Shifting Paradigms: From Technocrat to Planetary Person[1]

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ABSTRACT

This essay examines and compares two paradigms of technology, nature, and social life, and their associated environmental impacts. I explore moving from technocratic paradigms to the emerging ecological paradigms of planetary person ecosophies. The dominant technocratic philosophy's guiding policy and technological power is mechanistic. It conceptualizes nature as a resource to be controlled for human ends. Its global practices are drastically altering the integrity of the planet's ecosystems. In contrast, the organic, planetary person approaches respect the intrinsic values of all beings. Deep ecology movement principles give priority to community and ecosystem integrity. These deep ecology movement principles guide the design and applications of technology by principles following from ecological understanding. I describe this shift in philosophical paradigms and how it affects our perceptions, values, and actions. [deep ecology principles, technology and nature, technocratic paradigms, ecological approaches, ecological wisdom]

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THE PROBLEMS

We are reminded daily of the extent and seriousness of environmental problems. The episode at Three Mile Island, the recent discoveries of the extensive problems caused by irresponsible disposal of toxic wastes, such as at Love Canal in New York, the accelerating oil and energy prices, the Exxon Valdez, the Gulf oil spill, and the threat of nuclear accidents and war are only a few examples. Since the first Earth Day in 1970, increased public attention has focused on three major areas: soaring human population, increasing pollution and resource depletion, and loss of biodiversity. There is thinning of the ozone shield and increasing global warming.

Numerous reform measures have had limited success. Environmental quality has declined in recent decades, especially since 2000. We have not made significant progress. Many areas where progress seemed possible have recently come under renewed pressures. Decisions are made on narrow political and economic grounds, rather than on environmentally sound principles which are economically advantageous to most of us in the long run.

Various analyses are offered about what should be done to protect the environment and human welfare from the hazards of modern technologies. These technologies have given us some comfort and enjoyment. They have made possible the development of human skills on a scale never before possible. However, they are perceived by many as Frankenstein monsters loose among us. In films, novels, art, poetry, and even in the scientific establishment, there are voices of disquiet. There is fear that our society is controlled and imprisoned by its own technological and economic creations. There is discussion of alienation and anomie, the loss of community, and the impersonal character of machine-like bureaucracies. Early on some writers, for example Robert Heilbroner in *An Inquiry into the Human Prospect* (1974), saw virtually no chance that we can avoid major disasters, given our global direction. Heilbroner suggests that to control these problems will require powerful central governments with tight controls incompatible with democracy. Our technologies seem to have an alien, monster-like character. In our culture we seem of two minds about them. We welcome their advantages, but we also acknowledge their shortcomings. During the last 10 years we have become more aware of the dual nature of our Modern technology.

Analyses of the ecological crisis emphasize the inseparability of ourselves from the environment. Norwegian philosopher Arne Naess distinguished between those who see the problems in isolated ways compatible with mild reform, and those who see the problems holistically, requiring a deep change in our values and ways of life. The latter approaches, according to Naess, should put our relationships with the ecosystems on a sound, co-evolving basis.[2] The essential features of the shallow ecology movement are its mild reformist character and its belief that the nonhuman world has *only instrumental value*. This shallow ecology movement supports business as usual. It is oriented towards the health and well-being of people in the advanced industrial nations. Supporters of the deep ecology movement, however, recognize the need for a fundamental shift to ecological paradigms of human–environmental relationships that recognize the interconnections of these living fields and processes. The deep ecology movement emphasizes the intrinsic value of all life and of diversity.[3] Movement supporters aim to create social systems that are diverse, symbiotic, compatible with natural ecosystems and diversity of living beings, and that support social justice and peace.

Deep ecological knowledge leads us to recognize that ecosystems are so complex that we will probably never completely understand them. Supporters of the movement humbly recognize human ignorance, and the need for cautious

development of technology practices. They seek to avoid the fragmentation and complication of human life that results from too great an emphasis on technological control. They recognize the importance of personal, cultural and biological diversity, since adaptation to specific places has different features and qualities.

I explore this shift in philosophical paradigms for our society so that we can avoid practices leading to serious environmental problems. How can we move to paradigms and practices that promote environmentally sound and sustainable human communities? I will use Thomas Kuhn's concept of paradigms to help make clear the almost unconscious role they play in conditioning our thought (Kuhn 1970). We tend to be captives of our metaphors, models, and their associated techniques. A creative, flexible approach requires that we can shift perspectives to more *appropriate practices* to solve these problems. We can become aware of our constraints *and* larger possibilities.

We organize and orient our lives by using various ideals, models, symbols, and metaphors. Myth weaves knowledge, aspirations, and skills together in an inter-subjective realm of image and symbol; it blends art and science in meaningful stories. Mythic symbols store and convey vast amounts of meaningful information and insight in concise form. This enables us to assimilate the collective experiences of our culture. Dominant paradigms are like forms of mythic understanding. For example, the technocratic paradigm has a powerful mechanistic image from which a large number of other subordinate paradigms and routines follow, such as methods of analysis, techniques, and the like. However, when pushed to its logical extreme as a sole basis for life, it undermines other important values of human life in the inter-subjective realm. This paradigm has reached its limits, as evidenced by the stresses between it and leading edge science, by its negative cultural effects, and by its impact on the environment. Our civilization needs to go through a major transition to post-industrial local cultures. Their exact shape is not known now, but it is possible to describe the main features of this shift.

Within organisms and communities, evolutionary information is processed, encoded and communicated in diverse ways. We inherit a repertoire from the past, but as we live we have to improvise. Life requires creative responses. Much learning is accumulated and passed on to the young by cultural means. This makes greater flexibility possible. However, it can be a form of mental conditioning resulting in lost flexibility. One antidote is a dose of Socratic skepticism humbly acknowledging our limitations and the relativistic character of our theories and languages.[4] Socratic wisdom is the art of open inquiry with full awareness. One aim in contrasting paradigms is to free our minds so that we can look at the world afresh. If we view paradigms (or models) as art (or literary) forms, we can see how to avoid conceptual rigidity. I will now describe the major features of two dominant paradigms or development philosophies I call the technocratic and the planetary person.

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PARADIGMS, SOME BACKGROUND

Thomas Kuhn points out that Western science did not develop only by means of simple accretion. It has gone through periods of deep rapid change followed by times of consolidation and linear growth, in which there is a subsequent elaboration on the theories and models created during revolutionary periods. Creative periods provide modes of explanation, methods, laws, theories, and instruments that govern or guide scientific orthodoxy during periods of non-revolutionary change. A *paradigm* is a constellation of models that defines, exemplifies, and illustrates the ideals and procedures of normal science during non-revolutionary times. Paradigms have limitations, and the ongoing work of normal science eventually leads to a breakdown of paradigms exposing their limitations. This engenders the creation of new paradigms.

