Glimpses of Earth: Sustainability in the Crucible of Experience

Matthew C. Ally

It is not enough just to 'love nature' or want to be 'in harmony with Gaia.' Our relation to the natural world takes place in a place, and it must be grounded in information and experience.
—Gary Snyder

Since it first came into prominence in the early 1980s, the concept of sustainability has found its way into virtually all discussions of the future of Earth and its inhabitants. Though its meaning seems straightforward enough—i.e., that we must behave today in such a way as to preserve the prospects for future generations to flourish (cf. World Commission on Environment and Development 1987)—the range of specific inflections is notoriously broad. The term is used by free-market neoconservatives, by liberal welfare statists, and by anarcho-socialists. It is used by atheists, agnostics, and believers. It is used by advocates of hands-off back-to-nature lifestyles, by advocates of hands-on earth stewardship, and by advocates of heavy-handed programs for geoengineering. Some even speak of a "sustainability revolution," an emergent global paradigm shift that will rival the industrial revolution in historical significance[1]; and others of a global commitment to sustainability-oriented social and environmental activism now in the hands of the largest movement the world has ever seen.[2] Revolution or not, sustainability is for everyone, it seems. They cannot possibly all mean the same thing by the term.

The heuristic value of the concept in such a broad array of contexts is surely remarkable, but its apparent plasticity just as surely masks a degree of critical confusion on the part of some of those who have adopted the term as their own. This is worrisome, and raises questions that must be sorted out. It is particularly worrisome when it comes to a concept that could, and arguably should, define the spirit of these troubled times.

This article takes up some of the most relevant questions, first, in light of environmental ethics, then in light of earth system science, and, finally, in light of experience itself. This route to the meaning of sustainability is perhaps a bit too indirect and 'philosophical' for some, particularly for environmental policy-makers and activists who must decide and engage now in the heat of crisis—climatological and otherwise. But the threat of dilution and denaturing of this key concept makes this sort of philosophic scrutiny increasingly necessary. A concept that means everything to everyone in the present is at risk of meaning nothing to anyone in the end. Without proffering any new definitions or specific prescriptions,

1 Anders R. Edwards, *The Sustainability Revolution: Portrait of a Paradigm Shift* (Gabriola Island, BC: New Society Publishers, 2005).

2 Paul Hawken, *Blessed Unrest: How the Largest Movement in the World Came into Being and No one Saw It Coming* (New York: Viking Press, 2007).

this article suggests one path to an ethically rational, scientifically informed, and experientially grounded understanding of sustainability most broadly construed. It is addressed to all who are environmentally concerned, to philosophers, ethicists, and scientists, to academics and policy-makers, to concerned citizens and environmental activists, and especially to the many who manage to blend these various orientations in one way or another.[3]

Sustainability As Value

> *Nature is both symbol and mirror, pointing the way and reflecting the past. When we look to nature for a moral compass, we may instead find a reflection of our own values.*
>
> *—R. Bruce Hull*

A favorite milestone in the historiography of environmentalism is the famed 'Earthrise,' first seen and photographed by the Apollo 8 astronauts as they orbited the moon. Broadcast to millions on December 24, 1968, some estimates suggest that more than a billion people saw the image in the ensuing days and weeks, perhaps a quarter of all persons living at the time. Frank Borman, the commander of the Apollo mission, ended his Christmas Eve message from orbit with a blessing, and more importantly for the present discussion, with a value judgment: "…and God bless all of you," he said, "all of you on *the good Earth*."

By all reports, it was a uniquely moving experience: to see planet Earth drifting quietly and alone and scintillating through the cosmos, gathering for the first time all of humanity together in a vision of the Earth entire. U Thant, then United Nations General-Secretary, was deeply affected. "We saw the Earth the size of a quarter, and we recognized that there really is one world."[4] In that recognition, an emergent shift from a plurality of localities to the prospect of global unity crystallized in the popular imagination, if only momentarily. The whole world caught a glimpse of the world as one.

Even more now than in 1968, and perhaps despite ourselves, we do live in one world. As Peter Singer reminds us, "For most of the eons of human existence, people living only short distances apart might as well, for all the difference they made to each other's lives, have been living in separate worlds…Now people living on opposite sides of the world are linked in ways previously unimaginable."[5] The "daunting moral and intellectual challenge" for this century is to figure out how to live in that one world, for the future of Earth and its inhabitants now hangs on whether we meet that challenge, and how well.

Though Singer's topical concerns as an ethicist extend far beyond 'the

3 An earlier draft of this article was presented at under the title, "Which Sustainability? Whose Planet? Why Ask? : Environmental Ethics and Earth System Science in the Crucible of Lived Experience," *From the Local to the Global: An International Sustainability Conference*, Villanova University, 22-25 April 2009

4 Robert Poole, *Earthrise: How Man First Saw the Earth* (New Haven: Yale University Press, 2008), 31.

5 Peter Singer, *One World: The Ethics of Globalization* (New Haven: Yale University Press, 2002), 9-10

environment' as such, it is hardly incidental that his monograph on the ethics of globalization begins with a chapter on climate change. To be concerned with the idea of global interconnectedness at all is necessarily to be concerned with the environment. To think globally in any way today is necessarily to think about the prospects for sustainability most broadly construed.

