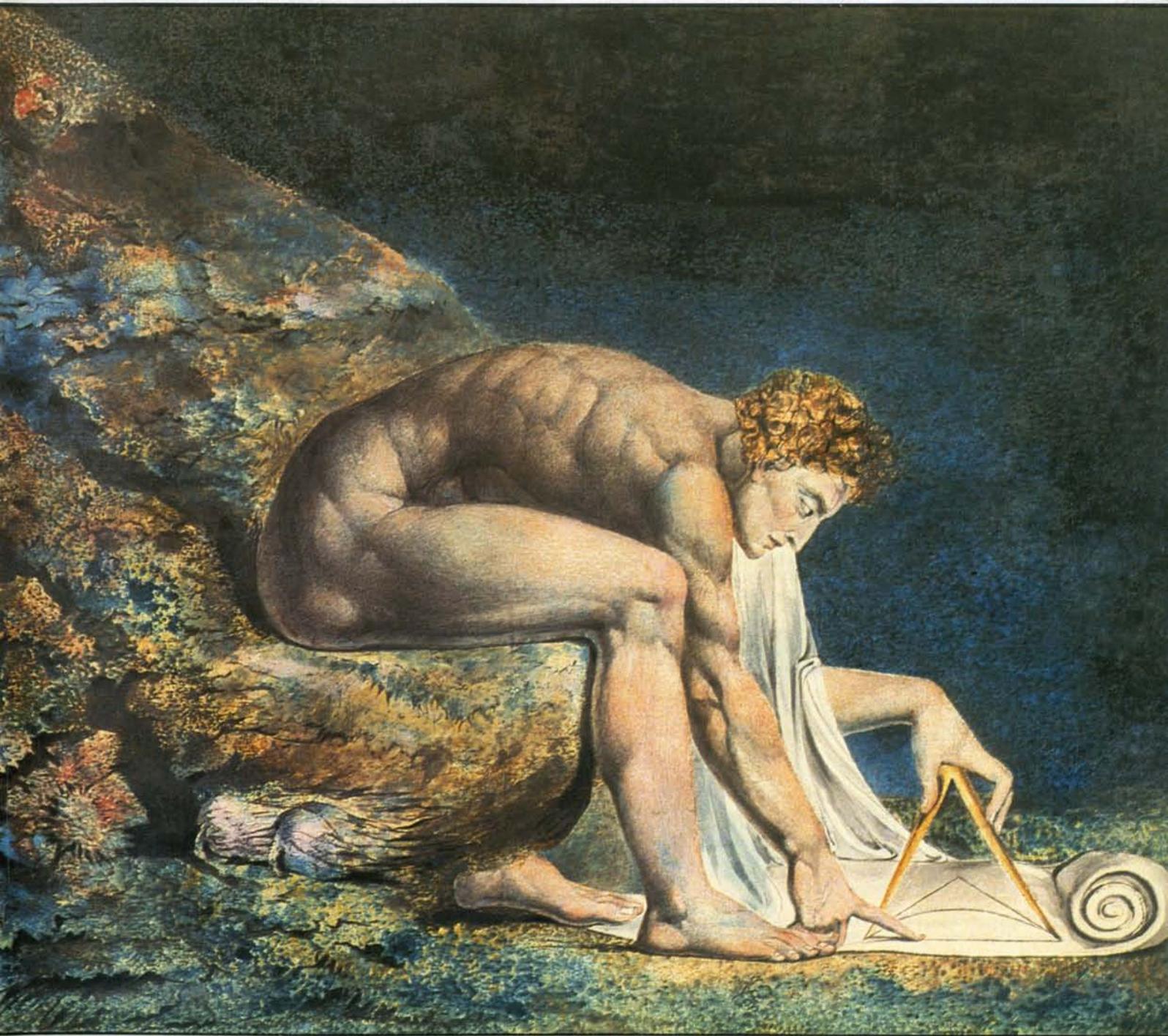


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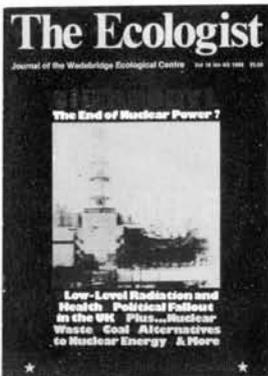
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The Need For An Ecological World-view

The progressive degradation of the biosphere which we are witnessing today cannot be attributed to technical deficiencies in the implementation of our socio-economic policies. It is the policies themselves that *by their very nature* are causing the destruction. Those policies, what is more, are difficult to reverse for two basic reasons.

The first is that we have all become dependent on the proper functioning of commercial, bureaucratic and political institutions which employ the bulk of us, and which are committed to — and dependent on — the perpetuation of precisely those policies that are causing the destruction. The second reason is that we are imbued with a world-view — the 'world view of modernism' — which rationalises, and hence legitimises, these policies, and thus the destruction which they bring about.

The basic tenet of the world view of modernism is that the world is imperfect: it is random, chaotic, atomised, and aggressive. In fact, to use Lord Tennyson's well known phrase, nature is seen as "red in tooth and claw," while the life of natural man (as opposed to modern man) is seen, in Hobbes's equally famous phrase, as "nasty, brutish and short." In effect, God is thought to have done a bad job. According to conventional wisdom, He produced a lousy world, filled with miserable people — which is why we must reverse His work and must change the world, transforming it as radically as possible. This transformation is to be achieved by means of science, technology, industry and the various institutions of the nation-state, which together will supposedly bring about that miraculous process called 'economic development', or 'progress', thus creating a veritable paradise on earth, one that is incomparably superior to any that God or even the evolutionary process could possibly bring about.

This is unquestionably the most pernicious myth ever entertained by man, for it is the policies which it serves to rationalise that are leading to inexorable destruction of the biosphere, which in turn must inevitably spell the eventual extinction of our species. The reason is clear: economic development involves methodically substituting the technosphere — or the surrogate world of human artefacts — for the biosphere — or the *real* world of living things — from which the former derives its resources and to which it consigns its ever more voluminous and toxic waste products. In other words, economic development, to which our society is totally committed, inevitably means ecological degradation and economic contraction. The two are inseparable — they are but different sides of the same coin.

Ecological degradation and contraction gives rise to a host of problems, each one of which is interpreted in such a way as to make it appear amenable to a solution that involves further economic development. Such an interpretation is consistent with the world-view of modernism. Thus, we are told, the population explosion is caused by poverty and insecurity in the 'underdevel-

oped' countries, and the only way to solve it is through further economic development which will make the poor rich and secure and will thereby give rise to the so-called 'demographic transition', with birth rates falling as material prosperity increases.

Similarly, malnutrition and famine are blamed on primitive agricultural techniques: again, economic development is seen as the solution, by making available tractors, combine harvesters, fertilisers, pesticides and cheap irrigation water.

And so it is for each of the growing problems that face us today and which are, in reality, but the symptoms of the ecological degradation being caused by the very policies that are supposed to solve them.

As a result, the destruction proceeds by positive feedback: we are in effect caught up in a veritable chain reaction in the direction of ever greater biospheric destruction — and eventual human extinction.

Indeed, if man is to survive on this planet for more than a few decades, then our society must not only be restructured into socio-economic groupings that are capable of sustaining themselves without annihilating the world of living things, but we must also reject the world-view of modernism in all its ramifications, replacing it with a world-view that validates these very different socio-economic structures and their ecologically benign policies.

The task of discrediting the world-view of modernism is well under way, but to persuade people to reject it outright will only be possible once we are in possession of a comprehensive and coherent ecological world-view with which to replace it. Different branches of the ecological movement have, in the last twenty years, made various contributions towards the development of such a world-view and several schools of thinking have emerged, such as Arne Ness's 'Deep Ecology', Murray Bookchin's 'Social Ecology' and Henryk Skolimowski's 'Ecophilosophy', to name but three.

Unfortunately, the proponents of the different schools disagree on what they take to be a number of fundamental issues — as will be seen by the exchange of views published in this issue of *The Ecologist* between Grover Foley, Henryk Skolimowski and Arne Ness. It may be, however, that the differences are more superficial than it appears, and that members of these — and other schools — might co-operate to develop a single ecological world-view. We have published two lengthy articles in this issue by Richard Sylvan and myself, both of which seek in different ways to consider what the basic features of such a world-view might be.

Edward Goldsmith

Deep Ecology and Subjectivity

by
Grover Foley

Deep Ecology is right to reject quick technological and political "fixes" as the solution to our environmental and social woes. But does Deep Ecology take us Deep enough? According to Grover Foley, Deep Ecologists have shied away from the issue of defining new values and have failed to provide hard guidelines for ecological living. They have become befuddled by mysticism and have disastrously ignored the forces behind humanity's fatal fascination with machines.

What is Deep Ecology? The term refers to all attempts to go beyond technological solutions — to change our values as well as our tools. 'Shallow' ecology depends on what Marxists of the Frankfurt School call 'instrumental reason', that which sets 'know-how' above 'know-what', cleverness above wisdom, quick fixes above long-term solutions. Among the deep thinkers range poets and professors such as Gary Snyder, Alan Watts, and Theodore Roszak; among the not-so-deep, Barry Commoner and Garrett Hardin. In their book, *Deep Ecology*, Bill Devall and George Sessions give a thorough outline and comparison of the alternative views.¹ But has Deep Ecology gone deep enough? Or does it still share some major assumptions of the technocratic, 'objectivist' views?

Commoner's 'Shallow' Ecology

As an example of the technological approach, take Barry Commoner. Called 'Mr. Ecology' by *Newsweek*, the 'Paul Revere of ecology' by *Time*, Commoner summed up three valuable principles of ecology:

1. Everything is connected to everything else. Life is a delicate, interwoven web; touch one thread, and the whole vibrates.
2. Everything must go somewhere. Nothing simply vanishes, and anything man-made can cause pollution.
3. Nature knows best. When we toss chemicals into an organism, it is as though we were tossing a random assortment of nuts and bolts into the most delicate machinery ever made.

All three principles are encapsulated in the economists' rule, "There is no free lunch". There is a price on everything we do to nature.²

What then is Commoner's solution? Better technology and socialist government. We should, he says, replace bad technologies with good: cars with trains, plastics with wood, detergents with soap, synthetics with wool, aluminium with steel. Not fewer people or less consumption, he argues: only better design of our

production technology, for bad design accounts for 95 per cent of the pollution problem. We are not, he claims, running out of resources or facing a population bomb. America's oil, for instance, will last another fifty years. That gives us time to seek a substitute, like solar cells, and a socialist form of government, that will avoid major shortages.

But such solutions verge on technological and political quick fixes. Commoner seems to accept the American level of consumption, as long as it goes with better technology and state planning. Like most Marxists, he believes science and planning are our chief hope. The anarchist Murray Bookchin sees Commoner as a typical proponent of environmental management, rather than of ecological holism.³ Like the scientific socialists, he does not fully see the grip that power thinking has on both capitalist and socialist camps.

Deep Ecology: Beyond Quick Fixes

Deep Ecology goes beyond the transformation of technology and politics to a transformation of humanity. Taking a holistic, total-field view, it denies any boundaries between man and nature. We cannot, it says, separate man from nature. In place of dualism, it posits a unity of subject and object. Life has no separate selves, only "unbroken wholeness" (as the physicist David Bohm puts it). The self and ultimate reality are one, as Zen and other mystic traditions claim — *That thou art, or: thou art That*. The root of our problem is anthropocentrism, and to overcome this we must make Nature the centre. We must identify with the whole world, for "No one is saved until we are all saved."⁴

Not only are man and Nature united. They are equal at every level. The principle of 'biocentric equality' says that all beings and things have equal intrinsic value; none is higher than another. All have an equal right to self-realisation. Man cannot lord it over lichens or even rocks: he is a 'plain citizen' of earth. Nature is not a mere resource for humans. We cannot set up any hierarchy of species, whether based on skill, intellect, or sentience (the ability to feel).

Plainly we need Deep Ecology: beyond better tools, better values. In the anti-war campaign too, we need more than statistics on warheads and the charade of 'arms control'. Without a change of heart, we will change few minds, much less our whole way of life.

Dr. Grover Foley, writer on technology, has taught social responsibility of science and technology at the Royal Melbourne Institute of Technology; medical ethics and ethics of technology at the Auckland Technical Institute, New Zealand; and philosophy, religion and ethics in the USA. He can be contacted at 4/6 Cahora Avenue, Remuera, Auckland, New Zealand.

*If humanity is the worm in the apple, how did it get there?
Deep Ecology gives no clear etiology of the Fall. How could
unselfish Nature beget a creature of such consummate
selfishness?*

Beyond Deep Ecology

But does Deep Ecology take us deep enough? The following critique is I hope constructive, for no one of course has an easy answer.

Some critics regret the amorphous, eclectic nature of Deep Ecology. It calls upon such diverse authorities as physicists and Buddhists, Spinoza and Carlos Castaneda, Martin Heidegger and Alan Ginsburg. "With a cast of prima donnas like this on stage", says William Godfrey-Smith, "it is very hard to follow the script."⁵ Others have questioned its principle of biocentric equality. True, this proclaims equality only 'in principle' and allows for use of one species by another in practice, when 'vital needs' are at stake. Animals may use animals, men may 'use' other men, and all men may use technology. Some Eskimos, it allows, may have a vital need for snowmobiles.

But how strict must egalitarianism be in practice? The natural world, Warwick Fox argues, is full of conflicts of value.⁶ Every level lives on another. Were there no difference in value between plants and animals, vegetarians might as well eat meat. But Deep Ecology rejects distinctions in value, even in terms of sentience. Man's capacity to feel does not make men 'higher' than Nature, nor do 'higher' organisms possess higher intrinsic value.

Befuddled by Mysticism?

Yet how do we distinguish essential from non-essential needs? Is the professor's word processor essential? His car, suburban home, or secretary? Deep Ecology, says Fox, has shied away from genuine conflicts of value: it has no guidelines even for killing and exploitation, though it acknowledges the need for guidelines. Deep Ecology is thoroughly mystic. Yet even most mystics, despite their emphasis on unity in process, have affirmed a hierarchy of states of mind and being. Ecological balance requires both hierarchy and diversity, rather than total equality and homogeneity. As Charles Birch and John Cobb argue, ecological justice is not the same as equality.⁷ Life does not spread its values evenly across the environment. Nor does mystic unity go well with Nature's mutualism. Statements like "All is Brahman", Ken Wilber charges, reduce natural diversity to a homogeneous mush or "divine goo."⁸ Even the spirit-body distinction — the basic dualism of most mystics — tends to vanish.

Nature mysticism sees all Nature as subject. Arne Naess sees the ultimate norm in 'Self-realisation': a World Self that includes the whole universe. All Nature, as Spinoza saw it, is ensouled. To re-enchant the world, Deep Ecology rejects science for mysticism (as do, for instance, Aldous Huxley, Gary Snyder, and Alan Watts). It commends the philosopher Baker Brownell, who rejected science as a method of knowing: "Brownell found this method in direct mystical experience."⁹

But why worry about mysticism? My chief concerns are

logical and technological. First, its logic. It claims that, from earthworm to elephants, the human is the only selfish animal. Tribal people, it claims, had 'animal confrères'. But if humanity is the worm in the apple, how did it get there? Deep Ecology gives no clear etiology of the Fall. How could unselfish Nature beget a creature of such consummate selfishness? Paul Shepherd, one of the few who seeks the cause, blames the agricultural revolution. But wooden ploughs seem somewhat less ominous than nuclear Ploughshare Projects.

Deep Ecology and the Bomb

This leads me to my second, techno-logical concern: lack of awareness of the Bomb. Apart from sporadic references, Deep Ecology ignores nuclear war. Not even Roszak has attempted a deep analysis of the Bomb. This indifference lasted throughout the 1970s. In his 1971 book, *The Great American Bomb Machine*, Roger Rappoport noted that ecologists were more committed to bio-degradable lavatory paper than to world peace, more concerned about oil spills than plutonium spills. "The voluminous handbook for the 1970 environmental teach-in," he noted, "carried not a single word about radiation pollution."¹¹

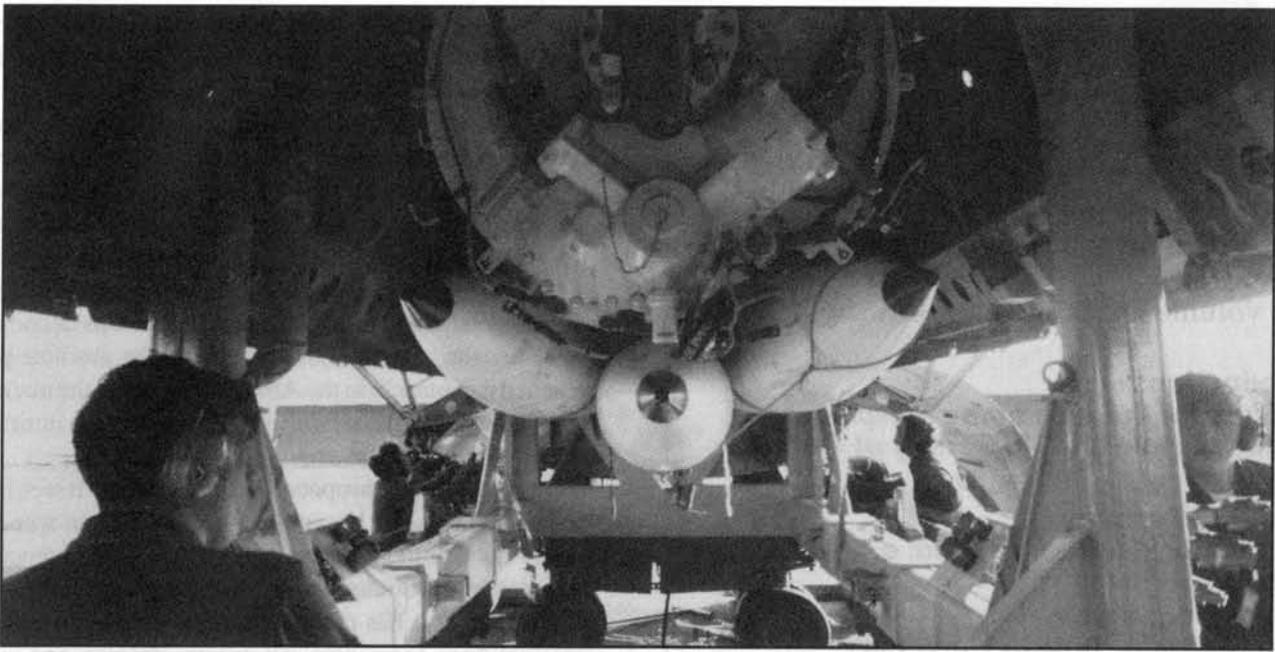
In 1976, a woman at a peace conference in Wellington, New Zealand, asked me to address her affluent group on the crises of the future. "Are you taking up the nuclear as well as environmental threat?" I asked. "No," she confessed, "the others would not be so happy about that." When I made that the condition of my speaking, I heard no more from the group.

Why this reluctance to look at the Bomb? Because, I suggest, the Bomb reveals *bad* subjectivity. It is not accidentally but calculatedly irrational, as suicidally insane as the monomaniac Captain Ahab in *Moby Dick*. How can one explain the Bomb without looking at the *subjectivity* of its creators: from Teller and Oppenheimer back to the alchemists' quest to transmute lead into gold?

The Subjective Machine

Deep Ecology, like most protests against our mechanized age, tends to see technology as the great objectifier. The solution then becomes a return to pre-technological subjectivism. But are our machines objective? Lewis Mumford argues that, on the contrary, they express our deepest longings. They translate human dreams into acts. The atomic bomb, for instance, is no mere 'thing'. Behind the Bomb lies the dream of absolute power; behind the space rocket, the dream of absolute speed; behind the computer, the dream of absolute control. Only the subjectivity of machines can explain the compulsive grip they have on our imagination, whether in missile mania or everyday growth-mania.

The age of science overlooks the irrationality within its own



The B1 bomber, a key weapon in America's strategic nuclear force. Apart from sporadic references, *Deep Ecology* ignores nuclear war. Indeed, in the 1970s, Roger Rappoport accused ecologists of being more committed to biodegradable lavatory paper than to world peace, more concerned about oil spills than plutonium spills.

artefacts. Few philosophers look at technology, and even fewer see the interplay of subjective and objective factors within the machines and their creators. Most thinkers foresee a future of either robots or rebels — but not the still more ominous union of both. Within the computer lies the spirit of Caliban.¹² True, many now acknowledge the subjectivity within science. Some even attack science as a 'religion'. But by 'religion', critics usually mean only a remnant of irrationality — a cult, fetish, or ideology. Yet the very idea of 'pure' science implies an absolute — and absolutes belong to the realm of faith. Power science above all reveals a utopian faith. Subjective drives lie deep within our 'objective' science and technology.

What do I mean by 'subject' and 'object'? In modern debate, 'subject' stands for aims, feelings, and beliefs; 'object' for facts, logic, and reason. Modern science claims purely objective knowledge. Galileo reduced life to matter and motion, claiming even colours and odours were illusions. Today we see machines above all as objects. At most, philosophers worry that machines may alienate the subject, leaving man "a stranger and afraid, in a world he never made" (as Thomas Hardy wrote).

What then is the usual solution? A rebirth of romantic subjectivity. "Do your own thing, let it all hang out, go with the flow". Rebelling against the techno-culture, the counter-culture set freedom against order, feeling against discipline, subject against object.

Freedom From or Freedom For?

But if we merely add subjectivity to the techno-culture, we may succumb to another utopia: the absolute self — whether a Dionysian rebel or a contemplative mystic. Scientific utopia arose because science, having emptied life of meaning, itself became life's new meaning. Romantics in turn envisaged a utopia of free spirits. Yet romanticism had its own Faustian element: "He who always forward strives, him we can redeem." Its freedom was random more than organic; individualist more than mutualist; freedom *from*, more than freedom *for*. 'Woodstock Nation' had little room for the orderliness, stability, and discipline that underlie family, society, and the ecosystem. As

Goethe himself put it, showing his classicist, anti-romantic side: "The Master shows himself in self-limitation, and only the law can give us freedom."

If we overlook the subjectivity of the machine, we may also overlook the objectivity within romantic reactions to the machine. Philosophers of *Existenz*, praised as deep ecologists, too often accept high technology with *Gelassenheit* (Heidegger's 'releasement'). The counter-culture for its part embraced quite a bit of technology: from LSD to Hondas, from coast-to-coast journeys to mammoth rock festivals.