Paradigms exist in every field of specialization. Students learn them when they study to be physicists, biologists, economists, psychologists, or philosophers. When the paradigms of a discipline are more productive in a given era than others, they tend to be used in other disciplines as well. Thus, paradigms of the physical sciences have come to be widely applied, not only in the natural sciences, but in the social sciences and, in limited ways in the humanities. In these fields there are also attempts to be precise and objective; experimental methods, quantification and analysis, methods modeled after the paradigms of the physical sciences, as these were defined by mechanistic and reductionist approaches to the world. Older, more holistic ways of thinking were supplanted by methods of analysis and experimentation that aimed at prediction and control. A positivistic orientation led to a fragmentation of our knowledge of Nature and human societies. However, the data and information developed by "hard" studies has, at the same time, tended to undercut the paradigms that guided their application. Thus, a paradigm shift is developing in more theoretically advanced studies. Today there are new cosmologies emerging that transcend the Modern machine models of reality.

When a major cultural activity, such as science, undergoes a paradigm shift, our perceptions change, since we interpret the world using the paradigms that are dominant. Paradigm shifts then, are not restricted to developments in science, but can extend to whole cultures.

My thesis is that our culture is undergoing, and is in need of, a *major paradigm shift*. The emerging paradigms can support deep ecology movement principles, and are more appropriate to the unity and the interrelatedness of the Earth, with its limitations and evolving ecosystems. This orientation will stimulate more fulfilling personal development. The emerging ecological paradigms or approaches I call the planetary person, the waning, older one is the technocratic paradigm.[5]

The spirit of inquiry and creativity especially comes alive during periods of shifting paradigms. We are more open to novelty and the multifarious complexity

of the world. We see new possibilities. Our lives take on added dimensions of significance. The openness of such times risks both conceptual confusion and a loss of conceptual orientation. Today one force driving our civilization toward fundamental change is confusion created by not understanding our own technological forces. This arises because science, art, and philosophy have been separated from daily life and are overly abstract. The older models no longer work as explanations for the process of technological development. Nor do they work for directing policy. We are overwhelmed by large amounts of information and high specialization. The older paradigm is no longer compatible with, nor able to coherently connect our vast knowledge in meaningful ways. Our experience of the world is fragmented, rather than united. We need new unifying insights enabling us to better understand human *and* ecosystem processes that are creatively self regulating, interconnected networks of ecological communities.

This discussion recognizes that within the two dominant outlooks there are subordinate, supporting practices and paradigms. I will often refer to the collective paradigms of each outlook in the singular as the technocratic and the planetary person paradigms. I note that major paradigms have sufficient resilience to survive cultural change. For example, organic paradigms have characterized philosophies in past cultures. This means that the current spiral of development is in some ways open to an infusion of older elements of Wisdom of the *Old Ways*. However, the emerging organic paradigms differ from older organic paradigms, because of more detailed and comprehensive knowledge of ecosystem processes, evolution, genetics, cells, matter-energy, planetary processes that inform the emerging paradigm. Nonetheless, features of earlier organic paradigms can be incorporated to give continuity over longer time spans. A waning paradigm is rarely totally rejected since aspects of it are incorporated in the new paradigms. So the paradigm of the technocratic outlook has useful but limited applications, just as Newtonian physics is still useful in an era of relativity and quantum physics.

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TECHNOCRATIC PARADIGM

Descartes' methods of inquiry and Bacon's idea of putting nature on the rack of questions, helped lay the foundations of Modern science and philosophy. Until recently Cartesian *philosophy of technique* dominated modern disciplines.[6] Philosophy has typically extended Cartesian analysis by formalizing modes of inquiry to resemble mathematics (understood sometimes as logic), or if it rejected some specific techniques, it retained the Cartesian "philosophy of technique." The fundamental idea is that proper application of right technique will in time yield solutions to any logical or practical problem. This emphasizes the uniformity of method and the character of the problems. We reduce phenomena to their component parts. We explain all wholes by reference to these parts and their external, measurable relationships. So conceived, technique sets the program for

technology, applied in uniform ways to production. Labor is divided so that each component need perform but one technique. It is easy to apply this idea to human life in general, including thought processes. Thus, ideas too have their simplest "parts." New ideas are the result of recombinations, just as new compounds are formed from the rearrangement of atomic elements. The whole universe begins to look like a complex machine with simple parts, that is, atoms.

A masterful technique has a power that is almost irresistible. It seems to simplify our problems and our lives. Unfortunately, the power of technique can become a substitute for understanding. To be sure, for a time concentration on technique expedites learning. However, all techniques have limitations. Moreover, complete mastery in some cases transcends technique, and this stimulates creativity to develop new techniques. We seem compelled to explore fully each new technique, to elaborate it, to consider all of its variations. This ensures that the limitations of any technique will be eventually realized. Thus, their complete elaboration often leads to their becoming overthrown. Here is an example of dialectical interaction. Every idea implies, i.e., logically connects with, its negation, its opposite. The extreme elaboration of a practice often generates an opposing reaction. But opposites interpenetrate. We tend to move from one extreme to the other as we overreact to situations judged in polar terms. Or we have a tendency to do more of what we are doing, when we dread the opposite result. This often has the consequence of bringing that very result to pass. For example, attempting to arrest social change can precipitate even more drastic change.

Powerful techniques can solve many problems but eventually often generate problems of their own. The techniques of modern science and technology are prone to create higher level problems, when at their limits; technology tends to become the prime concern of Modern industrial culture. Thus, we now see a need for control of technology by experts, either directly or through elected or corporate officials whose decisions are guided by technicians. The high amounts of capital involved in technology, the larger numbers of people, the high skill levels required, the increasing economic risks of large-scale investment, long lead time, and so forth press us toward government by specialized experts. Politicians and decision makers will not necessarily be experts, except in modern management techniques, but the net cultural effect of this technological development will result from the values of these experts, which underlie their decisions. In time this cultural bias leans toward what I call *technocracy*.

Technocracy here refers to the systematic application of technology to all levels of human activity, especially government and economic policies that have growth as their central aim. This growth in the contemporary West is promoted by policies favoring complex, high technologies and mega projects. The scale involved in applying new technologies dictates a need for government and corporate planning; thus, only specialists can write policy. A major aim becomes the control of life by means of management techniques to govern

the application of the hardware and processes integral to technology. Science is narrowed to its less theoretical activities with principal emphasis on prediction, control, and applied science. The sciences so stressed are thought to be value-free. The aim is to reduce all phenomena to those features that can be quantified, controlled, and observed directly with the instruments of technology. However, we now know that no inquiry or discipline is value free.

