out is reflected clearly in modern Western medicine’s striving to prolong life at any cost, including the quality of life of the patient. Doctors and hospitals take extraordinary measures to revive patients who are clearly dying, supported by society’s and families’ fear and denial of death. Instead of being regarded as a normal and necessary part of life, death is widely regarded as a failure of medicine (Bowron 2012).

Perhaps nowhere is modern society’s disdain for the breathing-out half of the life cycle more evident than in the manufacture and use of plastics. That humans could even contemplate creating a product that no one else can benefit from (that is, that cannot be eaten or broken down by the organisms residing along with us on the Earth’s surface) demonstrates an arrogant disregard for the cyclical process of life and death on Earth.^{iv} *Nonbiodegradable* means immortal, which from the point of view of microorganisms means worthless, unable to be consumed. By manufacturing and using plastics, not only do we imperil the sea creatures who ingest the mega-billions of plastic bits now residing in the ocean and then die of starvation, we also show disregard for the economy of nature itself, for any manufactured object that provides no food for others subtracts some energy, some fuel, from the ecocommunity as a whole.

Decades ago linguists Lakoff and Johnson argued that in the overarching metaphorical structure of modern life, “up” is good and “down” is bad and that this spatial structure of our thinking appears abundantly in everyday language (1980, 14–17). Feeling happy is “up”; feeling sad is “down,” as seen in phrases such as spirits *rising* or *sinking*, feeling *up* or feeling *low*. Virtue is “up”; depravity is “down” (as in *high-minded* and *upright*). The future is “up”; the past is “down” (*upcoming* events). Envious status is “up”; unenviable status is “down” (a *lofty* position, a *fall* in status). Being conscious is “up”; being unconscious is “down” (wake *up*, *fall* asleep, *sink* into a coma). Health and life are “up” while sickness and death are “down” (the *peak* of health, coming *down* with the flu, *declining* health, *dropping* dead).

The metaphorical structure of modern English mirrors the preferred direction of modern life. Modern societies want to breathe in forever. From economic laws to medical ideas to the vocabulary of everyday life, we want things to go up eternally. We want to breathe in and in and in and never stop.

But look how much of life is denied to those who cannot breathe out. There is no room for sharing when life is focused in getting and consuming and using. There is no room for equality because continual accumulating fosters inequality, not equality. The end of life and the dying process itself cannot be understood or appreciated in a system that has no room for the great letting go of life's breath.

Most of all, in the linear model of breathing in that modern society strives for there is no room for love. Love, or reciprocity, can take place only in relationship, only in give-and-take, only in the model of breathing in and breathing out that characterizes life on Earth.

Toward Breathing In and Breathing Out: Reciprocal Economies

How can nature's model of breathing in and breathing out be applied to the economy? Clearly, nature's reciprocal model provides an alternate story to the neoclassical model of accumulating profit without end. Only economies of reciprocity—economies based on sharing and mutual respect, or in other words, love—fit nature's model of breathing in and breathing out and therefore can be sustained over time.

The need for reciprocal economies is urgent because the extreme inequalities generated by the neoclassical model are worsening the ecological crisis. While it is well known that the negative consequences of ecological problems are borne disproportionately by the poor, it is less often noticed that inequality also drives ecological degradation. "Social inequalities are among the most important causes of current environmental problems" (Laurent 2013, 2). Inequality stimulates consumerism (through envy of those well off); it increases the demand for economic growth; it leads the richest classes and nations to behave in ecologically irresponsible ways; it decreases a society's resilience; and it prevents societies from organizing to protect their more-than-human neighbors (Laurent 2013, 4–12).

The Potlatch System of Northwest Coast People

But can modern societies transition to a breathing-in-and-out, or reciprocal, economy? It would mean massive and fundamental shifts in a lot more than economic laws. Values and definitions of status would have to be redefined so that those who accumulate wealth no longer receive admiration or respect. Holding disproportionate wealth without giving it back to others would lower a person's status rather than raise it. The definition of a profitable economic exchange would shift from getting a better deal than your exchange partner to making a perfectly even exchange; reciprocity would be valued above profit. Sharing would be vigorously practiced, and its role in promoting the thriving of human life as well as the thriving of the life-forms on which humans depend for food would be recognized and celebrated.