This is not the place to analyze Singer's powerful arguments. Rather, here Singer is offered as an exemplary ethicist, one who does exceedingly well what most ethicists do most of the time. Historically, with a few notable exceptions, ethicists have taken up a single task: *to provide rational grounds for normative claims upon human conduct.* Singer locates the origins of this task in our Paleolithic past. Ethics as a form of inquiry and expression "became distinct from anything we can observe in our closest nonhuman relatives when we started using our reasoning abilities to justify our behavior to other members of the group." If such reasoned justification distinguishes ethical reflection, "the revolution in communications has created a global audience" for that reasoning, for it puts us in a position where "we might feel a need to justify our behavior to the whole world," and so creates "the material basis for a new ethic that will serve the interests of all those who live on this planet in a way that, despite much rhetoric, no previous ethic has ever done."[6] The project of a global ethics, of an Earth ethic which takes the whole world as "the basic unit for our ethical thinking,"[7] (Singer 2002, p.ix), is truly unprecedented in its aspirations and potential reach. Still, it is business as usual in its essential nature. Ethics remains, as it has been for millennia, the systematic effort to provide good reasons for adopting certain values and acting upon them.

Things are much the same within the specific disciplinary purview of *environmental* ethics. A milestone in the historiography of environmental ethics is the publication of Lynn White's (in)famous essay, "The Historical Roots of Our Ecological Crisis." White's claim, made a little over a year before the world saw the Christmas Eve Earthrise, was that Abrahamic religion itself is the problem. The 'Judeo-Christian tradition,' White argues, values humankind above nature, values human domination and mastery of nature, and thus provides ethical justification (i.e., good reasons) for human exploitation of the environment. Again, this is not the place to debate White's thesis or to analyze his argument—which, needless to say, has been interestingly critiqued by many thinkers, Jewish, Christian, and otherwise. The point is to highlight the extent to which mainstream environmental ethics remains true to its philosophic pedigree in its privileging of value-talk. White provides an early and influential inflection of a persistent form of *axiological* argument in environmental ethics: if the environmental crisis finds its ultimate roots in a crisis of values, then solutions to the environmental crisis can only come about by means of a resolution of the crisis in values; and the only way to resolve a crisis in values is to develop and/or to retrieve other presumably better values. Stated so plainly, the argument has an air of obviousness that makes it seem beyond dispute. And it is not such a bad argument. After all, values *do* affect conduct. The question is, to what extent? And more to the point, how? Well, obviously

6 Ibid., 9-10
7 Ibid., ix

not enough, and obviously not solely because they are rational. For the moment, let these answers suffice—we will return to them in a later section.

The salient question for most practicing environmental ethicists concerns *environmental* values. What do we value with regard to the environment? And what have we valued? And what ought we to value? And more fundamentally, how do we ascribe environmental value in the first place? From such questions others follow. Do our values in fact lead us into destructive relations with the Earth? And if they do, what values might we adopt in order to break our destructive patterns? Shall we value nature? And what is nature anyway? Shall we value species? Individuals or communities? Mammals only, or fishes and trees too? Insects? Microbes? Shall we value sentient beings only, or the biota as such? And what of mountains and valleys, rivers and oceans? Shall we value parts or wholes? States or processes? Shall we value simplicity or complexity? High technology? Appropriate technology? Low technology? The city or the country? Wildness or civilization? All of these? Or none? And the litany of axiological questions goes on. Value-talk, it seems, is as promiscuous as life itself.

At the risk of caricature, mainstream environmental ethics promises, again, with some notable exceptions, that if only we sift through the proliferation of environmental values, and provided we do so rigorously and systematically, the right values will emerge in the clear light of rationality, and the force of the better argument will be sufficient unto itself to get us moving in the right direction.

The same promise is made even when the multitude of environmental values is sifted to one. In the face of the proliferation of value questions, many environmentalists have made a sensible choice by adopting the singular value of *sustainability* as the paramount environmental value. Under the umbrella of sustainability can be gathered all other relevant value questions, all of the sorts of proposed answers to them, and all of the better values that might replace the problematic ones. As Bryan Norton notes, this "strategy…of theoretically reducing all values to a single principle and measure…has dominated academic and disciplinary discussions of environmental values, including those in environmental ethics"; and it is fair enough to worry, as Norton does, about the ways in which this "single, a priori theory then constrains the values that are to count…."[8] But the distillation is not an entirely bad idea, and not merely because it is expedient. To the extent that sustainability effectively functions as the one preeminent value for environmentalism, it surely does help to keep an otherwise unwieldy conversation manageable and focused. Also, despite its many meanings, sustainability seems indisputably to be a reasonable and good value—more on that in a later section.

Still, fundamental principles can take us only so far. As with every value, sustainability remains a value seeking firmer ground than the force of the better argument can provide. Some seek this ground in science.

---

8 Bryan G. Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management* (Chicago: University of Chicago Press, 2005), 155.

