Life Sustains Life 2
The ways of re-engagement with the living earth

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SECTION I: INTRODUCTION[1]

Over the last 500 years the West has developed a social system that is socially and ecologically unsustainable and destructive. It overreaches and undermines the social and ecological conditions that sustain life on earth for Homo sapiens and many other species and ecosystems.

This social system has been spread around the world by Western imperialism in the colonial and post-colonial periods and is now the dominant social system on the planet.

It is a 'vicious' system in the technical sense that the regular feedback loops within the social system and between the social system and the ecosystems in which it is embedded reproduce and intensify the destructive effects of the system on the social sphere and ecosphere. These effects include such things as: global warming, climate change, pollution and the diseases it causes, acidification of the oceans, desertification of once arable land and the re-colonization of Africa, melting of the polar icecap and the release of methane, the depletion of non-renewable recourses and the military conflicts over what's left, the use of renewable resources and aquifers beyond their cyclical rate of renewal, millions of climate change refugees, global inequalities in life chances, petro-states, a planet of slums and gated enclaves, the domination of democracy by concentrations of private, media and military power, the concentration of the means of production in a handful of multinational companies, and counter-violences to the system's overt and structural violence that trigger counter-insurgencies and feed an ever-increasing arms race and arms trade, and so on.

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[1] This chapter follows from the first chapter on this theme at the 2013 NOMIS Workshop: *Life Sustains Life 1.* I would like to thank the participants in both the 2103 and 2014 workshops for their helpful comments on my presentations, especially the late Jonathan Schell, Akeel Bilgrami, Charles Taylor, Anthony Laden, David Kahane, and Pablo Ouziel. I would also like to thank Michael Carpenter for assistance with editing both chapters. I have discussed the topics in this chapter further in 'Reconciliation Here on Earth', in Michael Asch, John Borrows and James Tully, eds. *Resurgence and Reconciliation: Indigenous-Settler Relations and Earth Teachings* (Toronto: University of Toronto Press, forthcoming).

We have known that the dominant social system (a historical assemblage of many social systems) is unsustainable and self-destructive socially and ecologically since the 1970s: Rachel Carson, Barry Commoner, The Club of Rome, *and The Limits to Growth*.[2] It has been reaffirmed ever since by experts from a wide variety of different fields: *The Limits to Growth Revisited* (2012), IPCC, Lester Brown, and Craig Dilworth.[3]

Yet it continues despite efforts to address it in various ways since the 1970s and in the face of increasing evidence of its destructiveness, such as the 6th mass extinction, global warming and its effects, and the naming of the predicament *as* 'peak everything' and the 'anthropocene'.[4]

The phenomenon of a life system becoming a vicious system rather than a virtuous and self-sustaining system, and thus overshooting and destroying the social and ecological conditions on which it depends for its sustainability and collapsing, is not unusual in the history of human systems or non-human living systems.

Furthermore, as the resiliency literature argues, it is also not unheard of for a vicious life system tending towards self-destruction to transform itself into a virtuous one and avoid collapse, albeit usually at a qualitatively different dynamic equilibrium.

Thus, while life systems are the most complex systems in the world, they are not pre-determined, and it is not impossible for humans to save themselves from self-destruction, for, after all, we are the subjects and agents who reproduce the unsustainable social system by participating in it in our everyday activities, and we have the freedom to act otherwise.

Thus, there are three central questions with regard to sustainability I wish to address:

(1) How do we act in such a way as to transform the unsustainable system in which we find ourselves into a sustainable system?

(2) How do we become motivated to act in a sustainable way once we know what that is?

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[2] Rachel Carson, *The Silent Spring* (Boston: Houghton Mifflin Company, 1962), Barry Commoner, *The Closing Circle: Nature, Man, and Technology* (New York: Knopf, 1971); Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *The Limits to Growth: A report for the Club of Rome's project on the predicament of mankind* (New York: Universe Books, 1972).

[3] Ugo Bardi, *The Limits to Growth Revisited (SpringerBriefs in Energy)* (New York: Springer, 2012); Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Geneva: Intergovernmental Panel on Climate Change, 2015); Lester R. Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse* (New York: Norton, 2011); Craig Dilworth, *Too Smart for our Own Good: The Ecological Predicament of Humankind* (Cambridge: Cambridge University Press, 2009).

[4] For example: Stephen Emmott, *Ten Billion* (New York: Vintage, 2013); Kenneth S. Deffeyes, *Beyond Oil: The View from Hubbert's Peak* (New York: Hill and Wang, 2005); Paul Crutzen and Hans Günter Brauch (eds) *Paul J. Crutzen: A Pioneer on Atmospheric Chemistry and Climate Change in the Anthropocene* (New York: Springer, 2016). For a history of 'sustainability', see Jeremy L. Caradonna, *Sustainability: A History* (New York: Oxford University Press, 2014).

(3) And, before these two questions can be addressed, a third, prior question needs to be addressed: What are the salient features of sustainable and unsustainable life systems?

I want to address the question of the main features of unsustainable and sustainable life systems through the distinction Akeel Bilgrami makes between alienated and unalienated ways of life.[5] For, his concept of an alienated way of life describes life from within the unsustainable social system we inhabit as moderns and his concept of an unalienated way of life describes life within a sustainable social system.

An alienated or unsustainable way of human life has the following features:

(1) A disengaged or dis-embedded stance of humans *vis a vis* nature;
(2) A working relationship of control, mastery and domination of nature embedded in our working relationship to nature; and
(3) The presupposition that nature is devoid of intrinsic value and norms. Values and norms are assumed to derive from the autonomous human mind and are imposed by humans on a non-normative world.
(4) If there is a normative dimension to nature then it is a basic, amoral antagonism or struggle for existence among independent living beings (humans and non-humans) in which the fitter gain control over or exterminate the less fit and establish a new order or system that is a higher stage of development than the previous one in an unlimited set of stages of development and progress.

An unalienated or sustainable human way of life has the following features:

(1) Humans see themselves *participants in nature*, in the ecosystems in which they live;
(2) From this participatory perspective, when humans act, they *engage with* nature: they interact symbiotically in ecological relationships. They do not stand above and control.
(3) When humans act and experience the world in accordance with steps 1 and 2 the world is disclosed to them as interdependent webs of life (composed of living systems) and of value. Nature is seen and experienced to be suffused with values and norms that can be seen to involve responsibilities: that is, norms that are *action-guiding.*

Bilgrami argues that an alienated way of life became dominant over the last 500 years, from the 17th century onward. I agree and I believe that our task today is to begin the long project of re-engaging or reconnecting with and within the symbiotic living ecosystems on which our social system is an interdependent subsystem.

