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From Shallow To Deep Ecological Philosophy

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In outlook as in name, the philosophers of the Deep Ecology Movement acknowledge a debt to the science of context. Ecology's "skin out" perspective (contrasted with physiology's "skin in" reductionist insights) directs attention to the importance of a peripheral world and the "circumstances" of things. The implications correct an ancient mistake, broadening and deepening philosophy. "Philosophy has traditionally refused to acknowledge or directly face up to the physical existence of Earth . . . [and now] is philosophy's opportunity to rectify its greatest error: the rejection of the natural world as it is experienced concretely in real life" (Hargrove 1989).

Seventy years ago the same opinion was expressed by Will Durant (1926) and time has deepened his meaning: "Philosophy . . . must stay *on Earth* and earn its keep by illuminating *life*" (emphasis added). Here is the call for a true empiricism that values and embraces the reality of an animated Earth with all its aesthetic resonances, a call that ecology echoes. In this sense Naess, Sessions, Drengson, and others of their persuasion, are articulating a Deep Philosophy with ecological overtones, a new philosophy that opposes the abstract shallowness of the old (see Drengson & Inoue 1995, for basic references to the literature of Deep Ecology ecosophy and its exponents).

As with every body of knowledge that parades under the prestigious banner of "science," ecology is limited in its ability to reveal the qualitative and the normative. Nevertheless values are expressed at the paradigmatic level—in theories, hypotheses and major concepts—where the greatest possibilities for synergy with philosophy lie and where, incidentally, scientists can make ethical choices as to their fundamental faiths, favoring a competitive view of the world or a synecologic-symbiotic world-view.

In this article I propose to turn a critical and immodestly personal searchlight on ecology and on the beliefs of some of its practitioners, thereby illuminating indirectly several shadowy aspects of Deep Philosophy. For example, from the perspective of ecology, how are we to understand "life?" Does a concern with "biodiversity" go far enough? What do the terms "ecosystem" and "ecocentric" mean? For that matter, what is "ecology?" The term itself needs clarification because "ecology" can be understood as both scientific viewpoint and as field-of-study. Although this starting point may seem irrelevant, preliminary brush clearing is necessary if questions such as those above are to be examined in the light of an ecological Weltanschauung.

Scientific Viewpoints and Ecology

The "what, how, where and when" questions familiar to public speakers have been formalized by biologists into seven incommensurate "points of view" applicable to the study of organisms and other physical objects (Rowe 1961). These are morphology and anatomy ("what is its form, from the outside and from the inside?"), physiology and ecology ("how does it work, and what are its interactions with what surrounds it?"), chorology and chronology ("where is it in space, and what is its development through time?"), and systematic or taxonomy ("who are its relatives?"). All other queries can be shown to be variants or combinations of the above. For example, questions about

structure and composition are anatomical; questions about genetics and genesis are physiological-chronological. The “why” question, positing purpose, is not asked although it lies hidden in the ecological outlook.

Physiology and ecology are the twin functional or process-oriented viewpoints earlier referred to as “skin in” (inward looking) and “skin out” (outward looking). When questioned, the natural-born physiologist says, “I’ll look into it; in/quire, in/vestigate;” the natural born ecologist says, “I’ll find out about it; ex/amine, ex/plore.” To “find out about” any object in the ecological sense calls up one of two different methodological approaches. In the first, the object to be studied is maintained at the center of interest as a unity opposed to an unorganized “factored” environment of light, heat, moisture, nutrients, and other provisions. This is the approach of traditional biological ecology, focused on organisms functioning in “resource” habitats. Its mirror image in social thinking is “resourcism,” a narrow focus on humans as the center of a fragmented world, surrounded by stacks of God-given though imperfect assets crying out for development, management, stewardship.

In the second methodology the object is conceptualized as a functional part of more inclusive levels of organization, as an active constituent of larger unities which to some extent guide and constrain its activities. The appropriate physiological question is still the reductionist, “How does this thing function?” But the appropriate ecological question is holistic: “What is this thing’s function (role, niche, *purpose*) *within the larger system that comprehends it?* Here the ecological viewpoint places each “system” (such as a cell, an organ, an organism or any terrarium-like or aquarium-like piece of Earth) as a subset of a larger enveloping “system” wherein the relationship is that of part to whole, of thing to the larger medium that encapsulates it. This second viewpoint is more recent than the first and less popular in academic circles, its purview broader than organisms and Biology Departments. Diffused into social thinking it conveys supportive though nebulous ideas about the importance of “community,” “ecosystem” and “biosphere” concepts that evoke the other dimension of “ecology,” viz. its subject matter.