Sustainability As Fact

> *Before we can get the moral and normative concepts right…we will have to reconceptualize our place in the world. And such a reconceptualization may have more to do with the way we understand nature than it does with how we value nature*
> *—Bryan G. Norton*

If the Earthrise inspired one astronaut's value judgment—"all of you on *the good Earth*"—the same image inspired in others a different sort of appreciation, one more descriptive and potentially explanatory. As James Lovelock recalls, "It took a view of the Earth from space, either directly through the eyes of an astronaut, or vicariously through the visual media, to give us the personal sense of a real live planet on which living things, the air, the oceans, and the rocks all combine in one."[9] From the perspective of many scientists, that historic vision gathered in a single frame the prospects for a new understanding of Earth and earthly life. "This gift, this ability to see the Earth from afar, was so revealing that it forced the novel top-down approach to *planetary biology*."[10]

Biology had long been a 'bottom-up' science, oriented as it was toward the organism, and in due course toward populations of organisms and mixed communities of organisms. Progress in our understanding of the fundamental processes of life has taken a consistently and increasingly bottom-up route, first with the advent of cytology, and then with molecular biology. These paths have been and continue to be wildly productive—after all, "the network of chemical relations that characterizes life on Earth could not exist without a certain type of molecule."[11] Perhaps it was only a matter of time before life could and would be studied from 'above,' at the planetary scale. But just what sort of biology is planetary biology? What does it mean to do biology from the 'top' down?

We may begin to piece together an answer to this question with the help of earth system science. The emphasis from this angle is, as its name suggests, on Earth's character as a *system*. As described in the "Amsterdam Declaration on Global Change," a statement endorsed by more than a thousand working earth scientists representing four major international scientific associations, "The Earth System behaves as a single, self-regulating system comprised of physical, chemical, biological and human components. The interactions and feedbacks between the component parts are complex and exhibit multi-scale temporal and spatial variability."[12] Thus Earth system science conceives of planet Earth as a complex, relational, and integral phenomenon. As a variety of general systems theory, earth system science seeks to understand the whole Earth in terms of its parts, and the parts of the Earth in terms of the whole Earth.

---

9 James Lovelock, *The Ages of Gaia: A Biography of Our Living Earth* (Oxford: Oxford University Press, 1988), 19.

10 Ibid., 29 (emphasis added).

11 Michel Morange, *Life Explained*. trans. by Matthew Cobb and Malcolm DeBevoise (New Haven: Yale University Press, 2008), 143.

12 Berrien Moore et al. "Amsterdam Declaration on Global Change," Earth System Science Partnership, accessed: June 26, 2009, http://www.essp.org/index.php?id=41.

It is only a short step—historically backward, logically forward, intermittently controversial—from the earth system view to the view proposed by James Lovelock and Lynn Margulis in their (in)famous "Gaia hypothesis." Originally presented in the early 1970s, long before the institutionalization of the earth system approach which is its "undeniable offshoot,"[13] the original hypothesis has developed into a prominent perspective within theoretical biology, grounded in a large body of empirical research (see e.g., Schneider & Boston 1991; Volk 2003; Schneider, Miller, Crist & Boston 2004; Harding 2006). In his 1991 essay, "Geophysiology—the Science of Gaia," Lovelock writes, "Gaia theory is about the evolution of a tightly coupled system whose constituents are the biota and their material environment, which comprises the atmosphere, the oceans, and the surface rocks."[14] Like earth system science, geophysiology treats the whole Earth as a biogeochemically dynamic and evolving entity, a single (and perhaps singular) structural-functional unit. Additionally, and more controversially, geophysiology understands the earth system to be compellingly and informatively analogous to a living organism or a cell metabolism (see e.g. Lovelock 1988; Maruglis & Sagan 1995; Volk 2003). "Like living organisms and many closed-loop self-regulating systems, [Earth] would be expected to show emergent properties; that is, the whole will be more than the sum of its parts."[15] Thus, as Margulis remarks elsewhere, "what has been called 'the Earth's environment' is no externality. The environment is part of the body"[16] —a point to which we will return in the next two sections. Whatever the strengths and limits of such analogies, the dynamical, self-regulative, biogeochemical integrality of the earth system at a broad range of temporal and spatial scales is now an undisputed scientific fact. From this fact, others follow.

Particularly relevant in the present context is the way in which both earth system science and geophysiology explain Earth's integrative functions and its evolution over time in terms of periods of relatively sustained homeostasis (and more recently, 'homeorhesis'), punctuated by periods of rapid and dramatic change, which change is followed once again by a period of relative stability. Margulis, a microbiologist, attributes the earth system's peculiar history to the 'autopoietic' character of the biosphere. Autopoiesis is a term of art in the theory of cell metabolism developed by Humberto Maturana and Francisco Varela. It denotes self-making or self-maintenance (Gk. *auto* - self + *poiesis* - making). It is "life's continuous production of itself," Margulis writes. "Without autopoietic behavior, organic beings do not self-maintain—they are not alive." Autopoiesis is no mystery, whether at the cellular scale or above (nor at the molecular scale, cf. Williams 1996). At the planetary scale, it is just "the aggregate, emergent property of the many gas-trading, gene-exchanging, growing, and evolving organisms in [the ecosphere]. As human body regulation of temperature and blood chemistry emerges from rela-

13 Peter Ward, *The Medea Hypothesis: Is Life on Earth Ultimately Self-Destructive?* (Princeton: Princeton University Press, 2009), xix.