We have brought forth and spread around the world a social system within which we see ourselves as disengaged from and independent or autonomous of the interdependent social relationships on which we are inter-dependent, and we also see ourselves and our entire social

[5] Akeel Bilgrami, *Secularism, Identity, and Enchantment* (Cambridge: MA: Harvard University Press, 2014), 101-2-16, and see Tully, *Life Sustains Life 1.*

systems as independent of the ecosystems in which we and our social systems are embedded and interdependent.

From this independence perspective, the natural, social and policy sciences see themselves as exercising control and master over the living earth.

But, the life sciences and earth sciences over the last sixty years have shown this modernist picture to be a false representation or illusion. Our social system is a subsystem deeply embedded in and interdependent upon the ecosystems that comprise the living earth for every breath we take. This is how Barry Commoner famously made this fundamental point in 1971:

> "To survive on earth, human beings require the stable, continuing existence of a suitable environment. Yet the evidence is overwhelming that the way in which we now live on earth is driving its thin, life-supporting skin, and ourselves with it, to destruction. To understand this calamity, we need to begin with a close look at the nature of the environment itself. Most of us find this a difficult thing to do, for there is a kind of ambiguity in our relation to the environment. Biologically, human beings *participate in* the environmental system as subsidiary parts of the whole. Yet, human society is designed *to exploit* the environment as a whole, to produce wealth. The paradoxical role we play in the natural environment – at once participant and exploiter – distorts our perception of it."
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> That is, "all of modern technology leads us to believe that we have made our own environment and no longer depend on the one provided by nature. We have become enticed into a nearly fatal illusion: that through our machines we have at last escaped from dependence on the natural environment."
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> Yet, "every human activity depends on the integrity and proper functioning of the ecosphere. Without the photosynthetic activity of green plants, there would be no oxygen for our engines, smelters, and furnaces, let alone support for human and animal life. Without the action of plants, animals and microorganisms that live in them, we could not have pure water in our lakes and rivers. Without the biological processes that have gone on in the soil for thousands of years, we would have neither food crops, oil nor coal. If we destroy it, our most advanced technology will become useless and any economic and political system that depends on it will founder. The environmental crisis is a signal of this approaching catastrophe."[6]

If this description is accurate, and if we are to respond to the crisis, we need to free ourselves from the alienated way of life and move around and see and experience ourselves and our

[6] Commoner, *The Closing Circle*, 14-17.

social system as embedded and ourselves as engaged participants in (damaged) relationships of interdependency and co-sustainability within the ecosystems in which we live and breathe.[7]

We need to think not of independent social systems and ecosystems but of interdependent social and ecosystems: that is, *ecosocial systems*. Rather than independence we need to think about sustainability in terms of mutually interactive and interdependent co-sustainability of all life systems, human and non-human.

Three more important distinctions between the alienated and unsustainable way of life and the unalienated and sustainable way of life follow.

(1) The distinction Anthony Laden makes between ways of conceptualizing reasoning in his workshop presentation and his book on Social Reasoning maps on to the alienated/unsustainable versus unalienated/sustainable distinction of Bilgrami. Laden's conception of "reasoning and acting *with* others" and "connecting" describe the ways humans interact reasonably in mutually sustainable ways.[8]

(2) Spatially, the alienated way of life consists of independent entities in (efficient) causal or consensual relationships; temporally, they are in linear or developmental time.

(3) Spatially, the unalienated way of life consists of interdependent beings as always already in relationships of mutual support, networks or webs of life; temporally, they are in cyclical time:

That is, we need to think of ourselves, as Aldo Leopold put it in the *Land Ethic*, as "plain members and participatory citizens" of the "commonwealth of all forms of life on earth" with responsibilities to not only to sustain ourselves, but always to sustain ourselves in such a way that we also reciprocally co-sustain all the other forms of life on which we are interdependent and which co-sustain us.[9] This is an unalienated way of thinking about our responsible capabilities as sustainabilities.[10]

And to do this we need to learn from the living earth how living systems sustain themselves over billions of years and use this knowledge to transform our unsustainable and destructive social systems into sustainable and symbiotic systems within systems.

On this view symbiotic ecosystems are the ground of life and socioecosystems are the ground of human life. That they sustain life on earth is their value and the ground of all human value.

This is how Fritjof Capra puts the challenge:

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[7] David C. Korten, *The Great Turning: From Empire to Earth Community* (Oakland: Berrett-Koehler Publishers 2007).
[8] Anthony Simon Laden, *Reasoning: A Social Picture* (Oxford: Oxford University Press, 2012).
[9] Aldo Leopold, "Land Ethic" in *The Sand County Almanac and Other Sketches Here and There* (Oxford: Oxford University Press, 1949).
[10] Ellen LaConte, *Life Rules: Nature's Blueprint for Surviving Economic and Environmental Collapse* (Gabriola Island: New Society, 2012).

> "The key to an operational definition of ecological sustainability is the realization that we do not need to invent sustainable human communities from scratch but can model them after nature's ecosystems, which are sustainable communities of plants, animals and micro-organisms. Since the outstanding characteristic of the Earth household is its inherent ability to sustain life, a sustainable human community is one designed in such a manner that its ways of life, businesses, economies, federations, physical structures, and technologies do not interfere with nature's inherent ability to sustain life. Sustainable communities and networks evolve their patterns of living over time in continual interaction with other living systems, both human and non-human."[11]

I would like to respond to this challenge in the following way. In Section II I set out what I take to be four central features of sustainable living systems according to the life and earth sciences. In Section III set out what I take to be the main features of our unsustainable social system that cause damage to the ecosphere on the one hand and give rise to the illusion of independence from it on the other hand. In Section IV I then turn to several ways of responding to the sustainability crisis that are informed by this way of thinking about our interdependent relationship in and with ecosocial systems. These are ways of dis-engaging from our unsustainable practices, beginning to engage in practices of re-engaging and reconnecting socially and ecologically, and thus beginning to bring into being unalienated and sustainable ways of life on earth. If the symbiotic interdependency thesis of Section II is true, then participants in these connecting practices should be empowered in reciprocity by the interdependent relationships they connect with, and thus initiate expanding virtuous cycles. This reciprocal empowerment is discussed in Section V.

