

Shifting Paradigms: From Technocrat to Planetary Person

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In this essay I examine the interconnections between two paradigms of technology, nature, and social life, and their associated environmental impacts. I will discuss how we are moving from the technocratic paradigms to the emerging ecological paradigms of the planetary person. The dominant technocratic philosophy which now guides policy and technological power is mechanistic. It conceptualizes nature as a resource to be controlled fully for human ends and it threatens to drastically alter the integrity of the planet's ecosystems. In contrast, the organic, planetary person paradigm conceptualizes intrinsic value in all beings. Deep ecology movement principles give priority to community and ecosystem integrity and help to guide the design and applications of technology according to principles which follow from ecological understanding. I will describe this shift in paradigms and how it affects our perceptions, values, and actions.

The Problems

We hardly need to remind ourselves of the extent and seriousness of contemporary 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 threat of nuclear war, these are only a few examples in the news. Since the first Earth Day, in 1970, increased public attention has been focused on the three major areas: overpopulation, pollution, and resource depletion. (In more recent years we have become aware of the thinning ozone shield and global warming.)

Numerous reform measures have been attempted, sometimes with limited success, but on the whole the index of environmental quality has declined over the last decades, and especially since the year 2000. We do not seem to have made significant progress, and many areas where progress once seemed possible have more recently come under renewed pressure. Decisions are made on political and narrow economic grounds, rather than on principles that are environmentally sound, and economically advantageous in the long term.

Various analyses have been offered about what should be done to safeguard the environment and human welfare from the hazards of modern technologies. These technologies have given us much in the way of comfort and enjoyment, and they have made possible the development of human skills on a scale never before possible. But they are also perceived by many as Frankenstein monsters loose among us. In films, novels, art, poetry, and even within the scientific establishment there are many voices of disquiet, fearing a human society controlled and imprisoned by its own technological creations. There is much discussion of alienation and anomie, the loss of community, the impersonal character of machine-like bureaucracies. Some writers, for example, Robert Heilbroner in *An Inquiry into the Human Prospect*, see virtually no chance that we can avoid major disasters, given our current direction.¹ Heilbroner suggests that to control these problems we will need powerful central governments with tight controls that are incompatible with democracy. It seems as if our technology has an alien, monster-like character. As a culture we are of two minds about it. On the one hand, we welcome its advantages, but on the other, we often acknowledge its shortcomings. During the last ten years we have certainly become more aware of the dual nature of the uses of technology.

Many analyses of the ecological crisis have emphasized an inseparability of ourselves from our environment. Arne Naess, a Norwegian philosopher, distinguishes between those who see the problems in isolated ways compatible with mild reform, and those who see the problems holistically as requiring a deep change in our way of life. The latter approaches, according to Naess, will put our relationships with our ecosystems on a sound, co-evolving basis.² The essential features of the shallow ecology movement are its mild reformist character and its anthropocentric bias that the nonhuman world has only instrumental value. The shallow ecology movement is essentially oriented towards the health and well-being of the peoples of

the advanced industrial nations. Supporters of the deep ecology movement, however, recognize the need for a fundamental shift to new paradigms of human-environmental relationships in terms of fields and processes. The deep ecology movement emphasizes, in principle, biospheric egalitarianism and the intrinsic value of all life.³ Supporters of the movement aim for the creation of systems that are diverse, symbiotic, and compatible with natural systems, and for the establishment of an anticlass attitude which is consistent with ecospheric egalitarianism. Deep ecological knowledge forces us to recognize that ecosystems are in some ways so complex that we will probably never completely understand them. Thus, supporters of the deep ecology 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. Moreover, they recognize the importance of personal and cultural diversity since adaptation must be to specific places which have different features and qualities.

In this essay, I explore the possibility of a shift in paradigms for Western Civilization such that we can be freed from outlooks that lead to serious environmental problems, and can then move to those that promote environmentally sound and sustainable human societies. I employ Thomas Kuhn's notion of paradigms and try to make clear the almost unconscious role they play in conditioning our thought.⁴ We do tend to become captives of our own metaphors and models, just as we do of their associated techniques. A creative, flexible approach requires that we be able to shift our perspectives in ways more appropriate to our problems. We should be aware of our constraints and also of our larger possibilities.