By these means we *objectify* persons and nonhuman nature. If subjective experience cannot be "captured" or characterized in these terms, it is considered trivial. Thus, it becomes subjective in the pejorative sense, and so unimportant and irrelevant. Ironically, this thoroughgoing "objectivity" ultimately undercuts its own reason for being, since it denies meaning to the whole of human experience and ends are beyond its means to evaluate. Technology can only be a tool, a means, despite the fact that good design can create products with intrinsic aesthetic meaning. Technocracy must then rest on ends beyond its own capacity to understand or justify. Carried to its logical end *it seeks to turn the world into a controlled and manufactured artifact*. Nature is only a resource to be processed. This process in turn becomes self-perpetuating and self justifying; and in time it must also bring human social activities under technological control. This in turn involves behavioral technology and social engineering. Humans must now be "designed" to fit the technological mold and matrix, since they are fallible in their normal human form, and they might disrupt the technological and economic processes. Being a self-made person is taken to a literal *material* end.

The technocratic paradigm partly defines what science *should* be, but it does not preclude that science might consider values. However, even if this *were* done, the result would be to reduce them to abstract non-values. In any case, the practical social *result*, since technological priorities determine the flow of research money, is that those areas of human endeavor promoting technocracy thrive under technocratic paradigms, whereas those that promote deeper spiritual and ecological values languish. Think of the large amount of resources devoted to the hard sciences and engineering, compared with the small amounts devoted to aesthetics, art, music, poetry, and the humanities.

Descartes, the "father of Modern philosophy," held that creatures with souls have significant intrinsic value. However, once his conception of soul and God are rejected by natural and humanist philosophers, technocracy emphasizes methods and means that are impoverished in ends. The emphasis on method and technique includes reductionism, by explaining all natural phenomena in mechanistic terms; it includes the quantification of as much in the natural world as possible; these are emphasized by those who keep the materialistic half of Cartesian dualism. This materialism is the classical atomistic variety. These elements, then, more than any others, define the positivistic shape that the Modern philosophy of science assumes. As indicated earlier, these elements are closely tied to the development of Modern large-scale industrial manufacturing, production and

marketing. This is the reason for the emphasis on increased production and consumption, for this is the means to measure efficiency, even though these measures rarely reflect total costs. "Economics" itself is abstract and disassociated from ecological and humane values. It ignores the total context in the study of formulas.

The technocratic mind strives to create the perfect machine process at all levels of society. The machine metaphors for the body, nature, the solar system, and social systems are illuminating in limited ways. During the last three hundred years these models have penetrated Western consciousness, as more and more of our energies have been directed to creating modern, industrial, machine-based technologies and economies. The sheer intensity of this effort, coupled with the logic of these technologies and their anthropocentric values, seems destined *to literalize its own metaphors*. Thus, the Earth is seen as a machine, devoid of consciousness but for humans, and even in humans the methods of empiricist science pass *consciousness* by, or attempt to technologize it and reduce it to computer codes. Technocratic philosophy makes it difficult to distinguish consciousness from machine "intelligence." All of this is done, *supposedly*, for greater human interests, as none of the other planetary inhabitants have any value in their own right. Thus, the technocratic "machine" drives to manage all aspects of natural, industrial, and social processes by means of centralization, substituting where possible machines for humans, rules and laws for morality, social system and corporation for community, monoculture for diversity, and so on. This is a drive in capitalist and socialist nations alike, for the mechanistic paradigm is placeless, global, transpolitical, transideological, and is closely connected with Modern industrial technology and its specialized material science and engineering disciplines. (It has earlier embodiments in the Roman Legions.)

Just as nature comes to be treated only as a resource, so persons are evaluated on the basis of their functions, rather than by their deep and vital intrinsic worth. Production of things and profits is more important than persons and communities. Jobs, wealth, progress, the glory of the state, the facility of computer systems, and efficiency are justifications for disrupting persons, families, and communities. The technocratic state emphasizes wealth, power, and the capacity to control and influence others. Although lip service is paid to helping others, its system of rewards and sanctions ensures that those who choose service will be *under rewarded*, while those who strive for power will be rewarded in material wealth and prestige. The forms of organization that arise are *corporate entities*, whether business, university, government, or military. These converge in the technocratic state. Diversity is discouraged, for such a state tends to become a monolithic monoculture. Voluntary associations and public interest groups form in reaction, but their influence is small and their resources meager. Friendship and genuine community are difficult within corporate structures, since corporations demand loyalty and foster competition, both of which conflict with communal values.

The technocratic paradigm encourages the global development of centralization, capital-intensive and labor-poor industry. It strives to apply technology to all of human life and creates uniformity in product and culture. It fragments human life and lacks sustainable values. As it becomes more centralized and complicated, it becomes vulnerable to the "Titanic effect" (Wall 1974). It is impoverished in its feelings for persons. Nature is understood, not as living community of subjects, but as objects in machines. The intrinsic value of inter-subjective community life, as in art, fiction, storytelling, folklore, myth, poetry, and drama, is not recognized in the technocratic paradigm except to sell products.

So far I have emphasized the negative aspects of the technocratic paradigm in order to sharpen the contrast I will draw with the planetary person paradigm. These are inadequacies the ecological paradigm is meant to correct; it develops from an understanding of community, and is more adequately based on contemporary insights into the human and natural world. It takes whole contexts, relationships, ecosystems, and ecology seriously.

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MOVING TO THE PLANETARY PERSON ECOLOGICAL PARADIGMS

Socratic wisdom is the awareness that we are ignorant and have limitations. This frees us from the boundaries that self-assertive interests might draw between ourselves and others. If we attempt to measure all things by human interests, we think we have at last controlled life's uncertainties and eliminated its mysteries. This view seems absolute. We allow it to dictate how we should live, even when this view is a major source of problems. It is difficult to connect our philosophy with the *quality* of our experience, our actions and their consequences. Socrates shows us the way of dialogue and the cure of dialectics. We are limited not by an aware ignorance, but by our "knowledge" that the world is as we think it "must" be. Socratic questioning frees our intelligence to follow *inquiry* wherever it leads. Our quest is an enlarged paradigm for creating social processes in harmony with a broader understanding of reality in ecosystem health.

We each know in our bones that the world is not a machine and our body is not a mechanism. Computers are neither intelligent nor conscious. Poetry is as significant and can have as much beauty as mathematics. Logic and mathematics are not value free. The most valuable things cannot be measured or quantified. Friendship and community are necessary for flourishing whole persons. Nature is not an alien monster that we must conquer. Tigers and wolves are not just killing-machines; these fierce hunters are capable of tenderness and affection. Nature is not completely predictable. Humans, and at least some animals, are aware that the other is a *subject*. Most of us do not hate the natural world. We are deeply moved by its beauty, and awed by its majesty and power. We do not wantonly destroy or pollute it. We know that we are not separate from it.

Yet there is pollution and destruction. Our collective actions cause serious problems. These sometimes seem overwhelming, as if produced by an impersonal technology over which we personally have no control. Our inherited culture uses the technocratic paradigm, but there are other elements, such as those mentioned above. I will describe the organic planetary person paradigm to see how it integrates insights from our knowledge of and feeling for ecology, humans, and community. I begin by reflecting on Modern social philosophy.