SECTION II: SYMBIOSIS AND INTERDEPENDENCY

Let's begin with Commoner's description of how life sustains life:

> "There is an important lesson here. In the form in which it first appeared, the earth's system had a fatal fault: the energy it required was derived from the consumption of a non-renewable resource, the geochemical store of organic matter. Had this fault not been remedied, the rapid self-propagated growth of life would have consumed the earth's original organic 'soup'. Life would have destroyed the condition for its own survival. Survival –a property now so deeply associated with life – became possible because of a timely evolutionary development: the emergence of the first photosynthetic organisms. These new organisms used sunlight to convert carbon dioxide and inorganic materials to fresh organic matter. This crucial event reconverted the first life-form's waste, carbon dioxide, into its food, organic compounds. It closed the loop and transformed what was a fatally linear process into a circular, self-perpetuating one. Since then the perpetuation of life on the earth has been linked to an essentially perpetual source of energy – the sun.

[11] Fritjof Capra, *The Hidden Connections: A science for sustainable living* (New York: Anchor Books, 2002), 230.

"Here in its primitive form we see the grand scheme which has since been the basis of the remarkable continuity of life: the reciprocal interdependence of on life process on another; the mutual, interconnected development of the earth's life system and the nonliving constituents of the environment; the repeated transformation of the materials of life in great cycles, driven by the energy of the sun.

"The result of this evolutionary history can be summarised in a series of propositions about the nature of life and its relation to the environment.

"Living things, as a whole, emerged from the nonliving skin of the earth. Life is a very powerful form of chemistry, which once on the earth rapidly changed its surface. Everything living thing is intimately dependent on its physical and chemical surroundings, so that as these changed, new forms of life suited to new surroundings could emerge. Life begets life, so that once new forms appeared in a favourable environment; they could proliferate and spread until they occupied every suitable environmental niche within physical reach. Every living thing is dependent on many others, either indirectly, through the physical and chemical features of the environment or directly for food or a sheltering place. Within every living thing on earth, indeed within each of its individual cells, is contained another network – on its own scale, as complex as the environmental system – made up of numerous intricate molecules, elaborately interconnected by chemical reactions, on which the life-properties of the whole organism depend."[12]

Of course, there are important differences between human social systems and ecosystems. However, there are similarities as well. We are, after all, earthlings in the first instance. Following the earlier quotation from Capra, there are three kinds of education we can gain from the study of non-human life systems: (1) how they manage to sustain and complexify life over 3.5 billion years; (2) how humans are interdependent participants in ecosystems, and thus how we must design our social systems so that they support rather than undermine them; and (3) how to design or transform social systems so they are similarly self-sustaining. We need to acquire this education to engage in the practices of cultural and ecological reconciliation. Over the last forty years the ecological, life and earth sciences have advanced three hypotheses concerning the ways life sustains life that are essential for these reconciliation practices.

Interdependency and symbiosis: life sustains life

First, sustained life is a property of ecological systems rather than of single organisms or species. No individual organism can exist in isolation. Animals depend on the photosynthesis of plants for their energy needs; plants depend on the carbon dioxide produced by animals, as well as on the nitrogen fixed by the bacteria at their roots; and these living entities are interdependently coupled with abiotic rocks, atmosphere and waters.

The major factor in the co-evolution of forms of life is "symbiosis": the ways that organisms and ecosystems "live together". This refers to the way relations of interdependency within and among organisms and ecosystems are *mutually supportive* of the members. For

[12] Commoner, *Closing Circle*, Chapter 2.

example, the ways that animals depend on photosynthesis of plants; plants depend on carbon dioxide produced by the animals, and so on, in a circular manner.

Here is an example from Michael Simpson, a permaculture expert:

> "Living systems do not only reproduce themselves. Their very life processes nourish their habitat and strengthen the conditions of life around them. They thereby create an organism that is larger than themselves or their individual species. When a forest is growing back from a disturbance, herbaceous (non-woody) plants are the first to move in. These plants exude sugars that attract bacteria around their roots. The bacteria in turn exude an alkaline 'bioslime' that creates a favorable habitat for themselves as well as for the pioneer plant species. The alkaline condition of the bioslime also allows the bacteria to break down ammonia in the soil into nitrates that are taken up by plants allowing them to grow vegetatively. This cycle of life creating the conditions for more life continues as the forest gradually grows into a rich, biodiverse ecosystem (ecological succession).
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> "In short, living systems are not only self-regulating but they are relational in so far as they build the conditions of life around them. Hence, the organism is not something independent in its own right which then adapts itself to its environment; on the contrary the organism adapts a particular environment into it."[13]

The central point is this: in the activities of sustaining themselves, living systems also co-sustain the conditions of life around them, and *vice versa*. This symbiotic relationship of reciprocal sustainability among interdependent living systems is how life sustains life.

It is called a 'virtuous' cycle because it reproduces itself, becoming more complex. Moreover, it gives rise to symbiogenesis: the emergence of new systems of life out of the background symbiotic relationships and their complex relationships, creating the immense biodiversity of forms of life over billions of years.[14]

Thinking about living systems in this symbiotic way brings to awareness Arne Naess's 'ecological self', in contrast to the independent, ego-self of the dominant way of life.[15] We realize that if we wish to live well we should live in such a way that our way of life supports the ways of life of those with whom we are related and that they should do the same in reciprocity.

That is, Gaia citizens gradually come to identify with the interdependent members of the commonwealth of all forms of life. They see themselves as citizens of this commonwealth with reciprocal responsibilities of mutual recognition and sustenance as the condition of sustaining life on earth. They also realize that if they are suffering, it is probably because they are not living in ways that support such mutually supportive networks. This way of life is neither

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[13] Michael Simpson, PhD student, University of British Columbia, personal correspondence with the author.

[14] Lynne Margulis, *Symbiotic Planet: A New Look At Evolution* (New York: Basic, 1998).

[15] Arne Naess, *The Ecology of Wisdom: Writings by Arne Naess*, ed. by Alan Drengson and Bill Devall (Berkeley, Counterpoint, 2008).

altruistic nor egoistic, for that debilitating distinction rests on the presupposition that organisms are independent and self-sufficient to begin with.