Humans organize and orient their lives by means of various ideals, models, symbols, and metaphors. A major function of myth is to weave knowledge, aspirations, and skills together in an intersubjective realm of image and symbol that blends art and science in meaningful stories. Mythic symbols store and convey vast amounts of meaningful information in concise form. This makes it possible for a person to assimilate the collective experiences of his/her culture. In a loose sense dominant paradigms are like forms of mythic understanding. 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, forms of technique, and the like. However, when pursued to its logical extremes as a sole basis for life as a whole, it seriously undermines the vigor of other important aspects of human life, such as the intersubjective realm. This paradigm has reached its limits, as evidenced by the stresses between it and the work of contemporary science, by its apparent negative cultural effects, and by its consequences for the environment. Our civilization is going through a major transition to postindustrial cultures. Their exact shape cannot be determined beforehand, but it is possible to discern some of the main features of this shift.

Evolution allows information to be processed and encoded in various ways in organisms and communally. We inherit a repertoire from the past, but as we live in the world we also have to improvise. Life requires creative response from us. In human life much learning is accumulated and passed on to the young by cultural means. In some respects this makes greater flexibility possible. However, if taken too absolutely this can become a form of mental conditioning which can result in lost flexibility. A saving antidote is a healthy dose of Socratic awareness of our ignorance, humbly acknowledging our limitations and the relativistic character of our theories and language about the world.⁵ Socratic ignorance forces us to be open and to reclaim the art of inquiry pursued with full awareness. Thus, the aim in contrasting paradigms is to free our minds so that we can look at the world afresh. If we view paradigms as art (or literary) forms, we can then better appreciate the need to avoid conceptual rigidity. In what follows I describe in broad outline the major features of the two dominant paradigms, the technocratic and the planetary person.

Paradigms

Thomas Kuhn points out that Western science did not develop historically as the result of simple accretion. It has been characterized by periods of deep rapid change followed by times of consolidation and linear growth, in which there is a subsequent elaboration upon the theories and models created during revolutionary periods. The result of creative periods is a set of modes of explanation, methods, laws, theories, and instruments which govern scientific orthodoxy during periods of nonrevolutionary change. A

paradigm is a constellation of models which defines, exemplifies, and illustrates the ideals and procedures of normal science during nonrevolutionary times. However, as all paradigms have limitations, the labors of normal science itself eventually lead to a breakdown of these paradigms by exposing their limitations. This in turn forces the creation of new paradigms.

Particular paradigms exist in every field of specialization. They are part of what students learn when they study to be physicists, biologists, economists, psychologists, or philosophers. When the paradigms of a particular discipline are more productive in a given era than others, these tend to be deployed by other disciplines as well. Thus, certain paradigms of the physical sciences have come to be widely applied, not only to the natural sciences, but also to the social sciences and, in limited ways, even to the humanities. In these fields too we find attempts at precision and objectivity, experimental methods, quantification and analysis, methods modeled after the paradigms of the physical sciences, especially as these came to be defined by mechanistic and reductionistic conceptions of the world. Older, more holistic ways of thinking were supplanted by methods of analysis and experimentation that aimed primarily at prediction and control. This positivistic orientation has in turn 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 which have guided their application. Thus, a paradigm shift is developing in some of the more theoretically advanced studies, and today there are new cosmologies being created that dispense with the older machine models of reality.

When a major cultural activity, such as science, undergoes a paradigm shift, human perceptions are changed, since we interpret the world in terms of the paradigms that are in dominant use. The notion of paradigm shifts then, as we employ it here, is not restricted to the development of science, but is extended to cultures as a whole.

My thesis as set forth below is that our culture is undergoing, and is in need of, a major paradigm shift. Further, the emerging paradigm, if in support of the deep ecology movement, will be more appropriate to the unity and the interrelatedness of the Earth, with its limitations and its delicately balanced ecosystems. Such an orientation will stimulate more fulfilling personal development as well. The emerging ecological paradigm I call the planetary person, the waning, older paradigm the technocratic.⁶

The spirit of inquiry and creativity comes alive during such periods of paradigm shift. We are more open to novelty and the multifarious complexity of the world. We are able to see new possibilities. Our lives take on added dimensions of significance. To be sure, the openness of such times risks both conceptual confusion and a conceptless desert in which orientation can be difficult. In our current situation, one force driving our civilization toward fundamental change is the confusion created by lack of understanding of our own technological forces. Part of this confusion arises from the fact that science, art, and philosophy have become separated from daily life and overly abstract. The older models no longer work as explanations for this process of technological development. Nor do they work as they ought for direction of policy. We are overwhelmed by large amounts of information and highly specialized learning. The older paradigm no longer seems compatible with, and not able to coherently connect our vast knowledge in meaningful ways. Even our experience of the world is fragmented, rather than united. We need new unifying insights capable of enabling us to better understand human and ecosystem processes which are self regulating, interconnecting network systems.