Ecology as Fields of Study

Open most ecology textbooks and the “fields of study” judged legitimate are exposed.

Usually first attention is paid to individual organisms (autecology), then to species and groups of similar individuals (population ecology), then all organisms found occupying the same milieu (community ecology) and finally at the end of the book the ecosystem as “community plus abiotic resources” or “community plus environment.”

In parentheses, the textbooks of Eugene Odum are an exception. As early as 1953 he defined ecology as “the study of the structure and function of nature” and accorded first place to the discussion of ecosystems: “the largest functional units in ecology.” Despite his statement that “the entire biosphere may be one vast ecosystem,” few ecologists accepted the logic of “whole systems.” The fact of complexity in the subject matter, plus the academic necessity of focusing on simple problems that bring quick dividends to the individual in the form of papers judged publishable by peers, has ruled against it. Hence whole journals of ecological research are devoted to articles on communities and populations, the latter justified and enhanced by redefining “function” as Darwinian “adaptation.”

The prevalent concept of ecosystem continues to be “community plus environment” with research focused on the utilitarian aspects of organisms, or the effects of organisms on such “resources” as soil and water: Do the bomb’s radio-nuclides end up in the food chain and in people? How much photosynthate (net primary production) can be harvested from land and water? What is the sediment load and water yield from forested versus

non-forested watersheds and how can water yield be increased by manipulating vegetation? Both Hagen (1992) and Golley (1993) have traced the development since Darwin's time of the idea of ecosystem as a unit of nature characterized by energy flow, nutrient cycling, successional stages and productivity, noting how the practical concerns of the military and various other branches of government spurred the funding of ecosystem research. That ecosystems might be more than serviceable "functional" entities consisting of organisms (important) plus an energy-providing and nutrient-providing environment (relatively unimportant) has never been seriously considered in ecological science.

When arrived at by summation, the ecosystem concept can be anything, everything or, to some academics, nothing. The error is in the additive approach, building from individual to population to community and, finally, to ecosystem which emerges as last in order of importance, a so-called "convenient artifice" or "heuristic device" vaguely complementing and extending the biotic community compared to which it is less "real." On a more sophisticated level, Lovelock (1988) and Margulis (1995) have attempted to build the "living world" out of bacteria, rather than bacteria out of a living world. Again the *a priori* biological, organism-centered bias is evident. The planet and its sectoral parts whose air, land and water comprise every creature's evolutionary source and outer supportive matrix (matrix-mater-womb-mother) gets short shrift.

Earth-Sector Ecosystems

Suppose that the importance of Earth relative to organisms had been earlier recognized. Then four hundred years of science might have been devoted to understanding the grandest system with which humans are in direct contact: the planetary ecosphere. Examination from the physiological viewpoint, asking "How does it function; how does it work?" would have required a mental anatomizing of Earth in order to honor its magnificent complexity and to understand its structure-composition, because anatomy is the clue to function. As the word per-form-ance suggests, function is what form does over time; function is literally "read" from things happening. Scientists *have* today arrived at the global question of Earth's performance, prodded by the Gaia hypothesis and such research programs as the International Geophysical-Biological Program. But the question remains: At the sub-global level, what "mental anatomizing," what divisions of the ecosphere are relevant to such air-breathing, water-drinking, food-eating and land-dwelling creatures as we? The logical answer is *sectors of the ecosphere* at any chosen scale: air above land-water with organisms clustered where the gas, liquid and solid phases *interface* (Rowe 1992). This, in the words of Leopold (1949) with the addition of air-atmosphere that neither he nor the Bible's genesis story recognizes—is the "land community" to which humans belong. The more inclusive term is "terrestrial ecosystem" and the key to its logical definition and mapping lies in Earth's landforms and water forms (Bailey in press).