Despite the individualistic and competitive relationships of the dominant economy, we humans are participants in multiple social systems of this symbiotic or gift-reciprocity-gift kind. Relationships within families, neighborhoods, communities of practice with fellow workers, and an array of social networks are often symbiotic. Many psychologists argue that symbiotic relationships are the bedrock of communities and mutual well-being; unnoticed the dominant competitive ethos, yet necessary to hold societies together.[16]

Symbiogenesis and Gaia hypothesis

Second, the evolution of all the complex symbiotic feedback loops among life systems, atmosphere, rocks and water has symbiogenetically given rise to the biosphere or ecosphere as a whole: that is, the evolving, self-regulating ensemble that has maintained habitable conditions on the surface of the planet over vast stretches of geological time. Earth-systems scientist James Lovelock named this the Gaia Hypothesis in the 1960s.[17] As Lyn Margulis commented, it is symbiosis and symbiogenesis from a planetary perspective.[18] The Gaia hypothesis has since sustained several tests and is now accepted, in one form or another, by a wide range of scientists and members of the IGCC.

'Gaia' is the Greek term for the earth as a living or animate earth. The idea that the earth is alive (animate) is a view shared by indigenous cultures and many religious traditions, as well as by the Greeks and early modern Europeans. For the last 400 years the dominant Western view was that the earth is inanimate, a mechanism of some kind, and that the animate view was nothing but a pre-modern primitive superstition. With the Gaia hypothesis, there is now a growing convergence and conversation in theory and practice between leading trends in Western sciences and the complementary fields of Indigenous sciences. For example, Stephen Harding writes:

> **"**The key insight of the Gaia theory is wonderfully holistic and non-hierarchical. It suggests that it is the Gaian system as a whole that does the regulating, that the sum of all the complex feedbacks between life, atmosphere, rocks and water gives rise to Gaia, the evolving, self-regulating planetary entity that has maintained habitable conditions on the surface of the planet over vast stretches of geological time."[19]

And Lyn Margulis:

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[16] See further Section IV below.

[17] James Lovelock, *Gaia: A New Look at Life on Earth*, 3rd edn (Oxford: Oxford University Press, 2000 [1979]).

[18] Margulis, *Symbiotic Planet.*

[19] Stephen Harding, *Animate Earth: Science, Intuition and Gaia* (White River Junction: Chelsea Green, 2013).

> "Gaia is not an 'organism' but an emergent property of interaction among organisms. Gaia is the series of interacting ecosystems that compose a single huge ecosystem at the earth's surface. Gaia is symbiosis on a planetary scale."[20]

Homo sapiens do not control these systems, but, rather, are active participants within and with them, as both subjects and agents.[21]

Dynamic resilience, tipping points, and responses

Third, complex, overlapping, non-linear systems of symbiotic and symbiogenetic relationships are neither stable nor harmonious. Their interactions are cooperative and competitive, and often far from equilibrium. They change and transform continuously as they interact and re-adjust to the interactions of their neighbours. That is, living systems are dynamic systems that are resilient - they respond to disturbances in complex ways that systems theorists call positive and negative feedback loops.

In negative feedback, the initial change is counteracted. In positive feedback the initial change is amplified. Feedback loops are the 'circles of participation' by which living systems bring about constancy or change.[22]

Now, it is *always* possible that a positive feedback loop that causes the system to move away from dynamic equilibrium may begin a series of loops that move the system further away until it reaches a tipping-point and transforms into an unsustainable system. That is, the system transforms from its conciliatory feedback loops of sustainable interaction – virtuous cycles – into unsustainable relationships by a series of positive feedback loops – vicious cycles – and eventual systemic collapse.

Systems theorists explain the last four centuries of developmental modernization as the rise of a viciously cyclical global system – the Anthropocene – that is reaching, or has reached, a catastrophic tipping point in our time. They describe the overall crisis in two steps and the appropriate two steps of de-alienation and reconnection as follows:

> 1 The human enterprise is structurally and functionally inseparable from nature. That is, the human enterprise is a fully embedded, totally dependent subsystem of the ecosphere – people live within socio-ecosystems. Human activities can therefore significantly affect the integrity and behavior of supportive ecosystems and these changes immediately feedback to affect the state of the human subsystem. We can no longer understand either the dynamics of either the natural system or the human subsystem in isolation without understanding the dynamics of the other component.

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[20] Margulis, *Symbiotic Planet*, 119.
[21] Harding, *Animate Earth,* 62-85.
[22] Harding, *Animate Earth,* Ibid.

2 Linked/integrated/interdependent and interactive socio-ecosystems are constantly changing in response to both internal and external forces – they are dynamic complex adaptive systems. The changes within these systems are not linear, smooth or predictable, particularly outside the systems "normal" regime. Indeed, under sufficient pressure, critical systems variables may "flip" (cross a threshold) [tipping point] into a different regime or alternative stable state. In other words, like natural ecosystems, socio-ecosystems also have multiple possible equilibria, some of which may not be amenable to continued human use or existence (remember the collapse of the North Atlantic cod fishery).[23]

3 The sustainability of the human enterprise on a crowded and resource stressed planet depends on our ability to conserve the resilience of socioecological systems. In this context, resilience defines the capacity of the system to assimilate disturbances without crossing a threshold into an alternative and possibly "less-friendly" stable state. A desirable socioecological system characterized by high resilience is able to resist external disturbance and continue to provide biophysical goods and services essential for a satisfactory quality of life.

4 For sustainability, resource-management efforts must shift from reshaping nature for the purpose of satisfying human demands to moderating human demands so that they fit within biophysical limits. They must do this in a way that is consistent with both the productive and the assimilative capacities of ecosystems, and in a way that enhances the long-term resilience of the integrated socio-ecosystem.[24]

SECTION III: THE HEGEMONIC UNSUSTAINABLE AND VICIOUS SOCIAL SYSTEM

It is my working hypothesis that the current destructive and unsustainable relationship to the living earth that is causing climate change and the ecological crisis developed in Europe and spread around the globe by European imperial expansion and modernization. It is the driving force of the Anthropocene Age. It is a vicious and unsustainable system.

It is this social system that brings about and reproduces the alienated way of life Akeel describes and sustains the illusionary worldview of independence. This "illusion" of independence and linear temporality is grounded in the basic structure of the system, which constantly works to "dis-embeds" humans from the ecosphere.