14 Stephen H. Schneider and Penelope J. Boston, eds., *Scientists on Gaia*. Cambridge, MA: MIT Press, 1991), 4.

15 Ibid., 4

16 Stephan Harding, *Animate Earth: Science, Intuition, and Gaia* (White River Junction, VT: Chelsea Green Publishing Company, 2006), 11.

tions among the body's component cells, so planetary regulation evolved from eons of interactions among Earth's living inhabitants."[17] To repeat, the earth system is both dynamic *and* evolving, and "self-regulation of important [earth] properties, such as climate and chemical composition, is seen as a consequence of this evolutionary process."[18] This is the core of "Gaia Theory," which may have avoided much controversy if Lovelock had left Gaia out of it and named it, "Biocybernetic Universal System Tendency Theory," as he had originally intended.

This understanding of an evolving system of planetary regulation as the aggregate emergent property of biotic-abiotic coupling finds crucial empirical grounds in, among other things, the formative and continued *microbial* contribution to planetary biology (Margulis & Sagan 1986; Margulis, Matthews, & Haselton 2000). Thus, not incidentally, and not without a hint of irony, we see a warranted, testable, and predictive example of the top-down approach to the whole earth system that hinges upon the collective stature of the earth community's smallest members! But what has all of this to do with sustainability? It seems fair to wonder.

Geophysiology, like all good science, works with bold and testable hypotheses. It is the "story of a living planet that is alive in the same way that a gene is selfish" (Lovelock 2000, p.ix; cf. Dawkins 1976). The plot of this story of Earth goes something like this: If at some point after its first appearance roughly four billion years ago early microbial life proliferated to an extent that facilitated emergent planetary regulation, as it seems to have done; and if that regulation developed over eons in such a way that the evolution of life and the evolution of the non-living environment became and remain tightly linked in a single process, as they seem to be; and if that regulation became increasingly complex and tightly integrated during subsequent eons of interactions among Earth's life forms and their environments, as is increasingly borne out on evidential and theoretical grounds; it follows that planetary regulation continues to occur, *and* continues to evolve, *and* so continues to change. This is a simple enough story to tell, though its implications are far from trivial. For it is in the nature of all complex adaptive systems to persist in their evolutionary development until they fall off the narrow ridge between order and chaos and reach thermodynamic equilibrium—or, to put it more colloquially, until they die. And, not incidentally, and again not without a hint of irony, this much is true of the earth system even if the system itself is not a unit of selection (cf. Dawkins 1982); and even if the biotic element in the system has a reproductive tendency periodically to outstrip available resources, and a metabolic tendency periodically to toxify environments (cf. Ward 2009a, 2009b); and even if the unity of the system turns out to be neither teleological nor optimizing (cf. Kirchner 1991); and even if the heterogeneity of the parts challenges the argument for a living whole (Morange 2008, 144), to cite the most prominent empirical challenges faced by Gaia theory.

---

17 Lynn Margulis and Dorian Sagain, *What is Life?* (Berkeley and Los Angeles: University of California Press, 1995), 23.

18 Schneider and Boston, *Scientists on Gaia,* 4.

Whether one boldly conceives of Earth as alive, or more cautiously deems it a complex dynamical and/or adaptive system, there is broad scientific consensus that terrestrial life is highly integrative and integrated. As Michel Morange, a *molecular* biologist, frankly acknowledges, "At all levels of observation, life is a system: from the cell, the building block of multicellular organisms, all the way up to the various natural ecosystems found on Earth" (Morange 2008, 101). And so it must be, *a fortiori*, it would seem, with the whole earth system itself. There is also broad scientific consensus that terrestrial life as such is in its twilight years. Gaia will surely die, largely due to its aging star's increased solar output. But with 'merely' a billion or so years left before the planet becomes inhospitably hot, there is still much to be done, by life in general, and by humankind in particular. This bears directly on the meaning of sustainability.

As the Amsterdam Declaration reminds us, planetary science is both explanatory and diagnostic: "The understanding of the natural dynamics of the Earth System has advanced greatly in recent years and *provides a sound basis for evaluating the effects and consequences of human-driven change*" (Moore et al. 2009, emphasis added). The earth systems understanding is *explanatory* in so far as it elucidates the ongoing geophysiological process in such a way that, from the temporal and spatial perspective of planetary biology, sustainability is simply and nontrivially a *fact*—albeit a fact punctuated by the related fact of periods of relative instability during which the ecosphere phases into unsustainable, sometimes catastrophic, transitional states. The systems view is *diagnostic* in so far as it helps to illuminate the ways in which the Earth, much like other living systems, can be well or ill, imperiled or secure, and by extension, harmed or healed, neglected or nurtured.