By this route an explicit and tangible concept of ecosystem is derived by division of the ecosphere "from the top down," as compared to the diffuse and variable concept obtained by addition "from the bottom up." "Top down" division yields Earth-centered units of nature, surmounting the conventional organism-centered biocentricity of the "bottom up" approach. It engenders geoecosystems that are substantial as well as functional, rather than inexplicit bio-ecosystems (Rowe & Barnes 1994). It gives substance and real-world meaning to terms such as "ecodiversity" and "ecocentrism."

A second line of logic also leads to the idea of ecosystems as variable size-scaled sectors of the ecosphere. Suppose the reality of the world is conceived as systems within systems in a hierarchy of containment, like fitted Chinese boxes or Russian dolls within dolls. One starts at some low level, say a functional *cell*, observing that its inner structural parts are joined or articulated in such a way that it metabolizes and thus maintains itself (by *autopoiesis*, literally "self-making"). The cell's enclosing functional system is the

metabolizing *tissue*, in turn enclosed in the metabolizing *organ* and this in turn in the metabolizing *organism*. Note that each autopoietic level of integration is composed of lower levels and is itself a part of higher levels; each level has a physiology that refers to its constituent levels below and an ecology that relates it to the levels above.

Now ask, what is the entity *above the organism* that analogously shows articulated structure, that functions metabolically and exhibits autopoiesis? Logic points to volumetric place-specific ecosystems. Why not community or population? Because neither is a fully functional (metabolic) entity; neither exhibits articulated structure nor autopoiesis. As aggregates, communities and populations can be counted, classified and to some extent studied as interbreeding individuals—which is their practical use—but they are more abstract than organisms and geographic ecosystems; they are taxonomic categories based, respectively, on juxtaposition in space and membership in a particular species or sub-species. The population of a particular species or sub-species trading genetic material can be a *center of interest* to evolutionary biologists but it can never be a center of understanding when bereft of its sustaining ecosystem. Therefore, the level of integration above organism is the Earth space that surrounds and includes it (singly or with its shared population and community members); i.e. the sector of the ecosphere that includes and supports organisms, the internally articulated air-soil-water-organism “geo-ecosystem” that miraculously generates and maintains life.

To summarize thus far: the most “real” or least “abstract” fields-of-study that logic reveals, are the organism (within its surrounding ecosystem) and the ecosystem (within its larger surrounding ecosystem), each of the latter a complete piece of dynamic Earth at some geographic place. Ecosystems so conceived can be esteemed and studied from the seven scientific viewpoints previously listed. Not so for populations and communities. They lack the internal articulation and hence the structural-functional attributes of metabolizing autopoietic beings. Communities of creatures, including humans, are “brought to life” only by including with them the sustaining Earth-matrix of air, landform, soil and water; i.e. by conceiving them as organic parts of the holistic realities that are ecosystems.

Implicit here is a devastating criticism of sociology and communitarian politics that will “improve” the human condition by sole attention to populations, societies and social ills. Alarmed by the fact that the barbarians are not hammering on the frontier walls but are already here governing us, Macintyre (1981) called for “new forms of community” to sustain the moral life and “survive the coming ages of barbarism and darkness.” Such fervent hopes seemed realizable before the Age of Ecology. But now we know that groups of like-minded people banded together—the traditional community—cannot make it alone. The community with survival value can never again be conceived as a people-only free-standing entity, able to weather the storms generated by humanistic arrogance. Only Earth ecosystems in which humans are cooperating, serving parts can achieve long-term health and sustainability.

Where Does “Life” Reside?

The hierarchical series organ-organism-ecosystem-ecosphere represents a scale of increasing complexity and creativity. The last member, the ecosphere, is the leading candidate for embodiment of the organizing principle called “life.” What gives life to the cell? The living organ that is its surrounding environment. What give life to the organ? The living organism within which it is embodied. What gives life to the organism? The surrounding living ecosystem and the global ecosphere.

The October '94 issue of *Scientific American*, titled “Life in the Universe,” presented a state-of-the-art account of how planet Earth and organic earthlings—creaturely relatives and ourselves—came to be. Throughout the text the words “organisms” and “life” were used as synonyms. Two contributors made a stab at clarifying what the second concept

might or might not mean. Robert Kates suggested that “life is simply organic matter capable of reproducing itself,” or “the mix of living things that fill the places we are familiar with.” More circumspect, Carl Sagan was content to falsify current definitions, implying that a satisfactory meaning for “life” has yet to be found.