In the discussion that follows I recognize that within each of the two dominant outlooks there are subordinate, supporting paradigms, but I will refer to the collective paradigms of each outlook in the singular as the technocratic or the planetary person paradigms. I also note that major paradigms have sufficient power 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, in the Old Ways, for example. The emerging organic paradigms will differ from older Organic paradigms, because of our more detailed knowledge of ecosystem processes, cells, matter-energy, planetary processes and the like inform the emerging paradigm. Nonetheless, features of earlier organic paradigms can be incorporated so as to give continuity over a longer time span. Moreover, a waning paradigm is rarely totally rejected because aspects of it are incorporated in the new paradigm. So

the paradigm of the technocratic outlook will have useful but limited applications, just as Newtonian physics is still useful in an era of relativity and quantum physics.

Technocratic Paradigm

Descartes' conception of methods of inquiry, added to the 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 has dominated modern disciplines.⁷ Philosophy has typically extended Cartesian analysis by formalizing all modes of inquiry so that they resemble mathematics (understood sometimes as logic), or, if it has rejected some specific techniques, it has retained the Cartesian philosophy of technique. The fundamental idea is that proper application of right technique will in time yield solutions to any problem. This emphasizes the uniformity not only of method but also of the character of the problems. We aim to reduce phenomena to their component parts, and we explain all wholes by reference to these parts and to their external, measurable relationships. So conceived, technique sets the program for technology, applied in uniform ways to production. Labor is then so divided 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 can expedite our learning. However, all techniques have limitations. Moreover, complete mastery in some cases can mean a transcendence of technique, and this carries possibilities of a creativity which develops new techniques. It seems a human compulsion to explore fully each new technique, to elaborate it, to consider all of its possible variations. This ensures that the limitations of any technique must eventually be realized. Thus their complete elaboration often leads to their overthrow. Here we have 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. Thus, attempting to arrest social change can often help precipitate drastic change.

Powerful techniques 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 their limits are reached; technology tends to become itself the prime concern of modern industrial culture. Thus we now perceive a need for control of technology by experts, either directly or through elected or corporate officials whose decisions will be guided by technicians. The amounts of capital involved in technology, the numbers of people, the skill levels required, the increasing risks dictated by the required economics of large-scale investment, long lead time, etc., all press us toward a government by an expert elite. Perhaps the actual politicians and decision makers will not necessarily be experts, except in modern management techniques, but the net cultural effect of such technological development will result from the values of the experts, which underlie their decisions. In time this cultural bias leans toward technocracy.

Technocracy here refers to the systematic application of technology to all levels of human activity, including governmental and economic policies which have growth as their central aim. Such growth in the contemporary West is often promoted by means of policies which favor complex, high technologies. The scale involved in applying new technologies dictates a need for government and corporate planning; thus, only specialists can write policy. The 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 theoretic activities and principal emphasis is upon 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 which can be quantified, controlled, and observed directly with the instruments produced by technology. (However, it is now well known that no inquiry or discipline can be 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 unimportant, irrelevant. Ironically this thoroughgoing "objectivity" ultimately undercuts its own reason for being, since it denies meaning to the whole of human experience and finds ends beyond its means to evaluate. Technology can only be a tool, a means, despite the fact that good design can create products of 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 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 might disrupt the technological process. Being a self-made person is taken to its literal material end.

While the technocratic paradigm partly defines what science should be, it does not preclude that science might consider values. But even if this were to be done, the result would attempt to reduce them to nonvalues and abstractions. In any case, the practical social result, since technological priorities determine the flow of research money, is that those areas of human endeavor which promote technocracy thrive under technocratic paradigms, whereas those that promote deeper values languish. Think of the large amount of resources devoted to the hard sciences and engineering, compared with the small amount devoted to aesthetics, art, and the humanities.