The answer to mechanism and scientism is not simply more contemplation and intuition. That would be to abandon ecology to the so-called New Ecology, that reduces ecology in the last analysis to mathematics and statistics. Such academics see life in terms of economics, not balance; growth, not stability; competition, not co-operation. But such a 'Nature' is obviously unbalanced; it has as short a life expectancy as academic ecologists. A truly holistic science would explore the laws of life that earlier holism sought: not just statistics, but life; yet also not just freedom, but laws. Before our age of instant annihilation, nature must have had other rules. Due to their complexity they are not easy to establish, but they are vital to survival. It is crucial (as Edward Goldsmith shows) to re-establish these laws, such as mutualism, hierarchy, and succession.¹² That means different levels of science (as thinkers from Hegel to Waddington have argued). Each level, with its higher complexity and new emergent laws, cannot be reduced to the former.

The Power Machine

In the modern age we have seen a return of the power machine. To control nature, modern science disassembled it (Bacon's *dissecare naturam*), denied Nature value, purpose, or meaning. Galileo reduced Nature to matter and motion, while Hobbes made a machine even of the mind. Society lost any intrinsic value and became a mere constellation of forces. Science reduced man to cosmic dust, the plaything of chance and necessity. For what then does man live? Having driven out all other goals, power science itself becomes the only goal. Losing all other values,

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such as the Good, the True, and the Beautiful, man becomes, as with Hobbes, a creature of pure self-interest. Even the True is reduced to the Useful.

But power science knows no limits. Forever unsatisfied, it creates a growing need for more power. Nihilism leads to titanism, and titanism back to nihilism, in a never-ending process. Fearing his powerlessness, man must seek more power. But the greater his power over things, the more he reduces himself to a thing. The more he seeks meaning in power, the more all meaning vanishes. Ends disappear; the means becomes the end. Here lies the psychic root of the quest for absolute power, that reached its pinnacle in the Absolute Weapon, the nuclear Excalibur that will rid the world of evil and through limitless energy create a new Eden.¹⁴

Is such a view anthropocentric? Yes and no. It sees man as both crown and curse of Nature, the would-be Titan who becomes a dwarf (as Gunther Anders puts it), his omnipotence turned to impotence, his omniscience to ignorance, his hyper-rationality to irrationality. His central problem is not selfishness but his suicidal drive to become self-creator, master (and loser) of all. Our deepest problem lies not in greed but in nihilistic titanism, the same as titanic nihilism. Only so can we grasp man's fascination with self-destruct machines and blindness toward their outcome. Titanic drives blind us to the nihilistic outcome, while the nihilistic outcome foments still greater titanism.

Conclusion

To sum up: more than intuition and subjectivity, we need laws, both of balance and imbalance. If there are laws of organic order, there should also be laws of mechanical order (that becomes organic disorder). Ecology teaches or should teach balance; the nuclear nightmare teaches blow-up. A still 'Deeper' Ecology would include, with Nature's balance, the boomerang of titanism.

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12. Mumford more than anyone else has pointed out the symbiosis of 'id and automaton'. See my summary, 'The Robot and the Rebel', in 'Lewis Mumford—Philosopher of the Earth', *The Ecologist*, Vol.17, Nos. 2/3, 1987.
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14. See Max Horkheimer, *The Eclipse of Reason*, New York: Columbia University Press, 1947; William Leiss, *The Domination of Nature*, New York: Braziller, 1972; Friedrich Wagner, *Die Wissenschaft und die gefährdete Welt*, Munich: Beck, 1963, p. 43.

A PLANET IN CRISIS

As readers of *The Ecologist* will know better than most, our survival depends absolutely on the health of our environment. Unless we understand the complexities of the planetary environment and take care of it we cannot expect for long to enjoy clean air and water, food, shelter and the other essentials of life, to say nothing of the natural beauty that surrounds us in the infinite variety of Nature.

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A Buddhist monk at prayer. Deep Ecology, argues Skolimowski, lacks any theory as to 'ultimate ends'. It cannot therefore answer the supreme question: "What is our Destiny?"

Eco-Philosophy and Deep Ecology

by Henryk Skolimowski

The Deep Ecology Movement has made a brave stab at articulating a new 'ecological' worldview to replace that of modernism. But, admirable as its intentions undoubtedly are, the philosophical foundations of Deep Ecology are too shallow to provide an enduring and satisfactory cosmology for our times. Deep Ecology, argues the author, "claims too much and delivers too little".

Philosophy is an unending process of articulating the world around us. Deep Ecology is an attempt to articulate the structure of the world as we have inherited it in the second part of the 20th century. *The Ecologist* has done service to us by publishing three pieces on Deep Ecology (Vol. 14, Nos. 5/6, 1984). However the process of articulation awaiting us is of such a magnitude that it will take dozens of minds to determine "What is going on?", "Where we are?" and "Where should we be going?" We are only beginning to articulate the new post-industrial worldview, which is much inspired by ecology.

Since I am partial to this newly emerging world view, having published a book on the subject, *Eco-Philosophy, Designing New Tactics for Living*,¹ let me address the issues. It has struck me that the ideas of many scholars have been too hurriedly subsumed under the umbrella of Deep Ecology. This umbrella is too vast, and it is leaking. If we wish to move forward, we had better create a smaller but a more enduring umbrella, for Deep Ecology claims too much and delivers too little.

Henryk Skolimowski is Professor of Philosophy at the University of Michigan, Ann Arbor, Michigan 48109, USA.

Any movement which attempts to replace today's vast scientific-empiricist worldview is obliged to propose and articulate its own cosmology, its own ethics, and its own eschatology. In addition it must demonstrate that the three fit coherently into one structure, as they do in traditional worldviews where cosmology and ethics remain in a feedback relationship (see Figure 1).

Ethics follows from the general conception about how things 'are' out there: in heaven and on earth. Ethics, in turn, supports the order presupposed by cosmology. Furthermore, eschatology (or the doctrine concerning the ultimate ends) is related to both ethics and cosmology and often defined by them, if only indirectly. The relationship is thus triangular (see Figure 2).

Now if we examine carefully the tenets of Deep Ecology, particularly as propounded by its most vocal exponents, Devall and Sessions in their book *Deep Ecology: Living as if Nature Mattered*,² then we find that the cosmology of Deep Ecology is not sufficiently articulated to be a real challenge to today's mechanistic cosmology. Neither are the ethics of Deep Ecology sufficiently developed to be a guide in our daily life. As for an eschatol-

ogy, it hardly exists within Deep Ecology.

Eschatology

Let me start with eschatology. One of the underlying principles of Deep Ecology is *to live in harmony with the biotic community*. This is wonderful. But it does not go far enough, deep enough. It does not answer the supreme questions: What is our destiny? What are our ultimate ends? What we are here for? Without answering these questions, our quest for meaning is going to be frustrated. And if there is no foundation to the meaning of our life, we are adrift. One of the agonizing dilemmas of our times is the dearth of meaning. The relentless march of the empiricist worldview has denuded us of meaning. We all know the causes and the consequences. The tremendous push for material progress has made our psyche numb and our heart cold. Alienation is one consequence. The value-vacuum is another.

Any large scale movement which attempts to replace empiricism must find an antidote to the gospel of material progress, must be capable of creating a new foundation for meaning. When we look deeper

into the question we realize that unless deeper questions of human destiny are considered and answered, our quest for meaning cannot be truly satisfied.

In traditional religious worldviews, Christianity especially, all human strings are ultimately redeemed by the promise of eternal salvation. The idea of Eternal Salvation shines back on us, and infuses meaning into all our actions; redeems our quest for meaning; and it does so even if life is found unsatisfactory in earthly terms. Thus, in religious worldviews, the eschatology of transcendent heavens pervades the sense of human life, pervades human values, and pervades human meaning.

In the materialist-scientific world view, by contrast, there is no transcendent eschatology. We would be mistaken however to think that there is no eschatology at all in the empiricist world view. True enough, the universe does not have any intrinsic meaning – nor, indeed, does human life. Thus, in this scheme of things, questions about *ultimate* human destiny are considered misconceived. So often, we are told by the prophets of the materialist gospel (including Jean Paul Sartre), there are no further horizons beyond those which our eyes immediately see. Material gratification is all that matters. Material fulfilment is the only form of fulfilment. The meaning of life is to be conceived in terms of material fulfilment.

It is important to realise that there is a *fit* between cosmology, values and eschatology within the empiricist worldview. We may not be inspired by its values – indeed, we are not – and for this reason we invariably ask ourselves: Is it all there is to human life? Should we not, must we not, demand more? Where is the outlet for our higher needs, higher aspirations, and more sublime ends? In evolving ‘higher needs’ and ‘more sublime ends’ we are *ipso facto* postulating an eschatology which goes beyond the merely materialist: we are subconsciously gravitating toward a transcendent realm, toward spiritual values.

How does Deep Ecology respond to these deeper questions? It appears to me that it does not respond at all. My hypothesis is that, at heart, deep ecologists are secular humanists. They avoid the discussion of eschatology, perhaps because they do not have much to offer; but also because deep down they think that eschatology is to be limited to the life here on earth “in decent terms”, “in being in harmony with the biotic community.” This is in many ways admirable, but not deep enough.

Deep Ecology does not seem to wish to

go beyond the earth. And why? Is not the living earth – Gaia – part of the living universe? If so, is not the *process* which has brought about the living earth and the living universe (namely, Evolution) not to be cherished and recognized? It has struck me over and again that Deep Ecology is limited to the here and NOW. But in order to know where we are *now*, we must know where we have been; we must be able to answer at least tentatively the ultimate question – “Why are we here?” We are back to eschatological questions.

In contrast to the shallowness of Deep Ecology (as far as eschatology is concerned) Eco-philosophy, as I have developed it, does not avoid spiritual questions, and attempts to provide the rudiment of a new eschatology. As I see it, we are a part of the evolutionary unfolding, and in realizing evolution, we are actualizing our own potential. This perspective does not deny the rights of others. On the contrary, it is precisely because of the level of our consciousness that we have evolved moral codes, as well as the *idea* of our obligations towards others. We have tempered our selfishness by the awareness that other forms of life have the right to live as well as ourselves. This awareness is a part of our higher consciousness. The principle of the “Great Compassion”, particularly emphasized by Tibetan Buddhists, is a supreme crystallization of human consciousness. This principle tells us that because no life wants to suffer, (and because we are fully aware of this fact) we must try to help all sentient beings. The principle of compassion is a great *evolutionary* attainment.

Eschatological questions are bound, sooner or later, to lead us to the realm of theology. A far reaching ecological conception of the world is incomplete without some form of eco-theology. As Rene Dubos puts it: “A truly ecological view of the world has religious overtones.” Equally aware of the gravity of the problem was E.F. Schumacher who postulated that the most important task of our times is to provide a metaphysical and a religious reconstruction. Any thorough-going metaphysical reconstruction must find some answers to the deepest problems that have always fascinated and troubled the human mind – and these are the problems of human destiny, a dilemma which is ultimately religious in nature. For this reason my notion of Eco-Philosophy has been extended in recent years and has begotten eco-Theology. In 1985, I published a booklet on the subject. *Eco-Theology, Toward Religion for Our Times*.³ To outline a new religion is a gigantic task. No-

Figure 1

The relationship between Ethics and Cosmology in a Traditional Worldview

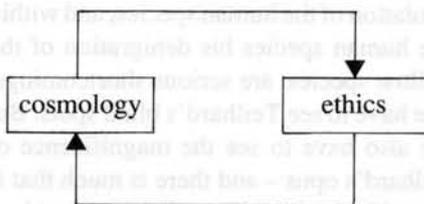
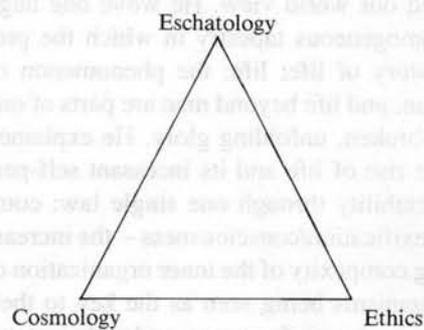


Figure 2

The Relationship between Eschatology, Cosmology, and Ethics



one would claim that we can articulate fully an ecological religion fitting at our times in our first attempt. The most we can do is to attempt to examine ultimate eschatological questions within an ecological framework. This is what my Eco-Theology has tried to do.

Evolution

One of the structural weaknesses of Deep Ecology is its inherently ambiguous attitude toward evolution. Deep Ecology does not want to deny evolution, nor does it not want to affirm it. There is a fear of the idea of evolution which pervades the ranks of deep ecologists. Like every fear, this one is partly justified; but only partly.

If evolution is conceived within the straitjacket of Social Darwinism, then it is to be avoided, for, as such, it is only a form of ideology, justifying inequities and injustices, under the banner of the survival of the fittest. Secondly, if evolution means the glorification of one species at the expense of other species, if it becomes the basis of narrow anthropocentrism (with the attendant short-changing of other species) then, again, it is to be avoided.

The philosophy of Teilhard de Chardin

(1881-1955) is routinely rejected by deep ecologists because he is supposedly an arch anthropocentrist. For this reason, his entire interpretation of evolution is rejected. This is throwing out the baby with the bath water. Teilhard was limited in many ways,⁴ but what thinker is not? His adulation of the human species, and within the human species his denigration of the yellow species, are serious shortcomings. We have to see Teilhard's blind spots. But we also have to see the magnificence of Teilhard's opus – and there is much that is magnificent in Teilhard! I have a deep suspicion that many who reject him out of hand have never read him carefully.

Teilhard transcended the dreary Darwinian view of evolution. "Evolution is a light illuminating all facts, a curve that all lines must follow."⁵ He clarified and unified our world view. He wove one huge homogeneous tapestry in which the pre-history of life; life; the phenomenon of man; and life beyond man are parts of one unbroken, unfolding glory. He explained the rise of life and its incessant self-perfectability through one single law: complexification/consciousness – the increasing complexity of the inner organization of organisms being seen as the key to their increasing performance, and to their status on the evolutionary ladder. He introduced the idea of the *noosphere* – that is, the sphere of the mind or of thought as another natural envelope of life at large – and showed that all life has been groping to articulate itself in the shape of noosphere. He broadened our conception of evolution, and with it our conception of *seeing*, so that

"A far-reaching ecological
conception of the world is
incomplete without some form
of Eco-Theology."

it becomes a vision of one continuous homogenous unfolding. He also enlarged our conception of science and of ourselves, introducing the notion of 'Omega Point' or the point of ultimate conversions, in terms of which alone we can make sense of all previous stages and strivings of life.

All these points are of *some* importance to a new ecological view of the world. In general it seems foolish to me to think that we can propose and articulate a new cosmological *Weltanschauung* while bypassing or ignoring evolution. The attributes of *Gaia* – the earth which is alive, the universe which is alive, the mind which is alive, and the capacity of compassion for and solidarity with all forms of being – are products of evolution: they are the stages of evolution unfolding. If we do not perceive at least that much, we lock ourselves into a vision which is so restricted that we actually doom ourselves to conceiving the universe as being as small as our immediate gaze . . . or we must return to older conceptions of the universe in which God has created all, and is controlling all.

Evolution must be taken seriously because only then can we take ourselves seriously, as evolving creatures, limited in our capacities, yet capable of taking the responsibility for all there is, including future generations and the future shape of the universe.

We need to be creative and evolving in our views of evolution. To think of evolution in Darwinian terms alone is lamentably backward. After all, over 125 years have passed since the publication of Darwin's *magnum opus*. Henri Bergson was actually born in 1859, the year Darwin's *Origin of the Species* was published. By the time Bergson achieved maturity, the Darwinian story of evolution was not only absorbed, but could be creatively transcended. This is what Bergson did in *Creative Evolution*. Bergson does not deny the idea of evolution, he only gives it wings and a creative potency. For Darwin and Neo-Darwinians, evolution is an almost dreary process of chance and necessity (Jacques Monod's *Chance and Necessity*⁶ is a prime example); for Bergson, by contrast, evolution is an exquisitely creative process. This was the

first step in liberating evolution from the dreariness of the semi-deterministic and, at the same time, semi-incomprehensible, framework of Darwinism.

Teilhard made another step, as he showed creative evolution to be all-pervading and leading from matter to spirit. Teilhard not only considered evolution creative but also spiritual in character. This contribution was to demonstrate that there is no inconsistency in considering evolution to be both scientific and spiritual in character, thus obeying the laws of science and the laws of the spirit. And for a good reason: if evolution embraces all, it lends itself to scientific and spiritual interpretations. Cosmogogenesis is both a material (physical) and a spiritual process: matter is transformed into matter, but also matter is transformed into spirit. Evolution must be taken seriously, if we are to take ourselves (and other species) seriously.

Cosmology

Because evolution is not taken seriously by leading proponents of Deep Ecology, its cosmology and ethics do not have a solid foundation. To say that the fundamental intuition of Deep Ecology is that "everything does indeed hang together"⁷ is to say close to nothing. Every moment and every school of thought which has rebelled against the crippling narrowness of the modern mechanistic worldview embraces this notion of 'wholism' – an admirable doctrine to assert, but not in itself sufficient as the foundation for a new cosmology.

Such notations as 'realistic praxis,' 'egalitarianism in principle,' and 'anti-anthropocentrism,' point to a new metaphysics. But these notions (which seem to be so important for the distinctiveness of Deep Ecology) are not coherently woven together into one structure. Warwick Fox is right, I think, when he says that:

In pursuing their central intuition of 'unity' (i.e., of no boundaries in the biospherical field), deep ecologists have possibly lost sight of the significance of the 'in process' aspect of their 'unity in process' metaphysics.⁸

But then, Fox does not seem to perceive that the very notion of "the significance of processes" implies the recognition of the process of evolution. Without the notion of evolution (of things evolving, 'getting better', in one sense or other of the term 'getting better'), the idea of processes, and particularly the idea of 'significant processes' – and, above all, the idea of new states of consciousness and new values – is lost or becomes groundless.

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Finally, let us be aware that a new cosmology requires an over-arching metaphor. For the mechanistic cosmology, this metaphor is a clock-like mechanism. Within the Eco-Cosmology that I have developed, the main metaphor of the universe is that of the sanctuary:⁹ we are its guardians and its dwellers; also its stewards, in the best sense of the term 'steward'. We are the guardians and stewards of the cosmic sanctuary within the matrix of unfolding evolution, which gives the *raison d'etre* for our responsibility; for our care for our brothers and sisters, within the human family and within the biotic community; for our interactions with the universe at large (we are evolution conscious of itself, helping the cosmos to evolve further); for our values, one of which is frugality, which means grace without waste; and for our ultimate strivings – in helping ourselves and evolution to arrive at Omega Point, or whatever name we use for the point of ultimate perfection by which we are somehow bound.

My central point is that the three constituents: cosmology, eschatology and value (or ethics) must be coherently connected together, must support each other, and must co-define each other. May I be presumptuous enough to notice that they are so connected in my Eco-philosophy? May I also point out that they are not so connected within Deep Ecology?

Conclusion

So, in conclusion, I shall observe that as admirable as the *intentions* of Deep Ecology (of the Californian School) are, its foundations are not deep enough, its assertions constantly beg questions, its cosmology leaves too much to be desired, and its spirituality is completely lacking. The umbrella Deep Ecology provides is definitely leaky. Without spirituality, there is no deeper justification of our eschatology – if, that is, we aim at an eschatology capable of transcending the consumer eschatology. Without assuming the significance of evolution, there is no meaningful way of ascribing significance to 'processes'. Yet, without processes, the idea of the seamless web of organic unity does not make sense. A new cosmology cannot be established by mere critique of old cosmologies.

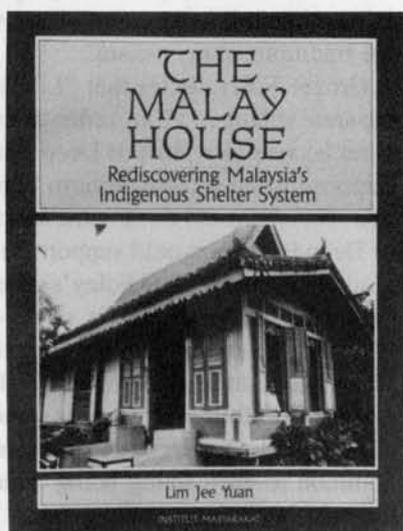
Against the triviality, and constantly trivializing influence, of the old mechanistic world view, we have to have the courage to ask what is the meaning of the universe, what it takes delight in and what it abhors. The universe does not delight in just 'being'. It delights in life. The universe does not delight in life. It delights in consciousness. The universe does not delight in consciousness. It delights in love. The universe does not delight in love. It delights in us reaching the orbit of God.

When the primordial explosion of light becomes New Light in the shape of God, then the universe truly delights.

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9. For a more detailed discussion of the idea of the universe as a sanctuary, see my monograph *Ecological Humanism*, Gryphon Press, 1977, subsequently incorporated as chapter 3 of my book on Eco-Philosophy (see note 1).

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Deep Ecology and Ultimate Premises

by
Arne Naess

Arne Naess replies to Grover Foley and Henryk Skolimowski, whose articles, he argues, reveal "important misunderstandings which slur over the broad agreement between the authors and myself." For Naess, Deep Ecology is not a rigid dogma, but rather a 'platform' that draws together supporters from disparate backgrounds and gives them a base from which to reassess humanity's relationship with Nature.

The values that supporters of the Deep Ecology movement share in common cannot necessarily be formulated in terms of a single set of propositions or expressed in a single language. They are the product of a dynamic social movement and cannot therefore be pinned down as if they belonged to a painstakingly formulated philosophy of the relationship between man and nature, or as if they formed a coherent body of doctrine. Deep Ecologists do not have a discrete philosophy or religion in common — a definite credo, a set of ultimate 'norms and hypotheses' — and why should they? When those representatives of different denominations and religions, who are also supporters of the Deep Ecology movement, come together at Assisi, for example, should they have to agree to do mutual missionary work? Why *Gleichschaltung*? Why monolithic ideologies? We have had enough of those in both European and world history.

Supporters of Deep Ecology aim to conserve what is left of the richness and diversity of life on Earth — and that includes human cultural diversity. Representing highly different religions and philosophies, Deep Ecologists articulate themselves using the *ultimate premises* on which their diverse holy texts or philosophical traditions are based. Their ecological views are conclusions based on those premises (but not, of course, *only* on those premises).