Organisms can be “alive” one moment and “dead” the next with no quantitative difference. The recently deceased organism has lost none of its physical parts yet it lacks “life”—an unknown *quality* of organization (perhaps that mystery called “energy?”) but not the organization itself. A still stronger reason exists for not equating “life” and “organisms.” The latter only exhibit “aliveness” in the context of life-supporting systems, though curiously the vitality of the latter has mostly been denied. By analogy, it is as if all agreed that only a tree trunk’s cambial layer is “alive” while its support system—the tree’s bole and roots of bark and wood that envelops and supports the cambium—is “dead.” Instead we perceive the whole tree as “alive.”

The separation of “living” organisms from their supportive but “dead” environments is a reductionist convention that ecology disproves. Both organic and inorganic are functional parts of enveloping ecosystems, of which the largest one accessible to direct experience is the global ecosphere. To attribute the organizing principle “life” to Earth—to the ecosphere and its sectoral aquatic and terrestrial ecosystems—makes more sense than attempting to locate it in organisms *per se*, divorced from their requisite milieu. The aquatic ecologist Lindeman (1942) who pioneered examination of lakes as energetic systems adopted the ecosystem concept because of the blurred distinction between “living” and “dead” in the components of the Minnesota lakes he studied.

The Biological Fallacy, equating organisms with life, is the result of a faulty inside-the-system view (Rowe 1991). Pictures of the blue-and-white planet Earth taken from the outside are intuitively recognized as images of a living “cell.” Inside that “cell,” cheated by sight, people perceive a particulate world separable into important and unimportant parts: the “organic” and the “inorganic,” “biotic” and “abiotic,” “animate” and “inanimate,” “living” and “dead.” Religions, philosophies and sciences have been constructed around these ignorant taxonomies, perpetuating the departmentalization of a global ecosystem whose “aliveness” is as much expressed in its improbable atmosphere, crustal rocks, seas, soils and sediments as in organisms. When did life begin? When did any kind of creative organization begin? Perhaps when the ecosphere came into existence. Perhaps earlier at time zero and the Big Bang.

Important human attitudes hinge on the idea of life and where it resides. If only organisms are imbued with life, then things like us are important and all else is relatively unimportant. The biocentric preoccupation with organisms subtly supports anthropocentrism, for are we not first in neural complexity among all organisms? Earth has traditionally been thought to consist of consequential entities—organisms, living beings—and their relatively inconsequential dead environments. What should be attended to, cared for, worried about? The usual answer today is “life” in its limited sense of “organisms,” of biodiversity. Meanwhile sea, land and air—classified as dead environment—can be freely exploited. In the reigning ideology as long as large *organisms* are safeguarded, anything goes.

We demean Earth by equating “life” and “organisms,” then proving by text-book definition that Earth is dead because not-an-organism. In this way mental doors are barred against the idea of liveliness everywhere. Certainly Earth is not an organism, nor is it a super organism as Lovelock has proposed, any more than organisms are Earth or mini-Earth. The planetary ecosphere and its sectoral volumetric ecosystems are SUPRA-organismic, higher levels of integration than mere organisms. Essential to the *ecocentric* idea is assignment of highest value to the ecosphere and to the ecosystems that it comprises.

Note the use of “ecosphere” rather than “biosphere,” the latter usually defined as a “life-filled” (read “organism-filled”) thin shell at Earth’s surface. The meaning of “ecosphere” goes deeper; it is *Earth to the core*, comprising the totality of gravity and electromagnetic fields, the molten radioactive magma that shifts the crustal plates, vulcanism and earthquakes and mountain building that renew nutrients at the surface, the whole dynamic evolving “stage” where organisms play out their many roles under the guidance of the larger whole, shaped at least in part by the “morphic fields” of the living Gaia (Sheldrake 1991:162).