Social Philosophy Since 1650

Before the scientific revolution, the dominant Western philosophy of humans and nature was based on the Christian Religion. The world was created by an act of God's love. Humans were created in *His* image. The world is theirs in trust from *Him*. Our role is to have dominion over it, but also to care for *His* creation. Nature is sacred. Humans destroy it at peril of eternal damnation. However, when the world was conceptualized as a machine, when Modern methods of control began to appear, there was tension between this Christian outlook and the scientific views of humanism. Humanism included many Christian values, but it emphasized the priority of human dominion over the world. In harmony with Modern science, humanism emphasized our ability to understand the world, to demystify, desacralize and control it. God and soul were left out of humanist philosophy and there eventually arose the technocratic doctrine that we have discussed, which stresses individualistic separatism, utilitarianism, mechanism, and anthropocentrism.[7] Nature becomes a secular object, mere resources to be used to satisfy human needs and cravings. The only locus of value is pure subjective preference, or a calculable "greatest good for the greatest number of humans (Utilitarianism)."

Kant observed, in contrast to Hobbes, that "humans are not only self-assertive, self-oriented and antisocial, but they also desire sociability, not simply to be admired personally, but also because they are social beings."[8] Community living is intrinsically valuable to us. *It is the dialectical interplay between these conflicting drives that creates society.* Kant echoes Bacon's warning that nature is to be commanded only by obeying her. Civilization cannot exist outside the realm of nature, for natural laws provide the constraints and context within which society must exist. Freedom in its highest expression involves acting on principles. In the social matrix these constraints and freedoms are balanced. *In community one realizes one's worth as a person acting in concert with others for a "kingdom of ends."*

Hobbes emphasized our separateness, Kant emphasized *community*. Technocratic philosophy, with Hobbes, regards each of us as separate parts that get their significance by being related through the state by means of laws externally imposed on us. Our connection to the world and to other persons, then, is through externalities that define the range of possible relationships, and which

also deny us the significance of relationships that unite us with other subjects in a meaningful community context. Planetary person philosophy, with Kant, regards community as primary. In its paradigm, *observer and observed are united in reciprocal processes of inter-responsiveness*. The boundaries of community extend to include the other beings in our home places. We affect and are affected by this larger *community of life*. Our societies are living processes within it.

The planetary person paradigm locates the constraints on human activities in the principles of ecology and the reality of particular ecosystems and living beings. Ecosystems are more like organisms than machines. The interrelationships between organisms within an ecosystem are not completely specifiable, unlike the case of a machine. There are elements of creative variability and unpredictability. Various elements of balance are so complexly interrelated that they intersect and double back on themselves; they form networks of symbiotic complexities that can magnify and also minimize effects. If one does apply a machine model to an ecosystem, this can be done only for abstracted, large "components," and even then it is a kind of Rube Goldberg machine, *qua* machine. Ecosystems and organisms are entropic and anti-entropic; they are recursive systems in process. Information and communication processing, storage, learning and modification are inherent in the natural world. Creative processes are found all through it.

The organic paradigm of the planetary person stresses the interrelatedness of the biosphere. The world is seen and felt as intersecting fields of processes, not just separate individuals. We cannot isolate our actions from the rest of society, nor from the rest of the ecosystem. Polluting the water in the stream that runs through my yard can pollute all water in the drainage. The ground water polluted by radioactive wastes can pollute a river, ocean and biosphere. Unlike a machine, the organism is a complexly interrelated whole of processes, with internal and external principles of organization. The ecosystem is like a living body. None of these systems is fully self contained or closed, and each has other creative systems within it.

We have some understanding of the vast complexity of the human body as a result of centuries of accumulated empirical study. Understanding does not necessarily mean power to control, nor does *power* to control necessarily mean we understand. One weakness of the machine model is that it gives us an illusion of understanding when we "explode" the parts and see them in display. But something is understood only if, after analysis, we can see the subject as whole once more. Some move toward synthesis is necessary. As Lewis Thomas points out, we cannot understand the cell *in isolation*, but only in relation to *higher levels of integration* (Thomas 1974). The body is a community of cells. In a larger human community persons have a range of freedom, but their mutual ends can harmonize to make communion possible. If each is an isolated Hobbesian

person with unlimited drives of self-assertion, then there is no alternative but to use external control. If we cannot be internally self-regulating persons within a context of consciously shared values, then we can only be regulated from without. This conclusion is drawn within the technocratic paradigm and this leads it to seek complete control. Further, this control is not first applied to the large collective social processes, but rather to persons. Since persons are the social atoms, the aim is to bring them into conformity with the ends of the technocratic state. Ultimately this control has no justification other than its own power to maximize the welfare of isolated individuals, who are now denied freedom and intrinsic worth by this very control. We are prisoners in these control systems.

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SEARCHING FOR WHOLE WISDOM

The ancient Chinese sage Lao Tzu (6th Century BC) was one of the earliest philosophers of ecology. In the *Tao Te Ching (1963 passim)* he observed that all things are equal in the great natural order. Trouble begins when we try to separate ourselves from this order. We do this first by passing judgments which attempt to elevate ourselves over other beings. The human impulse to manage the world is an expression of the judgment that we know best how the natural world should run. Ironically, we find every day that we do not know enough, and probably never will know enough, to prevent the unfortunate consequences of attempting to manage too much. We did not know that DDT would ultimately reach the Arctic, or that it would pollute even human milk. We did not know that aerosols and CFCs would threaten the atmosphere. We did not know that nuclear power would pose the risk of the nth country in nuclear arms. The list seems endless. Failure of our systems is blamed on human error, not on our lack of knowledge, not on the limits of our power, not on the arrogance of anthropocentrism, not on our basic values and philosophy. It is the fallible "human part" that is said to be at fault, not the whole approach.

From the perspective of deep ecology movement principles (see end of this article), managerial attempts to control the natural world create difficulties because our design ignores the values of other beings and natural ecosystems. There are human values at stake, and also the values of other organisms and communities. Fairness and the principles of ecological interconnection help us to realize that no large-scale impacts on ecosystems will be without effects on human life. The greater the effect observed on other life forms, probably the greater will be the effect on us. Since social processes are interrelated as well, *ecological principles must be introduced at the inception*, not at the conclusion of design and construction.