Somewhere on the far side of every given devastating environmental change still another such devastating event will no doubt occur—whether due to some intra- or extra-planetary perturbation, or perhaps to "some rapidly growing young population" (Lovelock 1973, p. 19), our own, for example. But in the meantime Earth will (somehow) achieve that relatively durable and dynamically stable condition that permits a particular biota to evolve and to flourish. And in each such epochal inflection of *sustainability* life is fine here on the good Earth, even if it is not always easy. Again, in this sense, sustainability is a fact, persistent if not permanent, plain if not simple. It has happened before, and it will happen again, with or without our explanations and understanding, with or without our involvement and care, and, if it must be said, with or without our presence.

So just as there are good reasons to treat sustainability as a preeminent earthly value, and we now see that there is sound evidence that sustainability is also an ordinary, if remarkable, terrestrial fact. Perhaps there is some relation between the two—this remains to be seen. In any case, like all things ethical and empirical, both the value and the fact must find their roots and bearing in some still firmer ground. This brings us to the question of experience itself.

Sustainability As Experience

> *Explanation is the essential and vitally important work of the rational mind, but we must not lose sight of an equally important need for understanding, for contact with the realm of meaning, where we seek intimacy and connection with what has been explained.*
>
> *—Stephan Harding*

We may once again take the Earthrise as our point of departure. If the Earthrise image evokes in some a certain range of value judgments—to recall, once last time, Borman's blessing of all of us here "on *the good Earth*"—and if the image also evokes in others a certain apprehension of the wholeness and integrality of Earth—as in Lovelock's "personal sense of *a real live planet*"—there is still another way, arguably more fundamental than either of these and surely integral to both, in which this vision of the Earth entire is importantly evocative. To see this good Earth in a single glance, and to perceive "Gaia's body" from above, is *a fortiori* to evoke the seemingly infinite range of ways in which this, our home planet, can be *experienced*.[19]

But what is experience? The question seems recalcitrant in the extreme, even obtuse. One historian of ideas details fully nine distinct and influential meanings of the term, and claims only to have scratched the surface.[20] Recalcitrant, to be sure, but still we must answer. What *is* experience? We will consider just three frequently employed modifiers in the philosophical and psychological literature. First, experience is *lived*. Second, experience is *meaningful*. Third, experience is *embodied*.

To say that experience is lived is, above all, to say that it is concrete and immediate. This is not necessarily to say that experience is or can be unmediated, but that's a separate question better left to Zen masters and phenomenologists and small children. Experience is not only the history, but the *currency* of our involvements in, and engagements with, a world. We live experience concretely and immediately in the sense that, for instance, navigating a woodland trail and negotiating a crowded city sidewalk each require our direct and present *engagement*, no less than do carrying out a trigonometric function, or yielding to boredom, or rising into joy. The retrospectively specifiable and (perhaps) articulable moment of involvement and engagement—be it our recollection of a particular attentiveness to stones and gullies, or to curbs and faces and other pedestrians' movements, or to the discrete deductions of an algorithm, or to a gnawing sense of dull malaise or a burgeoning sense of exhilaration—are first *lived*. Only subsequently are they grasped and thematized. There is nothing abstract about our engagements and involvements when and where we are engaged and involved—and this, not even when we are about the business of abstraction.

In short, experience is not an idea; it is an act. Experience is not something we have; it is a thing we *do*. And we do it all the time. Right now, for instance.

---

19 Tyler Volk, *Gaia's Body: Toward a Physiology of Earth* (Cambridge, MA: MIT Press, 2003).

20 Martin Jay, *Songs of Experience: Modern American and European Variations on a Universal Theme* (Berkeley: University of California Press, 2005).

Again, experience is *lived*. Perhaps this seems an obvious point, but it is all too easily and all too often forgotten.

If experience is always lived, what is lived is always *meaningful*, though not always in some deep and heavy existential sense. After all, it is meaningful to me each time my cell phone vibrates in my pocket and makes me jump, and it is meaningful to my teenage daughters who always chuckle at the fact that my vibrating cell phone still makes me jump after all these years. My concern for my children's happiness and success is meaningful, too, though in quite a different way than is a buzzing bit of pocket-sized technology. Light or heavy, superficial or profound, lived experience always *means something* to the 'experiencer' who lives it. Moreover, the experiencer *feels* the meaningfulness of the experience, again, prior to any thematic recognition or expression of it. As Eugene Gendlin articulates it, "Meaning is not only about things and it is not only a certain logical structure," as in the meaning of an object or possession, or the meaning of terms, concepts, and symbols. Meaning always "involves *felt experiencing*."[21] Experience is lived in particular ways and with particular significations, and this always and only against a backdrop of particular felt meanings. Felt meaning is logically primary and existentially prior to specified meaning. Felt meanings run 'deeper' in the unfolding of lived experience, and articulated and expressed meanings come 'later.' When we evoke any meaning by way of symbolic tools, be it a stick figure or an image of Earth from space, be it a simple term like pen or mango, or complex notions like truth or life or sustainability, "a large mass of undifferentiated experience is called forth as the felt meaning of that word [or symbol]."[22] If you doubt this, consider those moments when words fail you, when you struggle to describe an experience. The struggle itself is index enough of the *feel* you have for the meaning of the experience, for you would hardly struggle to find the right words if you did not *already have* a feel for the meaning you hope to convey. As George Orwell somewhere remarked, "We must let the meaning choose the word." Experience is meaningful, and this in a way that is first felt, then (perhaps) thematized, and then (perhaps) expressed in words and symbols and deeds.