In different times and places the source of life has been attributed to the air, to soil, to water, to fire, as well as to organisms. As with the blind men touching the elephant, each separate part has been the imagined essential component of the whole Earth. Now that the planet has been conceptualized as one integrated entity, can we not logically attribute the creative synthesizing quintessence called “life” to *it*, rather than to any one class of its various parts?

When life is conceived as a function of the ecosphere and its sectoral ecosystem the subject matter of Biology is cast in a bright new light. The pejorative concept of “environment” vanishes. The focus of vital interest broadens to encompass the world. Anthropocentrism and biocentrism receive the jolting shock they deserve. The answer as to where our preservation emphasis should center is answered: Earth spaces (and all that is in them) first, Earth species second. This priority guarantees no loss of vital parts.

The implications of locating animation where it belongs, of denying the naive “Life = Organisms” equation, are many. Perhaps most important is a broadening of the Schweizerian “reverence for life” to embrace the whole Earth. Reverence for life means reverence for ecosystems. We should feel the same pain when the atmosphere and the seas are poisoned as when people are poisoned. We should feel *more* pain at the destruction of wild ecosystems, such as the temperate rain forest of the West Coast, than at the demise of *any* organism, no matter how sad the latter occasion, because the destruction of ecosystems severs the very roots of evolutionary creativity.

System Hierarchies and Purpose

In 1950 von Bertalanffy outlined General Systems Theory, stating that “Reality in the modern conception appears as a tremendous hierarchical order of organized entities. . . . Unity of Science is granted, not by a utopian reduction of all sciences to physics and chemistry, but by the structural uniformities of the different levels of reality.” Thus the structural similarities of the many different subordinate and superordinate systems makes possible the formulation and deduction of principles valid for systems in general.

Consider now the proposed organized hierarchical systems-within-systems: the ecosphere, the geographic ecosystem, the organism, organ, tissue and cell. All such hierarchies are abstract conceptual schemes devised by humans and imposed on nature, and clear thinking demands that the different levels be coherent and congruous. Medawar (1967), the Nobel laureate, criticized Arthur Koestler for building an illogical hierarchy of “holons” from non-homogeneous elements; shaky logic of this kind, he said, can be mischievous. Note that the proposed hierarchy is one of containment, logically consistent in that it embodies three-dimensional, internally structured objects which are different levels of integration related as wholes and parts. Populations and communities are excluded to avoid Medawar’s criticism.

The philosopher Feibleman (1954) attempted to systematize the structural uniformities and inter-relationships of systems in hierarchies. One of his pertinent “laws of the levels:”

The *mechanism* of any level is found at lower levels (the parts), while the

purpose of any level is found at levels above (the wholes).

Consider an organ, such as the human heart. Its mechanism (how does it function?) is found anatomically and physiologically through the tissues and cells of which it is composed and what they do (contract, expand, etc.) Its purpose (what is its function?) is found ecologically by reference to the role it plays in the human body of which it is an essential part. In today's society, where mastery and management are prized, mechanism takes priority over purpose because the levers of power over nature lie in knowledge of mechanisms and their controls. This is why science—society's chief tool of control—is strongly reductionist, why physics gets the big research grants, why molecular biology is preferred to ecology.

Applying Feibleman's logic to people within Earth's ecosystems, the *mechanisms* of human beings are disclosed through anatomy and physiology, through internal form and function. Thus medicine promises to cure diseases and set everyone right by manipulations at the organ, tissue, cellular and DNA levels. The *purpose* of the human being must be found ecologically, in the role played vis-à-vis ecosystems and the ecosphere, *not* in the narrower roles played vis-à-vis family, ethnic group or society-at-large. By analogy with the heart-body relationship, the purpose of people is to keep Earth healthy, sustaining life at the global level. Roszak (1992) champions this ecological view, suggesting the corollary: human health, mental and physical, depends on establishing a right relationship with Earth.

The conclusions in shorthand form: Earth before organisms. Ecosystems before people. Ecosphere not biosphere. Ecocentrism not biocentrism. Ecodiversity not biodiversity. These beliefs are arguably based in "science." I take them to be empirical truths whose implications go well beyond present abilities to put them into practice, yet with power to command philosophical commitment and modify political policies and actions. Perhaps they will never counteract the grandiose self-deception that sets *Homo sapiens* apart from all other species. But at the least they should help in subverting the cultural anthropocentrism and individual selfishness that plague the human race.