To not recognize the intrinsic worth of other beings, to fail to appreciate the subtle ways in which natural processes work, and to seek centralized control is

to be ultimately saddled with the responsibility we once thought was God's. Humanism, as anthropocentrism, joined with the technocratic paradigm, assumes the overwhelming responsibility to run everything. All nature must be managed for human ends, and even these ends must be managed. Ultimately, to value humans alone is to leave us without value, for then we are unable to find value in the world; value becomes purely subjective. The deep ecology movement reclaims value by placing it in the center of life, and by broadening our conception of human experience consonant with this. With respect to the intrinsic worth of each being no philosopher in our tradition expressed this better than Alfred North Whitehead when he wrote:

> *Everything has some value for itself, for others, and for the whole. This characterizes the meaning of actuality. By reason of this character, constituting reality, the conception of morals arises. We have no right to deface the value experience which is the very essence of the universe. Existence, in its own nature, is the upholding of value intensity. Also, no unit can separate itself from the others, and from the whole. And yet each unit exists in its own right. It upholds value intensity for itself, and this involves sharing value intensity with the universe. Everything that in any sense exists has two sides, namely, its individual self and its signification in the universe. Also, either of these aspects is a factor in the other.*[9] [Whitehead 1938:11]

Compare Whitehead's remarks with those of U.S. Supreme Court Justice William O. Douglas in his dissenting opinion on Mineral King, a California wilderness area threatened by development:

> *The river, for example, is the living symbol of all the life it sustains or nourishes—fish, aquatic insects, water ouzels, otter, fisher, deer, elk, bear, and all other animals, including man, who are dependent on it or who enjoy it for its sight, its sound, or its life. The river as plaintiff speaks for the ecological unit of life that is part of it. Those people who have a meaningful relation to that body of water—whether it be a fisherman, a canoeist, a zoologist, or a logger—must be able to speak for the values which the river represents and which are threatened with destruction.* [Douglas 1974:75]

Whitehead and Douglas both recognize that humans can appreciate the *intrinsic values in natural processes*, plants, animals, and other beings. For Douglas a variety of relationships with the river are mentioned, but each meaningful perspective on the values of the river implies that these values are not human alone. Other beings are involved.

One difficult matter in environmental issues is the representation of interests. Courts have often taken a narrow view of "interests." In the case of Mineral King, the Court denied standing to the Sierra Club on the grounds that the club members would not be injured, and did not have an interest in the proposed development of Mineral King. The Sierra Club redrafted its brief to name

members aggrieved by the proposed resort. The Court said that only humans, or the fictional persons of ships and corporations, have standing. The majority view was that environmental disputes must be settled, through the legal channels, by means of resolving conflicts of interest. In the case of a forest, the forest as such cannot be aggrieved. Conservationists have interests, but these are *their* interests, not the values within a natural process, independent of human interests. Douglas' dissenting opinion suggests that other living beings, and processes like the river, have their own values that should be recognized by the Court. Those who are qualified by their meaningful relationships with the subject in question should be able to represent and speak for these values.

The technocratic model treats all interests as human interests. Aesthetic values, species values, recreational, habitat, and other values of a forest are quantified by dollar values, and weighed by monetary values gained in logging, or some other economic use. We tend to bridle at the suggestion that all human values can be meaningfully quantified, let alone given a dollar value. It is even more difficult to place a dollar value on natural processes. Moreover, if we do not recognize value in the natural world, if we are rigidly committed to the fact/value distinction, then we are confronted with the problem of trying to find any value at all. If there are only human values, but no values in the world apart from our interests, do human values then have any objective meaning? Would this not force us ultimately to consider all differences in value perception as conflicts of interest, in which the most powerful interest will win?

Whitehead avoids this difficulty by a metaphysics that considers value as part of the *very meaning of actuality*. *The value experience is the very essence of the universe*. The value that each being has for itself is also shared by others. So each exists for itself, but also exists for the other. It is a value in itself and a value for others. It has both intrinsic and instrumental values. Douglas and Whitehead *transcend* narrow anthropocentrism. They recognize the inter-penetration of beings and things with one another. The values spoken of imply diversity, one of the features of most ecosystems. Intrinsic value in each being negates the appropriateness of centralized control. The value of the river is for many others, but it has a value in itself. These intersecting value relationships within the context of ecosystems promote flexible stability, resilience, and creative change. The features of diversity, flexibility, adaptation, symbiosis, accommodation, interconnectedness, all suggest a process of design for human technologies that deeply understands these processes, an understanding enriched by both intrinsic and instrumental values. This understanding is not the result of "objective" study alone. It requires that we approach the subject with a *respect for its way* that is free of one-sided judgments, for these obstruct a deeper appreciation of these diverse forms of life and values. This leads to a new type of perennial understanding.

■

A NEW, ANCIENT WAY OF UNDERSTANDING

How then do we come to this understanding? Consider these words of Rolling Thunder[10]:

> *Too many people don't know that when they harm the Earth they harm themselves, nor do they realize that when they harm themselves they harm the Earth. . . . It's not very easy for you people to understand these things because understanding is not knowing the kind of facts that your books and teachers talk about. I can tell you that understanding begins with love and respect. It begins with respect for the Great Spirit, and the Great Spirit is the life that is in all things—all creatures and plants and even the rocks and the minerals. All things—and I mean all things—have their own will and their own way and their own purpose; this is what is to be respected. Such respect is not a feeling or an attitude only. It's a way of life. Such respect means that we never stop realizing, and never neglect to carry out our obligations to ourselves and our environment.* [Boyd 1974:51–52]

What is implied by Rolling Thunder's words is that we cannot understand the ways of other beings, so long as we approach them only *via our* interests, economic or personal. We also must be able to approach them on their own terms, through love and respect, as a way of being, as a way of acting in relation to them. Other approaches that separate us from other beings, narrow our perspectives, and encroaches upon our poetic and aesthetic responses by drawing boundaries and making judgments. Rolling Thunder sees that we and the environment are not separable. Conflict with the world is a conflict that begins within us. Conflicts of interest narrowly defined are then only conflicts about how we shall *use* the world for our benefit alone. They do not reflect any *deep appreciation* of beings in themselves. Rolling Thunder tells us it is possible to appreciate the value of other beings *through respect*.[11]

It might be said that we do not know what other natural beings value. What do ravens, deer and bear want? This is not for us to judge. They have their way of life and wise stories that we should respect. We share our lives with others. Our communities include other beings. To disrespect them impoverishes our lives, and deprives us of their values. It paves the way to destructive exploitation, for once we refuse to recognize any values other than human interests, there is no way to recover these lost values short of a deep readjustment in our thinking, feeling, and acting in the world. Our dichotomies, as between human and non-human, reason and emotion, fact and value, hinder experiencing the world in ways fully receptive to other lives. Rolling Thunder suggests that *the way of love and respect* will open us once more, *unite us* with the world, and enable us to experience the values of other beings and communities.