Descartes held that creatures with souls have significant intrinsic value. But once Descartes' conception of soul and God are rejected by natural and humanist philosophers, technocracy is free to emphasize methods and means, now impoverished in ends. The emphasis on method and technique includes reductionism and explaining all natural phenomena in mechanistic terms; it includes the quantification of as much in the natural world as possible; these are all emphasized by those who keep only the materialistic half of Cartesian dualism. This materialism is of the classical atomistic variety. These elements, then, more than any others, define the positivistic shape that the philosophy of science assumed. As was indicated earlier, these elements were closely tied to the development of modern large scale industrial manufacturing. This explains in part the emphasis on increased production and consumption, for this is the means to measure efficiency, even though these measures do not reflect total costs. Economics itself became abstract and disassociated from ecological and humane values.

The technocratic mindset strives to create the perfect machine process at all levels of society. The machine metaphors for the body, for nature, for the solar system, and for social systems have been illuminating in limited ways. During the last three hundred years these models have penetrated Western consciousness as more and more of its energies have been directed to the creation of modern, industrial, machine-based technologies and economies. The sheer intensity of this effort, coupled with the logic of these technologies and their anthropocentric values, often seems destined to literalize these metaphors. Thus the Earth comes to be 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 codes. Technocratic philosophy even 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 drive is found in capitalist and socialist nations alike, for the mechanistic paradigm is essentially placeless, global, transpolitical, transideological, and is closely connected with modern industrial technology and its specialized material science and engineering

disciplines.

Just as nature comes to be treated only as a resource, so persons are evaluated on the basis of their functions, rather than in terms their intrinsic worth. Production of things and profits becomes more important than persons and communities. Jobs, progress, the glory of the state, the facility of computer systems, efficiency, these are cited as justification for disrupting persons, families, and communities. The technocratic state emphasizes wealth, power, and the capacity to influence others. Although lip service may be paid to helping others, the 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 all corporate entities, whether business, university, government, or military. These all converge in the technocratic state. Diversity is discouraged, for such a state tends to become a monolithic monoculture. Voluntary associations and public interest groups may form in reaction, but their influence will be small, their resources meager. Friendship and genuine community are difficult within corporate structures, since corporations demand loyalty and foster competition, which often conflict with these communal values.

In summary, the technocratic paradigm encourages the development of centralization, of capital-intensive and labor-poor industry. It strives to apply technology to all human life and creates uniformity in product and culture. It fragments human life and finally lacks any values to sustain it. As it becomes more centralized and complicated, it becomes more vulnerable to the "Titanic effect."⁸ The concept of persons is impoverished. Nature is understood, not as living subjects, but as objects and machine. The intrinsic value of inter subjective community life, as exemplified in art, fiction, storytelling, folklore, myth, poetry, and drama, lacks serious recognition within the technocratic paradigm. In this discussion I have emphasized the negative aspects of the technocratic paradigm in order to sharpen the contrast I will next draw with the planetary person paradigm. All these inadequacies the ecological paradigm is meant to correct because it develops from an understanding of community, and because it is more adequately based on contemporary insights into the human and natural world. It takes relationships and ecology seriously.

Planetary Person Paradigm

The essence of Socratic wisdom is the clear awareness of our own ignorance and limitations. Thus armed, we are freed from the boundaries that our self-assertive interests draw between ourselves and others. When we arrogantly attempt to measure all things by human interests, when we think we have at last controlled life's uncertainties and eliminated its mysteries, our view seems absolute. We allow it to dictate how we should live, even when this view is itself a major source of our problems. We find it difficult to connect our philosophy with the quality of our experience, with our actions and their consequences. In such a case, Socrates would direct us to the way of dialogue with its cure of dialectic. We are limited not by an aware ignorance, but by our "knowledge" that the world is as we think it "must" be. In contrast, Socratic questioning has the virtue of freeing our intelligence to follow the inquiry wherever it might lead. Here our quest is an enlarged paradigm for the creation of social processes which will be in harmony with a broader understanding and reality of ecosystem health.

Each of us knows in our bones that the world is not a machine. Nor is our body 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 in life cannot be measured or quantified. Both friendship and genuine community are necessary for the development of whole human persons. Nature is not some alien monster that opposes us that we must conquer: Tigers and wolves are not just killing-machines; even 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 sometimes 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. Each of us knows that we are not separate from it.