If experience is always lived and always meaningful, what is lived and meaningful is also always *embodied*. "Human experience is incarnated," writes Drew Leder. "I receive the surrounding world through my eyes, my ears, my hands. The structure of my perceptual organs shapes that which I apprehend. And it is via bodily means that I am capable of responding…From the most visceral of cravings to the loftiest of artistic achievements, *the body plays its formative role*" (Leder 1990, p. 1). If this, too, seems an obvious point, it is just as easily and often forgotten as the others, particularly in an age such as ours wherein our bodies are at once extended and effaced by the plethora of available technologies and information. No matter what we think or how we think it, our bodies are always there 'first,' as it were, and "we must see how our bodies, our brains, and our environments together generate a vastly meaningful milieu out of which all significance emerges

21 Eugene Gendlin, Experiencing and the Creation of Meaning: A Philosophical and Psychological Approach to the Subjective (Evanston: Northwestern University Press, 1999), 1.
22 Ibid., p. 65

for creatures with bodies like ours…We need to see how our 'higher' abstract conceptualization and reasoning are grounded in this embodied meaning-making."[23] The bodily basis of lived experience is meaning's most permanent ground, no less during 'higher order' cognitive experience—say, that tricky bit of trigonometry, or defining sustainability—than during 'lower order' physical experience—say, finding the pencil you tossed across the room in frustration at the algorithm, or cutting your shower short to conserve fresh water. Both sorts of engagement and involvement are possible only by means of the very embodiment they take for granted.

Despite our tendency to remain unaware of the corporeal basis of lived meaning-making, experience is wholly rooted in and sustained by the body. And the body, in turn and of necessity, is wholly rooted in and sustained by the broader body of Earth. Thus our bodily and earthly nature would seem to bear directly on the lived meaning of sustainability itself.

Sustainability In The Crucible

> *I speak of ecosophy: ecology blended with philosophy, wisdom related to action about people on Earth.*
> *-Arne Naess*

We may return one last time to the Earthrise and revisit the slippery concept of sustainability, now in the shared light of its character as value and fact, and viewed through the lens of bodily and earthly experience. I have repeatedly invoked the Earthrise image because it is difficult to imagine a single symbol that better illustrates what is at stake in thinking about sustainability. Some have suggested that the image is too abstract, too distant, even disorienting (for examples, see Poole 2009, pp.167-168). But they are wrong, or at best, they are only half right. Abstraction, distance, and disorientation each have their place in the plenum of experience. And the Earthrise is, after all, the image of our place in the cosmos. This Earth is our only home, and its visage could be, and arguably should be, the defining image of this new century; just as sustainability, one hopes, might become both this century's defining value and the new millennium's defining fact. Bearing in mind the image of Earth, then, first gifted to us only four decades ago, after more than 400 centuries of human experience, and nearly 4,000,000 millennia of earthly life, we may ask again: What does sustainability mean?

Sustainability is about many things, but it is clearly, at least for us, about nature, experience, and the human place in the living Earth. And this is no pernicious anthropocentrism. At worst, it is a rather unsurprising 'anthropometrism,' if you will, just a particular species predictably and sensibly taking its first and best measure on the basis of its nearest and dearest concerns. Think again of environmental ethics and earth system science, and this is easy enough to see. Environmental ethics, with its emphasis on values and obligations, helps us to see in various ways that we must ask again and again the question of our earthly

23 Mark Johnson, *The Meaning of the Body: Aesthetics of Human Understanding* (Chicago: University of Chicago Press, 2007), 31.

participation. We must ask for the sake of future generations, for the sake of endangered species, for the sake of the oppressed, for the sake of social and ecological stability, for the sake of security, for the sake of human dignity, and even for the sake of Earth itself, to name but a few of the stakes. Earth system science and geophysiology, with their emphasis on facts and explanations, help us to understand how we may ask anew the question of our earthly belonging. We may ask because we now know that the whole planet is a single dynamic and evolving entity, and, like any complex adaptive system, Earth is vulnerable. Systems science helps us to think like anatomists and physiologists, to understand that much like the parts of our own bodies, the parts of the whole Earth are so tightly, intricately, and subtly interconnected, and our understanding of the connections among them still so limited, that at least within any humanly relevant timeframe, the earth community's vulnerability is tantamount to our own. And what of experience itself? The ever-evolving nature of our earthly experience helps us to see why we ask at all. We ask because we are curious, because we care, because we ought to, because it is beautiful to wonder. And surely we ask because we can.

All such wherefores and whats and whys must find their roots and bearing in experience, lived, meaningful, embodied, and inextricably earthly. For sustainability is finally both implicate of and imperative for all earthly experience, past, present, and future.