The present crisis in the relationship between man and nature has revealed a surprising amount in common between the different supporters of Deep Ecology. The

so-called 'environmental' policies which they oppose are approximately the same. Their critique of dominant trends in rich industrial societies is much the same. Similarly, their regret for the lack of broadness, depth, and long-term perspectives in the deliberations of policy makers. There is thus enough in common, perhaps even enough to elaborate a set of principles — a 'platform' — for Deep Ecology, as George Sessions and I have attempted (*see Box, page 130*).¹ The principles we elaborate are discussed below.

Deep Ecologists or Mystics?

Grover Foley (page 119) seems to have a strong impression that such a platform would embrace mysticism — "The self and ultimate reality are one, as Zen and other mystic traditions claim: 'That thou art; or thou art That.'" But a firm supporter of Deep Ecology might not feel at home with any of the famous epithets of the great traditions of philosophical and religious mysticism. I doubt, for instance, whether F. Golley, or M. Soulé, or I, would.²

A representative of the harassed, nomadic Sami people of Arctic Norway was arrested and asked by the police why he insisted on remaining by a river that was to be dammed. He answered: "It is part of myself." He certainly did not say that the geographically defined flowing water was part of his Ego. Nor did he quote any Buddhist texts. Social psychologists may interpret his statement within the framework of the idea of the 'social self', as brilliantly put forward by William James. But there are other possibilities. Personally, I work with the concept of 'Self-

realisation', as expressed in my so-called 'Ecosophy T', inspired by, but not conforming to, Gandhi's interpretation of the *Bhagavadgita*.³ But, of course, I am not in any way a Hindu, and I respect the Buddhist *anatmavada* as a reaction against Hindu *atman*-absolutism. None of us are mystics.

When Gary Snyder, a firm supporter of the Deep Ecology movement, writes, as a Buddhist, that "The universe and all creatures in it are intrinsically in a state of complete wisdom, love and compassion,"⁴ do I have to ask what he means? Of course not, and he does not ask what I mean when I write in a language inspired by Spinoza that "The more you understand particular beings the more you understand God or Nature."⁵ Incidentally, such a proposition is incompatible with some views within the traditions of mysticism.

Grover Foley writes that "Life has no separate selves . . .", in order to express what he sees as a tenet of Deep Ecology. Supposing that we take the term 'separate' in a special sense, I think some supporters of Deep Ecology would support the statement. Personally, I find Foley's statement, "Fundamentally, all life is one" — not palatable to Sir Alfred Ayer — significant, but what it means to me may also be expressed as follows: "There is something of overwhelming dignity and importance common to each living being which secures its intrinsic value."

In short, I hope somehow to save both the wholes and the successive complexity which culminates in a supreme whole, and each individual. No philosophy or religion has, in my view, accomplished this in an articulated way that is not open to serious counter-argument. Supporters of Deep

Arne Naess is one of Norway's most eminent philosophers and the founding father of the Deep Ecology movement.

Ecology cannot expect to feel at home with ultimate views. The expectation involves, strictly speaking, a contradiction.

Deep Ecology and Nuclear War

Every year, the European nuclear disarmament movement must fight off attempts to widen it by making unilateral disarmament only part of its platform, and so far, I am glad to say, the fight has been successful. This I say in spite of being very favourable myself to unilateral disarmament.⁶ Similarly, it is important that any platform of Deep Ecology should not pretend that it can provide a solution to every great contemporary problem. In 1975, peace movements and ecology movements were not interacting strongly. Today, there is lively communication between them. Wars and preparations for modern wars are ecological disasters. I do not think it accurate today, therefore, to say, as Grover Foley says, that "Deep Ecology ignores nuclear war." And I do not think that war should be mentioned in a 200-word formulation of a platform for the movement.

Deep Ecology and Ultimate Premises

Skolimowski argues that too many Eco-philosophies "have been too hurriedly subsumed under the umbrella of Deep Ecology." This would be a valid criticism if the various philosophies were in competition with each other and were claiming to be the only 'correct' Deep Ecological position. But they are not. To take an analogy: there are many mother languages in the world — but none is more 'correct' than any other. In spite of this, groups with different mother tongues may agree in important ways. What supporters of the Deep Ecology movement have (more or less) in common *at a fairly general and abstract level*, must not be sought at the *level of ultimate premises* of a given philosophy, or, more succinctly, at the level of the 'total view', but rather at a secondary level, where there is agreement on the relationship between man and nature.

Nonetheless, a characteristic of the supporters of Deep Ecology is their involvement *at every level*, not only at that of ultimate premises, but also at the level of action and decision-making. In the 'shallow' movement, reference to ultimate foundations are rare and mostly shunned. Instead the arguments are mainly 'practi-

Social and political work must go hand in hand with work in nature for nature.

cal', 'tough', 'pragmatic', and 'objective'. By contrast, the Deep Ecology movement has an intensely emotional component. As Charlene Spretnak puts it:

"Deep Ecologists write that the well-being and flourishing human and non-human life on Earth has value in itself and that humans have no right to reduce the richness and diversity of life forms except to satisfy vital human needs. Eco-feminists agree, but wonder how much one's concept of 'vital needs' is shaped by the values of patriarchal culture. Finally, some philosophical ecologists favour abstract schemes such as 'ecological process analysis' to explain the natural world. But eco-feminists find such approaches alone to be sterile and inadequate, a veiled attempt, yet again, to distance oneself from wonder and awe, from the emotional involvement and caring that the natural world calls forth."⁷

Some may undertake process analysis without losing their emotional engagement, others may not. More than 2,500 years of literature and poetry have expressed wonder and awe in a direct way that eco-philosophy or a Deep Ecology platform cannot, and may be should not, try to imitate.

Agreeing to Differ

Henryk Skolimowski writes in his book *Eco-Philosophy* that "Values unrelated to ultimate ends of human life ring hollow". I wholeheartedly subscribe to this view, and presume that supporters of Deep Ecology have such ends in view. But I do not need a concept of Deep Ecology such that a definite set of ends are prescribed as part of a Deep Ecology platform. Henryk Skolimowski seems to me to regret that *the term 'Deep Ecology'* has not been attached to evolutionary, philosophical and theological views which I would regard as part of the ultimate premises (or Level 1) of a given philosophy.

Indeed, I think it would serve Skolimowski best to leave the concepts of Deep Ecology as they are, and then advocate his ideas about the ultimate ends of life as ideas which transcend the views that supporters of the Deep Ecology movement have in common. Skolimowski writes:

"Any large-scale movement which

attempts to replace empiricism must find an antidote to the gospel of material progress, must be capable of creating a new foundation for meaning. When we look deeper into the question, we realize that unless deeper questions of human destiny are considered and answered, our quest for meaning cannot be truly satisfied."

I admit that questions of human destiny are deep and that eschatological questions — by definition — are the deepest, in the sense of 'the last and ultimate'. But the function of Deep Ecology is more modest — for instance, keeping together, within a limited frame of reference, a community in desperate conflict with gigantic forces. Every member of the community may not have the same answers to questions of human destiny.

Before proposing a tentative platform for Deep Ecology, let me touch upon the issue of philosophical pluralism — or pluralism of *Welt und Lebensanschauung*, to use the German expression. It would, in my view, be a cultural disaster for mankind if one philosophy or one religion were to become established on earth. It would be a disaster if future Green societies were so similar that they blocked the development of deep cultural differences.

Insofar as supporters of Deep Ecology agree on this, they take care not only to find points of agreement but also to accept those differences which are inevitable if the richness and diversity of life on earth is to flourish.

A Platform for Deep Ecology

As mentioned above, George Sessions and I have formulated what we refer to as "the special platform of the Deep Ecology Movement." Inevitably, this platform (*see Box, page 130*) needs a number of comments. Its main object is to draw attention to the broad measure of agreement today among groups all over the world on a wide range of issues. The knowledge of such agreement encourages people and groups who work locally, often surrounded by a majority who are passive or lukewarm to the issues. Such local groups and individuals should know that they have friends all over the world, who have strong basic feelings in common, who use closely similar metaphors to express their views, and who adhere to the principles of non-violence even during severe confrontations.

Of the eight points we outline, (1), (2) and (6) hang together closely. If conservation efforts are to aim not only at avoiding further extinction of species (a colossal

A Platform for Deep Ecology

Below is what I call "the platform of the Deep Ecology movement", or rather, *one* formulation of such a platform:

1. The flourishing of human and non-human life on Earth has inherent value. The value of non-human life-forms is independent of the usefulness of the non-human world for human purposes.
2. The richness and diversity of life forms are also values in themselves and contribute to the flourishing of human and non-human life on Earth.
3. Humans have no right to reduce

this richness and diversity except to satisfy vital needs.

4. The flourishing of human life and cultures is compatible with a substantial *decrease* of the human population. The flourishing of non-human life requires such a decrease.
5. Present human interference with the non-human world is excessive, and the situation is rapidly worsening.
6. Policies must therefore be changed. The changes in policies affect basic economic, technological and ideological structures. The resulting state of affairs would be deeply

different from the present and would make possible a more joyful experience of the connectedness of all things.

7. The ideological change is mainly that of appreciating *life quality* (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be profound awareness of the difference between 'big' and 'great'.
8. Those who subscribe to the foregoing points have an obligation, directly or indirectly, to participate in the attempt to implement the necessary change.

goal in itself) but also at restoring habitats and landscapes, and, furthermore, at assuring the continued evolution of species, then technology, economics, social relations, life styles, and education must be deeply changed. From points (1) and (2), plus a set of further premises not mentioned because of shortage of space, follows point (6).

Points (6) and (8) clearly and sharply differentiate the Deep Ecology movement from an academic philosophy, or from a movement of mere spirituality. They involve politics at every level, from the local to the global. But they do not suggest that a person active in the Deep Ecology movement ought to leave it to join a peace movement, or vice versa. We need each other — "the front is long" — and people should not feel pressured into leaving the work they feel they are competent to do and which they are glad to do.

Social Change an A Priori?

Point (6) implies that *future* societies must differ from present ones. Green societies are deeply different from the 'Red' or 'Blue' societies of today. The question therefore arises: is it at all possible to realise thoroughly responsible, long-range ecological policies so long as we have not changed society? Perhaps we have first to change society? Or perhaps we at least must *focus* on the necessary social changes, hoping that desirable attitudes towards nature will inevitably follow?

Marxist and anarchist groups have tended to reply "Yes" to these questions, whereas many strong conservation groups

have tried to avoid giving answers to social and political questions. As an example of a positive response, let me quote from an article⁸ by Murray Bookchin published in 1980:

"...as long as hierarchy persists, as long as domination organizes humanity around a system of elites, the project of dominating nature will continue to exist and inevitably lead our planet to ecological extinction."

and:

"Where social ecology, in my view, seeks to eliminate the concept of the domination of nature by humanity by eliminating the domination of human by human, environmentalism reflects an 'instrumentalist' or technical sensibility in which nature is viewed merely as a passive habitat."

One possible objection to Bookchin's views is rather trivial: namely that time is running out, and that we have to save a little of what is endangered *today* by work *today*. That means working with 'Blue' or 'Red' societies basically bent on dominating nature. Social and political work must go hand in hand with work in nature for nature. Some feel at home trying to change social and political institutions, others deal more directly with nature. "The frontier is long". Nobody needs to focus on what he or she is incompetent to do.

The Levels of Deep Ecology.

Many authors now use the term 'Deep Ecology' and I often find their introduc-

tion of the theme better worded than my own. But I would still like to stress that I see Deep Ecology as a total view comprising many levels in close contact with each other. To illustrate this I use a special diagram (see **Figure 1**), which is clear to me but, nonetheless, appears to require some amplification and comment.

The 'Apron Diagram' illustrates logical, as distinct from genetic, relations between views. By 'logical relations', I mean verbally articulated relations between the premises and the conclusion. They move down the diagram in stages: some conclusions belong to the premises of new conclusions. By 'genetic relations', I refer to influences, motivations, inspirations and cause/effect relations. They are not indicated anywhere in the apron-diagram. They may move up and down or anywhere, and they involve time.

Focusing on the eight points of the proposed platform of Deep Ecology, we ask: from which premises, if any, are the points derived? Placing the eight points at Level 2 of the diagram, some of their premises have their place at Level 1. At the upper limit of this area are placed the ultimate premises.

As mortal beings with less than infinite capacities, we must stop somewhere along our premises/conclusion chains. The supporters of the Deep Ecology movement invite 'shallow' ecologists to clarify their ultimate premises — preferably in public. (Unfortunately, the relation of deepness in the apron-diagram leads upwards. To avoid mixing metaphors, the apron should be turned upside down.)

The large area labelled Level 3 is reserved for views which have one or more

of the eight points as part of their set of premises. Below Level 2, in short, is placed what follows from the eight points. At level 4 are placed the practical decisions, which in part are based on premises embodied in the upper levels. However, because a decision is derived in part from details of a particular situation, it will always involve premises in addition to those of the upper levels.

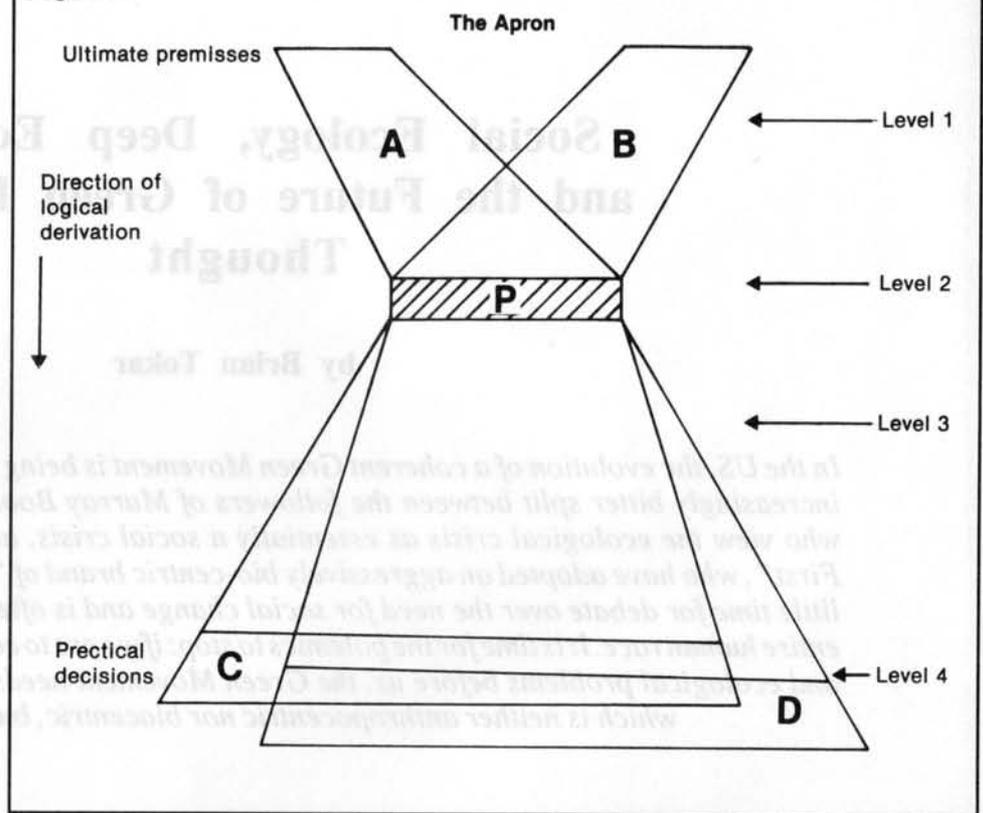
Differing Premises: Same Conclusions

The possibility of the eight points being derived from a plurality of mutually inconsistent premises — the A-set and the B-set — is illustrated in the upper part of the apron diagram. Similarly, the lower part of the diagram illustrates how, with one or more of the eight points as part of a set of premises, mutually inconsistent conclusions may logically be derived, leading to the C-set and B-set of concrete decisions. C may be inspired by a sort of Christianity, D by a sort of Buddhism: or, again, C may be Spinoza-inspired whilst D follows Heidegger. They scarcely understand each other and feel miles apart.

There may be other and better proposals for a platform, but I expect that a distinction between the 4 levels will be of importance. Supporters of Deep Ecology have ultimate views from which they derive their acceptance of the platform, but those views may be very different from person to person, and from group to group. Likewise, supporters may disagree about what follows from the eight points, partly because they interpret them differently, partly because what follows does not follow from those eight points alone, but from a wider set of premises, and these may be in conflict.

Those who object that their total view — if they have one — is not a logical system, miss the point. Even moderately integrated people have reasons for their views — or, at least, they indirectly pretend to have reasons. What is unfamiliar, perhaps, is the relation between more philosophical or general views and the concrete, and also the demand for clear articulation of that relationship. Suppose P asks Q: "Why have you decided to go canoeing?" and Q answers, "Because I feel like it". A logical reconstruction may read: *Premise 1*, "I feel like canoeing." *Premise 2*: "If I feel like X, do X." *Conclusion*: "Canoeing." The articulation of feelings is as important as contents in accepting premises and reaching conclusions. There is nothing illogical

Figure 1



about that. Perhaps feelings enter our premises with a frequency proportional to our self-knowledge.

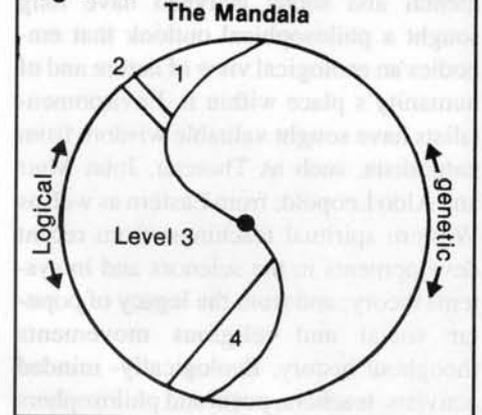
There is another diagram, the Mandala (see Figure 2). The left part of the circle illustrates the stream down from premises to conclusions, the right part the genesis, psychological and social, of the premises and conclusions. P asks Q: "How did you come to value canoeing so highly?" Q answers: "From reading page 33 of Paul F. Schmidt's *Rebelling, Loving and Liberation*, where he talks in an inspiring way about canoeing." P thus get a *genetic* explanation of part of the motivation for P's decision. The genesis of the view that all life forms have intrinsic value is probably extremely complicated and only partly known to those who hold the view.

The above, I hope, shows how Deep Ecology views can manifest both plurality and unity: Unity at Level 2, plurality at other levels. The environmental conflicts all over the globe, from Tasmania to Arctic Norway, reveal an astonishing similarity at level 4 — the decisions taken, the non-violent ways of behaviour, and the rhetoric used

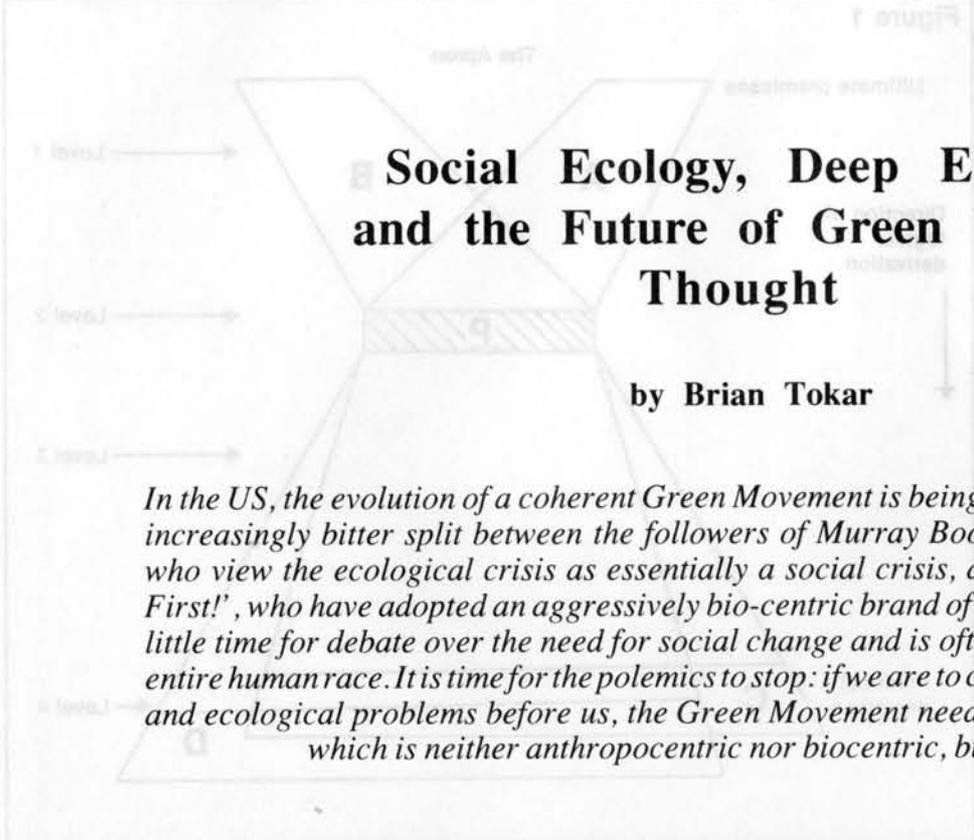
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Figure 2



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Social Ecology, Deep Ecology and the Future of Green Political Thought

by Brian Tokar

In the US, the evolution of a coherent Green Movement is being severely hampered by the increasingly bitter split between the followers of Murray Bookchin's 'Social Ecology', who view the ecological crisis as essentially a social crisis, and the followers of Earth First!, who have adopted an aggressively bio-centric brand of 'Deep Ecology' which has little time for debate over the need for social change and is often outrightly hostile to the entire human race. It is time for the polemics to stop: if we are to confront the pressing social and ecological problems before us, the Green Movement needs to embrace a worldview which is neither anthropocentric nor biocentric, but 'eco-centric'.

People devoted to a synthesis of environmental and social activism have long sought a philosophical outlook that embodies an ecological view of nature and of humanity's place within it. Environmentalists have sought valuable wisdom from naturalists, such as Thoreau, John Muir and Aldo Leopold; from Eastern as well as Western spiritual teachings; from recent developments in the sciences and in systems theory; and from the legacy of popular social and religious movements throughout history. Ecologically-minded activists, teachers, poets and philosophers have looked to a wide variety of sources for inspiration, insight and guidance. The present resurgence of environmental activism in the United States and the emergence of Green political movement have prompted a renewed search for sources of ecological wisdom.