Yet there is pollution and destruction. Our collective actions cause serious consequences. These

sometimes seem overwhelming, as if produced by an impersonal technology over which we have no control. Part of our inherited culture takes the form of the technocratic paradigm, but there are other elements, such as those mentioned above. We will now develop an organic planetary person paradigm to see how it might better integrate these insights with our contemporary knowledge of ecology, humans, and community. I begin with a reflection on social philosophy since 1650.

Prior to the scientific revolution, the dominant Western philosophy of humans and nature was Christian. The world was *seen as* created by an act of God's love. Humans were created in His image. The world was theirs in trust from Him. Their role was to have dominion over it, but also to care for His creation. Nature was sacred. Humans would destroy it only at the 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 took over many Christian values, but it especially emphasized priority of human dominion over the world. In harmony with modern science humanism emphasized human ability to understand the world, to demystify it, to desacralize it, and to control it. As both God and soul were left out of humanist philosophy, there eventually arose the technocratic doctrine that we have discussed, which stressed individualistic separatism, utilitarianism, mechanism, and anthropocentrism.⁹ Nature becomes a secular object, mere resources to be used to satisfy not just needs but even human cravings. The only locus of value is pure subjective preference, or a calculable "greatest good for the greatest number of humans."

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."¹⁰ 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 within which society must exist. Freedom in its highest expression involves acting on principles. In the social matrix these constraints and freedoms are balanced out. In community one realizes one's worth as a person acting in concert with others in a kingdom of ends.

If Hobbes emphasizes our separateness, Kant emphasizes community. Technocratic philosophy, with Hobbes, regards each of us as separate parts which get their significance only 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 which 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. Through its paradigm, observer and observed are united in reciprocal processes of inter-responsiveness. The boundaries of community extend to include the other beings of our home places. We affect and are affected by this broader community of life. Our societies are living processes within it.

The planetary person paradigm attempts to locate the constraints on human activities in the principles of ecology and the reality of particular ecosystems. These reveal that 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, form networks of symbiotic complexities that 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 are both entropic and anti-entropic, they are recursive systems in process. Information processing, storage and modification are inherent in the natural world.

The dominant organic paradigm of the planetary person stresses the interrelatedness of the biosphere. The world is thought of as intersecting fields of processes, rather than as 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 the river, the ocean and the biosphere. Unlike a machine, the organism is a complexly interrelated whole of processes, with both 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 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 one understands. One weakness of the machine model is that it gives us the illusion of understanding when we "explode" the parts and see them in display. But something is fully understood only when, after analysis, we can view 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.¹¹ The body is a community of cells. In a larger human community persons have a range of freedom, but their mutual ends finally harmonize and this makes 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 is the conclusion drawn within the technocratic paradigm and this logic drives it toward complete control. Further, this control will not first be applied to the large collective social processes, but rather to persons. Since persons are the social atoms, the aim will be 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.

The ancient Chinese sage Lao Tzu was one of the world's early philosophers of ecology. In the *Tao Te Ching* he observed that all things are equal in the great natural order. The trouble begins when we start 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, nor that it would pollute even human milk. We did not know that aerosols would threaten the atmosphere. We did not know that nuclear power would pose the risk of the nth country in nuclear arms. The list goes on endlessly. 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 philosophy. It is always the fallible human part that is said to be at fault, never the whole approach.

From the perspective of the deep ecology movement, managerial attempts to control the natural world create difficulties to the extent to which our design ignores the values of other beings and natural ecosystems. There are not only human values at stake, but also the values of all other organisms. Ecospheric egalitarianism and the principles of ecological interconnection help us to realize that no large-scale impacts on ecosystems will be without their 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.

To refuse to 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 finally to be saddled with the ultimate responsibility that once was thought to be God's. Humanism, as anthropocentrism, joined with the technocratic paradigm, must finally assume the overwhelming responsibility for running 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 would reclaim value by placing it once more at 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 has expressed this better than A.N. Whitehead when he said:

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.¹²

Compare Whitehead's remarks with those of Justice William O. Douglas in a 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.¹³

Both Whitehead and Douglas, then, recognize that humans can perceive the intrinsic value in natural processes, plants, animals, and other beings. In Douglas's case 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.