One way of *seeing* this unsustainable relationship is to reflect on a saying indigenous people across Canada use to distance themselves from it. Since the 1960s indigenous people

[23] William E. Rees "Thinking 'Resilience'," in The *Post Carbon Reader: Managing the 21st Century's Sustainability Crises*, ed. by Richard Heinberg and Daniel Lerch (Healdsburg: Watershed Media, 2010), 32.
[24] Rees "Thinking 'Resilience'," 32.

have been saying the following: "the land does not belong to us; we belong to the land." If our mode of being in the world is one of being engaged participants in living interdependent and symbiotic ecological and sociological relationships that mutually sustain life, then the true expression of this mode of being is "belonging to the land". That is, as we have seen, we belong to this great common-wealth of earthlings and have shared responsibilities to sustain it and our fellow members.

From this orientation, it would be absurd to say that we stand in a *relationship of ownership or property* to the living earth. Ojibway Elder Basil Johnston says this is like having property in your mother: mother earth. Yet, this relationship of the land belonging to humans has displaced the earlier relationship of belonging to the land and has become the basis of our modern way of life and the cause of the crises.[25]

For 95% of their time on earth Homo sapiens lived in predominantly sustainable social systems and understood themselves to belong to the ecosystems in which they dwelled. Although things began to change with the sedentary agricultural revolution 11,000 years ago, the "great transformation" of the world as a whole to the orientation that the earth belongs to humans occurred over the last 400 years and accelerated exponentially in the twentieth century. There are many accounts of this, but among the best was advanced by Karl Polanyi in *The Great Transformation* (1944) and those who have learned from his analysis.[26]

The great disembedding and re-embedding in the global social system

Polanyi argued that during this great transformation humans have been disembedded from participation in the interdependent ecological and social relationships that sustain life and re-embedded in abstract and competitive economic, political and legal relationships that are dependent on, yet destructive of, the underlying interdependent ecological and social relationships. This "great disembedding" takes place in the following three steps.

First, the peoples who are embedded in symbiotic ecological and social relationships are dispossessed of this way of life and the territories in which it is carried on; first by the enclosure of the commons in England and then by the dispossession of indigenous peoples throughout the non-European world (the 'second enclosure').

The second step is to impose an ownership relation to the land by the spread of western legal systems of private property and so to transform "earth into property" as Anthony Hall puts it.[27] Polanyi describes the privatization of land as a "fictitious commodity" because land is not a commodity produced for sale on the market. What we now call commodifiable and

[25] Robin Wall Kimmerer, *Braiding Sweetgrass: Indigenous wisdom, scientific knowledge, and the teaching of plants* (Minneapolis: Milkweed Productions, 2013).
[26] Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon, 2004 [1944]).
[27] Anthony J. Hall, *Earth into Property: Colonization, Decolonization, and Capitalism* (Montreal: McGill-Queen's University Press, 2010).

exchangeable "natural resources" are, as we have seen, interdependent co-participants in the symbiotic webs and cycles of life that sustain life on earth.

Relating to the living earth as a storehouse of commodifiable resources disembeds them from these interdependent ecological relationships and re-embeds them in the abstract and competitive relations of the global market system. The ecosystems in which resources are embedded are then treated as 'external' to the global system of commodification and radically changed. The result of 'development' under this system is the destruction of the webs of interdependent ecological relationships that sustain the natural and human world, giving rise to the environmental crisis and climate change.

Once the means of the reproduction of human life are placed under the ownership of independent corporations, the third step is to treat the productive capabilities of human beings as commodities for sale on the labour market by the spread of western contract, labour and corporate law. This kind of commodification dis-embeds human producing and consuming capabilities and activities from the surrounding social and ecological relationships in which they take place and re-embeds them in abstract, competitive and non-democratic global market relationships. Polanyi describes the commodification of the productive capabilities of individual humans as the second "fictitious commodity" of modernization.

It is fictitious because abilities to work together and sustain ourselves are not commodities made for the market. These capabilities are, as we have seen in the previous section, the co-operative response-abilities and sustain-abilities through which we humans participate in the social and ecological systems that conciliate and sustain life on earth. They are the capabilities through which we "belong to the land" and are grounded in it. Yet, they are now treated as abstract capabilities that we as separate individuals "own" (self-ownership); and, by selling the use of these abilities to a corporation, they become the means by which we insert ourselves in the global market system. The underlying social systems that producers and consumers live in and which sustain them – such as families, communities, First nations, networks, and so on – are treated as "external" to the market system. The result of 'development' under this system is the destruction of the webs of interdependent social relations of mutual aid that sustain human communities, giving rise to the well-known forms of social suffering of modern life: alienation and anomie, the horrendous inequalities in life-chances, and the planet of slums and gated 'communities' in which we find ourselves.

In 1944 Polanyi predicted that the result of this "great transformation" would be disastrous:

> "To allow the market mechanism to be sole director of the fate of human beings and their natural environment...would result in the demolition of society. Robbed of the protective covering of cultural institutions, human beings would perish from the effects of social exposure; they would die as the victims of acute social dislocation through vice, perversion, crime and starvation. Nature would be reduced to its elements,

neighbourhoods and landscapes defiled, rivers polluted, military safety jeopardized, the power to produce food and raw materials destroyed."[28]

The global vicious cycle

Despite Polanyi's warning and hundreds of others, this global system of double commodification in which the human species is re-embedded continues to unfold as he predicted. It is now a deeply entrenched *vicious cycle*; what global systems theorists call an "automaton".[29]

Briefly, they argue that corporations are caught up in a competitive system in which they must continuously extract and exploit natural resources and human resources (capabilities) at the lowest price and at maximum speed in order to make a profit or go under. Any damage to the environment and communities are treated as external and off-loaded to governments. Governments and communities are constrained to compete for these corporations, because they fund their campaigns, bring jobs to the electorate and provide the taxes that enable governments to provide basic services and repair the damage they do to social and ecological systems. If governments try to internalise the externalities, regulate and charge the corporations, corporations move to more compliant countries. Governments are also constrained to give military and economic support to companies that extract resources in foreign countries, giving rise to the huge global military network and the wars over scarce resources that follow. These degrade further once self-sustaining human communities and ecosystems. As non-renewable resources become scarce, it becomes more expensive and destructive to extract and exploit them. And, it becomes more difficult to regulate the "race for what's left" that we see today in the North, in fracking, in the Northern Gateway Pipeline, and other examples. Even "renewable" resources, such as fisheries, are exploited to extinction, because the temporality of market competition is faster than the natural cycles that *renew* fish, forests and oceans.