Our traditional moral philosophies cannot resolve these environmental issues and conflicts.[12] These philosophies do not recognize values in natural things and they are individualistic in their conceptions of rights and duties. Our collective actions are beyond their reach. The problems will not be resolved by denying the value of individuals, so that they might be completely subjugated to the interests of the collective. Nor will they be solved by denying responsibility for our collective activities. Each individual has values in itself, for itself. The dandelion that grows in the meadow has its own value, but it also shares this with others in its biotic community. Individuals do not exist in isolation, but in relationships. We only begin to understand this in a deep way when *we begin to appreciate the value of their way*. Such a respect clearly implies a different orientation toward the natural world and human life. One problem in Western democracies is that we uphold individual values even when the "persons" in question are corporate and their actions have collective impact; yet, we often attempt to control individuals by laws which prosecute victimless "crime." We punish persons for harm they might do to themselves, and thus we do not respect their freedom and dignity. We have no effective way of curbing corporate activities that impinge upon the rights of each person by polluting the air she breathes or corrupting the water he drinks. These imbalances indicate that our system is in a time of great stress.

The planetary person understands the mutual interpenetration of living communities and their ecosystems. The interconnections are evident on several levels of integration. From the energy-flows through ecosystems, the networks and systems of living organisms in terms of population, the networks of food webs, the relationships of neighborhood and territory, the interpenetration of reciprocal awareness in the active responses of sentient beings, the consciously shared ends and purposes in human communities, these all represent levels of integrated organization within a total ecosphere. In human communities persons live within the rich cultural and ideational matrix where their feelings are interwoven with those of others. We tend to live in this culturally conditioned consciousness without noticing the role played by dominant metaphors and models in shaping our understanding and reactions to others. We are often unaware of how we lose our capacity for *wholehearted response* through habit, and by being captured by these dominant models. The technocratic paradigm begins its control of nature with the control of our minds; it affects how we think and feel about the world and what we look for.

■

SHIFTING TO WHOLE LIFE APPROACHES

Shifting to the planetary person paradigm facilitates looking at the world through ecological processes and relationships. We begin to see the need for

and the way of designing our processes so that they are compatible with the principles of ecology, and consistent with respect for living beings in ecosystem communities. We can sense when a process complements an ecosystem rather than seriously altering it. The eye for proper "fit" is, in one respect, the eye uncolored by theory or judgment; it is informed by deep and broad experience. Art and science meet within this awareness. In emphasizing intrinsic worth and diversity, the planetary person sees and feels the possibility of designing collective activities that from their very conception are ecologically sound, and capable of coevolving with other life forms. Thus, the organic paradigm leads us from individual actions to an appreciation for persons and beings in communal relationships. These contexts lead to the processes that interconnect communities globally. From the person, human and nonhuman, and the community, we are led to sense the planet as a whole. (The story of the whole Earth . . .) A view of the *Whole Earth* suggests that it too can be illuminatingly seen as an organism (biography). The *Gaia hypothesis* can be a rebirth of the ancient wisdom that the Earth is a living mother to us all. Seeing the planet as a living being reinforces our understanding of the *interdependence* of biospheric processes.[13] There is, in a real sense, symmetry between our bodies and the body of the planet.

Let us liken the world to a living symphonic poem. It is not a symphony in which a central score determines the music yet to come; nor does each performer have its role rigidly fixed. Each has its own characteristic voice in this jazz symphony. We do not know where it is going, since it is improvised as we go along. Each voice fits itself to the music made by all the others, but each has a chance to play its own tunes. (It is inter-and co-responsive.) To fit ourselves into this ongoing harmony requires attention and agility. For purposes of design, philosophical and otherwise, we need conceptual and emotional agility. Organic art requires a sensitive awareness receptive and responsive to the music while it is played, immediately aware of the symphony as a whole and of its many voices. When we are attuned to the world in this way, control is not an issue. We realize we do not have to manage everything. We can approach the world on a smaller, more decentralized scale, based on subtle feelings and understanding. We ride with the natural processes rather than fighting them. We *trust* nature because we trust ourselves to appropriately improvize as the need arises, rather than trying to follow a rigid plan that we impose on everything, including ourselves.

Shifting to this organic paradigm means letting go of the mechanical approach, but it is maladaptive and insecure. Pure "reason" and "objectivity," devoid of sensitive awareness, aesthetic response, insight, intuition, and caring attention, might prevent leaving the "security" of this narrow experience. This narrowness is ultimately a source of insecurity. If we narrow our experience in this way, then we live incompletely. We will be dissatisfied and insecure. Life becomes a tangle of unfinished problems that we plan to solve in the future by more tightly controlling the world. However, when we do our best as whole

persons, we realize that the natural world will support us indefinitely, if we adapt our activities to it. We realize how to open to a *centered awareness* free of conceptual constraints. This openness leads to realizing our essential being and inherent worth, as it is in the world as a whole.[14] There is no need to "distinguish" ourselves to realize our value. We have nothing to prove. In the deep ecological planetary approaches we are at home in a harmonious world of mystery, beauty, and depth. We are not isolated and alone. We are citizens of a communal world, members in larger communities of life, dwelling in harmony in our home places with diverse beings as companions. Our values transcend narrow self-interests and embrace the *whole of life*.

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SUMMING UP BEFORE CONCLUDING

The planetary person ecosophic approaches stress: internal principles of order, homeostasis and balanced development; context and place; symbiosis and mutual interrelationships, decentralization, diversity and unity, spontaneity and order, freedom in community; intrinsic value in being, human experience as value-laden; creative, ecologically compatible design of human activities; collective responsibility and the unique value of individuals, personal knowing, inter-subjective experience and diverse consciousness; organisms as wholes which interact with other organisms in spheres of interpenetration; the whole planet as a living organism; persons as creative, open, dynamic, developmental, and as coevolving within larger diverse cultures and communities.

The technocratic paradigm stresses: atomistic analysis; reductionism, mechanism; context-free abstractions; anthropocentrism; individualism and isolation; determinism and laws; eternal principles of order; manipulation and centralized control; repetitive and predictable patterns of action; interchangeable parts; value-free experience, objective, abstract, disinterested observation; value in nature as only instrumental; persons as mechanical, closed, in need of control, capable only of linear growth and monocultures.

If Westerners shift to the planetary person approaches as our basic orientation, we could create postindustrial processes that will support ecosystem resilience and vitality. If we continue in the technocratic mode there is less chance of this since capital-intensive, large-scale programs will undermine attempts to add environmental constraints at the end of the design process. Ecosystems will be degraded, and then "cost-benefit" analyses will be used to justify expediency and "efficiency." If these fail, "national emergency" will suffice to preserve the status quo of business as usual.

Paradigm choice is a creative affair, but it is not arbitrary. Many paradigms are so limited that they cannot be generally applied. My reasoning is that the principles of ecology and the current state of advanced scientific knowledge point toward emerging metaphysical cosmologies and conceptions of the world

that are more in tune with ancient outlooks of organic paradigms, than with the technocratic machine paradigm.[15] Philosophy can make a significant contribution to developing ecocentric paradigms that are ecophilosophical in the broad sense, and advance creative syntheses in contemporary knowledge. Here I offer a preliminary sketch. Table 1 is a chart comparing the main features of the two organizing philosophies discussed in this essay.