One of the most difficult matters in environmental issues has to do with 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. What the Court in effect said was that only humans, or the fictional persons of ships and corporations, can be given standing. The majority view is that environmental disputes must be settled, through the legal channels, by means of resolving conflicts of interests. For example, in the case of a forest, the forest as such cannot be aggrieved. Conservationists have interests, but these must be *their* interests, not the values within a natural process, independent of human interests. Douglas's dissenting opinion suggests that other living beings, and processes like the river, have their own values which should be recognized by the Court. Those who are qualified by their meaningful relationships with the subject in question should be allowed to represent these values.

The technocratic model treats all interests as human interests. Aesthetic values, species values, recreational, habitat, and other values of a forest are to be quantified in terms of common dollar values, and these are to be weighed against the monetary values to be gained by logging, or by 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 much 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 always win?

Whitehead avoids this difficulty by a metaphysics that takes value as part of the very meaning of actuality. Value experience, he says, is the very essence of the universe. This 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 value. Both Douglas and Whitehead then would transcend

narrow anthropocentrism. Both recognize the inter-penetration of things with one another. The values spoken of imply diversity, one of the features of most ecosystems. Intrinsic value in each being denies 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 and resilience. 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 that is enriched by the perception of both intrinsic and instrumental values. This understanding is not the result of "objective" study alone, but requires that we also 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 requires a new type of understanding.

A New Understanding

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

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.¹⁴

What is implied by Rolling Thunder's view is that we cannot understand the ways of other beings, so long as we approach them only *via* interests, economic or personal. We must also 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. Any other approach separates us from other beings, narrows our perspective, and encroaches upon our poetic and aesthetic responses by drawing boundaries through making judgments. Rolling Thunder sees that we and the environment are not separable. Conflict with the world is therefore 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 things in themselves. Rolling Thunder tells us it is possible to appreciate the value of other beings, but only through respect.¹⁵

It might be said that we do not know what other natural beings value. What do deer and bear want? But the point is that this is not for us to judge. They have their way of life. This we should respect. We share our lives with others. Our communities include other beings. To disrespect them is to impoverish our own lives, to deprive ourselves of their values. It is, moreover, to pave 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 way of thinking, feeling, and acting toward the world. Our various 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 up once more, unite us with the world, and enable us then to experience the values of other beings and communities.

Our traditional moral philosophies cannot resolve these environmental issues and conflicts.¹⁶ These philosophies do not recognize values in natural things and they are individualistic in their conceptions of rights and duties. Our collective actions are really 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 relationship. 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 also toward human life. One paradox of 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 individual persons by laws which prosecute victimless "crime." We often punish persons for harm they might do to themselves, and thus we do not respect their freedom and dignity. Yet we have no effective way of curbing corporate activities that impinge upon the rights of each person by polluting the air (s)he breathes or corrupting the water (s)he drinks. Clearly these imbalances indicate that our system is in a period of great stress.

The planetary person paradigm helps us to understand 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 chains, 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, all of these represent levels of integrated organization within the 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 reactions to others. Moreover, we are often unaware of the extent to which we lose our capacity for wholehearted response through habit, and through being captured by these dominant models. The technocratic paradigm begins its control of nature with a control of our minds, which affects how we think and feel about the world and what we look for.

The planetary person paradigm shift enables us to look at the world through the eyes of ecological processes and relationships. Afterwards, 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 a respect for living beings in ecosystem contexts. We can better tell when a process complements an ecosystem rather than seriously altering it. The eye for proper "fit" is, in one respect, the eye uncolored by any theory or judgment, but nonetheless informed by deep experience in the broad sense. Art and science meet within such eyes. In emphasizing intrinsic worth and egalitarianism, the planetary person paradigm helps us to see the possibility of designing collective activities that from their very conception are ecospherically sound, 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 contexts. These contexts lead to the processes that interconnect communities globally. From the person, human and nonhuman, and the community, we are led finally to see 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 recently proposed Gaia hypothesis represents 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 interconnectedness of biospheric processes.¹⁷ 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 fully 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-responsive.) To learn 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 which is receptively responsive to the music as it is played, immediately aware of the symphony as a whole and of its many voices. If we are attuned to our world in this way, control is no longer an issue. That is to say, we realize we do not have to try to manage everything else. We can then learn to approach things on a smaller, more decentralized scale, based on subtle understanding. We can learn to ride with the natural processes rather than against them. We will, in short, trust nature because we will trust ourselves appropriately to improvise as the need arises, rather than

trying to follow some rigid plan that we impose on every thing else, and even on ourselves.