Finally, in contrast to sustainable cycles, in which the 'waste' of one organism is used up by another, so there is zero waste or emissions overall, the global market system produces commodities in a liner, non-circular way, so they rapidly become waste, and require new commodities to replace them, as in automobiles or terminator seeds. And, new commodities are required to repair the damage they cause during their short life-span. It is a cradle-to-grave system of production rather than a cradle-to-cradle system.

If the real costs of this global system were taken into account it would collapse under its own economic irrationality. As Lester Brown points out:

"As the world economy expanded some 20-fold over the last century it has revealed a flaw – flaw so serious that if it is not corrected it will spell the end of civilization as we know it.

[28] Polanyi, *The Great Transformation,* 197.
[29] Capra, *The Hidden Connections*, 129-157.

> The market, which sets prices, is not telling the truth. It is omitting indirect costs that in some cases now dwarf direct costs. Consider gasoline. Pumping oil, refining it into gasoline, and delivering the gas to US service stations may cost, say, $3 per gallon. The indirect costs, including climate change, treatment of respiratory illnesses, oil spills, and the US military presence in the Middle East to ensure access to oil, total $12 per gallon. Modern economic thinking and policymaking have created an economy that is so out of sync with the ecosystem on which it depends that it is approaching collapse."[30]

As a result, this is how the dominant system looks from the resiliency perspective of Section II:

Contemporary resource-management approaches typically attempt to maximize one or a few desirable systems components at the expense of other species and systems functions – think agricultural or forestry monoculture. Diversity plummets and functions are lost. The managed system becomes inflexibly brittle and vulnerable to unexpected external shocks.

Now, consider the form of contemporary global economic development. The emphasis here is on maximizing economic growth by exploiting the efficiency gains conferred by local specialisation and global trade [comparative advantage]. The approach tends to maximize resource exploitation and material dissipation (pollution), both of which simplify ecosystems, undermine life-support functions, and erode systems resilience. The global economy becomes dominated by a few global enterprises (and their numbers continue to shrink with each merger or acquisition). The sheer economic power of these monster corporations stifles meaningful competition and blocks new players from entering the market: both local diversity and global diversity plummets. Meanwhile, the economy and society have become dependent on a few declining energy sources (petroleum) and on energy-intensive systems (e.g. the global transportation systems and even the internet)."[31]

Moreover, when we participate in this vicious system in our business-as-usual activities we *overlook* the destruction it is causing to the symbiotic social and ecological relationships on which humanity and other forms of life depend. When we can no longer overlook, deny and discount the problem, rather than confronting the underlying relationship that causes it, the response is to try to regulate the system: to repair damage and compensate stakeholders. Most of these responses take place within and reproduce the vicious system because we continue to see the problem through the lens of the artificial system in which we are re-embedded. And it creates the illusion of independence, as Commoner mentions in Section I.

There are three ways in which the crisis is denied or discounted: (1) The boiled frog syndrome: the brain functions so that slow changes, long term implications and multiple connections cannot be easily seen: (2) Mental apartheid: the psychological barrier between modern humans and the rest of reality: perceptual dualism since Descartes. (3) The idea of the tragedy of the ungoverned commons, from Hobbes' state of nature to Garret Hardin's analysis,

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[30] Lester R. Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse* (New York: Norton, 2011), 8.

[31] Rees "Thinking 'Resilience'".

makes it appear that the only alternative is privatization (and this becomes our present tragedy). So, there appears to be no other possibility.[32]

I think all three of these strategies can be seen as consequences of the alienated form of life. However, the really basic one is that our alienated way of life causes us to overlook the living earth and to represent it as resources for production and consumption, whether capitalist or Marxist, and this because of the sense of ourselves as independent and of the only alternative to it as a kind of servility, dependency or heteronomy. The third possibility of being agents within and with the living earth disappears from the picture.

SECTION IV: RESPONSES OF RE-ENGAGEMENT AND RECONNECTION: REALIZING INTERBEING

Aldo Leopold was one of the first people to point out the way in which our modern mode of life diverts our attention from its destructive effects and to suggest an appropriate response:

> "One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to laymen. An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise. [33]
>
> "All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in the community, but his ethics prompts him also to cooperate (perhaps in order that there may be a place to compete for).
>
> "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or, collectively: the land.
>
> "In short, al and ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.
>
> "In human history, we have learned (I hope) that the conqueror role is eventually self-defeating. Why? Because it is implicit in such a role that the conqueror knows, ex cathedra, just what makes the community clock tick, and just what and who is valuable, and what and who is worthless, in community life. It always turns out that he knows neither, and this is why his conquests eventually defeat themselves.[34]

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[32] Mathis Wckernagel and William Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth* (Gabriola: New Society Publications, 1996).

[33] Leopold, 'Land Ethic' in *Sand County Almanac,* 197

[34] Leopold, "Land Ethic," 239-40

> "An ethic presupposes some 'mental image of land' as a 'biotic system'. It is not only a mental image that is required, but also, 'we can be ethical only in relation to something we can feel, understand, love, or otherwise have faith in'."[35]

Practices of de-alienation, reconnection and re-engagement

Now, let's turn to the practices of freeing ourselves from captivity to the alienated and unsustainable way of life, of beginning to reconnect and engage-with the living earth in regenerative rather than extractive-dominative ways (being the change), and thereby of beginning to see our place in the world differently and being moved by the animacy of Gaia – as Leopold recommends. There are countless ways in which this transformation can take place in everyday life. Here are several examples.[36]

The most obvious activities of reconnection are those engaged in by citizens and elected officials in the representative institutions and courts. These are indispensable yet insufficient. As we have seen, the social system as a whole places severe limits on what can be done for all the reasons discussed in the previous section. When Gaia citizens run up against these limits they turn to more direct forms of transforming unsustainable and destructive social systems.