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FURTHER REFLECTIONS

Since this paper was first drafted in 1978, Naess has published many papers and books explaining in more depth the basic principles of the deep ecology movement. His earliest statement referred to in this paper was published in 1973. The most recent and more complete account is in the *Selected Works of Arne Naess* Vol 10 *The Deep Ecology of Wisdom* published by Springer in 2005. See also the Series on Naess's work in *The Trumpeter* at http://trumpeter.athabascau.ca which is online in the archives. Even more recent is the anthology *Ecology of Wisdom: Writings by Arne Naess* edited by Bill Devall and myself, published by Counterpoint in 2008 (now in paperback 2010).

Naess said that his rough and ready account of the deep ecology movement in the summary paper needed to be clarified since he received so many varied responses to it. He explained that from that first paper, he was always writing about the *deep ecology movement* and personal philosophies of ecological harmony and wisdom he called *ecosophies* (combining the ancient Greek root words "*ecos*" and "*sophia*"). He was emphatic that he was writing and talking about a grass roots international movement similar to the peace and social justice movements. These three movements are supported by people from different cultures, religions, and worldviews. In all three movements there is great diversity at the level of ultimate philosophies and considerable agreement at the level of platform principles. At the level of policy formulations there is increasing diversity with considerable diversity at the level of practical actions. The levels chart in Table 2 sets forth his concept of levels of discourse and articulation of worldviews.

The most recent account of the deep ecology movement platform principles is in Naess' book *Life's Philosophy* published in 2002 by the University of Georgia Press (Naess and Haukeland 2002:108). The eight platform principles are:

> *1. All living beings have intrinsic value; 2. The diversity and richness of life has intrinsic value; 3. Except to satisfy vital human needs, humankind does not have a right to reduce this diversity and this richness; 4. It would be better for humans if there were fewer of them, and much better for other living creatures; 5. Today the extent and nature of human interference in the various ecosystems is not sustainable, and lack of sustainability is rising; 6. Decisive improvement requires considerable change: social, economic,*

TABLE 1. TECHNOCRATIC PARADIGM COMPARED TO PLANETARY PERSON ECOSOPHIES

	Technocratic Paradigm	Planetary Person Ecosophies
1	Machine metaphor, control	Organic metaphor, free action
2	Reductionist, specialists	Holistic, generalists
3	Linear, monolithic	Multidimensional, pluralistic
4	Nature as instrument, passive	Intrinsic values, creative
5	Observer outside nature	Participant observer
6	Causal-mechanistic models	Acausal-stochastic also
7	Consciousness epiphenomenal	Consciousness irreducible
8	Dead matter	Living energy
9	Growth	Developing states of intrinsic worth
10	Quantitative	Qualitative
11	Non-dialectical	Dialectical
12	Discrete things	Fields, processes
13	Knowledge as power	Wisdom and understanding
14	No spiritual dimensions	Spiritual practices and disciplines
15	Mega Technologies as power-over	Appropriate vernacular Technologies
16	Having	Being
17	Mechanistic explanations	Ecological description & spontaneity
18	Mastery of Nature	Self-mastery & actualization
19	External relations	Internal as well
20	Subject/object separation	S/O reciprocity
21	Centralization and hierarchy	Decentralization and networks
22	Design as technique	Design as whole art
23	Specialist	Whole person generalist
24	Training for technical skills	Balanced education
25	Anthropocentric	Ecocentric
26	Corporation and association	Community and friendship
27	Competition	Cooperation
28	Uniformity & monocultures	Diversity & pluralism
29	Artifact Earth	Living Earth & self organizing
30	Science & philosophy as theory	Science & philosophy as activities
31	Limited perspectives	Multiple open possibilities
32	Captive of unconscious myths	Creative freedom with myths
33	No sacred ground or place	Sacred grounds and places
34	Ideal person: technocrat	Ecomonk, planetary person
35	Narrowly historical	Transhistorical
36	Surface ego self	Deep rich unified and integrated Self

technological and ideological; 7. *An ideological change would essentially entail seeking a better quality of life rather than a raised standard of living*;

▲ **Cross Cultural Typology: 4 Levels of Questioning and Articulation**   A

Level 1	Life Philosophies, Ultimate premises of norms and hypotheses	Taoism, Christianity, Ecosophy T, etc.
Level 2	Movement Platform Principles For example, the DEM 8 points	Peace Movement, Deep Ecology Movement, Social Justice Movement, etc.
Level 3	Policies	PO1, PO2, PO3, etc.
Level 4	Practical Actions	PA1, PA2, PA3, etc.

(See *SWAN X*, 9) **Q** = Questioning, Inquiry **A** = Answering, Articulation.

8. Those who accept the aforementioned points are responsible for trying to contribute directly or indirectly to the realization of the necessary changes.

Naess did not use the words "deep ecologist." He called anyone who supports the platform principles a follower or supporter of the deep ecology movement. Each person or community will have their own personal philosophy of life as the basis of their support for the movement. Naess called his personal philosophy *Ecosophy T*, named for his mountain hut Tvergastein in Norway where it was experimentally worked out.

Naess was a pluralist. He favored a gestalt ontology as a metaphysics that treats theoretical models and formulae as abstract structures; our spontaneous experience provides the *concrete contents* that grounds these abstractions. Our *spontaneous experience* is always deeper and more complex than we can ever express in any language. Naess placed great value in cultural and worldview diversity. He considered them among the Earth's treasures, as well as its biological diversity. He thought there are vast numbers of philosophies of life consistent with peace, and ecological and social responsibility. He stressed nonviolent communication and direct action.

With respect to my account of the planetary person paradigm, I am trying to describe in broad terms the main features of a major shift to what I now call *ecological approaches* that can support the platform principles of the deep ecology movement. There are several international movements in the world. The movement for ecological responsibility is critical to peace and social justice. The word "planetary" includes global *and* local actions, as well as the idea of wholeness, as in whole persons with holistic approaches.

Internationally there are five main features to the emerging global ecological approaches shared by a great diversity of cultures, worldviews, religions and personal philosophies. They are: (1) Reality is personal and ordered, (2) Order is in part created by multitudes of beings, striving to realize themselves in multi-dimensional relationships, (3) The powers of Nature are in us and other beings, and wise actions are possible through integration and unification of our many ways of knowing and powers of acting, (4) Nature is filled with diverse intrinsic values that can be discovered, as well as ways to create new ones, (5) Completion and fulfillment are found in deepening ourselves through authentic dwelling in harmony with Nature and each other, for example, by living an *ecosophy*. Every major religion has been interpreted to support these principles and recognize the sacredness of creation *and* human life.