Thus sustainability ought not to be conceived as a simple matter of changing our minds about the human place in the broader fabric of nature. Nor is it simply about developing new environmental values and putting them into practice. Nor can it be a simple matter of improving our understanding of the functioning of the whole Earth and of its many parts, and then attuning our behavior (and perhaps tuning Earth's behavior, if we dare to take the geoengineering option) in such a way as to attain some 'optimal' dynamic equilibrium. Important as these latter philosophical, ethical, scientific, and technical tasks may be, if we are to succeed at any of them, let alone all of them, we must somehow manage to transform our experience. For lived, meaningful, embodied, earthly experience is the ground of all understanding and all action. Nothing will change if we do not change our experience.

This seems a tall order, but it is not so difficult as it may at first appear. Our experience changes all the time, sometimes by default, sometimes by accident, sometimes by choice, and often by way of a bit of each. Like all living things, we humans are dynamic and active beings, not static objects. Much like Earth itself, we are far more processes than states, and this even if there are moments when we may and when we must pause to ask just where we are and just what we hope to become. Like experience itself, the relation between humankind and the broader earth community is a continuous and always evolving task. So the question of sustainability properly posed concerns whether and to what extent we can more meaningfully engage the intricate web of processes of earthly becoming. And whether we can do so in such a way as to enhance in ourselves and in others some lived sense of earthly belonging. And whether we can do so in such a way as to encourage in ourselves and in others some bodily impetus to earthly participation.

And thus whether we can do so in such a way as to contribute to the present and future flourishing of the whole earth community.

Perhaps most important and most challenging, we must undertake this task right here, right where we are. No matter how worldly our sensibilities, no matter how global our sensitivities, we are always *somewhere* here on the good Earth. It is only from some particular place on Earth that creatures like us can effectively change their experience.

All understanding is directly or indirectly grounded in experience, lived, meaningful, embodied, earthly. Our individual and collective experience unfolds as we press on in a particular environment, within a particular milieu, partially of our own making, partially made by other creatures and powers, of which and by which we are wholly (though not solely) made. Thus our concepts, if they are to be valuable *and* valid *and* vital, must find their roots in our shared earthly experience. And so it must be with the concept of sustainability.

Conclusion: Sustainability As Participatory Belonging

> *You have two things to lose, the true and the good; and two things to stake, your reason and your will, your knowledge and your happiness; and your nature has two things to shun, error and misery. Your reason is no more shocked in choosing one rather than the other, since you must of necessity choose. This one point is settled. But your happiness?*
> *—Blaise Pascal*

C. S. Lewis once quipped something to the effect that if all the world needed was a few more good ideas and a little more good advice, he could have things straightened out in about an hour. Sustainability is not just another good idea or another bit of good advice. The value of sustainability does not obligate; it only orients. And the fact of sustainability as such is neither good nor bad; it just is. It's a question of how we discern the relevant and right conduct, in light of what we know, and grounded in our lived, meaningful, embodied experience here on Earth. It's how we flesh it all out in our practical choices that counts. At times we may even need to choose against the force of some better argument, since the logic of experience does not always accommodate the logic of our favored ideas and our best advice. If we are to negotiate effectively the social and environmental difficulties we face in the coming decades and centuries, a critical mass of persons around the world will need to act upon an experientially grounded awareness of our belonging as earthly beings amidst myriads of other earthly beings. We will need to recognize the relevance and the rightness and the efficacy of a more participatory understanding of our place in the broader earth community.

It is not enough just to read and think and talk about what nature means, to sit back and ponder big environmental questions and agree that nature is all of this, and we are all so much a part of it, and isn't that just wonderful. The harder task has to do with becoming acquainted with nature, or becoming reacquainted in the case of the many who are surely feeling out of touch. Still and always, again and again, we must remake our place in the community of the living Earth. We

must each somehow encounter nature, meet our environment face to face, and experience ourselves within it and it within us, wherever we are on Earth—city or suburb, farm or forest, classroom or cubicle or corner office, sprawling slum or rising flood plain or encroaching desert or melting permafrost.

The relation between humankind and Earth is not a condition. It is an achievement. Our task is to achieve some living and meaningful and bodily sense of this Earth, our home. Our challenge is to achieve a sense of what it is and why it matters, of where we fit in and what we ought to do and how we might manage to do it. Our choice must be to turn earthward and see once and for all that we are participants and that we do belong. Perhaps our greatest achievement will be to act together upon this blinding glimpse of the obvious.

We will achieve none of this if we do not transform our experience of and with and in this good and living Earth. Thus beneath any definition of sustainability worth its salt, and behind any specific prescriptions we might proffer, lies this perhaps singular implicate and imperative of that first glimpse from above: *we must cultivate our experience in such a way as to preserve the prospects for future generations of earthlings to cultivate theirs*. And as experience ceaselessly reminds us, we are never obligated to do the impossible. To know that we must is to know that we can.

References

Dawkins Richard 1976. *The Selfish Gene*. Oxford: Oxford University Press.

———. 1982. *The Extended Phenotype: The Long Reach of the Gene*. Oxford: Oxford University Press.