In response to 500 years of dispossession we are witnessing in our time a reclaiming of the local commons that is a worldwide phenomenon. From the renaissance of over 350 million indigenous people, to global movements such as the Food Sovereignty movement, and on to the return to local food production and distribution in the global north, people are not only re-possessing privatized commons. They are also re-asserting local knowledges of how to use and sustain the living earth; knowledges that were swept aside as primitive and replaced by modern scientific agribusiness and synthetic fertilizers, yet are grounded in thousands of years of practical knowledge of the renewability conditions of local resources. In Boaventura de Sousa Santos' famous characterization of this renaissance of local practices and local knowledges: there is no global justice without local epistemic justice.[37]

In response to the commodification of labour power, democratic, cooperative citizens refuse to comply with this undemocratic mode of production and consumption. As much as possible, they re-appropriate their producing and consuming capabilities from commodification and exercise their capabilities 'in common'; in democratically-run cooperatives and community-based organizations' that are re-embedded in social and ecological relationships. Such grass-roots democracies then produce and distribute the basic public goods that are privatized under

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[35] Leopold, "Land Ethic," 251.

[36] I have discussed these in more detail in James Tully, *On Global Citizenship: James Tully in Dialogue* (London: Bloomsbury, 2014), and *Imperialism and Civic Freedom* (Cambridge: Cambridge University Press, 2008).

[37] Boaventura de Sousa Santos, *Epistemologies of the South: Justice against Epistemicide* (London: Taylor and Francis 2015).

the dominant form of democracy: food, shelter, clothing, and health care, clean water, security and so on. These social and economic democracies are linked together by global networks of fair trade relationships that are also under the democratic control of the producers and consumers subject to them.

This famous response to the injustices of the privatization of labour power has gave rise to the tradition of cooperative democracy throughout the world. From Robert Owen, William Thompson and Peter Kropotkin in Europe, to Gandhi, Richard Gregg, Fritz Schumacher and the Swaraj and Swadeshi movements across Asia and Africa to food sovereignty in Latin America, the turn to local food production, microcredit, democratic cooperatives and indigenous and non-indigenous community-based organisations of diverse scales and types. These are then linked together by global networks of fair trade and self-reliance. These cooperative practices generate social capital and realize social and economic justice directly; by bringing the local and global organization of economic activities under the democratic cooperation and mutual aid of all subject to and affected by them.

This is the cooperative citizenship response to the global problem of economic inequality and exploitation. It is important to note that despite the global spread of the institutional module of modern representative government and civil citizenship, poverty and hunger persist on this "planet of slums":

> "963 million people go to bed hungry every night. One billion people live in slums. One woman dies every minute in childbirth. 2.5 billion people have no access to adequate sanitation services and 20,000 children a day die as a result."[38]

Cooperative citizens offer a response to this *glocal* injustice that is more immediate and perhaps more lasting than representative responses because the victims of hunger, starvation and poverty become the agents of grass-roots democracy and economic self-reliance.

Another response is ecological or Gaia citizenship. In response to the third process of the commodification of the living earth, civic citizens withdraw their capacities from activities based on the commodification of the environment and develop a responsible way of relating in and to it. They re-embed natural resources and the human uses of them into their place within ecological relationships and cycles of no waste and regeneration. They see the webs of ecological relationships as a living commonwealth of all forms of life. They derive the fundamental duties, responsibility and rights of democracy in the first instance from their membership in the webs of ecological relationships in which democracy takes place and on which all forms of life depend. This natural gift economy, as Vandana Shiva puts it, is for them the true mother of democracy.[39] The norms of ecological well-being govern economics, not the other way round.

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[38] Irene Kahn, *The Unheard Truth: Poverty and Human Rights* (New York: W.W. Norton, 2010).

[39] Vandana Shiva, *Earth Democracy: Justice, Sustainability, and Peace (*Berkeley: North Atlantic Books, 2015).

This revolutionary response to the injustice of privatization of the natural world has given rise to the great co-operative and community-based ecology movements. From Aldo Leopold, Rachel Carson and Vandana Shiva to the Chipko Movement in India and Asia, and on to Japanese fishing co-operatives, the water justice movement, Food Sovereignty and everyday ecological footprint initiatives, millions of Gaia citizens are reclaiming the commons and exercising their capabilities democratically in ethical relationships of stewardship in the commonwealth of all forms of life. These experiments in eco-democracy and cyclical economics are responses and alternatives to the idea of unlimited linear development that gives rise to the ecological crisis.

Finally, two of the foundational premises that justify the imposition and continuation of the unsustainable processes of modernization are: humans are naturally antagonistic, and thus they need an authoritarian master who coercively imposes a structure of law over them as a socializing precondition of peace and democracy. These are foundational presuppositions of modernization in theory and practice since Hobbes. As we can see from the examples I have just given, Gaia citizens reject these premises.

From Kropotkin, through Gandhi and Richard Gregg to millions today, these citizens argue in contrast that humans are self-organising and self-governing animals. Autopoiesis - self-organisation, cooperation and nonviolent contestation and dispute resolution - are more basic conditions of human evolution than antagonism, violent conflict and the hegemonic relationships of command and obedience that violence aims to establish, yet which tends to generate counter-violence. If this were not the case, if Kantian antagonism and Hobbesian war of all against all were primary, the human species would have perished long ago. We overlook this pacific feature of our everyday activities precisely because it is so commonplace and familiar. [40]

Humans are not unique in this respect. The hypothesis holds for all forms of life and for the ecological relationships in which they all live. This was put on scientific footing in the 1960s by James Lovelock in the Gaia hypothesis. It is widely endorsed by biological, ecological and climate scientists today.[41] This view that the ground of our being as earthlings is ecological and sociological relationships of mutual interdependence and support is also widely endorsed by many of the spiritual traditions of the world. This helps to explain the powerful attraction of cooperative citizenship to people from such different secular and spiritual traditions.

It follows from this scientific revolution in the way we think about our place and roles in the ecosphere that there are two gift-reciprocity or mutually co-sustaining socioecosystems. The

[40] Richard Gregg, *The Power of Nonviolence* (New York: Schocken Books, 1966), Mark Engler and Paul Engler, *This is an Uprising: How nonviolent revolt is shaping the twenty-first century* (New York: Nation Books, 2016).