To those who think these values are impossible in a Hobbesian world of violently selfish greed, it may come as a surprise to learn that some human societies have actually functioned this way for thousands of years. Trosper details how the Northwest Coast Indians, through their system of prescribed sharing known as potlatch, guaranteed an ample supply of salmon for two thousand

years, an astonishing achievement in sustainability. Through a governing system of reciprocal generosity, coastal people “actually manipulated their environment to its high level of productivity” (Trosper 2009, 1). Sharing took place in public ways, with “houses” made of several families accumulating wealth for a number of years for the purpose of giving it away to the other houses at a grand feast celebrating a marriage, birth, or death. The hosting house provided all the food and drink for the feast and in addition gave gifts, such as blankets, to each guest. The more lavish the food and gifts, the higher the status of the hosting house and its chief. Gifts were counted and announced in public so that it quickly became obvious if a house and chief were (or were not) living up to the community’s standards of generosity.

Accumulating the wealth needed for a feast required a house to take scrupulous care of the fishing, hunting, gardening, and berry-picking territories that belonged to it. People would take and eat only what they needed to ensure an ample supply. Responsibility was imagined as being directed to more-than-human kin; each house was responsible *to the salmon* to consume the salmon’s gifts sparingly and share the salmon’s gifts generously, or the salmon would fail to return in the future. It was an economy based on love—not only love for the human kin but also love for the plants, trees, and animals on whom they depended for life (Trosper 2009).

The society, in other words, set up incentives for generosity rather than selfishness. Because all were expected to share, all took part in stewarding their resources—or as the coastal people prefer to say, all cared for their relatives the salmon. Rewarding generosity rather than self-interest encouraged more generosity because it was embedded in the society’s definitions of status and in their most basic practices of exchange.

The potlatch system could be sustained over two thousand years because it matched a fundamental reality of the ecocommunity: that living on Earth means being bound up in an interdependent web of creating and eating, giving and taking, sharing and collecting. By replicating nature’s interdependence in their human relationships, the coastal people preserved their unity with their ecocommunity. They created no separation between their ways of relating and those of other creatures around them.

Trosper uses the potlatch system to refute the idea of modern Western economists that reciprocal economies are utopian fantasies, and he suggests that some features of the potlatch could be translated into the modern world. In a modern potlatch system “houses” might become “firms,” and “chiefs” an “ecological review board” made up of representatives of each firm. Within a given ecocommunity, such as a watershed, each firm would work to build up wealth, as corporations do in our present system. However, they would be entitled not to their full profits but to only a portion of them. At the same time, they would be entitled to a portion of the profits of other firms in their watershed. In effect, each firm would own part of the wealth of the others (Trosper 1998).

The Jubilee of Ancient Israel

In the ancient Mediterranean the idea of a Year of Jubilee arose among Israelites as a way of restoring social equilibrium and allowing both land and people to rest. It was rooted in the “clean-slate laws” of Assyrian and Babylonian kings, who upon assuming power often forgave outstanding debts. The move consolidated new rulers’ popularity and staved off social unrest by preventing people from being forced off their land and into migration. Most of the debts were owed by the citizens to the state, so in forgiving those debts, the state was restoring economic stability to its own people. The origins of clean-slate laws lay in Sumeria of about 2400 BCE, where laws called *amargi*, literally, “return to the mother,” were instituted to cancel debts. Such laws were two thousand years old when Israelites adapted them for their own use around the sixth century BCE (Hudson 1999).

In the ancient Hebrew version, every seventh year was to be a sabbatical when fields would lie fallow so the land could rejuvenate. Every forty-ninth year, or seven times seven, was a Year of Jubilee, where fields that had changed hands were to be returned to their original owners, all debts forgiven, and all slaves and servants set free. No one would go destitute for want of land, no one starve while others luxuriated. Resources would again flow to those from whom they had previously ebbed, and the cycle would be complete.

The Israelite innovation in clean-slate laws was to set up debt forgiveness as a regular recurrence, taking place automatically every fifty years rather than at the whim of a new ruler who wished to curry favor. It was rooted in the Israelites’ religious conviction that humans cannot “own” land; only God is the landowner. “The land must never be sold irreversibly because the land belongs to me,” God says in Leviticus. “You are only guests and tenant farmers working for me” (25:23). In the Israelite covenant with God, it is up to humans to use the land wisely, making sure that everyone in the community retains the ability to support themselves. The reciprocal action of forgiving debts and restoring lands to their original owners addressed inequalities that had arisen over the past half century.