This search has been considerably clouded in the past years by an increasingly bitter feud between two apparently conflicting approaches to ecological philosophy, namely social ecology and Deep Ecology. Important philosophical and political issues raised by these two developing schools of thought have increasingly become lost in a morass of polemics, accusations and name-calling. Social ecology, developed primarily in New England and New York by Murray Bookchin and

his colleagues at the Institute of Social Ecology, emphasizes the embeddedness of human consciousness in nature, a radical ecological critique of hierarchy and domination in society, and the historical unity of ecological and social concerns.¹ Deep Ecology, which originated in Norway but has gained adherents primarily in the Western United States, purports to speak more directly for the biosphere as a whole and seeks a better relationship between the human species and other forms of life.² The increasingly bitter debate between these approaches, with their very different theoretical assumptions and political styles, threatens to obscure the essential work of movement-building and the development of more lasting alliances among people dedicated to saving the earth and creating more ecologically sound ways to live upon it.

Social Ecology and Deep Ecology

Social ecology has attracted political activists from a variety of movements who have come to see the ecological crisis as the overriding human dilemma of our time. The unrelenting exploitation of nature, upon which industrial civilisation rests, has driven us to the brink of ecological collapse. Peace activists, feminists, and social thinkers of all orientations have come to see the fundamentally anti-ecological nature of militarism, patriarchy,

racism and other forms of social domination. Such a merging of ecological and anti-militarist concerns led to the founding of the Green movements in Europe. Social ecology prefigured many of these developments, arguing since the mid-1960s that the view of nature as a force to be dominated and controlled was a result of the rise of social hierarchies, especially in early warrior societies. Domination, argues Murray Bookchin, is neither intrinsic in nature, nor has it ever been an appropriate response to the needs of human survival. Rather, the patterns of the natural world call upon us to embrace the values of cooperation, complementarity and unity-in-diversity, both in our relations with the rest of nature and within the human community.³

Deep Ecology is more a product of traditional environmental concerns, seeking to expand upon the values of the wilderness preservation movement. Deep Ecology celebrates the individual, personal relationship with the ever-shrinking world of 'wild' nature and embraces a wide variety of political, artistic and philosophical approaches for expressing and deepening that relationship. It shares with social ecology a frustration with the technocratic, managerial approach to the natural world that much of the environmental movement has succumbed to (though, as we shall see, it holds onto some of the mechanistic assumptions of mainstream environmentalism), and seeks to build a broader ecological movement based upon the deep affinity

Brian Tokar is author of *The Green Alternative: Creating an Ecological Future* (R and E Miles, San Pedro, California). He is based at: P.O.Box 4190, Berkeley, CA. 94704. USA.

of people with the land they know best. Deep Ecologists tend to be very knowledgeable about forestry, animal habitats and the internal dynamics of ecosystems and to aspire to understand the natural world on its own terms, as removed as possible from the cultural assumptions of this or any other civilisation. They advocate a broadly focused 'biocentrism', in contrast to the narrow 'anthropocentrism' of mainstream (and even most radical) culture. The Earth First! movement, in many respects the cutting edge of environmental activism today, has embraced Deep Ecology as its underlying philosophy.⁴ A wide spectrum of artists, philosophers, animal rights advocates and spiritual seekers have embraced Deep Ecology as a call for a stronger personal link to the natural world.

These potentially complementary world-views have placed themselves on opposite poles of a debate that threatens to compromise the growing consensus for an ecological understanding of the world's problems and an ecological commitment to curing them. In his paper distributed at the first national conference of U.S. Green activists in July of 1987, Bookchin attacked Deep Ecology as "vague, formless, [and] often self-contradictory," a "black hole of half-digested, ill-formed and half-baked ideas," and an "ideological toxic dump."⁵ He condemned Deep Ecologists for ignoring the social and historical basis of the ecological crisis, upholding a distorted biological determinism with quasi-fascist implications and compromising the moral and ethical base necessary for a viable eco-philosophy. Earth First! co-founder Dave Foreman and others, writing in the pages of the *Earth First!* journal, have accused social ecologists of being dour, humourless and hyper-rational, mounting an anthropocentric 'leftist' conspiracy against the ecology movement, and deliberately underestimating the intrinsic failings of all human societies and institutions.⁶ Writers in the *Earth First!* paper continued for months to arouse the ire of social activists with misanthropic diatribes about overpopulation. They advocated starvation and disease as ecological or 'Gaian' solutions, and asserted that the human species as a whole — including Third World and indigenous peoples, and excepting only the Deep Ecologists — is innately destructive to the environment.⁷

This is not the first time environmental and social activists have expressed conflicting priorities. Robyn Eckersley (see pp.142-147) has traced the debate back to the nineteenth century, showing how the

Writers in the Earth First! journal have asserted that the human species as a whole — including Third World and indigenous peoples, and excepting only the Deep Ecologists — is innately destructive to the environment

earliest conservationists, typified by John Muir, advocated a total immersion in nature, often to the exclusion of any discussion of the social or historical roots of environmental destruction. Meanwhile, Marxist-leaning social activists embraced the factory system as the locus of human liberation, while accepting a narrowly economic and production-oriented view of human nature. Though Marx and Engels were aware of the terrible toll industrial capitalism was already taking against human health and well-being, technology and capital were still seen as vehicles for social progress beyond the confines of archaic "nature idolatry". In fact, much of the traditional Left continues to express outdated nineteenth-century views of human liberation as the historical transcendence of 'irrational' natural constraints.⁸

The emergence of the environmental movement in the 1960s was at first seen by many on the left as a mere middle class indulgence, far removed from the more immediate concerns of the world's suffering people. Many early conservation campaigns were seen, rightly, as the efforts of affluent individuals to preserve their own secluded wilderness retreats, with little regard for anything else. Some individuals, however, saw that there was more to ecology than creating playgrounds for the rich. Murray Bookchin, writing in the early 1960s, argued that the insights of ecological science bespoke the urgency of a radical social transformation and an evocatively naturalistic vision for how such a transformation could come about.⁹ He attacked the economic biases of Marxism and called for a different kind of relationship between humanity, technology and nature. The naturalist and anthropologist Paul Shepard came to a similar conclusion, when he labelled ecology, *The Subversive Science*.¹⁰

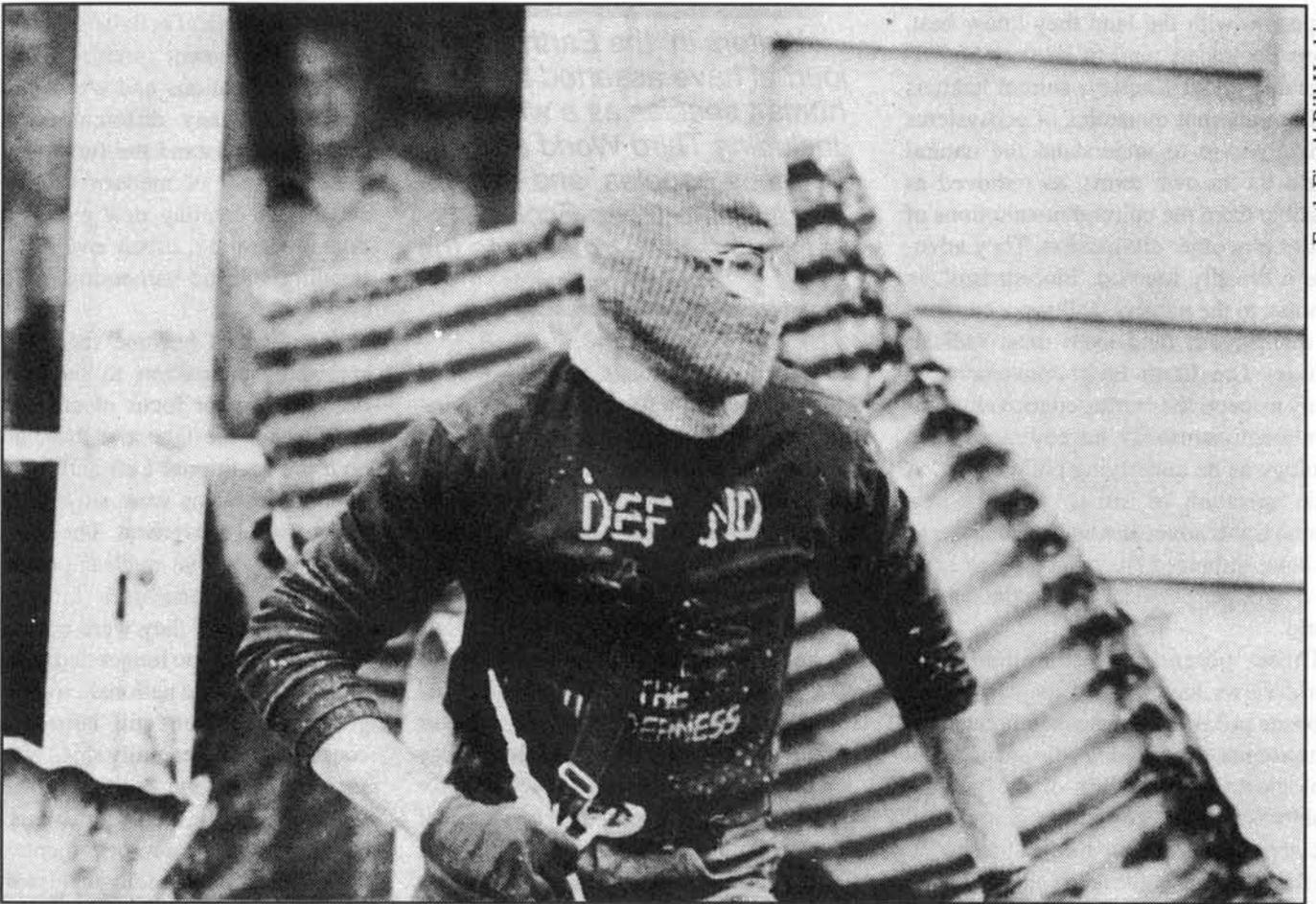
These kinds of insights, coupled with growing concerns about the effects of pesticides, such as DDT in food, and about the industrial pollution, urban sewage and toxic chemicals that are devastating the air and the water, led to the rise of a different

kind of ecological activism. The environmental movement pressed for much-needed regulations and clean-up efforts. People of many different orientations came to understand the fundamental unsustainability of modern urban society and began creating new experiments in organic farming, urban and rural home-steading and the harnessing of solar energy.

Such efforts become far more widespread as opposition to nuclear power became a major focus of environmental activism in the late seventies; however, both the traditional Left and mainstream environmentalists were slow to embrace this growing movement. The Marxist left often claimed that nuclear power, along with other technologies of 'progress', would be safe if they were controlled by the workers and no longer tied to the profit motive. The large national environmental groups, with their still largely affluent constituencies, generally shied away from such complex and politically-loaded issues.¹¹ Partly due to its political independence, the anti-nuclear movement was able to foster a new ecological radicalism, advocating social as well as ecological alternatives, promoting self-reliance, embracing direct action and feminist organisational models. The vision of social transformation that the anti-nuclear movement began to articulate resonated well with the ideas of social ecology. The merging in the early 1980s of anti-nuclear and anti-militarist concerns established a political base for the international Green movement and for a more integrated approach to social and ecological renewal, bringing together approaches from the New Left of the 1960s and the various alternative movements of the 1970s.¹²

Earth First! and Radical Environmentalism

By the mid-1980s, wilderness activists in the Western United States increasingly came to see that the major environmental organisations were falling ever further afield from their mission to protect the integrity of natural ecosystems. Conflicts over particular tracts of wilderness or the protection of particular species were becoming increasingly symbolic. Environmental lawyers and lobbyists were increasingly willing to compromise ecological principles for the sake of political expediency and to safeguard their professional status. Just like the resource-minded conservationists that John Muir had to



Over the past five years, Earth First! has distinguished itself as the cutting edge of environmental activism throughout the American West.

confront around the turn of the century, the current crop of environmental officials had completely succumbed to the view of nature as a storehouse of resources to feed the industrial mega-machine.¹³

When the U.S. Interior Department under James Watt proposed a re-evaluation of all the remaining roadless areas in the country — part of their plan to open the National Forests to more 'multiple uses' — one group of radical environmentalists went on the offensive. Under the rubric of "Earth First!", they advocated a no-compromise approach to wilderness protection, advocating a major expansion of designated wilderness areas and the active sabotage (both politically and materially) of efforts to expand logging, mining and other intrusions upon the few remaining wild lands of North America.¹⁴

Over the past five years, Earth First! has distinguished itself as the cutting edge of environmental activism throughout the American West. Controversies around the spiking of trees to prevent the logging of old-growth forests and the sabotage of three major genetic engineering experiments (to name two) have brought nationwide media attention, spawning over fifty largely autonomous Earth First! groups across the United States and overseas, creating an international network of

rainforest activists, and successfully halting or forestalling a myriad of ecologically irresponsible projects. More mainstream environmental groups have been left trying to regain the publicity and the place in the public imagination that Earth First! has seized from them. More respectable wilderness activists and opponents of offshore oil drilling in California have been able to take much stronger positions than before as a result of Earth First!'s uncompromising stand on these issues.

In the realm of ideas, however, Earth First!'s role has been increasingly problematic. The redneck cowboy posture put forward in the *Earth First!* journal was amusing at first and annoying to many, but was generally put forward with enough good cheer and self-effacing humour to disarm even the most urbane of sensibilities. Beneath the dumb redneck image they created for themselves, there were always enough rousing accounts of action campaigns, incisive environmental writing and flagrant defiance of all manner of authority and propriety to convince this writer, for one, that they were on the right side of things. Unlike most environmentalists these days, they were also regularly putting themselves on the line for their beliefs and openly confronting the failings of the established institutions.

Ideological consistency has never been very important in America, however, and Earth First! has always flaunted its nasty underside. Alongside poetic pleas for the integrity of wild nature, writers in the *Earth First!* journal have tended toward a rather grim and brutalised view of human nature. They have railed against Native American hunting practices and primitive agriculturalists and touted AIDS and famine as 'natural' cures for human overpopulation.¹⁵ They have censored anarchists and feminists and provided a platform for neo-survivalists, behaviourists and outright misanthropes. Freely mixing pseudo-scholarly tomes and spit-in-the-can bar-room philosophy, there is something in *Earth First!* to offend just about anyone.

The naturalist Wallace Stegner once described the West as, "... a country to breed mystical people, egocentric people, perhaps poetic people. But not humble ones..."¹⁶ For writers in *Earth First!*, ideas are a game and words are for riling people up and getting them angry. The more outrageous the better.¹⁷ Novelist Edward Abbey, whose quintessentially Western brand of anarchist individualism has been a major inspiration for Earth First!, is the reigning master of that kind of writing. The older he gets, the more intransigent and some Earth First! people swallow every-

thing he says whole. The present trouble all started when Dave Foreman and other writers in *Earth First!* began parroting, and then building upon, Abbey's racist diatribes condemning starving Ethiopians, Mexican refugees and other non-Europeans to the ecological scrap heap.¹⁸

Political writers in the European traditions, on the other hand, strive to be very exacting and literal in their use of words. Highly polemical styles of writing are common, in which the political implications of one's words are drawn out to their fullest, and political targets are set up for a full onslaught of verbal abuse. Social ecology often reflects this heritage — some say the burden — in which everything one says is loaded with several layers of urgent and highly charged political meaning.

Such distinctions would only be of academic interest if the debate between Social Ecology and Deep Ecology had not succeeded in polarizing the nascent new ecological movements to such a disturbing degree. The polemics have occupied many pages of the *Utne Reader*, *The Nation*, and many smaller political journals, and activists struggling to shape a viable movement merging ecological and social concerns are being pressed to choose sides.¹⁹ Vital questions of political strategy, efforts better to understand the evolution of people's historical relationship to the land, and explorations of the links between political and cultural change are being lost in a war of personalities, accusations and counter-accusations. For this writer, it is due time that we digested the lessons of this debate and got back to the work of forging an ecological radicalism that can really shake the foundations of the miserably anti-ecological and anti-human society in which we live.

The Politics of Population

Possibly the most contentious long-term controversy in the ecology movement has been over the question of population control. It is probably also the greatest point of contention between Deep Ecologists and Social Ecologists, as well as between many traditional environmentalists and people with more diverse histories of work in social change. Most surveys of deep ecological ideas emphasize the need to reduce human populations, and Dave Foreman declared the population issue "an absolute litmus test" for whether one "belongs" in *Earth First!*²⁰ (a dismaying thought for a social ecologist who has participated in *Earth First!*-type actions at

considerable personal risk). There has been so much confusion over this one issue that it demands further discussion here.

There is no question that the Industrial Era has brought an unprecedented increase in the world's human population at the same time as it has drained the earth's resources and devastated its ecological integrity. Millions of people are going hungry, while the carrying capacities of lands all over the world are increasingly overtaxed. This has led many people to view overpopulation as the fundamental cause of the ecological crisis.²¹

It is a compelling view, at first glance, if only for its sheer simplicity. It raises the hope that only one small adjustment, a statistical decrease in population, can somehow reverse the course of environmental destruction. Proponents of this view discuss human populations in the the same abstracted, purely statistical terms that populations biologists invoke to explain population patterns among birds or insects, thus accepting the reduction of ecological thinking to a highly mechanistic form of systems analysis. Social institutions, consumption patterns and concentrations of power and wealth do not have to be scrutinised. There could be enough land, enough food and enough goods to go around, they argue, if there were just a quarter as many or a tenth as many or a thousandth as many people to use and consume them.²² Just how to decrease population is rarely discussed — we are just assured that it will be 'gradual' and 'by attrition' — and this omission creates openings for all manner of naive, dangerous and even openly racist proposals.

The idea of overpopulation has been with us for a long time, and has often been used by apologists for the wealthy classes to decry the excess of poor people in the world. The fact that people are *made* poor when they are driven into cities by the expropriation of peasant and tribal lands and forcibly separated from their own means of sustenance rarely enters into the discussion. Thomas Malthus wrote at the beginning of the nineteenth century that poor people should be left to starve and die of "ravaging diseases", arguing that "all cannot share alike the bounties of nature".²³ *Earth First!* sells a bumper sticker declaring, "Malthus Was Right", but even Malthus modified his early claims about the inevitability of geometrically-growing populations facing a mere linear increase in food supply. Advocates of eugenics in the early twentieth century argued that human breeding should be controlled to eliminate the excessive breeding of 'infe-

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by Graham Searle

This study was commissioned by the International Institute for Environment and Development (IIED) to serve as a background document for a proposed meeting between the World Bank and its principal critics.

Searle looks carefully at the probable human, social and ecological consequences of three World Bank projects, the **Narmada River Development Project** in India, the **Polonoroeste Project** in Brazil and the **Indonesian Transmigration Programme**, which were to be discussed at the meeting.

The material on which the study is based was largely obtained from the World Bank itself and the study was conducted with the full co-operation of the Bank's project staff.

Unfortunately, the meeting, originally scheduled for June 1986, was postponed to October 1986 and eventually cancelled while the IIED decided against publishing the study.

The Wadebridge Ecological Centre, however, decided that this document must be published because of its value to those concerned about the role played by the World Bank in determining the present course of Third World development. This has been made possible by a generous grant from the Rowntree Social Services Trust, to whom all thanks are due.

Maps, tables and diagrams as well as references to the World Bank documents used to compile the study are included.

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Thomas Malthus. He believed that poor people should be left to starve and die of "ravaging diseases", arguing that "all cannot share alike the bounties of nature." Deep Ecologists in the US have espoused the same views.

rior races'. And now, some self-professed Deep Ecologists argue that AIDS and other diseases are 'nature's' only remaining remedy to the cancerous growth of the human hordes.²⁴

For thousands upon thousands of years, land-based peoples have sustained themselves with a minimum of damage to the basic integrity of ecosystems. Limited areas of forest have been cut and burned to make room for fields and villages, but primitive peoples generally understood the need to protect the health of the forest as a whole. Peasant societies living relatively outside the reach of cash-based urban economies have been able to sustain agrarian communities on limited tracts of land for a very long time. It is only with the rise of highly industrialised urban societies and capitalist modes of economic accumulation that the basic stability of rural life was shaken to its foundations.

Modern industrial economies are driven by an incessant drive to expand. When the provision of people's basic needs becomes a set of abstracted production processes, carried on for the private profit of a tiny minority of the population, the economies of scale, the manipulations of credit and capital, and the built-in distortions of mass industry make overproduction a necessity. The effects filter down to every level of society. Whether one examines the early expropriation of British peasants for large-scale sheep herding or the more recent theft of Central American peasant lands for coffee and sugar production, one sees the immediate social effects of a profit system driven by an inexorable need to expand.²⁵ The more people are forced off the land, the more land there is to 'develop' and the more people have to turn to the urban, cash-based economy to survive. By reducing people to 'units of production',

capitalism exaggerates the pressure on displaced people to have larger families to maintain a sufficient survival income. Those who remain on the land are compelled to grow luxury goods for export in order to raise cash to buy food. Meanwhile, as more people are absorbed into the competition for manufactured goods, production levels rise, while wages fall and profits continue to climb. Rapidly growing urban populations are good for business.^{26,27} In several European countries, in fact, industrial planners have raised a fear of underpopulation, a concern that is met by importing thousands of 'guest workers' from Africa and the Near East, while exhorting white families with highly racist appeals to have more children.²⁸

Life continues to worsen for those who are left to work the land, robbed of the social stability and control of their basic life patterns that sustained their ancestors for countless generations. The trends described a decade ago by Frances Moore Lappé and Joseph Collins in their path-breaking book *Food First* continue to dominate Third World economies. Their work should be studied carefully by anyone who wishes to understand the dynamics of population growth in the modern world.²⁹ Lappé and Collins have documented with great care how the apparent inability of Third World people to feed themselves is a direct result of the political and economic structures imposed upon them by the international market economy.³⁰

Throughout Africa, Asia and Latin America, people are going hungry at the same time that massive quantities of food are being shipped for luxury consumption in the United States and Europe. Subsistence farmers are forced to grow food on steep, rocky mountainsides while the most fertile land is controlled by commercial growers of coffee, cocoa, sugar, cotton and tropical fruits. There is more cultivated land per person in Africa than in the U.S. or the Soviet Union, far more than in the 1950s, when Africa was considered to be self-sufficient in food.³¹ Vast areas of land are overgrazed by beef cattle, raised almost entirely for export. People in many African countries have to hide their food gardens in the middle of coffee fields to escape high taxation and other forms of punishment imposed by governments tied to neo-colonial practices.