Ethics by Extension or Ethical Ecosphere?

As heirs to several centuries of rampant individualism—culminating today in the frenetic pursuit of self-esteem and personal authenticity—most of us will be burdened throughout our lives with an indissoluble kernel of egocentrism and, by extension, anthropocentrism. This should not deter people of good will from proclaiming the truth that, relative to Earth, humanity is not the center. A few centuries ago, with some reluctance, people admitted that the planets, sun and stars did not circle around their abode. One hundred years ago intelligent people likewise admitted that, yes, humans are not specially created but are sister and brother to the animals. In short, our thoughts and concepts though irreducibly anthropomorphic need not be anthropocentric.

Wherever our sense of greatest importance lies, there also will our ethics be. The attempt to build ethical concern for the ecosphere from the inside out, by add-ons starting with our own self importance and that of the human race, may soothe consciences for a little while, but it will be the kiss of death for wild nature. Aldo Leopold has been the influential exponent of ethics-by-extension, rationalized as a Darwinian expedient for human survival. Unfortunately this approach only strengthens anthropocentrism, making it certain that land, air, water and other organisms will always in the crunch take second place to the welfare of self, family and friends. More sensible, but more difficult, is the ecocentric ethic that confers highest valuation on the eco sphere which, by proxy, bestows ethical merit and concern on its subsidiary contents according to their compliance and cooperation. The self finds its ecological values in the welfare of the non-self. Thus ecological ethics—guidelines for human behavior here on Earth—are derivative, founded in care for Earth and all its contents (Rowe 1990).

The Deep Ecology Platform

From the Earth-ethic perspective and for purposes of discussion the first four articles of the Deep Ecology Eight-Point Platform (Drengson & Inoue 1995) are revisited, with explanatory comments.

1. “The well-being and flourishing of human and nonhuman Life on Earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.”

Rephrase: The well-being and flourishing of the living Earth and its many organic/inorganic parts have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.

Comment: If the idea of the living Earth is stressed, people may in time come to look on “their environments” as alive, deserving the same attention, affection and care as charismatic animals and plants.

2. “Richness and diversity of life forms contribute to the realizations of these values & are also values in themselves.”

Rephrase: Richness and diversity of Earth’s ecosystems, as well as the organic forms that they nurture and support, contribute to the realization of these values & are also values in themselves.

Comment: In ecological parlance, diversity includes richness (number of different things, such as species, per unit area) as one of its dimensions, though the two are usefully paired for emphasis. A “marsh/duck” example may explain the suggested change. Over long evolutionary time, marsh ecosystems brought forth ducks as well as a swarm of other semi-aquatic organisms. From this the argument follows that diversity of marsh ecosystems is more important than the diversity of ducks; marshes can exist without ducks but ducks (now in decline), cannot exist without marshes. Similarly, people in today’s unconscionable numbers are decreased (qualitatively if not yet quantitatively) as their thoughtless activities ravish the diversity of Earth’s ecosystems.

3. “Humans have no right to reduce this richness and diversity except to satisfy vital human needs.”

Rephrase: Humans have no right to reduce the diversity of Earth’s ecosystems and their vital constituents, organic and inorganic.

Comment: The original ending phrase, “except to satisfy vital human needs,” might be interpreted as a giveaway. Satisfying human needs must be balanced against maintaining ecodiversity. For example, the conventional practices of industrial agriculture destroy ecosystem diversity (destroying richness of species, richness of soil types, richness of minor landforms, richness of water regimes). Such practices can only be justified, if at all, by the preservation of large areas of native grassland, woodland, and wetland representative of each agricultural region’s natural suite of ecosystems. At reasonable population levels (a world of less than one billion people), vital human needs could be satisfied without obliterating all the sun-powered prairies, rain forests, coral reefs, etc., with their evolving organic/inorganic constituents.

4. “The flourishing of human life and cultures is compatible with a substantial decrease of human population. The flourishing of nonhuman life requires such a decrease.”

Rephrase: The flourishing of human life and culture is compatible with a substantial decrease of human population. The creative flourishing of Earth and its multitudinous nonhuman parts, organic and inorganic, requires such a decrease.

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