However, the practice of Jubilee was not long-lived. Within a few hundred years lands in Israel as well as in the rest of the Mediterranean had consolidated in the hands of fewer and fewer people, and once the land belonged to only a few, the idea of returning it to its original owners in a Year of Jubilee changed into an out-of-reach utopian ideal. Nevertheless, it expressed the conviction that societies, to run well, need economic relationships of give-and-take to mirror the periodic rest that land, to remain healthy, also requires.

Toward Breathing In and Breathing Out: Daily Practices

If the ebb and flow of the breath characterizes sustainable systems, and if modern life is patterned on the breathing in, then it is reasonable to suppose that what is needed to move society toward sustainability is practicing the breathing-out half of the cycle. Activities that give back, give away, reciprocate, or create a balance of give-and-take contribute to sustainability because

they complete the breathing-out phase of the cycle. They also address the ecocrisis at its root because they remedy modern society's rejection of the breathing-out half of the life cycle.

At the state, national, and international levels, policies could be enacted that limit the harmful breathing out of carbon dioxide, such as carbon taxes and vehicle fuel efficiency standards and limits on power plant emissions and moratoriums on fossil fuel extraction. Policies could also be shifted toward incentives for giving back or reciprocating, such as incentives for solar and other renewable energy to reverse the present policies that subsidize the extraction of fossil fuels and the accumulating of wealth. At the regional and local levels many types of organizing are possible to place people in cooperative and reciprocal relationships with their neighbors, such as community-supported agriculture programs, local energy production, local banking and cash systems, local labor exchanges, and local time banks.

But what I wish to highlight here are a few breathing-out activities that would be valued differently in a society that balanced its breathing in with its breathing out. Each of these activities can be practiced by ordinary people in daily life. Each of them rebuilds the breathing-out half of life, and engaging in any one of them is an act of resistance to, and helps to correct, modern society's heedless breathing in. If more breathing out is needed to bring modern society into a sustainable balance, each of these activities begins to create that balance in everyday experience.

Some of these activities are easily recognized as "green" or contributing to sustainability; others are less visible or are overlooked entirely in conversations on sustainability. But seen through the lens of breathing, each of these activities acquires a new importance in creating sustainability, for any activity that engages people in building reciprocity or giving back to others (both human and other-than-human) contributes to sustainability by emphasizing the breathing-out phase of the living cycle.

Building Reciprocity: Recognizing Legal Rights of Nature

Around the world movements are growing to place into law the requirement to safeguard the health and well-being of other-than-human creatures and communities. One form is the movement to make ecocide, or habitat destruction, a Crime Against Peace at the level of the United Nations. The four Crimes Against Peace, set forth in 1998 in the Rome Statute of the International Criminal Court, are genocide, crimes against humanity, war crimes, and crimes of aggression. The crime of ecocide had been included for many years and had already been put into law in ten countries when in the later drafts of the document it was removed because of the objections of the Netherlands, the United Kingdom, and the United States (Gauger et al. 2012).

A parallel movement is growing in many countries to place the rights of nature into law. The country of Ecuador guaranteed the rights of nature in its Constitution in 2008, becoming the first nation to codify rights of nature at the national level, followed in 2010 by Bolivia in its Law of the Rights of Mother Earth. Several dozen municipalities in the United States have passed rights-

of-nature ordinances as a way of asserting people's rights to a healthy environment against the interests of corporations that would impair local lands through activities such as fracking, factory farming, or dumping sewage sludge. These communities, recognizing that environmental laws have failed in that they do not prevent pollution but rather legalize it through the permitting process, assert their rights to a healthy and thriving ecocommunity as the basis for human life (CELDF n.d.).

Another form of legally safeguarding ecocommunities is being explored through public trust law. In legal precedent stretching back to sixth-century Rome, when the emperor Justinian declared that “by the law of nature these things are common to mankind—the air, running water, the sea and consequently the shores of the sea,” some ecocommunities and elements have been recognized as belonging to all rather than as able to be owned privately. In public trust law, democratically elected governments have the duty of safeguarding the health of these common ecocommunities so that citizens can survive and flourish. In public trust law, public property rights underpin individual liberty, for there can be no individual rights without a thriving ecocommunity (Wood 2014, 160, 309). Public trust law is beginning to be used to fight climate change by enlisting the courts in protecting the climate when elected officials and legislatures fail to do so (DeMocker 2014).