These problems are exacerbated by 'development aid' that favours commercial-scale agriculture and industrial mega-projects, deliberately crushing the economic independence that the great major-

ity of people once enjoyed. Countries like Brazil have tried to alleviate some of the social pressures that result from such distorted development patterns by opening up previously unsettled wilderness lands for people displaced by plantation agriculture, grazing and urban development. Many point to the resulting migrations as evidence that poor people are ultimately responsible for the destruction of the rainforests. It is true that a substantial portion of the rainforest destruction in Brazil is being carried out for new settlements rather than directly for corporate agribusiness, but this is not the result of population growth. Rather, it reflects a concerted national policy to try to compensate for tremendous inequities in land ownership in other areas of the country by moving people into Amazonia.³² It has been estimated that as much as a third of the present loss of rainforest in the Amazon is a direct result of the massive government-sponsored road-building efforts carried out to encourage more rapid extraction of resources, along with this planned relocation of the rural poor.³³

So why are populations in many corners of the world growing so rapidly? History shows that rapid increases in population occur when people become dislocated from their traditional land base and when people become less secure about their personal and family survival. When the future is secure, when the infant mortality rate is low, when the range of social choices for women are expanding, and when parents are not worried about who will support them in their old age, then populations become more stable.³⁴ In much of Europe, large population increases accompanied the displacement of peasants from traditional village lands — Ireland before the potatoe famine offers one of the more recent examples. As the distribution of wealth became more balanced in much of Europe in the nineteenth century, life became more secure and birth rates sometimes fell by almost half.³⁵ More recently, Cuba, China, Costa Rica and several other countries have been able to reduce birth rates substantially, generally alongside dramatic declines in infant mortality. Efforts to attack the root causes of social instability and inequality and to create educational opportunities for women have proven far more effective in stabilising populations than family planning programmes designed to increase the use of contraceptives. Meanwhile, countries in Africa and Asia that are presently suffering the decline of village economies and experiencing massive migrations to

congested urban centres have some of the highest birth rates in the world.³⁶ Rather than providing evidence for innate human destructiveness, the population question reveals the profound effect of social choices on the most basic ecological and demographic realities.

Who Drains the Resources?

Environmentalists often cite the statistic that the United States, with only 5 or 6 per cent of the world's population, consumes upwards of 40 per cent of the world's resources. If we add up all of the industrial production in other parts of the world that is oriented toward serving North American markets, the discrepancy might even be greater.³⁷ This suggests that people in the United States, where the population is relatively stable by world standards, are far more responsible for draining the earth's resources than the rest of the world combined.

However, the distribution of wealth and patterns of consumption are distorted within the United States. One per cent of US citizens own more than a third of the wealth; the richest ten per cent own two-thirds and certainly own virtually all of the vacation homes and most of the luxury consumer goods, as well as the country's productive resources.³⁸ The military contributes substantially to the excessive consumption of oil and mineral resources. We have inherited a parasitic economy that rewards waste and speculation and ignores all but the shortest-term consequences of economic decisions. Resources are not being squandered because growing numbers of people need them in order to survive, but because relatively few people are very highly rewarded for exploiting resources at a pace far out of proportion to real social needs.

Consider the case of offshore oil drilling, currently one of the most controversial environmental issues in California and several other places. It is claimed that the extraction of offshore oil is needed to prevent future energy shortages; however even the most optimistic figures show that the entire projected oil production of the Northern California coast would only satisfy the USA's present demand for oil for two to four weeks.³⁹ Even a minimal conservation effort would save far more oil than these highly-contested and ecologically-fragile offshore sites could ever produce. Similarly, Western activists have begun to document the decline of federally-owned grasslands due to overgrazing



Those who blame overpopulation for the current ecological crisis often gloss over the problem of over-consumption. Yet people in the United States are far more responsible for draining the earth's resources than the rest of the world combined.

by beef cattle. All of the cows now grazed on Western range lands, at considerable public expense and ecological toll, account for less than 2 per cent of US beef consumption.⁴⁰

California's old-growth redwood forests are being cut down two to three times faster than ever before, and this has nothing to do with any increase in demand for redwood products. Rather, the one logging company that owns much of the remaining privately-owned redwoods was involved in a hostile corporate takeover last year, and the new parent company, the Houston-based Maxxam conglomerate, has chosen to 'liquidate' its timber assets in order to cover the costs of the buyout.⁴¹

There is no doubt that huge numbers of Americans are extremely wasteful in their consumption patterns — high consumption has become the most accepted outlet for people living in a society so far removed from its means of personal sustenance. Wasteful habits are encouraged by advertising, by alienated patterns of work and leisure, and by the loss of indigenous cultural ties both to the land and to each other. But the massive loss of natural ecological diversity which we are seeing in our own lifetimes is neither the result of growing populations, not of extravagant personal consumption by average citizens of the 'developed' countries. It is the product of an economy that rewards speculation and thrives on growth for the sake of growth, a vastly inequitable distribution of wealth, and an international order dominated by two bloated military superpowers. The ethic of domination described by many ecological thinkers has been traced back through thousands of years of 'civilised' history, but only in the past few dec-

ades have we come to see the combination of economic ruthlessness, raw technological power and social dislocation that threatens the total degradation of the earth's life-sustaining qualities.⁴²

Myths from the Land

It is not difficult to understand how a strong devotion to environmental activism has driven many people to such a grim view of human nature as that held by many Deep Ecologists. Modern urban society is virtually designed to bring out the worst in human nature, and Deep Ecology, at its best, has raised the full ambiguity of humanity's present role. Such an approach rings especially true in the western United States, where public devotion to the wilderness is often the strongest, but the patterns of human settlement and the ways in which most people actually live their lives, reflect a tremendous personal distance from the natural world. People in the far West often live surrounded by huge mountains, and population centres are often separated by considerable expanses of largely undeveloped land. But nature, for the most part, is still just a place to be visited on weekends and enjoyed in one's leisure time. The places where most people actually live — especially in California but increasingly throughout the arid West — are large cities and suburban housing developments inflicted upon the landscape over a very short span of years, with a nearly total lack of sensitivity to natural patterns. Wealthy people live up in the hills and poor people live in the more congested flat lands below. Human settlements are often striking impositions upon

the land, built by speculators out to make quick profits, and usually completely dependent upon imported water and on the automobile for transportation. The line between the places where people live and everywhere else are much sharper than in most of the country, and this cannot help but shape the way people view their own place in nature.

The impacts of civilisation upon the West are exaggerated by both the suddenness and the scale of development. Vast tracts of land tend to be swallowed up all at once by massive commercial ventures. Thousands of acres of ancient old-growth forest are devoured in a single logging season. Mining companies swallow up entire mountains and vast canyons are still being dammed up to secure water supplies for the growing cities. In the San Francisco Bay area, one can find thousands of people who grew up in fairly rural agricultural communities that have been completely sacrificed to sprawling high-tech suburbs in just a decade or two. People appear to be invading from everywhere. It is no surprise that, for the last few years, people who have been asked what is the most important problem facing the Bay Area have

cited "overpopulation", next only to "transportation" and "pollution".⁴³ It might have been more accurate for people to cite "overdevelopment" or simply "congestion", but the idea of overpopulation has so influenced the way people think about the world that many of people's concerns about the declining quality of urban life have come to be understood in these terms.

The Western brand of deep ecological thinking also reflects a very distant cultural relationship to the land that has evolved partly from the ethic of the early Western frontier. By contrast, a pastoral, rather than a frontier ethic shaped settlement patterns in the East, and was often carried by settlers across the Appalachian Mountains to the mid-western heartland.⁴⁴ Until the opening of the Western frontier to individual homesteaders in the mid-nineteenth century, patterns of settlement and land use were often decided upon on a communal basis, and a cooperative relationship with the land often followed from the ideal — and the necessity — of cooperative relationships between people in village communities. The land ethics of the far West were more thoroughly shaped

by myths of rugged individualism, as personified in the figure of the lone frontier scout. This historical difference in peoples's outlook toward the land lies at the heart of some of the conflicts among the various approaches to ecological philosophy. Social ecologists in New England have inherited an affirmative vision of human communities sharing a cooperative relationship with the land, while Deep Ecologists in the West have embraced a more isolationist frontier ethic, with its harsher view of both wild nature and human nature.

In the February 1988 issue of the local San Francisco Bay area Sierra Club newspaper, Dave Foreman set out to explain why protecting wilderness is the most important goal for environmentalists to pursue. For Foreman, the diversity of nature that may only exist in places far removed from human settlements provides the real basis for natural evolution. Why concentrate our efforts on preserving these places? "So that there is something to come back after human beings, through whatever means, destroy their civilisation" he explains.⁴⁵

Our present civilisation is clearly

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headed for collapse, and is currently poised to carry the rest of the earth down with it. Whether by instantaneous nuclear holocaust or by the more gradual degradation of the earth's life-support systems — the forests, the air, the protective ozone layer and all of the earth's climatic patterns — the course of ecological collapse is underway and the chances for survival often appear slim. So it is a noble effort to fight for the few remaining wild places, in the hope that they might someday offer the seeds for global renewal.

However, if we are to take the lessons of ecology seriously, we know that everything in nature is far more thoroughly interconnected. The environmental technocrats might be able to predict by systems analysis that so many acres of such-and-such type of habitat can survive as an isolated unit, but in reality, no place is unaffected by the ravages of our present ecologically-disastrous way of life. Phenomena such as nuclear winter, acid rain, the greenhouse effect, and the thinning of the ozone layer make it clear that no partial solution can really sustain life, no matter how well-meaning and environmentally-responsible it may seem.

The destruction of many — possibly most — of the defining institutions of modern society should be actively encouraged by earth-loving people. But if we leave a barren landscape of concrete and ashes with a few patches of green scattered among them, we cannot really claim we have bought the earth's survival. It is as grim a view as that of the armed survivalists who build private fortresses in the hills and the deserts, their basements stocked with canned food in the hope that they and their families will survive a nuclear war even if nobody else does. The ecological survival of every part of the earth now hinges on our ability to cast aside the imbalanced ways of our present civilisation, to stop raping the earth for the short-term gain of a few, and to create a way of life that expresses renewed personal and communal ties to the earth and all its living beings. The destructive power of the present industrial system and its military-industrial complex defies all halfway solutions.

Arne Naess is critical of most of the prevailing trends in the ecology movement. In his 1987 speech to the Schumacher Society, he criticised both people who think that changes in our relations with nature will automatically follow from changes in social institutions and those who seem so fixated on the whales and the birds that they do not think about society at all. For Naess, only "shallow ecologists"

(and I have never met anyone who admitted to being one of those) "think that reforming human relations toward nature can be done within the existing structure of society."⁴⁶

Living Ecologically

The major challenge for Greens, I believe, is to create a broad, transformative social movement that can completely recast our society along ecological lines. In *The Green Alternative*, I proposed ecological approaches to many current social problems and outlined some political strategies that might help shape such a long-term effort. I proposed a radical decentralisation of political and economic power, a merging of protest politics with efforts to build sustainable alternatives, and a new vision-oriented approach to political organisation.⁴⁷ Efforts along these lines have begun in earnest in many parts of Europe and North America and all kinds of ecologists need to come together to make it a reality.

Social ecologist Murray Bookchin has probably gone the farthest toward describing in philosophical terms what a truly ecological society might look like. It would restore the best qualities of traditional earth-centered societies — strong communal ties among people, complementarity of social roles, a deep respect for both natural patterns and human crafts, and the sharing of community resources to sustain everyone's basic needs. At the same time, such a society would uphold the values of universal humanity, personal autonomy and freedom that have emerged over the past several centuries. Humanity would "re-enter natural evolution", enhancing fecundity and diversity on nature's own terms and rejecting synthetic, manufactured ways of living. Personal and cultural development would be founded upon an "ecological interplay of social freedom and natural freedom."⁴⁸ The institutions that ruthlessly exploit resources, despoil the earth and repress people's deepest desires would be replaced with free, fully participatory forms evolved to foster the fullest relationship of humanity-in-nature:

"Hierarchy, in effect, would be replaced by interdependence, and consociation would imply the existence of an organic core that meets the deeply felt biological needs for care, cooperation, security and love. Freedom would no longer be placed in opposition to nature, individuality to society, choice to necessity, or per-

sonality to the needs of social coherence."⁴⁹

Deep Ecologists see us as mired in an irresolvable conflict between anthropocentric and biocentric values. The Green movement needs to transcend this division, embodying a new *eco-centrism* that refuses to place humanity either above or below the rest of nature. *Eco-centrism* places primary value on the ecological *relationships* among people in a community, among communities sharing one of the earth's diverse bioregions, and among bioregional confederations joining cooperatively to sustain the earth we all share. Intimate relationships, both among people and between people and other creatures in the biosphere, should be the highest source of value and would evolve to reflect better a thoroughly ecological sensibility.

Instead of becoming further mired in sectarian debates between philosophical approaches that increasingly define themselves in opposition to one another, eco-activists need to begin evolving a broader approach, firmly grounded to a commitment to ecologically-sound living. Deep Ecology is unfortunately too diffuse and amorphous to meet this need. It has been picked up as a label by people representing highly divergent points of view — from desert isolationists to romantic poets, from animal rights people to New Age therapists to complete social nihilists and misanthropes. The unifying thread is becoming harder rather than easier to find. Although social ecology comes from a more firmly rooted philosophical tradition, it is too opposed to other ecological tendencies to motivate a sufficiently broad community of people. Murray Bookchin's continuing contributions are indispensable for anyone seeking a philosophical and political grounding for ecological activism — his writings appear in both major anthologies of Deep Ecological thought — but one person's brilliant insights cannot replace the essential process of an evolving movement for social change having to define itself.

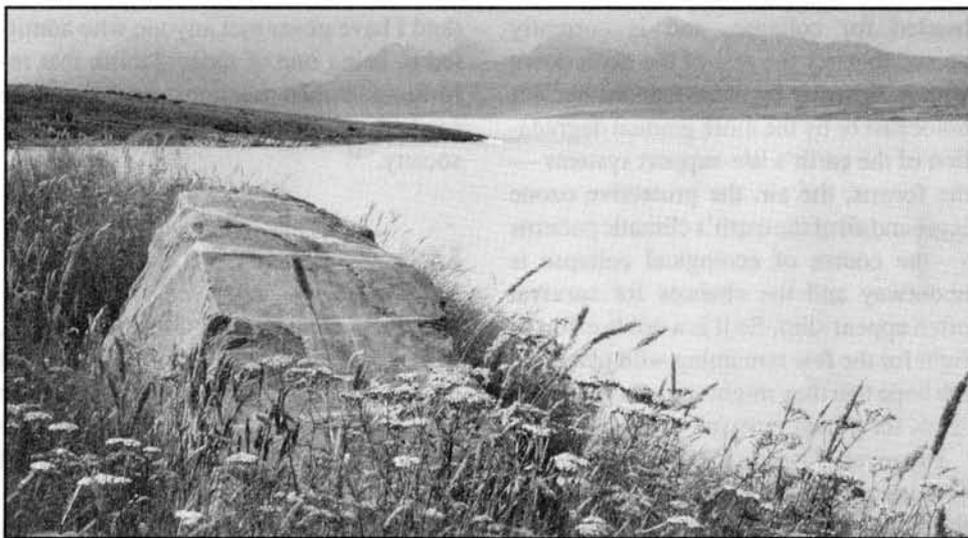
Earth-loving people from a variety of orientations need to begin working to evolve a radical ecology that is more activist, that merges the best of the various existing tendencies, and which furthers eco-centric principles in the search for ecologically-sound ways of living with and relating to the earth. Such a radical ecology would embody an understanding of the dialectical relationships between the social and ecological dimensions of life, seeking to reveal both the social and political roots of ecological problems and the

Our notions of scientific progress are founded on the myth that we can compensate for, work around, and improve upon the basic patterns of nature

origins of social problems in the culturally-imposed alienation between human beings and the rest of the natural world.

Such an approach would embrace social ecology's celebration of nature as a grounding for human ethics and creativity — a potential "realm of freedom" — while placing primary value on the wealth of personal and communal relationships among people and between people and the earth. It would dissolve the false separation between "the natural evolution of the planet and the social history of the species" called 'human'.⁵¹ It would seek to celebrate and enhance the power of people to shape their own history, create bases for living and working cooperatively, and help us to become more compassionate voices for our own emotions, the sanctity of all life, the joy and pain of birth and growth, and a full awareness of natural cycles.⁵² Ecofeminism offers especially important insights toward these ends. Radical ecologists should seek to evolve nurturing ways of living and working with the earth and its cycles that could supplant the manipulative and ultimately destructive approaches of modern science and technology. Politically, radical ecologists would struggle for bioregional autonomy, refusing to cooperate with oppressive institutions that now exert control from outside of one's own community and also transforming all hierarchical relations among people and institutions within communities and regions. Differences among people would be celebrated as essential aspects of ecological diversity and never used as bases for one group of people to dominate any other. Political action, creative cultural and spiritual expression, philosophical contemplation and personal growth and change would be seen as mutually-enhancing aspects of an ecological transformation of both self and society.

The sustenance of human life and the health of the whole biosphere are thoroughly interwoven. Whether we acknowledge it or not, our survival as a species is completely dependent upon the entire web of life remaining intact. Our notions of scientific progress are founded on the myth that we can compensate for, work around, and improve upon the basic pat-



Sierra Club/John Hendrickson

For Earth First!'s David Foreman, it is essential to preserve wilderness areas "so that there is something to come back after human beings, through whatever means, destroy their civilisation."

terns of nature, seeking to organise the human world around increasingly predictable, machine-like structures. Modern cybernetics and genetic engineering are based on this risky proposition, as is much of modern medicine. The further the earth's ecosystems, our health and our personal lives are degraded by technological 'progress', the more our civilisation becomes dependent upon technological solutions to try to manipulate its way out of the mess that has been created. Whether one looks at global climatic patterns, the weakening of the human immune system, or the long-term decline of both natural and agricultural ecosystems, it is clear that further attempts at remaking nature in a technological mould will bring increasingly disastrous results.⁵³ We can never replace by technical intervention or design the ecological integrity that has emerged through billions of years of natural evolution. We need to live every day with the understanding that the vitality of life on this earth depends more than ever on the integrity of all life.

Over the past two decades, a sensitivity to ecological principles has gradually emerged throughout the developed world, and begun to affect the thinking of people of all walks of life. At the same time, the instruments of destruction have become more powerful, the excesses of consumerism have become more blatant and capital has consolidated its neo-colonial domination over peoples and lands all over the earth. In the United States, where so many of the institutions and ideologies of destruction and control have their home base, new ecological movements are slowly beginning to influence people's thinking and behaviour at many levels of society. The prevailing system retains its control over people's lives and psyches by exploit-

ing the tremendous personal isolation and social fragmentation experienced by its subjects. Movements for social change have classically reflected this fragmentation, losing themselves in internal battles and polemics that rarely help illuminate either the underlying nature of domination or the path to a different way of life.

The emerging Green movement in the United States threatens to pick itself to pieces before it even has a chance seriously to take on the powers that be. As we seek to draw the substantive lessons from the continuing philosophical debates, it is time to put aside the polemics, the vindictiveness and the name-calling and begin to create a movement that can confront, on all levels, the pressing social and ecological dilemmas of our time. Our hopes for the survival of life on this planet, and for a richer, more fulfilled life for everyone, depend upon it as never before.

Notes and References:

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4. Essays on Deep Ecology and Earth First!'s expression of its ideas appear regularly in the *Earth First!* journal, published by Ned Ludd Books of Tucson, Arizona (P.O. Box 5871, Tucson 85703). Devall and Sessions are regular correspondents (see below).

5. Murray Bookchin, 'Social Ecology vs. Deep Ecology — A Challenge for the Ecology Movement', *Green Perspectives*, Nos.4-5, Summer 1987. See also, M.Bookchin, 'The Crisis in the Ecology Movement', *Green Perspectives*, No.6, Spring 1988 and M.Bookchin, 'Yes! With Earth First!?', manuscript available from *Green Perspectives* (Box 111, Burlington, Vt. 05402).

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9. M.Bookchin, *Our Synthetic Environment*, Harper and Row, N.Y., revised 1974; see also note 3 above.

10. Paul Shepard and Daniel McKinley (eds), *The Subversive Science: Essays Toward an Ecology of Man*, Houghton Mifflin, Boston, 1969.

11. As late as 1978, members of the Clamshell Alliance and other anti-nuclear groups were still attempting to lobby the Sierra Club to take a stand on nuclear power.

12. See, for example, Petra Kelly, *Fighting for Hope*, South End Press, Boston, 1984; Rudolph Bahro, *Building the Green Movement*, New Society Publishers, Philadelphia, 1986; and Carl Boggs, *Social Movements and Political Power*, Temple University Press, Philadelphia, 1986.

13. A provocative inside account is offered by Dave Foreman in *The Whole Earth Review*, Number 2, Spring 1985.

14. See, for example, reports of ongoing action campaigns in *Earth First!*, May 1988 and June 1988; also Dave Foreman and Bill Haywood, *Ecodefense: A Field Guide to Monkeywrenching*, Ned Ludd Books, Tucson, 1987.

15. See supra note 7.

16. Quoted in Harold Gilliam's environmental column in 'This World Magazine', *San Francisco Chronicle*, December 6, 1987.

17. Some commentators, though, have observed overtly fascist overtones in the way Earth First! spokespeople use language, especially in their self-image as warriors poised against a destructive human race. See, for example, E.B. Maple in *The Fifth Estate* Spring 1988, Vol. 23, No. 1.

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25. See, for example: Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution*, Harper and Row, San Francisco, 1980, pp. 42-68; Frances Moore Lappé and Joseph Collins, *Food First: Beyond the Myth of Scarcity*, Houghton Mifflin, Boston, 1977, Chapters 7, 11 and 12; Frances Moore Lappé and Joseph Collins, 'Central America: Roots of Environmental Destruction', The Environmental Project on Central America, 300 Broadway, Suite 28, San Francisco, CA. 94133.

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27. Bernard Nietzschmann, 'The Third World War', *Cultural Survival Quarterly*, Vol. 11, No.3, Summer 1987 analyzes 120 wars currently being fought around the world, of which 84 are between established states and recognized internal nations of the Third World.

28. Jonathan Lieberman, 'Too Many People?', *New York Review of Books*, June 26, 1986, pp. 36-42; Tony Kaye, 'The birth dearth: Conservatives conceive a population crisis', *The New Republic*, Jan. 19, 1987, reprinted in the *Utne Reader* No. 27, May-June 1988, pp.91-93.

29. The notion of 'Food First' should be taken very seriously by those seeking an ecological solution to the world's problems. If ecological policy is to be guided by the philosophy of 'earth first' (and I believe it should), then 'food first' should be the guiding principle of social policy.