[41] Fritz Capra and Pier Luigi Luisi, *The Systems View of Life: A Unifying vision* (Cambridge: Cambridge University Press, 2015.

first is the natural ecosystem that sustains all forms of life. The second is that there is are informal, and often unnoticed, social networks of mutual sustenance that sustains the day to day lives of members in any community of practice. These informal networks of mutual aid underlie and the dominant, formal and unsustainable social systems. The dominant systems are parasitic on these relationships of 'social capital', as Polanyi argued, in the sense that they need these symbiotic systems to sustain the members that they simultaneously separate, exploit, places in competition, and dis-employ. This is a complex dynamic because the more concerned citizens repair the social and ecological networks that sustain life, the more attractive they become as resources for re-commodification.[42]

Another important local and global initiative is the turn to zero waste, and cyclical, nonviolent technology, architecture and urban planning. These movements find their inspiration in Gandhi's constructive programs and Fritz Schumacher's cyclical economics and appropriate technology. More recently, McDonough and Braungart explain their 'cradle to cradle' version in the following way:

> "Nature operates according to a system of nutrients and metabolisms in which there is no such thing as waste. A cherry tree makes many blossoms and fruit to (perhaps) germinate and grow. This is why the tree blooms. They fall to the ground, decompose, feed various organisms and microorganisms, and enrich the soil. Around the world, animals and humans exhale carbon dioxide, which plants take in and use for their own growth. Nitrogen from wastes is transformed into protein by microorganisms, animals, and plants. Horses eat grass and produce dung, which provides both nest and nourishment for the larvae of flies. The earth's major nutrients – carbon, hydrogen, oxygen, nitrogen – are cycled and recycled. Waste equals food.
>
> "This cyclical, cradle to cradle biological system has nourished a planet of thriving, diverse abundance for millions of years. Until very recently in the earth's history, it was the only system, and every living thing on the earth belonged to it. Growth was good. It meant more trees, more species, greater diversity, and more complex, resilient ecosystems. Then came industry, which altered the natural equilibrium of materials on the planet. Humans took substances from the earth's crust and concentrated, altered, and synthesised them into vast quantities of materials that cannot be safely returned to soil. Now material flows can be divided into two categories: biological mass and technical – that is, industrial – mass.
>
> "From our perspective, these two kinds of material flows on the planet are just biological and technical nutrients. Biological nutrients are useful to the biosphere, while technical nutrients are useful to what we call the technosphere, the systems of industrial processes. Yet somehow we have evolved an industrial infrastructure that ignores the existence of nutrients of either kind.

[42] Michael Klare, *The Race for What's Left: The global scramble for the world's last resources* (New York: Picador, 2012), Dilworth, *Too Smart for our own Good.*

"Human are the only species that takes from the soil vast quantities of nutrients needed for biological processes but rarely puts them back in usable forms."[43]

Another important example is the way green legal theory and practice is presenting alternatives to the modern legal commodification of land and labour under national and international law. The role of green legal theory is to develop a way of thinking about law that cognizes the cyclical and symbiotic interdependency and co-sustainability of "natural resources" in ecosystems, and "human resources", technology and "communities of practice" (cooperatives and corporations) in socioecosystems.[44]

Finally, one of the most important movements over the last few decades is the attempt to bring together and integrate the various fields of knowledge, research and teaching that I have drawn in on describing our predicament and responses to it.[45]

The challenge today is thus not to dream up responses to climate change or seize power. Rather, it is to find ways to democratically coordinate the multiplicity of such practices of de-alienation and reconnection around the world so they grow and gradually hollow-out, displace and transform the unsustainable systems. The tragedy of the present, is that we who inhabit the dominant social systems and view the world through their theories of transformative change by means of reform or violent revolution do not see this alternative, nonviolent way of systemic transformative change from below, yet it is the way damaged life systems repair and regenerate themselves.[46] If it took 500 years for the dominant system to reach "peak everything", perhaps we should think of this new 'great transformation' as also taking centuries of sustained and sustaining practices of regeneration.

SECTION V: RE-ANIMATION

Perhaps one of the most important practices of sustainability is the everyday individual and cooperative practices of engaging with the living earth through the primacy of dialogical perception. This consists in disengaging our perception/cognition (senses and synthesia) from the built environment and re-connecting with the animate earth sensuously, as our nervous system does naturally. This is how David Abram, following Maurice Merleau-Ponty, describes it:

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[43] Fritz Schumacher, *Small Is Beautiful: Economics as If People Mattered* (New York: Harper, 2010); William McDonough and Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things* (New York: North Point, 2010), 92-93, 96.

[44] Cormac Cullinan, *Wild Law: A Manifesto for Earth Justice*, 2nd Edition (Cape Town: Green Books, 2011).

[45] See, for example, Capra, *The Systems View of Life,* Sean Esbjorn-Hargens and Michael E. Zimmerman, eds. *Integral Ecology: Uniting multiple perspectives on the natural world* (Boston: Integral Books, 2009).

[46] See the quotation from Michael Simpson at note 13.

> "The event of perception, experientially considered, is an inherently interactive, participatory event**,** a reciprocal interplay between the perceiver and the perceived.
>
> "Perceived things are encountered by the perceiving body as animate, living powers that actively draw us into relation. Our spontaneous, pre-conceptual experience yields no evidence for a dualistic division between animate and inanimate phenomena, only for relative distinctions between diverse forms of animateness.
>
> "The perceptual reciprocity between our sensing bodies and the animate, expressive landscape both engenders and supports our more conscious, linguistic reciprocity with others. The complex interchange we call 'language' is rooted in the non-verbal exchange always already going on between our own flesh and the flesh of the world."[47]

Re-engaging with the natural world in this way reconnects us with our interdependent "ecological self" and overcomes the separation of culture and nature in our dominant identity formation. Interacting in this way "brings forth the world" cognitively as interdependent and co-evolving and, in so doing, brings us into connection with the suffering of the world. It enables us to see our responsibility for and interdependency on the living world. Yet, even more importantly, it connects us with the animacy of life itself (*anima mundi*) that empowers us.[48] As Joanna Macy and Chris Johnstone argue, the gratitude we experience for the invaluable gifts of the life-sustaining goods and services that the living earth gives us every second motivates and moves us to reciprocate.[49] It is animacy of life itself that empowers us to continue to act in reciprocally sustaining ways.[50]

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[47] David Abram, *The Spell of the Sensuous: Perception and Language in a More-than-human World* (New York: Vintage Books, 1997) 89-90.

[48] Harding, *Animate Earth.*

[49] Joanna Macy and Chris Johnstone, *Active Hope: How to face the mess we're in without going crazy* (Novato: New World Library, 2012).

[50] Kimmerer, *Braiding Sweetgrass.*