Each of these ways of placing the health of ecocommunities into law begins to right the one-sided taking from nature that modern societies practice. These legal alternatives move society away from the idea of nature as property—that is, commodity—and toward the realization of nature as the source of human life. In placing respect for nature's health into law, they begin to build more reciprocal relations between humans and our other-than-human neighbors.

Giving Back: Restoration and Wildscaping

Restoring disturbed landscapes is another way for people to give back to the land. Many local and regional organizations exist to engage residents of urban, suburban, and rural ecocommunities in environmental restoration projects (Leigh 2005; Global Restoration Network 2014). Wildscaping is “bringing conservation home” by planting native plants and flowers in the yard to attract local insects, birds, and animals (Colorado Audubon 2005). It is a very direct way of giving back—providing sustenance and places to live for the more-than-human residents of the local area. Instead of planting the ubiquitous Kentucky bluegrass turf, which is a food desert for local wildlife, residents can use their yard to feed their neighbors.

Giving Back: Appreciating Nature

The very simplest act of giving back is appreciation. Slowing down enough to pay attention and to extend thanks is a direct means of giving back to ecocommunity neighbors. Scottish poet and writer Kathleen Jamie says, “When we step outdoors and look up, we're not little cogs in the capitalist machine. It's the simplest act of resistance and renewal” (Crown 2012). Stepping outdoors and looking up is also a direct way of communing with animals, plants, trees, insects, clouds, and air (Stuckey 2012).

This means that all forms of appreciation or teaching others to appreciate directly contribute to sustainability. This might include everything from teaching nature appreciation to children to teaching body awareness and appreciation to thanking loved ones for their presence in one's life to thanking the plants and animals on one's table three times a day for making one's own continued existence possible. The minute of silence that several hundred of us observed in honor of four dead bears made such a contribution of appreciation. Thanking and appreciating are the coins of reciprocal relationships—with other humans as well as with more-than-human neighbors.

Breathing In and Out: The Pause of Meditation

If modern society's fixation on endless, mechanistic growth both drives and defines unsustainability, then simply taking time to pause and breathe out, literally, helps to build sustainability. Like stepping outdoors and looking up, it is an act of resistance to the more-at-all-costs pace of mechanistic capitalism. Pausing to reflect and to return to the pace of the breath is a clear reminder of the demands of biological life—that every life requires an even and balanced breathing in and breathing out. This means that practices that encourage breathing and that teach attention to the breath, such as mindfulness practices, various kinds of meditation, and yoga, make invaluable contributions to sustainable life, and teaching any of these activities is an act of building sustainability.

Breathing Out at End of Life

In the context of a mechanistic worldview the breathing-out process at the end of life has been devalued and ignored, and in industrial societies it is often hidden from view. By contrast, in a relational worldview, where breathing out is regarded as highly as breathing in, the end-of-life process and the caregiving needed at that time receive as much respect and attention as the process of birth.

Any kind of caregiving, from care of infants and children to care of the ill, disabled, or dying, contributes to sustainability because sustainable life includes the processes of becoming ill and dying. Extending comfort and care to those who need it during those times not only promotes health and wellness but also engages people in an activity that attends to the breathing-out half of life.

I am reminded of a poem painted in huge decorative script on the walls of a shop in my city that sells herbal tinctures and remedies:

We Are Grateful

For the green world—its foods and medicines,
For pain and disease—that we might grow and share,
For each other,
For Hope.

I was struck at once by the line “We are grateful . . . for pain and disease—that we might grow and share.” Giving thanks for illness contradicts the mechanistically inspired urge to fix health problems at all costs. The writer of this poem recognizes that illness increases reciprocity between people, that people “grow and share” as a result of it. The poem is rooted in the realities of biological life, which sometimes include getting ill and always include dying. It demonstrates in a few simple lines the source of its acceptance: remaining close to “the green world,” the ever-renewing, life-and-death world of Earth.

Thankfully, many people’s attention is turning in recent years toward easing the process of dying and using the end of life as a valuable time for completing internal healing and finding peace. The Dying Well movement emphasizes the wellness possible at the end of life and uses the term *dying well* to refer not so much to how one dies but how one lives while dying. *Well* here is an adjective referring to the dying person; she or he is dying as a “well” person (Byock 1997). This movement, as well as hospice and palliative care movements, are returning modern society’s attention to the value of the end-of-life process.