Edwards, Andres R. 2005. *The Sustainability Revolution: Portrait of a Paradigm Shift*. Gabriola Island, BC: New Society Publishers.

Gendlin, Eugene 1999. *Experiencing and the Creation of Meaning: A Philosophical and Psychological Approach to the Subjective*. Evanston: Northwestern University Press.

Hawken, Paul 2007. *Blessed Unrest: How the Largest Movement in the World Came into Being and No one Saw It Coming*. New York: Viking Press.

Harding, Stephan 2006. *Animate Earth: Science, Intuition, and Gaia*. White River Junction, VT: Chelsea Green Publishing Company.

Hull, R. Bruce 2006. *Infinite Nature*. Chicago: University of Chicago Press.

Jay, Martin 2005. *Songs of Experience: Modern American and European Variations on a Universal Theme*. Berkeley: University of California Press.

Johnson Mark 2007. *The Meaning of the Body: Aesthetics of Human Understanding.* Chicago: University of Chicago Press.

Kirchner, James W. 1991. The Gaia Hypotheses: Are They Testable? Are They Useful?. In Schneider, Stephen H. and Boston, Penelope J., eds. 1991. *Scientists on Gaia*. Cambridge, MA: MIT Press, pp. 38-46.

Leder, Drew 1990. *The Absent Body*. Chicago: University of Chicago Press.

Lovelock, James 1973. The Gaia Hypothesis. Reprinted in Margulis, Lynn Matthews, Clifford, and Haselton, Aaron eds. 2000. *Environmental Evolution: Effects of the Origin and Evolution of Life on Planet Earth*. Cambridge, MA: MIT Press.

———. 1979 (reissued, with a new preface, and corrections 2000). *Gaia: A New Look at Life on Earth*. Oxford: Oxford University Press.

———. 1988. *The Ages of Gaia: A Biography of Our Living Earth.* Oxford: Oxford University Press.

———. 1991. Geophysiology: The Science of Gaia. In Schneider, Stephen H. and Boston, Penelope J., eds. 1991. *Scientists on Gaia*. Cambridge, MA: MIT Press.

———. 2006. *The Revenge of Gaia: Earth's Climate Crisis and the Fate of Humanity.* Oxford: Oxford University Press.

———. 2009. *The Vanishing Face of Gaia: A Final Warning*. Oxford: Oxford University Press.

Margulis, Lynn 1998. *Symbiotic Planet: A New Look at Evolution*. New York: Basic Books.

Margulis, Lynn and Sagan, Dorian 1986. *Microcosmos: Four Billion Years of Microbial Evolution*. Berkeley and Los Angeles: University of California Press.

———. 1995. *What is Life?*. Berkeley and Los Angeles: University of California Press.

Margulis, Lynn, Matthews, Clifford, and Haselton, Aaron eds. 2000. *Environmental Evolution: Effects of the Origin and Evolution of Life on Planet Earth*. Cambridge, MA: MIT Press.

Moore, Berrien, Underdal, Arild, Lemke Peter, Loreau Michel, 2001. *Amsterdam Declaration on Global Change*. Earth system science Partnership. http://www.essp.org/index.php?id=41 (last accessed: 26 June 2009)

Morange, Michel 2008. *Life Explained*. Translated by Matthew Cobb and Malcolm DeBevoise. New Haven: Yale University Press.

Norton, Bryan G. 2005. *Sustainability: A Philosophy of Adaptive Ecosystem Management*. Chicago: University of Chicago Press.

Poole, Robert 2008. *Earthrise: How Man First Saw the Earth*. New Haven: Yale University Press.

Rothenberg, David 1993. *Is it Painful to Think?: Conversations with Arne Naess*. Minneapolis: University of Minnesota Press.

Schneider, Stephen H. and Boston, Penelope J., eds. 1991. *Scientists on Gaia*. Cambridge, MA: MIT Press.

Schneider, Stephen H., Miller, James R., Crist, Eileen, and Boston, Penelope J., eds. 2004. *Scientists Debate Gaia: The Next Century*. Cambridge, MA: MIT Press.

Singer, Peter 2002. *One World: The Ethics of Globalization*. New Haven: Yale University Press.

Snyder, Gary 1990. *The Practice of the Wild: Essays*. San Francisco: North Point Press.

Volk, Tyler 2003. *Gaia's Body: Toward a Physiology of Earth*. Cambridge, MA: MIT Press.

Ward, Peter 2009a. *The Medea Hypothesis: Is Life on Earth Ultimately Self-Destructive?*. Princeton: Princeton University Press.

———. 2009b. Gaia's Evil Twin. *New Scientist*. 20-26 June.

White, Jr., Lynn 1967. The Historical Roots of Our Ecological Crisis. White, Jr., L.. *Science* 155(3767):1203.

Williams, George Ronald 1996. *The Molecular Biology of Gaia*. New York: Columbia University Press.

World Commission on Environment and Development 1987. *Report of the World Commission on Environment and Development: Our Common Future*. http://www.un-documents.net/wced-ocf.htm. (Last accessed: 10 July 2009)