30. See supra note 25.

31. Lappé and Collins, *op. cit.*, supra note 25, p. 18; Nicholas Guppy, 'Tropical Deforestation: A Global View', *Foreign Affairs*, Vol.62, No.4, Spring 1984, p.946

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The Road to Ecotopia? Socialism Versus Environmentalism

by
Robyn Eckersley

How compatible is socialism, as espoused by the traditional Left, with ecology? Is a synthesis between the two possible — or even desirable? Robyn Eckersley looks at the ideas of John Muir and Karl Marx, both forefathers of their respective movements, and concludes: "In Muir, not Marx, lie the seeds of Ecotopia and the promise of cultural and biological diversity."

To your workaday socialist, a 'Greenie' is a middle-class, elitist, romantic nature worshipper who has turned his or her back on the bread and butter issues facing the working class and the poor to save whales, trees and other 'lower order' life forms in an absurd, misanthropic deflection of purpose — a betrayal and affront to humanity, especially the needy. To your workaday environmental activist, our aforementioned socialist is an anthropocentric, short-sighted materialist who foolishly champions large-scale technologies that wreak havoc on the non-human world and ultimately (and ironically) condemn the socialist's hapless constituency to an increasingly alienated and insecure future.

What intellectual currents have contributed to this kind of crossfire between our caricatured representatives of two of the most powerful social movements of the 20th century — the labour and environmental movements? In an effort to shed some historical and philosophical light on the contemporary Red vs Green impasse, it would seem opportune to juxtapose the thought of two figures who are widely recognised as the intellectual forebears of the more radical wings of the respective socialist and environmentalist spectrums — Karl Marx and John Muir. In tracing these two particular pedigrees of contemporary socialism and environmentalism (arguably the most influential and distinctive), two questions should be borne in mind:

(1) Would Marx and Muir have shaken hands had they met (and

been aware of each others philosophy and activities)? In other words, are their ideas compatible or are they irreconcilable?

(2) If the latter, which intellectual legacy (if any) offers the most promising path towards ecotopia — that is, a just and sustainable society that respects both cultural and biological diversity?

These are important questions that have a significant bearing on the ideological cleavages between the contemporary Red and Green imaginations that are now manifest in various forms (for example, as both intra- and inter-party divisions) in most Western countries. In Australia, for instance, one particular incarnation of these opposing currents met at two separate conferences held in Sydney during the Easter break in 1986 — the Broad Left conference and the Getting Together conference. The conflict also surfaces from time to time between the Australian Labour Party and the Democrats and on the local front, between the Wilderness Society and the State Labour party. In West Germany, the division is loosely represented by the eco-socialist/eco-fundamentalist factions within Die Grunen, but more sharply, between the Social Democrats and Die Grunen; in Britain, we find it between the Labour Party and the Green Party (formerly the Ecology Party).

By tracing the lineage of the most extreme poles of these two streams of contemporary thought, hopefully we will advance our understanding of the crux of the disagreement and the possibility or desirability of a meaningful alliance.

Karl Marx (1818-1883) was born of the Old World — in 'civilised' Europe, the home of the Agrarian, French and Indus-

trial revolutions. John Muir (1838-1914), although born in Scotland, emigrated as a child with his family to North America and grew up in the New World, the land of opportunity, the wild frontier. Whereas Marx was an egocentric man of letters, a cosmopolitan, Jewish emigré, actively involved in subversive politics in the revolutionary hotbeds of Paris and London in the mid-19th century, Muir was an autodidact, a shy, solitary figure who preferred 'wild' nature (especially his beloved Sierra Nevada mountains) to what he saw as the artificiality and greed of urban life. And whereas Marx witnessed the exploitation and alienation of the unpropertied, labouring masses of Europe, Muir witnessed the conquest and domestication of the American wilderness by European colonists. (The American frontier is said to have been officially 'closed' in 1890). Not surprisingly, Marx and Muir came to espouse radically different creeds and were champions of radically different causes in their time.

Muir's Biocentric Philosophy

As first president of the Sierra Club, formed in 1892, John Muir espoused a deep-seated biocentric philosophy that was to lead him (reluctantly) into the political fray to become one of America's foremost publicists for the preservation of wilderness. Muir fiercely resisted the pioneering mentality that saw wilderness as a slumbering wasteland to be plundered and/or tamed. He also resisted the more tempered managerial utilitarianism that gradually emerged as the 'rational' antidote to the 'cowboy ethics' of the early

Robyn Eckersley is writing a PhD dissertation on the political philosophy of Green politics at the Centre for Environmental Studies, University of Tasmania, GPO Box 252C, Hobart, Tasmania 7001, Australia.

pioneers. For Muir, this 'wise-use' school of land management (typified in the arguments of his arch rival, Gifford Pinchot, the first Chief of the United States Forest Service) was equally contemptuous for it regarded the non-human world as no more than a stockpile of resources to be prudently managed and 'utilised' for humanity's benefit. The 'wise-use' school saw Sinfulness as waste and inefficiency, Godliness as exploitation. Yet to Muir, the non-human world had intrinsic value, that is, it had its own special worth and dignity and was valuable for its own sake. What led Muir to this biocentric philosophy?

John Muir was born into a strict Presbyterian family in Scotland in 1838 and emigrated with his family to North America in 1849, settling on a farm in Wisconsin. Muir's father was a Christian zealot who brought up the young Muir by the bible, hard work and the whip. When Muir finally left Wisconsin and the exacting demands of his father and the family farm, he soon rejected the overarching Christian God of his boyhood. The North American wilderness provided Muir with a deeper sense of spiritual meaning — that of the indivisible beauty and harmony of the natural world. Although he still used the pious, religious vocabulary of his childhood when speaking of wild nature, his adult metaphysics parted company with the orthodox Christianity of his time. To Muir, Christians impeded a proper appreciation of the natural world for they had dispensed with nature gods in favour of a single deity, in whose image we were made. It was also 'stingy' in the way it saw only humans as having an immortal soul — a view that enabled the manipulation and domination of the non-human world for human ends. This Muir saw as nothing short of ignorance and conceit for it was apparent to him that all species had their own purpose, regardless of their use to humans:

The world we are told was made for man. A presumption that is totally unsupported by the facts. . . Nature's object in making animals and plants might possibly be first of all the happiness of each one of them, not the creation of all for the happiness of one. Why ought man to value himself as more than an infinitely small composing unit of one great unit of creation, and what creature of all that the Lord has taken the pains to make is less essential to the grand completeness of that unit?!

A Radical Attack

Muir's radical attack on the selfish anthropocentrism of humanity (dubbed 'Lord Man') was to anticipate the sentiments of the now famous 'land ethic' of the American ecologist Aldo Leopold in his environmental classic, *A Sand County Almanac*, published in 1949:

A thing is right when it tends to preserve the integrity, stability and



John Muir, the father of the US environmental movement. For Muir, Christians impeded a proper appreciation of the natural world, for they had dispensed with nature gods in favour of a single deity, in whose image we were made.

beauty of the ecosystem. It is wrong when it tends otherwise.

Like Leopold, Muir believed that humans were part of a collective organism, the land, and that we ought to cast aside our conquering mentality and, to borrow Leopold's language, become "plain members" of the biotic community, "fellow voyagers with other creatures in the odyssey of evolution".

Muir's direct experience of wild places led him to a deep belief that humans were but one small part in the great unit of creation, which belonged to an impartial yet divine force of nature. This divine force, which Muir variously referred to as 'Beauty', 'Nature' or 'Nature God', expressed itself in its purest and most exalted form in wilderness, far from the artificial constructs of town and city. Although interested in matters scientific (Muir had spent a considerable period of his life working out a theory as to how glaciers had formed Yosemite; he was also skilled in

the mechanical arts), he rejected the detached, analytical method of scientific inquiry in favour of direct immersion in nature as the principle way to true knowledge. When Muir came to learn of Darwin's theory, he was readily able to accept the process of evolution (unlike the creationists) but insisted that, behind that process, there lay a Divine Intelligence. Moreover, he felt uncomfortable with Darwin's emphasis on struggle and competition, which conflicted with his own experience of nature as being without accident, dissonance or absolute separation.

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petition, which conflicted with his own experience of nature as being without accident, dissonance or absolute separation.

Muir is often cast as a disciple of the Concord Transcendentalists. Certainly Muir admired their work, especially Thoreau's *Walden*, and he was affected deeply by a meeting he had with Emerson in 1871 at Yosemite. However, he did not derive his ideas from their writings but rather learnt of them after his own ideas had already formed. Moreover, as Stephen Fox points out in his biography of Muir, he often found them to be insufficiently appreciative of wilderness. He felt that they were too abstract. Nature was but the confirmation of their ideas rather than the source of them. Muir preferred the direct, unmediated experience of nature as his teacher. Whilst he wrote many articles for literary magazines and the like in publicising the case for preservationism, he did not see himself as part of the Boston literati. His theories and philosophies were generally self-taught and his inspiration was drawn largely from wild nature rather than from books.

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Muir as Politician

The one major exception to this tendency was politics. Prior to the 1880s Muir was, by and large, politically ignorant. However, his slow awakening to the world of politics (promoted by the increasing incursions which civilisation was making on the remaining vestiges of the American frontier) can be attributed, in part, to books. Ironically, it was the Englishman John Ruskin (particularly his *Time and Tide*) who led him to grasp the role played by classical *laissez-faire* economics in leading to environmental destruction, that it was a systemic problem rather than the

result of the random greed of the few.² However, his appreciation of Ruskin (as with most writers) was tempered by what Muir saw as a lack of wildness: "You never can feel that there is the slightest union betwixt nature and him."³ Muir was nonetheless attracted to other aspects of Ruskin's thought, such as his "call to turn away from cities and technology; [his] criticism of a Christian for lamenting the sufferings of Christ instead of his own countryman's; [and his]. . . proposal to reward landowners for keeping their property in 'conditions of natural grace.'"⁴

Although Muir was involved in many political battles during the last twenty years of his life, they were exclusively concerned with wilderness issues; he did not, by and large, preoccupy himself with broad social questions. Muir saw himself and his fellow Sierra Club members as "a group of civilian combatants. . . who would work through agencies and Congress to protect forests and national Parks."⁵ Although they failed to prevent the damming of the Tuolumne river in Hetch Hetchy in Yosemite National Park (a battle that consumed Muir's energy for the better part of ten years), the Sierra Club achieved numerable victories on other fronts and has grown to become one of the largest and most successful conservation organisations in the USA.

Stephen Fox has charted the history of the conservation movement from radical amateurism to professionalism. Ironically, it has been the subsequent professionalisation of the movement that has led it to shed some of Muir's biocentric vocabulary in favour of a more anthropocentric, utilitarian discourse of the kind demanded by the land-use policy-making process. Yet the more radical streams of environmentalism (such as the Deep Ecology and Bioregional movements — the former of which has had a noteworthy impact in Australia) have continued in the Muir tradition to press home the critique of anthropocentrism.

Muir's sentiments were essentially Taoist, although expressed in Christian terminology. Nowadays, however, especially since the emergence of environmental philosophy in the early 1970s, the case for biocentrism has been largely stripped of the pious, religious vocabulary of Muir and set in more contemporary terms. We now find discussion of our interrelatedness and interdependence with the non-human world, of the need to cultivate an ecological consciousness, of the need to extend our compassion beyond our own species and identify with the fate of



Sierra Club/Harvey Payne

The North American wilderness provided Muir with a deeper sense of spiritual meaning — that of the indivisible beauty and harmony of the natural world.

other life forms. Indeed, the ecological worldview espoused by Deep Ecologists such as Arne Naess, George Sessions, Bill Devall and Warwick Fox is in greater accord with the picture of reality presented by modern science (especially modern physics, ecology and biology) than the mechanistic worldview upon which the dominant social paradigm rests. Nonetheless, Muir remains an important 'godfather' to the movement and the growing number of biographies, commentaries and now conferences on his life and philosophy are evidence of his enduring stature in American environmental politics.

Marx: His Background

Marx's intellectual and political achievements are, of course, well known. Born into a comfortable, middle-class, Jewish home in Trier, Germany, Marx pursued studies in law at the University of Bonn, then philosophy at the University of Berlin. He then charted an intellectual course through philosophy to romanticism and Hegelianism, ending with politics and economics. After working as a journalist in Germany, he emigrated to Paris in 1843 and became totally absorbed with French

socialism. He read widely on the French revolution and classical English economics and became actively involved in the Communist League and, from 1864, the First International. His subversive journalistic activities forced him to live in exile, first in Brussels and later in London where he suffered deprivation and was kept alive by the generosity of his lifelong friend Engels. He finally retired from active politics due to ill health and financial hardship, although he readily embraced a more opulent lifestyle in the last decade of his life after receiving an inheritance.

According to Isaiah Berlin, Marx (who resented being Jewish) was not introspective by nature and he took little interest in persons or states of mind or soul.⁶ Rather, "[he] was endowed with a powerful, active, concrete, unsentimental mind. . . [and] an acute sense of injustice".⁷ However, Marx did not have an explicit ethical ideal to press upon the world. To Marx, ethics were an illusion. His was a scientific approach that entailed very little discussion of ultimate principle. To quote Berlin again:

He detested romanticism, emotionalism, and humanitarianism appeals of every kind, and, in his anxiety to avoid any appeal to the idealistic feelings of his audience, systematically tried to remove any trace of the old democratic rhetoric from the propagandist literature of his movement.⁸

The masses were to be 'taught' the correct line through knowledge of the 'facts', the 'real' state of affairs. In this respect, as Isaiah Berlin has observed, he was one of the great authoritarian founders of a new faith that offered a scientific approach to and understanding of social and economic reality. Marx lived at a time when science and industry were making spectacular headway. He saw the Great Exhibition in London in 1851 as a "pantheon in the new Rome", where the world bourgeoisie proudly displayed the deities it had fabricated. Yet it was the bourgeoisie as an expropriating class whom Marx detested, not the productive powers that their entrepreneurial skills and scientific handmaidens had unleashed. Marx fully absorbed the Victorian faith in industry, science and progress. The great contradiction, the great evil, lay in the relations of production (that is, those arrangements that govern the control and ownership of the productive process and the distribution of its fruits). The existing means (or 'forces') of production (i.e., machines, techniques and human labour) were welcomed as facilitat-

ing the transition from the “Kingdom of Necessity” to the “Kingdom of Freedom”, a transition that would be complete once the working classes had expropriated and further developed the bourgeoisie’s tools for their own benefit. Indeed, Marx urged the perfection of the Baconian quest, outlined in Bacon’s *New Atlantis*, of “enlarging human empire”. Marx’s central quibble concerned how the spoils of this empire were to be managed and divided. The capitalist relations of production were seen as fetters that stood in the way of a fully social appropriation of the “slumbering possibilities” of nature, — that is, the potential of nature to be converted into use value.

Marx’s View of Nature

It is here that we arrive at the most deep-seated incompatibility between Marx and Muir, an incompatibility that may be traced to their fundamentally different senses of human importance, purpose and relationship to the non-human world. To Marx, the human being is above all *Homo faber*, the worker, the fabricator. We realise our humanity by transforming nature through our technology and productive activity. This particular conception of humanity is derived from the way in which Marx fused the three great intellectual tributaries of his thought — German metaphysics (particularly Hegelianism), French Socialism and British Political Economy. The effect of Marx turning Hegelianism on its head (replacing Hegel’s idealism with a materialistic conception of history) was to transpose the role occupied by God in Hegel’s system of thought onto ‘Man’ (used here advisedly). Humanity thus became omnipotent, answerable to no-one but itself. To conquer nature, rather than to be subject to it, was seen to be our historical calling. Humanity was the goal of history, ‘progressing’ through historical stages — from the primitive to the feudal to the capitalist and ultimately to the socialist via a dialectical development from ‘lower’ to ‘higher’ stages. Any form of reverence for nature, such as that displayed by primitive cultures, was considered to be childish and backward for it hampered humanity’s development:

...the great civilizing influence capital, its production of a stage of society in comparison to which all earlier ones appear as mere local developments of humanity and as nature idolatry. For the first time, nature becomes purely an object for hu-



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Marx's central quibble was with how the spoils of Nature were to be divided. . . To conquer nature, rather than to be subject to it, was seen to be our historical calling.

mankind, purely a matter of utility; ceases to be recognized as a power for itself; and the theoretical discovery of its autonomous laws appears merely as a ruse so as to subjugate it under human needs, whether as an object of consumption or as a means of production. . . .⁹

From the French socialists (such as Saint Simon, Fourier and Owen), we can trace the idea of the perfectibility of humankind via a rational ordering of society. But again, this optimistic view of human destiny — a legacy of the Enlightenment — was, in Marx’s hands, to be achieved through the ongoing transformation of nature.

Perhaps the most decisive current of anthropocentrism, however, came from Marx’s readings in British political economy, which helped shape his famous labour theory of value. According to Marx, the key process creating value is labour. Nature (often referred to as the ‘external world’), on the other hand, is value free, it makes no normative claims upon us, it is raw material to be bent and transformed as an instrument of human labour. It is thus valueless until such time as human labour (and its extension, technology) has acted upon it. Nature thus has no intrinsic worth.

Marx’s communistic utopia was a technological dream world, a stage where humans have thoroughly transformed nature to their own ends, or, as Charles Taylor has observed, where humanity is at one with nature because, and to the extent that, it has made it over as its expression. This is what Marx meant when he spoke of the “Humanisation of Nature”.

Managing Nature

In view of the above, can it be said that Marx had an environmental consciousness? The answer is yes, but it was unashamedly anthropocentric and thus very far removed from Muir’s biocentrism. To the extent that Marx addressed environmental problems, his interest was confined to public health and welfare issues. Capitalism was seen to be wilfully blind to the health and occupational hazards it brought to bear on the working class and their families. It was also profligate in its use of raw materials. The structural dynamics of capitalism led it to exploit the labourer and the soil alike. But Marx’s solution to this mismanagement lay in the wise use and management of resources, a state of affairs that would be possible only after a fundamental change in the relations of production. Whilst Marx and his colleague Engels occasionally extolled the virtues of conservation, of rational planning and management, they nowhere mentioned the need for the preservation of the non-human world “in its state of natural grace”, as Muir would wish it. They clearly belonged to Gifford Pinchot’s ‘wise-use’ school of resource management and would have been fundamentally opposed to John Muir’s case for the preservation of wilderness for its own sake.

Of course, wilderness issues were, and remain, very much on the periphery of the environmental agenda in Europe when compared to North America and were therefore not issues that engaged the cosmopolitan Marx. However, in view of Marx’s conception of human purpose, it is easy to gauge what his position would have been. Moreover, his attitude to the emerging ‘humane societies’ for the prevention of cruelty to animals in the 18th and 19th centuries (including Jeremy Bentham’s moral objection to animal suffering) are telling. Marx viewed the campaigns of such societies as “a displacement of human concern” — a concern restricted by the privileged class position of the societies’ advocates.

This *ad hominem* criticism has been

repeatedly echoed by latter-day Marxists in response to many modern environmental campaigns. For Marx (and most contemporary orthodox Marxists-cum-Socialists), the exploitation and deprivation suffered by the labouring poor eclipse any concern for the fate of the non-human world. The Green rejoinder is that the standard Marxist critique betrays an elitism of a different order, namely human chauvinism and that, in any event, the technological dream world envisaged as liberating the poor will inevitably serve to alienate and enslave the masses, whilst at the same time undermining our biological support system.

Modern Marxist Responses to Environmentalism

Just as the environmental movement has broadened since the days of Muir to take on issues of social justice (witness the rise of Green politics, which rests on the 'four pillars' of *ecology, social responsibility, grassroots democracy and non-violence*),

Muir's direct experience of wild places led him to a deep belief that humans were but one small part in the great unit of creation, which belonged to an impartial yet divine force of nature.

Western Marxism has sought to come to terms with the environmental crisis, particularly since the 'limits to growth' debates of the 1970s. (The environmental crisis has also led to a number of publications of the official Soviet analysis and response to the phenomenon; predictably, the solution is more 'technological fixes' and more 'rational' planning.) The relatively new era of Western Marxist scholarship began in a defensive mode in the form of an ideological critique of the campaigns of 'bourgeois environmentalists' but soon broadened into an effort to develop Marxist theory so that it may constructively address the environmental

crisis in its own terms. This was considered important by Marxist scholars from the point of view of opening up a meaningful dialogue on environmental problems with socialist countries (where one third of the world's population resides) as well as with the labour movement within non-socialist countries.

However, for most (such as Raymond Williams, Charles Tolman, Howard Parsons, André Gorz and Hans Magnus Enzensberger), the focus of concern remained restricted to issues of human well-being and survival. Significantly, a number of these theorists have found it necessary to reject central aspects of Marx's theory (such as the revolutionary potential of the working class and the importance of large-scale technology in emancipating the oppressed) to the point where some, like André Gorz, now identify themselves as 'post-Marxists'. Other former Marxists, such as Rudolf Bahro, now see the ecology crisis as "the quintessential crisis of capitalism" and look upon Marxism as no more than a useful quarry, containing a few salvageable insights, that must be ulti-



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mately abandoned in favour of a new ecologically inspired political theory.

Much of the new Marxist (and post-Marxist) scholarship referred to above is as much an attempt to deal with the popularity and growing political influence of new social movements (notably the diverse array of anti-nuclear, environmental, peace and women's groups that now make up the broader Green movement) as it is to do with the real problems associated with environmental degradation. Moreover, the Marxist response has been slow to take up the challenge thrown down by new developments in moral philosophy (the growing field of environmental ethics, for example) and the science of ecology, both of which underscore the interrelatedness and interdependence between the human and non-human worlds and the importance of preserving wilderness and ecological diversity. Indeed, it is these latter arguments that Marxist scholars have found to be the furthest removed from their traditional concerns (and consequently the hardest to make sense of), especially where they challenge the essentially *human-centred* philosophical roots of Marxism in arguing for the *intrinsic* value of non-human phenomena.

Of the many strands of environmentalism, the preservationist strand within the modern environmental movement is clearly the most foreign to mainstream Marxists, especially when couched in terms of "wilderness for its own sake" rather than for its instrumental value as a means to human ends (say, for sport and recreation, aesthetic appreciation, science or for providing raw materials for future generations). Yet it is precisely this general preservationist viewpoint (which centred on intrinsic value arguments, although it did include some instrumental value arguments, particularly the aesthetic delight and spiritual renewal that comes from the wilderness experience) that pre-occupied John Muir for most of his life and provided the basic motive of his political involvement. This is not to argue that Muir is revered by all those working within the now extremely broad and diverse environmental movement. Rather, it is to hold out Muir and his ideas as embodying the concerns of the more radical constituents of the modern environmental movement, who, not surprisingly, reject Marxism as being irrelevant to their concerns (for example, the Deep Ecologists, Bioregionalists and most of those on the 'visionary/holistic' or fundamentalist spectrum of the Green Movement, such as Rudolf Bahro,

Petra Kelly, Fritjof Capra and Charlene Spretnak).