The shift to an organic paradigm means loosening the hold of the mechanical approach, but that has become maladaptive and insecure in any case. Pure "reason" and "objectivity" devoid of sensitive awareness, aesthetic response, insight, intuition, or caring attention prevent leaving the "security" of this narrowed experience. This narrowness is itself a source of insecurity. If we narrow our experience in this way, then we tend to live incompletely. This almost ensures that 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, by doing our best as whole persons we can realize that the natural world will support us indefinitely, if we but adjust our activities to it. We can also realize how we can open to a centered awareness that is free of conceptual constraints. This openness in turn can lead to a realization of our essential being and inherent worth, as it is in the world as a whole.¹⁸ We do not need to "distinguish" ourselves to realize our value. We have nothing to prove. For our deep ecological planetary paradigm human life is at home once more in a harmonious world of beauty and depth. We are not isolated and alone. We are citizens of the world, members of the larger communities of life, dwelling in harmony in our home places with diverse beings as companions.

Summary

The planetary person paradigm stresses: internal principles of order and the importance of 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 itself, ecospheric egalitarianism, human experience as value-laden; creative, ecologically compatible design of human activities; collective responsibility and the unique value of individuals, personal knowing, intersubjective experience and diverse consciousness; organisms as wholes which interact with other organisms in spheres of interpenetration; the planet as a whole as a living organism; persons as creative, open, dynamic, developmental, and as coevolving within larger 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.

If our Western Institutions shift to the planetary person paradigm as our basic orientation, we will have some chance of creating postindustrial processes that will not destroy ecosystem resilience and vitality. However, if we continue in the technocratic mode there is less chance of this since capital-intensive, large-scale programs will undermine all attempts to add on environmental constraints at the end of the design process. At that point "cost-benefit" and similar analyses can be used to justify expediency and "efficiency." Should these fail, then "national emergency" or similar appeals will always suffice.

To a certain extent our paradigm selection is a creative affair, but by this we do not mean to suggest that it is entirely arbitrary. Many paradigms are so limited that they cannot be generally applied. Furthermore, my main reasoning in this essay has been that the principles of ecology and the current state of advanced scientific knowledge point toward emerging metaphysical conceptions of the world that are more in keeping with ancient outlooks and organic paradigms, than with the machine paradigm of the technocratic outlook.¹⁹ Philosophy has a significant contribution to make in helping to develop ecocentric paradigms that are ecophilosophical in the broad sense, and which represent a creative synthesis of current knowledge. What I have offered here is only a preliminary sketch.

This table compares the major features of the two paradigms discussed in this essay.

Comparison of Technocratic and Planetary Person Paradigms		
	Technocratic	Planetary Person
1.	Machine metaphor	Organic metaphor
2.	Reductionistic	Holistic
3.	Linear	Multidimensional
4.	Nature as instrument	Intrinsic values
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.	Technology as power-over	Technology as appropriate
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 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 Self

Postscript Spring 2008

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 complete account is in the *Selected Works of Arne Naess Vol 10 The Deep Ecology of Wisdom* published by Springer in 2005. Also see the series on Naess's work in the *Trumpeter* at <http://trumpeter.athabascau.ca> which is online in the archives. Naess realized that his rough and ready account in the first paper needed to be clarified since he received so many varied responses to it. He explained that from that first paper on he was writing about the deep ecology movement and also about personal philosophies of ecological harmony and wisdom called *ecosophies* from the ancient Greek root words "ecos" and "sophia". He made clear that

he was talking about a grass roots international movement similar to the peace and social justice movements. All 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 actions.