The green burial movement also works toward acceptance of dying, death, and decay by advocating for simple burials without embalming or vaults (Clayden et al., 2015). Embalming fluid, intended to prevent bodies from becoming part of earth, are of course toxic to microorganisms in the soil and water. The steel buried underground in caskets in the United States amounts to 1 million tons every year or enough to build another Golden Gate Bridge, while the concrete invested in vaults every year would pave a two-lane highway from New York to Detroit (Saslow 2011). These practices give the appearance of escaping mortality, which is another way of saying they reject the breathing-out processes inherent in dying. They show just how deep runs the desire to avoid giving our bodies after death to the processes of decay and renewal and the microorganismic creatures who accomplish them.

Sustainability and Love

What does love have to do with sustainability? Only everything. Love is precisely what is missing in a mechanistic worldview in which people use others as things rather than respect them as partners in relationship. Love is what living beings exchange; it cannot be exchanged with a machine. Only a relational worldview, where “things” do not exist but rather persons or subjects or beings or communities interact in social relationships, can provide the foundation for sustainable living. Only when humans accept our embeddedness in the complex *social* world of nature can we structure human societies in alignment with the reciprocity that defines biological, cellular life: the breathing in and out of all living creatures.

Breathing in and out is an ongoing reciprocal transaction with others. It is sharing in the most literal, physical sense—sharing molecules of oxygen and carbon and hydrogen. It implies a taking in balanced with a giving out—the only sustainable system of exchange. Breathing in and out in equal measure is love.

Every form of taking that is not balanced by giving—from the linear economies of the modern world to the widespread practice of preserving human bodies from decay—contributes to unsustainability. What humans have done by taking without giving back, by using without reciprocating, is to create inequalities among themselves and endanger the living ecocommunities of Earth. As Wendell Berry says, “We must change our lives, so that it will be possible to live by the . . . assumption that what is good for the world will be good for us. And that requires that we make the effort to *know* the world and to learn what is good for it. We must learn to cooperate in its processes, and to yield to its limits” (2002, 20). We must, in other words, learn reciprocity.

Even more important, says Berry, is leaving behind pride: “We must abandon arrogance and stand in awe. We must . . . recover the sense of the majesty of creation, and the ability to be worshipful in its presence” (2002, 20). Rekindling wonder and awe can open the heart to the needs of our other-than-human kin and lead to accepting our place in the reciprocal exchanges of the Earth economy. Wonder and awe can open the heart to giving back; indeed, they are the beginning practices of giving back.

Reciprocity, as we have seen, can take many forms, from building reciprocal human economies to sharing breath to paying silent homage to bears. May we learn to practice giving back before it’s too late.

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ⁱ Viruses are usually not considered organisms because they do not have cellular structure and do not breathe, or metabolize. This has traditionally excluded them from being classified as living beings, although the edges of life are slippery and definitions of life are changing (Forterre 2010).

ⁱⁱ Other forms of a relational worldview can be found in actor-network theory (Latour 2005) and in philosophical work on panpsychism or the idea that awareness is a fundamental quality of matter (Mathews 2003; Clark 2004). Among quantum physicists, Karen Barad proposes an alternative to the mechanistic worldview based on what she calls *intra-action*: “things” coming into being by constituting one another, by relating. At the quantum level, one does not observe separate elements “interacting” with each other—one thing bumping into another thing (the mechanistic view). Instead one sees a reality where “things” do not exist at all until *after* they interact with one another. There are no “things” prior to relating; each is brought into being through “intra-acting,” through relationship. This is the “radical aliveness” of the world (Barad 2007, 33).

ⁱⁱⁱ Some might think that it is possible to imagine the world as an impersonal ecosystem and still arrive at reciprocity through the metaphor of breathing in and breathing out. But this approach is built on a contradiction, that of borrowing a biological process such as breathing while not acknowledging the awareness that resides in the act of breathing itself. For humans the act of breathing is not separate from awareness of oneself as a living person and of other breathers also as living beings. So to extract the biological rhythm of the breath from its embeddedness in animate, social life is internally incoherent; it shows the contradiction between a mechanistic worldview and a relational one. Though a relational worldview might not be required as a starting point for moving humans toward reciprocal relationships with others in the planetary ecommunity, the very act of engaging in reciprocal relationships with land, trees, or air assumes an equality with other-than-human beings that is consistent with an animist or relational worldview rather than a mechanistic one.

^{iv} There are now encouraging hints that some fungi may be able to digest plastics (Russell et al. 2011).