Conclusion

In view of the urgency of the environmental crisis and the persistence of exploitation, poverty and injustice in the world, what are the prospects of a creative synthesis of the Red and Green imaginations depicted here? A detailed discussion of this oft-debated question is clearly beyond the scope of this article but it should be at least clear from the foregoing that, despite their shared contempt for *laissez-faire* capitalism and its short-sighted, profligate use of the earth's 'resources', the respective philosophies of Marx and Muir are ultimately irreconcilable. The question we must therefore ask is: which of these broad traditions is more likely to lead us on a path towards a more just, ecologically diverse and sustainable society? To what extent is each tradition able to admit the concerns of the other into its *Weltanschauung* or worldview?

It is clear that with the Green imagination, resting as it does on compassion towards all beings, issues of justice and social responsibility occupy a natural place within its orbit. On the other hand, the Marxist circle of compassion (concern with social and economic justice) is but a subset of the Green circle of compassion (concern that all life forms be able to 'live and blossom'). Seen in this light, the standard Left rebuff to the effect that Muir and his followers are misanthropic merely betrays the Left's narrow moral universe and outmoded picture of the human and non-human worlds as two mutually exclusive zones; it also explains the zeal with which the Left are prepared to pursue a road to social justice that wreaks havoc on the non-human world. In Muir, not Marx, lie the seeds of ecotopia and the promise of cultural and biological diversity.

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Taoism and Deep Ecology

by

Richard Sylvan and David Bennett

The ancient Chinese philosophy of Taoism has much to offer Deep Ecology, particularly in those areas which have yet to be fully articulated. Most notably, Taoism's emphasis on the need to follow 'The Way' — in essence, to 'Follow Nature' — provides the foundation for a sounder philosophy of ecological living

There is a remarkable, and remarked, convergence of themes between deeper ecological positions, such as Deep Ecology, and Taoism.¹ Given that 'Deep Theory' has not been adequately elaborated upon in terms of its cosmology and politics, the older wisdom of Tao can be profitably drawn upon to elaborate and enrich it. Indeed, the points at which Taoism diverges from Deep Ecology (our working example, since it is presently the best known deep environmental theory) touch upon some of the weakest and most controversial parts of the Deep Ecology platform, such as the theme of biospheric egalitarianism, and the equality of all living beings.²

Taoism can thus provide not only a base for correcting and adjusting Deep Ecology, but also an impressionistic guide to a more satisfactory and richer Deep Theory. Taoism is throughout ecologically oriented; a high level of ecological consciousness is built into it, and it provides the practical basis for a way of life whose main tenet is 'Follow Nature'. It is also, so it transpires, a very congenial philosophy for ecologically-concerned intellectual travellers weary of mainstream Anglo-American and Continental philosophies which inform and reinforce the dominant Western social paradigm.

Both for background, and in order to arrive immediately in the thick of the comparison, we outline below (see Figure 1) a main part of the Deep Ecology platform in 'slogan' form and contrast it on the one hand with predominant Western attitudes and platitudes, and on the other with Taoism.

The contrasts tabulated are of limited accuracy, not only because they are condensed to slogans, but also because much of importance is omitted, especially from Taoism (which as so far portrayed only reflects themes of Deep Ecology). In what follows, several of the contrasts will be expanded, and the main omissions rectified. The richness of Taoism, and the philosophical topics which it covers (to which nothing corresponds in Deep Ecology), will mean that Deep Ecology is often left far behind.^{3,4}

Nature, Cosmology, and Tao.

Taoism sketches a cosmology while Deep Ecology does not. The cosmology is interestingly at variance with dominant Western

cosmologies. For the universe arises out of nothing. Being arises in accordance with Tao, which precedes existence. Non-being precedes Being. Non-being is ultimate (according to Chang Tzu) and comes first:

All things in the world come from being

And being comes from non-being.⁵

The universe had a primeval beginning, coming into existence from nothing.⁶

Every entity arises out of material nothingness and eventually falls back into nothingness;⁷ all that comes to pass, that is "All things flourish, but each one returns to its root".⁸ The whole, the integrated natural system, is a process of becoming and of decay. But the emphasis upon process, evolution and change, upon Nature as flux and transformation, is much enhanced in Chang Tzu, over the work of Lao Tzu, where more stress is put upon stability, constancy and equilibrium.⁹ Overall, it is correct to say, if not highly informative, that Tao is a natural process philosophy, with a keen sense both of *change* and of *limits*.

The novel cosmology — the emergence of what exists from nothing — is made feasible through adopting the rudiments of a theory of objects, in the style much later elaborated by Reid, Meinong and others. Non-being, what does not exist, is not formless or empty, an indescribable nullity, as previous Chinese schools had apparently invariably thought.¹⁰ On the contrary, it is not devoid of characteristics, but has definite features. Perhaps wisely (if unfortunately from an analytical angle) authentic Taoism is largely silent on such questions as to exactly which features characterize non-existent items. But enough is said to reveal how what does not exist - above all Tao - may yet have very distinctive features, while yet lacking other properties (such as existence). Main examples, some repeatedly alluded to, are those of gaps, lacunae, vacant spaces, as with a hollow bowl,¹¹ or empty utensil or window space or lightweight wheel,¹² or valley. The unoccupied space of a room for example has definite dimensions, location, and so forth; and its function and utility depends upon its not being occupied.¹³

Though Tao is considered nameless,¹⁴ that is, it is not an existent concrete thing (e.g. 'a particular'), nonetheless a lot can be said *about* Tao, by way of description.¹⁵ Though Tao is a single item, One, unity behind multiplicity, under conceptualisations it is 'complex': it is many things: the source of everything, the great form regulating both nature and conduct, and the Way of satisfactory conduct and proper lives. By derivation, it is 'invisible', 'inaudible', 'vague and elusive'. Nothing important conceptual-

Richard Sylvan and David Bennett are based at The Eco-Logical Trust, RMB 683, Bungendore, Australia 2621. A full version of this paper is available from the authors.

ised in Taoism comes in neat single form. All the main features and notions of Taoism — its principles, models, examples and so on — appear in such multiple form, being metaphysical, ethical, etc. The artificial boundaries between these areas are broken down. Tao itself exhibits this plural conceptual character: it combines both a complex of natural principles and methods and of guiding ethical forms, with no imposed separation of fact and value; but it is also an inexhaustible source. But the Tao is not beyond the reach of reason (necessarily), even though it is inexpressible (adequately). Other concepts, such as infinity, are also of this nature. (If Tao were Nothing, which in a sense it is, many of the puzzling descriptions would be entirely apt.)

Tao is perhaps best explained by going back to fundamentals. As Chan points out:

“The word tao consists of one element meaning a head and another meaning to run. It means that on which something or someone goes [that by which a thing becomes what it is], a path or road, later extended to mean ‘method’, ‘principle’...”¹⁶

To the apt Taoist images of Tao as ‘storehouse’, ‘mother’ and ‘ancestor’, may be added others, such as that of a programmed or guided missile. Each image helps peel off unwanted associations of others; thus Tao is a great mother without male input; an ancestor without predecessor, a missile without maker, an outputting programme without input. Like a programmed projectile or a storehouse, it integrates a complex source, an initial operating programme, with a planned course, a natural and ideal path.

The great or overarching Tao is a comprehensive source of natural activity; it encapsulates a framework of forms or principles, principles of natural order, both metaphysical and moral. It comprises both dynamic principles (or evolving ‘laws’) of nature and axiological principles guiding conduct.¹⁷

It is evident that Tao is intimately linked with, and concerned with, the natural, and indeed linked with — and not above — the everyday. But what is the relationship between Nature and Tao? Is Tao supra- or super-natural? Tao is certainly not supernatural, and it does not transcend natural things in the fashion of Western supernatural religions; rather Tao both orders and reflects nature. Tao supplies the physical laws that provide ideal physical models of processes. Tao in this sense is both a process and the container and origin of process and the laws of process. Tao is the natural, *internal* way of the universe — of Heaven and Earth — and super-Tao, also signified as Tao, is both the way of the universe and the universe itself. (Under a computer analogy, Tao is the programme of the whole system; it is also, as super-Tao, the programme combined with the system; in effect, it is everything). As Great Tao it is certainly simple, all-embracing and One. Understanding its components and their connections is not quite so simple.

As to the status of the principles, the laws, and the rules, of Taoism, standard Western categories are again exceeded. These principles are not transcendent, governing things externally, but are, so to speak, self-supplied, with things self-regulated. Undominated things are naturally self-governing. Nor is it accurate to say that “the Tao is immanent and expressed through the *te* (approximately translated in Greek as “*telos*”, or the ideal direction) of things.”¹⁸ The transcendent / immanent dichotomy fails (as on object-theory), because it presupposes that the principles and the Tao exist, either externally or internally; but they do not exist. What is closer to the mark is that

“Everything has its own nature and each nature is its own ultimate . . . then by whom are things produced?”¹⁹

But *ideally* they proceed according to the Tao-te, the goal

Table 1
Deep Ecology Contrasted with the Dominant Paradigm of Modernism and with that of Taoism

Dominant Western Paradigm	Deep Ecology (DE)	Taoism
Domination over nature	Harmony with Nature	Elaboration of DE
Nature a resource; intrinsic value confined to humans	Natural environment valued for itself.	Much as for DE; ‘humanism’ rejected.
Human supremacy	Biocentric egalitarianism	Differs from DE; wide impartiality
Ample resources/substitutes	Earth supplies limited	Supplies ample
Material economic growth a predominant goal	Non-material goods, especially self-realization	Following Tao-te
Consumerism	Doing with enough/ recycling	Doing with enough (recycling inappropriate)
Competitive lifestyle	Cooperative lifeway	Much as for DE: Voluntary simplicity
Centralized/urban centred/ national focus	Decentralized/bioregional /neighbourhood focus	As for DE
Power structure hierarchical	Non-hierarchical/ Grassroots democracy	Hierarchy without power structure
High technology	Appropriate technology	Limited technology

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directed way of virtue, autonomously.

Laws persist, and perhaps evolve, under the guidance of the overarching Tao, while the universe in its rich diversity comes into and out of being. Tao thus offers a kind of unity in, or above, diversity. In this regard too, Taoism can be applied to enrich and clarify the value scheme of Deep Ecology. For Deep Ecology also values diversity and organic unity in diversity, but lacks the cosmology from which the features derive. The unity lies in a unified tier of principle (matched in part at an upper level of the Deep Ecology pyramid) above the diversity of life processes. The Taoist metaphor of a single block, variously composed of many things, can likewise be applied to fill out Deep Ecology's picture of the ecosphere. However, the block metaphor has some drawbacks; it tends to suggest a static picture, which is unwarranted. For both Tao and Deep Ecology, universes and ecospheres are, when appropriately stable, in dynamic equilibrium.

Tao is a natural order. Though the phrase 'natural order' may seem strange, even contradictory, it is not. The reason is, in part, that the Taoist perception of the world is the reverse of the modern Hobbes-Locke perception of the world. In contrast to mainstream European political thought of the Hobbes-Locke tradition, where the state-of-nature is one of chaos or extreme disorder, the Taoist state-of-nature is one of order. A main assumption of Western thought, that political order must be imposed by regulation on an unruly state-of-nature, is thus undercut. A separate imposed political order is not required; for such an order rests on mistaken assumptions. Politics can, and should, follow nature. Science and politics can and should be blended, not sharply separated as in the West, where nature is taken to exclude value. Nature presumes value.

Nature is already in order, as it normally is, through a unity in diversity which involves a normative component — a principle or recipe for how things "should" be, as well as how they are. Values are built into the environment, and are an integral part of the way of things. By following the values of Tao, one enters and comes into contact with the whole environment and into unity with the environment. Tao is a description of how things are and a prescription of how to act in accord with the way they are.

Thus, whereas dominant Western thought sees the world as extensional, mechanistic and value-neutral (except for its human cargo), Taoism views the world as both intentional and value-infused. These features extend not merely to the whole, but to components which go into composing the greater whole. These have their programmes, or Ways, which are integrated into the greater way (somewhat as, but artificially, expert system programmes may be organised into grander programmes representing super-experts, computer substitutes for the lost "universal men").

The overarching Tao — or Tao with a capital 'T', the programme or recipe or Form or whole code — combines many individual lesser (or lower-case) taos within it. The lesser tao of an individual, a system or whatever, is what makes something what it is, a directed or informed source, a programme-directed path, a processed output. A tao is a source-directed object; it is thus a type of object, a dynamic item, which can be represented by a pair comprising a recipe, a programme or form and a direction or goal-orientation. Accordingly, an individual or local tao (or form) resembles one of Aristotle's individual forms as coupled with a *telos*, which comprises a normative directive. For both Aristotle and Tao there is, in effect, an "invisible hand" at work. (How did this natural order come about? The answer is: It evolved.) When things are running properly, the lesser, individual, taos (most conveniently) fit together and operate in accord

"In Taoism, as in nineteenth century social anarchism, society functions along natural lines; the state is essentially otiose. Society is self-regulating."

under the overarching programme. If each individual runs according to the programme, then the overall programme succeeds fully. However, it works even if each individual does not run according to the overarching programme, but it has a less ideal result. If each person acts in a correct way a massive net good and great order result. Yet, any attempt to impose order does not bring it about, but is counterproductive. The invisible (natural) hand guides, but the hand cannot be forced.

This picture of order invites comparison with the modern market theory, which claims that maximum effect or benefit is obtained without regulation (other than extensive framework legislation!), and that once regulation is imposed the result is inferior. In principle, the market operates on a set of understood (partly conventional) rules. The rules are known and it is merely a matter of following them. But the market enables dominance by the rich and powerful, and thereby encourages discrimination and the like. Tao, however, is opposed to such dominance; those who follow Tao attempt to refrain from dominating others. But like the market, the rules of conduct are built into the system and any attempt to impose them is counterproductive.

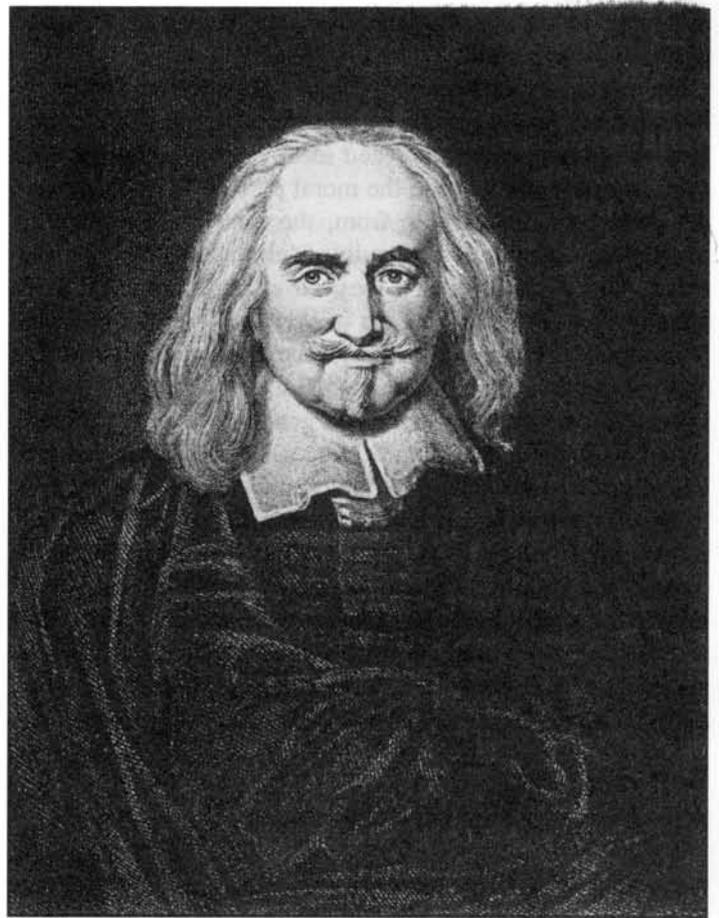
As a result, spontaneity and order are not opposites, but result from the same thing. A strong sense of natural order, of self organisation, of anarchy (in the good sense) enters. Like Buddhism, Tao assents to the maxim, "Do nothing and from unforced order greater order results". If each being is permitted to follow its tao, then the needs of all will be met without coercion. Following the way of Tao, nature emerges as a self-supplying organisation. Such convenient natural organisation stands (so far as it occurs!) in need of some further explanation, whether of an internal, evolving sort, or of a supernatural sort, as in Neoplatonism where God or the One accomplishes the organisational task. Taoism undermines such alternatives, and points towards an evolutionary explanation.²⁰

Taoism, Religion and Morality

God does not occur, and is not needed, in the cosmology of Taoism, either as an agent, to make things in the universe happen, or as an authority to regulate things or set moral or legal standards. If He did occur, He would, like other directors and rulers, not be needed, though He could serve as an example. "But there is no indication of his existence."²¹ As in the socio-political sphere, direction by an overseer or ruler is otiose, and only exemplary. In particular, God is not required to start or wind the universe up:

"Everything in the world creates itself without the direction of any creator. Since things create themselves they are unconditioned. This is the norm of the universe."²²

The Tao is not a supernatural personal agency; it is not supernatural, it is certainly not personal, and it is only in a stretched sense an "agency". If the Tao includes all-encompassing natural order – a unity in diversity – in which the tao of each is ideally in harmony with the whole, then there is no need to



Hobbes saw the state-of-nature as one of extreme disorder, as 'nasty, brutish, and short.' For Taoists, such a state-of-nature is not natural but one which reflects a deviation from the norm.

posit a super-Being. Each being follows its course in the whole. Moreover, the appeal to a superpersonal authority, exalted example, or the like, on the one side, or to ethics, on the other, is needed only when people have moved away from the Tao. Everything will work well if a community lives according to the Tao. Thus the question of moral obligation only arises when the system is in disequilibrium – an interesting, but tricky, position. So too, in formulating norms, the appeal is to the framework from which people have diverged.

In politics, as with morality, it is deviation from the natural state that represents the problem: again this is in sharp contrast to European political thought of the Hobbes-Locke strain, where the state-of-nature is seen as one of extreme disorder (nasty, brutish, short, etc.). For Taoists, such a state-of-nature is not at all a natural state; by contrast with mainstream thought, nineteenth century European anarchism adopts a position very similar to Taoism.²³

It is revealing to compare the Taoist picture of deviation from a natural state with the Aristotelian model of deviation from the mean, which provides the norm. On the Aristotelian model, the end of all things is seeking well-being, to be achieved by following the Mean. This involves adhering to the Mean in an active rational fashion. Rationality is tied to seeking, to the means. Tao does not require rationality. Tao is sought passively, by letting events happen, not actively, by forced efficiency, whereas on the Aristotelian account, the search and aim for the good is active.

Though the ancient transcultural doctrine of "the mean", or the middle way, appears explicitly in Lao Tzu,²⁴ that middle path is arrived at, and interpreted, differently. The Taoist route is an easy no-action route, a valley way, a path of weakness and little

resistance, in line with the general account of following Tao and living and faring well.

Tao supplies a set of suggestions and prescriptions for how to live well, as a parallel (and controlling) set of propositions about how things happen and proceed ideally. Of course there is a moral purpose in Lao Tzu; the moral purpose is a central one, alongside, and inseparable from, the metaphysical purpose, namely the acquiring of an account of "ultimate reality". To what extent then is Taoism open to the accusation of amorality? Since axiology is a crucial part of the world view — evaluations and commendations are freely and extensively offered in the texts — it is not amoral in a generous sense. But the treatment of deontic principles, and of rules of conduct generally, is very different. Deontics get into the picture only when there is a lapse or deviation from an ideal natural state (from a *proper* course). "When the Great Tao declined, the doctrine of humanity and righteousness arose."²⁵ It depends then, on what counts as 'moral' and 'amoral'. Certainly there are approved and implicitly recommended life-styles, though there are few 'oughts' and no (Confucian-Kantian) lists of duties. Moreover, unless the preferred Taoist lifestyle were merely recommended, not required, Taoism would fall down as insufficiently pluralistic.

An Environmental Lifestyle.

According to Lao Tzu, there are some basic elements to living well. Particular stress is laid, for instance, on the 'three treasures':²⁶

1. **Deep love** — which can also be taken to involve compassion, pity, commiseration, care, respect and regard, and which includes something close to empathy, deep-penetrating empathy. Sympathy, a main linkage of the European 'Enlightenment', does not however capture what is involved: sympathy alone would be too egoistical for Taoism, as it is for Deep Ecology. Deep love is part of the notion of genuine relatedness, not a one-sided 'relatedness' or possessiveness (which Taoism rejects).

2. **Frugality** — a renunciation of excess. But frugality is not impoverishment. Needs are met adequately without deprivation or excess.

3. **Modesty or humility** — not to dare to be ahead of the world, not to take the lead. In Taoism there is no competitive requirement, but the opposite; such Western desiderata lapse. Rather, one gives up trying to be on top of the pile, or even being in a faster lane. In a Taoist society there are no conspicuous tall poppies.

Much else connects with or follows in a loose way, it is assumed, from these three virtues; for instance, courage from deep love; generosity from frugality; a kind of leadership from humility. The arguments for those surprising derivations go like this:

"deep love helps one to aim in the case of attack,
And to be firm in the case of defence".²⁷

Earlier in the same text,²⁸ it is taken that proper abandonment of humanistic ethics will mean a return to (what the ethics inadmissibly substitutes for) deep love, a basic valuational relation. But in place of frugality, goes a discarding of profit, and in place

of humility an abandonment of conscious wisdom and discarding of immodest (or conventional) wisdom. These changes are, astonishingly, said to be rather superficial and inadequate; so further desiderata, commonly read out of the 'treasures', are adduced:

*Manifest plainness
embrace simplicity
reduce selfishness
have few desires.*²⁹

Another element, beyond the three of relatedness, frugality, and not daring to be ahead, is adaptability or spontaneity. This complements the further desiderata.