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NOTES

1. The revision of this essay was informed by several additional articles and books. These references can be found on the *Restoration Earth* website http://www.oceanseminarycollege.org/node/59, and *The Trumpeter* website http://trumpeter.athabascau.ca/miscfiles/ShiftingParadigmsReferences.html under the title "Bibliography of Deep Ecology Movement Resources." Included with this bibliography is a discussion of shifting paradigms as it relates to the continuing development of primordial anthropology and transpersonal ecosophy.
   Dedication and history: This paper is dedicated to U.S. Supreme Court Justice William O. Douglas. An earlier version was presented as the first lecture in the "William O. Douglas Distinguished Lectureship" series at Yakima Valley College, Yakima, Washington, in May 1979. It is part of a large project begun in the academic year 1974–75 supported by the Canada Council and the University of Victoria. Thanks to Delma Tayer of Yakima Valley College for her efforts in organizing the lecture series, and to Holmes Rolston, III, whose helpful criticisms and suggestions greatly improved the early versions of this paper. My analysis benefited from reading an unpublished paper by Donald A. Crosby, Colorado State University, "Authority in Social Systems: Two Models." My "Shifting Paradigms" paper was first published in *Environmental Ethics* 3 (1980) 221–240. It was revised in 1994 and reprinted in *The Deep Ecology Movement: An Introductory Anthology*, edited by Alan Drengson and Yuichi Inoue, published by North Atlantic Press in Berkeley California in 1995. This anthology was then translated into Japanese and published in Japan in 2002. This article was the basis for my first book by the same title published in 1983 (Drengson 1983). This book was revised and became *Beyond Environmental Crisis* published in 1989 by Peter Lang (Drengson 1989). This article was revised again in 2010.

2. Arne Naess, "The Shallow and the Deep, Long-Range Ecology Movement: A Summary," *Inquiry* 16 (1973) 95–100. See the five issues of *The Trumpeter* online devoted to Naess's work, starting with the 2005 issues which are in the archives at http://trumpeter.athabascau.ca. A version of this article has been reprinted recently in *The Trumpeter 24, 1 2008 under Peder Anker "Deep Ecology in Bucharest."*

3. As Naess explains, "The 'in principle' clause is inserted because any realistic praxis necessitates some killing, exploitation, and suppression" (95). This qualification is made with the simple recognition that we cannot live without affecting the world to some degree. In the discussion that follows, whenever biospheric or ecocentric egalitarianism is discussed this qualification is assumed. Because this phrase was often misconstrued Naess quit using the term "egalitarianism." The platform principles of the deep ecology movement first published in 1985 do not use this term.

4. On Socratic ignorance see the author's paper, "The Virtue of Socratic Ignorance," *American Philosophical Quarterly* 18 (1981). This paper is online at http://www.ecostery.org in the articles file.

5. My choice of terminology was partly influenced by Theodore Roszak's book *Person/Planet* (New York: Doubleday, 1978).

6. Cartesianism is used to refer to the historical influence of Descartes' philosophy. It is not clear that Descartes would have approved the direction in which others developed his thought. For an illuminating philosophical and historical discussion of technique see William Barrett, *The Illusion of Technique* (New York: Doubleday, 1978).

7. Humanism as I use the term refers to that anthropocentric and secular philosophy that accompanied the development of Modern science and technology. It emphasizes that science and technology can solve most human problems, that problems not solvable by technology can be solved by social engineering, that human values alone are important, and that the world is a resource for humanity. There were and are religious strains of humanism which recognize human limitations and the need for spiritual development, but I do not refer to these here. For a critique of the technocratic version of humanism see David Ehrenfeld, *The Arrogance of Humanism* (New York: Oxford University Press, 1978). There are other forms of Humanism which are not necessarily anthropocentric that focus on social justice. See also Stephen Toulmin's *Cosmopolis: The Hidden Agenda of Modernity*, 1990, Chicago, University of Chicago Press.

8. See Kant's two important works: "Perpetual Peace" (1963:85–135) and "The Idea of a Universal History on a Cosmopolitan Plan" (1963:11–26). These two essays were influential in the development of the League of Nations and the United Nations.

9. This passage is cited by Roland C. Clement in his brief but helpful article "Watson's Reciprocity of Rights and Duties," *Environmental Ethics* I (1979): 353–55. Compare here also Whitehead's comment in *Science and the Modern World* (New York: Macmillan, 192–5), p. 136: "Remembering the poetic rendering of our concrete experience, we see at once that the element of value, of being valuable, of having value, of being an end in itself, of being something which is for its own sake, must not be omitted in any account of an event as the most concrete actual something." This observation is completely in harmony with Naess's gestalt ontology, which he discusses in numerous articles. See the Naess Series in *The Trumpeter* online for more on this subject and also the anthology *Ecology of Wisdom* cited above.

10. Rolling Thunder is most succinctly summed up as a Cherokee-born practitioner who eventually became well-known throughout North America and Europe. For a more complete account see Doug Boyd.

11. See Naess, "The Shallow and the Deep, Long-Range, Ecology Movement": "The ecological field worker acquires a deep-seated respect, or even veneration, for ways and forms of life. He reaches an understanding from within, a kind of understanding that others reserve for fellow men and for a narrow section of ways and forms of life. To the ecological field-worker, the equal right to live and blossom is an intuitively clear and obvious value axiom." (95). See also Holmes Rolston, III, "Can and Ought We to Follow Nature?" *Environmental Ethics* I (1979): 7–30.

12. I owe this point to Mark Sagoff, "On Relating Philosophy to Environmental Policy" (unpublished).

13. James Lovelock and Sidney Epton, "The Quest for Gaia," *New Scientist* (6 February 1975): 304–306. Lovelock's way of interpreting the Gaia metaphor is too narrow and technocratic in my view. Others have taken it in more poetic ways which are compatible with person planetary ecosophies and also Thomas Berry's New Story cosmology.

14. This is put far too tersely. An insightful discussion of this can be found in David Bohm, *Fragmentation and Wholeness* (Jerusalem: Van Leer, 1976) and Ken Wilber, *No Boundary* (Los Angeles: Center Publications, 1979), especially chapter 4.

15. For a semipopular discussion of these metaphysical implications in relation to theoretical physics see Gary Zukav, *The Dancing Wu Li Masters: An Overview of the New Physics* (New York: William Morrow, 1979). To date however, A.N. Whitehead's *Process and Reality* (New York: The Free Press, 1929) remains one of the most sophisticated versions of the metaphysical implications of twentieth-century Western knowledge of the universe, as based on physics and biology. Whitehead's metaphysics takes the process view of reality seriously, whereas many popular versions (Zukav's excluded) actually fall back on classical, atomistic materialism, which fails to account for the *creative and developmental* character of the world and treats matter as inert stuff rather than energy. Whitehead's philosophy recognizes the dialectical character of process, the interpenetration of opposites, the significance of levels of organization, the importance of community, and the irreducible nature of awareness. These features give his organicism a special relevance to the deep ecology movement and a meeting of East and West. Leading edge work in this cosmology has been carried forward by Ralph Metzner (1999), Ervin Laszlo (1997).

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