The most recent account of the platform principles is in his book *Life's Philosophy* published in 2002 by the University of Georgia Press. 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, technological and ideological; 7. An ideological change would essentially entail seeking a better quality of life rather than a raised standard of living; 8. Those who accept the aforementioned points are responsible for trying to contribute directly or indirectly to the realization of the necessary changes. Naess does not use the words "deep ecologist" but calls anyone who supports these platform principles a follower of the deep ecology movement. Each person or community would have their own unique personal philosophy of life which would be the basis of their support for the movement. Naess's personal philosophy is called *Ecosophy T* named for his mountain hut Tvergastein in Norway. Naess is a pluralist. He favors a metaphysics of gestalt ontology that treats theoretical models and formulae as abstract structures. Our spontaneous experience is always deeper and more complex than we can ever express in language. Naess places great value in cultural and worldview diversity. He considers them among the Earth's treasures as well as its biological diversity. He thinks there are many philosophies of life consistent with ecological and social responsibility. He stresses the importance of nonviolent communication and direct action.

Finally, with respect to my account of the planetary person paradigm, I intend to describe in broad terms the main features of a major shift to what I now call ecological approaches which can all support the platform principles of the deep ecology movement. There are several international movements in the world and the movement for ecological responsibility is a critical one which is related to peace and social justice. The use of the word "planetary" is meant to include global and local action as well as the idea of wholeness as in whole persons with holistic approaches. I think that internationally there are five main features to the emerging ecological approaches that describe a great diversity of cultures, worldviews, religions and personal philosophies of life. These five features 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 possibilities for creating 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 that I know of can be interpreted to support these principles and recognize the sacred quality of creation and human life.

Endnotes

1. Robert L. Heilbroner, *An Inquiry into the Human Prospect* (New York: W.W. Norton, 1974).
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>.
3. As Naess explains, "The 'in principle' clause is inserted because any realistic praxis necessitates some killing, exploitation, and suppression" (Ibid., p. 95). This qualification is made with the simple recognition that we cannot live without affecting the world to some degree, the discussion that follows, whenever biospheric or ecocentric egalitarianism is discussed this qualification is assumed. Because this phrase was often misconstrued Naess later quit using the term "egalitarianism." The platform principles of the deep ecology movement first published in 1985 do not use the term.

4. Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, University of Chicago Press, 1970).
5. On Socratic ignorance see the author's paper, "The Virtue of Socratic Ignorance," *American Philosophical Quarterly* 18 (1981). This paper is now online at www.ecostery.org in the articles section.
6. The choice of terminology was partly influenced by Theodore Roszak's book *Person/Planet* (New York: Doubleday, 1978).
7. Cartesianism is used to refer to the historical influence of Descartes' philosophy. It is not entirely certain 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).
8. James Wall, *The Titanic Effect* (Stanford: Sinauer and Associate, 1974).
9. Humanism as I use the term refers to that anthropocentric and secular philosophy which 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 we 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.
10. See Kant's two important works: "Perpetual Peace" and "The Idea of a Universal History on a Cosmopolitan Plan." These two essays were influential in the development of the League of Nations.
11. Lewis Thomas, *The Lives of the Cell* (New York: Bantam, 1974).
12. Alfred North Whitehead, *Modes of Thought* (New York: Macmillan, 1938), p. 11. 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.
13. William O. Douglas, "Sierra Club vs. Morton Minority Opinion," reprinted in C.D. Stone, *Should Trees Have Standing?* (Los Altos: William Kaufmann, 1974), p. 75.
14. Doug Boyd, *Rolling Thunder* (New York: Delta, 1974), pp. 51-52.
15. 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" (p. 95f). See also Holmes Rolston, III, "Can and Ought We to Follow Nature?" *Environmental Ethics* I (1979): 7-30.
16. I owe this point to Mark Sagoff, "On Relating Philosophy to Environmental Policy" (unpublished).
17. James Lovelock and Sidney Epton, "The Quest for Gaia," *New Scientist* (6 February 1975): 304-306.
18. 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), esp. chapter four.
19. 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* 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 attempts to take 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 developmental character of the world, and which

treats matter as inert stuff rather than as 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 character of awareness. All these features give his organicism a particular relevance to the deep ecology movement and a meeting of East and West.

Dedication and History

This paper is dedicated to 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 larger project begun in the academic year 1974-75 and was supported by the Canada Council and the University of Victoria. I thank Delma Tayer of Yakima Valley College for her efforts in organizing the lecture series, and Holmes Rolston, III, whose helpful criticisms and suggestions greatly improved the early drafts of the paper. The analysis has also 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 has since been translated into Japanese and published in Japan. This article was most recently revised in 2008.

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