Evidently, the main ingredients for a simple, environmentally-sound life-style are highly commended. Lao Tzu might almost have been writing an introduction for Callenbach's environmental handbook, *Living Poor with Style*, or even for Pausacker and Andrews' *Living Better with Less*. In Chang Tzu, the pure person is a deep environmentalist: She is a 'companion' of Nature and "does not attempt to interfere with it by imposing the way of man upon it". Her goal is "spiritual emancipation and peace" and, by derivation, freedom; and her route is "through knowing the capacity and limitations of one's own nature and adapting it to the universal process of transformation" and thus to the environment.³⁰

In complementary fashion, opposite 'virtues', common in anti-environmental life-styles are condemned. The Western drives to power, fame, competition, possessions, excess commodities, useless (small) knowledge are rejected by Taoism (along with 'Mans' Affairs'). Thus entrepreneurial activity in business, and also in professional and academic affairs (as well as business itself), gets decidedly discouraged. The good life naturally reduces ambitions and desires and avoids competition. Competition is connected with self-assertion and aggressive action. Taoism, while not neglecting limited natural competition, casts aspersions on both, thus fitting neatly with Deep Ecology's prescription for environmental lifestyle and policy of non-violence. In place of the Enlightenment and mainstream economic virtue of competition appears the "virtue of non-competition".³¹ Arguments against competition can be developed from other doctrines of Taoism. For example, competition often requires forced or artificial action; thus it violates the doctrine of *wu-wei* (non-action), competition is deviant, and is evidence of deviation from one's tao. The penalty for such deviation from the path is not spelled out in Deep Ecology, but it is in Taoism. Another way of putting it (suggested by Clark) is that, in competition, rival external standards are imposed on Tao, presumably with electrifying results. In any case, according to Taoism, there is no merit in trying to place oneself above another. So there is no value in competition. Fortunately competition can be reduced. If a person does not compete then the world cannot compete with him.

A way of life is depicted, based on love, respect and compassion for all things, attuned to what is essential, shedding what is unnecessary, where simplicity and frugality are sought, and excess avoided. This includes, in a nutshell, voluntary simplicity of a deep sort. In Deep Ecology, the same idea appears, as the slogan "simple in means; rich in ends". Simplicity is not then the impoverished life of one who seeks escape. Taoism goes much further in disparaging scarce material means. Do not exact the worth, so that people compete. Do not value rare treasure, so that people do not steal. Gross wealth and prestige are rejected; they are vanities and vexations. But not all is vanity: living well is not.

It is a very natural inference, then, from the account of living

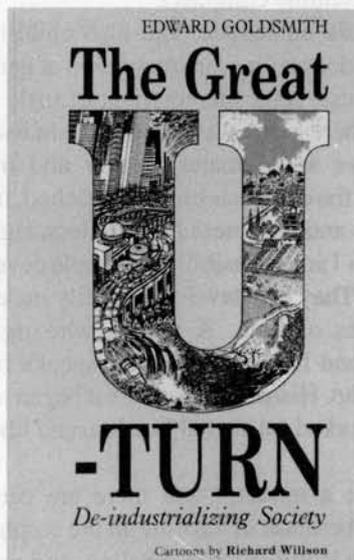
well to the suggestion that Tao offers a deep form of voluntary simplicity. Voluntary simplicity is a fuzzy notion.³² Voluntary simplicity can initially be explained through its two obvious components: simplicity, and its voluntary adoption. Simplicity connects with, and is often equated with frugality, as elaborated in Taoism. But whether or not simplicity is obtained from frugality or other Taoist virtues, it plays a direct and important part in the theory, and is in fact modelled, like its metaphysical counterpart, the unconceptualised Whole, by the 'uncarved block', a notion which is central to the theory. The block symbolises unity, simplicity and naturalness, unspoiled by artifice; metaphysically, it represents the wholeness and unity of Tao before conceptual carving, and ethically the wholesome straightforward non-devious life under Te, the "simple life that is free from cunning and cleverness, is not devoted to the pursuit of profit or marked by hypocritical humanity and righteousness, but is characterised by plainness, tranquility, and purity".³³ As to volition, people have a *choice* of selecting the way of Tao rather than one of the deviant ways. It is a choice of recipes — frugality versus excess; relatedness versus non-relatedness; tall poppies versus not daring to be ahead. But one does not attempt to force one's way onto the correct path. To seek the path hyperactively is a deviation in itself. It is deontic to speak of a *requirement* to find the correct path.

Following the Tao

Part of the Taoist route to an environmental lifestyle and to "self-realization" consists in acquiring the practice of non-action, in terms of non-assertion, non-aggression, non-destruction, and so on. *Wu-wei*, commonly translated as 'non-action', is thereby rendered a dialectic notion, for it does not exclude action and, in a sense, *is* action. To avoid such dialectical overtones, *wu-wei* is sometimes translated as "not acting wilfully" or "not acting artificially" or "acting naturally"; it is better translated as "without forcing" or "no forced (or coercive) action".³⁴ Construed in this fashion, *wu-wei* is not an extraneous awkward addition to

Taoism, but an integral part, which emerges from other features of the theory, namely those of following natural low-action ways. For non-action is the 'activity' of letting one's tao drift or flow into line with the overall Tao. What is commended, in the correct circumstances, is the pacifist action of letting events happen (for example, letting creatures die), as opposed to aggressive, extrovert action (for example, killing), forced action being a means of upsetting natural ways. The same is true for other taboos; the 'no desires' directive, for instance, is shorthand for 'no impure desires'³⁵ — that is, for no unsatisfactory or anti-*te* desires. Non-action accordingly does not require literally no action, but only actions in accord with ideal nature, so ruling out actions contrary to undisturbed Tao. It may appear that perennial problems, alleged to haunt Taoism (and intensified in Stoicism), are induced. For example, if all is Tao, and Tao is natural, how can there be unnatural activity? Or differently, if nothing can depart from Tao, how can there be unspontaneous actions, or any violation of *wu-wei*? Tao, however, is a source which only points in an ideal, natural, direction. It does not determine all individual paths, which can deviate from ideal or natural paths. Thus deviant activity is not excluded, unspontaneous and ill-organised activity by individuals is in no way ruled out; and forced, coercive and nature-destroying activities are all too common.³⁶

In terms of policy, non-action generally implies non-interference, when things have not been damagingly disturbed. It implies letting things take their own natural course; "letting Being be", as Deep Ecologists would say — in effect, a "hands off" approach to 'management'. In practice, unforced action is well illustrated by such examples of going with the flow as carving meat. The chef does not encounter bones. He takes the meat apart effortlessly in the same way that an athlete performs effortlessly, with little wasted action. Going with the flow can, however, involve a lot of activity, as with the man swimming easily in a raging torrent below the waterfall, or as in sailing and trimming to the wind. At a personal level, non-action lies in such things as not striving to put oneself above others, in foregoing competition, in simplicity, frugality, and adherence to a 'middle' way. Evidently this removes a range of normally accepted social



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Mahatma Gandhi was a model Taoist leader. For Taoists, rulers are not apart from society, but central to society's ideals. They lead by their spiritual example, inspiring the people to follow their ways.

activities. Flexibility, and suppleness, and even weakness, belong to the centre (or mean), to the valley way. In Tao, these qualities are associated with life; the inflexible and the rigid are associated with the dead.

A supreme goal in Deep Ecology, both for individuals and systems, societies and such like, is self-realisation. Self-realisation is a modern European idea, not found in Taoism, and indeed incompatible with it and all older non-maximizing wisdoms which incorporate theories of adhering to the Mean. For self-realisation is a maximizing prescription applied to the aggregated interests of separate selves, the inflation of a typically egoistic concept not found in original Taoism. But although Taoists would rightly query Deep Ecology's ideal of self-realisation, there is a group of associated goals to be found in Taoism: namely, attaining enlightenment and tranquillity, through following Tao, and cultivating *te*. The contrast between individual self-realisation (with a small 's') and the overall idea of Self-realisation (with a capital 'S') parallels that between *te* and *Te*, great *te*. Since "the main objective of the [*Lao Tzu*] is the cultivation of virtue or *te*,"³⁷ it is *te* that displaces self-realisation on the Taoist scheme.

Complementary to Tao is *Te*, and to tao is *te*. Whereas tao is the directed source of a thing, *te* is the matching *goal-directed developing* or unfolding of a thing. It is a directed and *appraised developing* — in principal, favourably appraised — and hence a perfecting; thus, the standard translation of *te* as 'virtue'. Because of its potential to reach a (good) goal, a rival translation as 'power' has some currency; it is a directed force *for good* (or evil). The programme of tao supplies the direction of matching *te*. So a thing can follow its tao (and thereby follow Tao) by cultivating *te*, by practising positive virtue, by choosing a lifestyle of deep simplicity. The directives for a good individual life are accordingly commonly given in terms of individual *te*, and it

is *te* (rather than Tao) that generally appears individualised.

As self-realisation in Deep Ecology is not restricted to individuals, so *te* and tao are not. The society as well as the individual has a tao and a matching *te*. Taoism is neither individualistic nor atomistic, but systemic and holistic. Thus groups or societies have their own taos and the collection is related to the overall Tao. Social insects perhaps provide a conspicuous example of the social tao. The example transfers to overly rigid social forms, such as bureaucracies, and also to military societies which are obsessed with security. But security is not obtained by being secure as in military security, which is characteristically a fortified security. In peace, people are open to danger but secure in another sense. The materialist world, excessively propped up by possessions, Taoism treats with disdain; it does not equate security with material security.

Each being has its own tao, its own ideal, naturally-programmed path of self-development or unfolding. Correspondingly, there is an immanent *telos*, a *te*, a goal-directed virtuous developing, for each thing. By each following its own nature, all follow nature.

Feminism, Powerlessness, Peace.

Taoism advances many themes which conflict with entrenched Western standards — strength and power, for example, are devalued, whilst characteristically feminine and child-like attributes are held up as important to living well and achieving Taoist self-realisation, *te*. Taoism was thus prepared for ecofeminism in a way that Deep Ecology was not. Taoism is highly critical of patriarchy, accepting in effect the main anti-chauvinistic themes of ecofeminism. By contrast, there has been continuing conflict between Deep Ecology and ecofeminism. In its formative days, Deep Ecology did not recognise legitimate feminine aspirations or the reality of sexual domination, and it took no due account of the central theme of ecofeminism, namely the striking parallel between the domination of women and the domination of nature. In Taoism, however, the traditional Chinese balance between *yang* and *yin* swings, when in disequilibrium, towards the *yin*. In contrast with the Western paradigm, one properly aims at *yin* (which represents the complex of supposedly feminine features) rather than at *yang* (symbolising, among other things, the masculine complex).

There is thus an emphasis on female, and also child-like, features, and, as in *yin-yang* dovetailing, an integration of gender features. There is, nonetheless, some stereotyping of male and female features in Tao (as there generally is in feminism itself), with males allegedly active and females weaker and more passive. It is in this way that the emphasis on *yin* is reached, from desiderata such as humility and weakness. Nonetheless, rigidly defined sex roles are alien to Taoist sensibilities. People develop according to their own tao. They can develop typically male, or female, features or features of both. A person who rigidly accounts these masculine and feminine features, speaks from without the framework of Tao. Historically, where it began to be put into practice, Taoism worked for sexual freedom and liberation of women.

The child also serves as a model,³⁸ and there are certain components of childhood liberation in Taoism: in the emphasis on freedom, in the attack on learning and schooling, and so on. The reason why the child is taken as a model is because it has spontaneity, it is direct and natural, and lacks power and strength. Tao rejects institutions and societies based on power. Infants are

not ruled by a longing for power, instead all actions are spontaneous.

Active force, like power, is in general castigated. To force growth is deviant for it destroys harmony. But to stop growth is also deviant. "For the mind to employ the vital force without restraint means violence" (replacing 'mind' with 'intentionality' would give a better picture of what is meant). There is a significant difference between force and violence. To employ intentionally destructive force is to do violence. To so force things is condemned. To remain in harmony with things one does not so force things or practise violence. There is a non-interference principle at work, which also indicates types of non-interference that are excluded.

Not only is the Taoist opposition to violence well-known, but there is a blistering attack on militarism and warfare in *Lao Tzu*:³⁹ "war is a symptom of the decline of man".^{40,41}

Taoism and the Environment

As with deeper ecological theories, Taoism rejects the traditional Western model of the relationship between humans and the natural world — namely that humans have dominion over the earth and its other inhabitants. The metaphysical, creationist basis for this myth of human superiority is also rejected, thereby undercutting the foundations of other lesser, and rather more benign, Western models of our relationship to nature, such as the notion of 'stewardship'. In Taoism, there is no greater ruler or purpose for humans to serve or act as steward to; besides stewardship, which is both hierarchical and implicitly patriarchal in cast, typically involves active interference in producing products. The idea of perfecting nature also implies active interference; for Taoists, however, nature is more or less in order as it is, and requires no 'perfecting'. Thus stewardship and perfectionism are discarded along with domination and dominion.

Taoism offers instead a 'let-it-be' approach to our relations with nature, stressing a 'hands off' attitude to management and associated lifestyles, several features of which we have already glimpsed.

A striking feature of Taoism is its environmental depth, its strong opposition to both humanism and human chauvinism:

"Heaven and earth are not humane

They regard all things as straw dogs [i.e. rather worthless strictly ritual objects].

The sage is not humane [or human chauvinist].

He regards all people as straw dogs"⁴²

Because of such tough pronouncements, reiterated and reinforced in *Chang Tzu*,⁴³ Taoism is sometimes said to be predicated on anti-humanism. But it is not "a dehumanising philosophy", it does not deny compassion; what transpires is that concern and value are not confined to humans or their affairs, but

"...include the natural and the metaphysical. The human is no longer the criterion of what is good or true. The traditional idea that a supreme supernatural being... is the ruler of the universe is replaced by the doctrine that the universe exists and operates by itself. When [Lao Tzu] says that 'Heaven and Earth are not humane', he means in a narrow sense that they are impartial, but in a broader sense that Nature is no longer governed according to human standards... In one stroke he removes Heaven [or God] and man as the standards of things and replaces them with Nature."⁴⁴

What is rejected is human chauvinism. For being 'humane' means accepting the chauvinistic assumptions of conventional

society and remaining within the narrow sphere of interests of the human species. There is no unbridgeable gulf between humans and other creatures such as Western thought has tried to manufacture. "Put a halter around the horse's head and put a string through the cow's nose, that is man".⁴⁵ In place of humanism, Taoism adopts a doctrine of impartiality. "Embrace all things without inclining to this way or that way".⁴⁶ He who is enlightened "is impartial";⁴⁷ "he has no partial love for anyone";⁴⁸ he does not bestow undue or special favours upon humans; he aims to be one with Nature.

Impartiality does not imply equality. Despite the received title of chapter 2 of the *Chang Tzu*, "the equality of all things" (the literal "levelling all things" is nearer the mark) and the standard inference to some Taoist doctrine of parity, no simplistic notion of all things having equal value is ventured — nor any theme of parity for some favoured subclass thereof, such as living things. (Though some accent is placed on 'prime life', there is not the same stress on *life* in Taoism that there is in Deep Ecology, nor the bizarre extension of 'life' to include waterfalls, mountains and other striking natural objects.)

What is offered is (again like deeper ecological theory) a doctrine of identification. Wide identification and wide solidarity does promote impartiality and counter chauvinism. Egoism, for instance, involves discounting all but oneself; humanism all but humans, and requires a species solidarity with human things. But wider identification puts a stop to such discounting and to such class-restricted solidarity. For wider identification reveals that interests, desires, values and so forth, are not so individual or class restricted.

No less striking than the criticism of humanism, Taoism makes a similar attack on traditional education and on the accumulation of knowledge. The case against traditional education, especially 'learning' by rote, is straightforward; it reinforces entrenched practices and prejudices — for instance, those of humanism. The criticism does not of course imply that there would be no regular learning or socialisation processes.

More perplexing, however, is the attack on knowledge acquisition, though, in part, like the attack on conventional education it is an attack on entrenched knowledge in the hands of a power group. But, in an organic society, knowledge is integrated into the community and not rarified into a commodity held or controlled by a priesthood or a class of intellectuals or literati. Knowledge is power; such power is removed from the hands of a few by making it a community good. This goes beyond Deep Ecology, in that it questions and rejects experts. Indeed in its criticism of schooling, narrow expertise, and the like, Taoism resembles and anticipates the position taken by Illich rather than the features of Deep Ecology.

Taoism is not against pure knowledge, but rather against slickness and cleverness, against devious and crafty uses of knowledge,⁴⁹ against the counter-productive acquisition of knowledge or cunning, and its teaching. In the *Chang Tzu* an apposite distinction is made between *small* knowledge, which is inquisitive, partial, discriminative or merely analytic, and *great* knowledge, which is "leisurely and at ease", comprehensive, extensive, and synthetic.⁵⁰ Even so, original Taoism hardly seems to cater for adequate access to information, and the removal of (perhaps debilitating) ignorance, concerning health and welfare, careful and damaging practices, choices and alternatives.

The critique of small knowledge and narrow expertise extends to encompass a critique of technology. In Taoism, technology is assigned a very limited role at best. (Hence, one of the complex reasons for the delayed development of technology in China.)

Certain forms of technology were if not rejected outright (as Clark contends), at least strongly discouraged. Thus, Lao Tzu states: "Even if there are ships and carriages, none will ride in them. Even if there are arrows and weapons, none will display them".^{51,52} More generally, while high and dangerous technology is set aside, even 'appropriate' technology cannot be accepted uncritically. Lao Tzu recognized clearly that even low impact technology may destroy human practices and conventions constructive to a community. Nor was the connection of technology with population neglected. Given a small country and few inhabitants, if provided with a labour-saving device he would not use it. There are dominating and non-dominating forms of technology. An avoidance of artificial wants and desires is enjoined, and correspondingly the replacing of labour with nothing at all is to be shunned. Taoism exhibits a firmer grasp of some of the problems of technology, even appropriate labour-saving technology, than recent positions like Deep Ecology.⁵³ The Taoist approach also demolishes the so-called iron law of technology, that there is no stopping technology or its progress; whatever the merits of the 'Law' (they are not so conspicuous), Taoism reveals that such social laws are highly paradigm-dependent, and do not necessarily withstand transfer from the dominant Western paradigm to other cultures.

Many other elements of a sensitive and sophisticated ecological position feature in Taoism. There is an elaborate and sensitive account of nature, from which it emerges plainly that nature is not a mere instrument for other ends and not a resource, but something of great value in and for itself. Nature is something to be cherished, which should be allowed to take its own course, and which is not to be interfered with or destroyed by humans. Indeed the dominant view is reversed; value for humans is achieved

above all by identification with nature, and by following natural ways. (Paradoxical reversal is a feature of Taoism; even castigated Western aims, such as leadership, fame and so on are achieved, not by direct aim, but by letting the reverse happen. So it is with the control of nature; non-intervention and non-action is the first approach. Sufficient control is gained, it is said, when assertive attempts to impose it are abandoned. While such concepts as bioregionalism are not discussed explicitly in Taoism, the bases for this — and for many other recently fashionable environmental ideas — are there: living in place is certainly present;⁵⁴ so too, the concept of doing things locally and remaining local, while being attuned to the universe and retaining global connections, is certainly advocated, underwriting the Deep Ecology maxim of "think globally, act locally".

While there is much in Taoism that fits easily and revealingly with deeper environmental theories, it seems plain that Taoism did not face up to such environmental problems as overpopulation and incremental resource degradation. The texts say little about soil degradation and deforestation, long major environmental problems in China. By contrast, in the West, Plato was properly concerned about deforestation of Greece. Nor does Taoism have much to offer directly on such contemporary issues as animal liberation, species loss, urban decay, and so forth, though some of the problems are hardly new. Historic Taoism too was a product of its times, adjusted to what were seen as problems when Lao Tze was writing.

Hierarchy, Domination, and Rulers

In looking to Taoism for political illumination, an early query is

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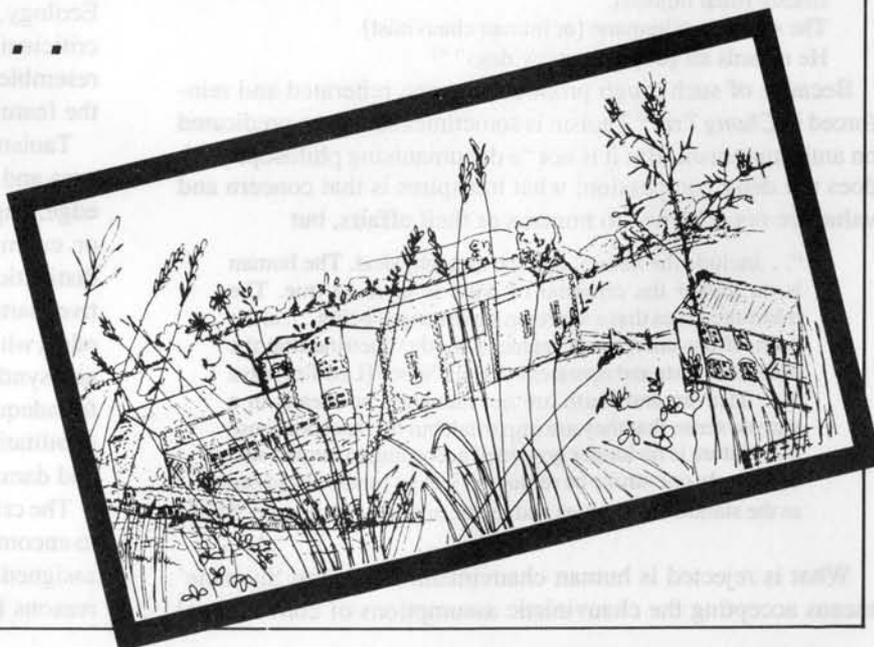
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likely to be: To what (damaging) extent is Taoism, and the work of Lao Tzu in particular, anarchistic? It explicitly addresses a ruler, and takes for granted the existence of a state. Thus the format of the *Lao Tzu* may have been obligatory; for Taoism also hopes for "the absence of princes". Nonetheless, overtly, Taoism is not anarchistic. But although literally anarchist, almost everything in the work corresponds to anarchist sentiments, and it has struck responsive chords in anarchists. Not surprisingly then, some have argued that, despite appearances, the work is anarchistic, and disposes of the State and the ruler "when taken in a political sense".⁵⁵ What has happened here is that anarchism is confused with an important variant, *anakyrisism* meaning practice, policy and so on without domination. Taoism sketches an early version of monarchically organised anakyrisism; Clark (in his book) a late version of ecological anakyrisism.

If Taoism assumes a ruler then it is open to the charge by some deep ecologists of not being a suitably natural way — unless there is a 'no-hands' ruler. But a satisfactory ruler does not coerce, and in fact does not regulate. It seems clear that Lao Tzu assumes a monarchical style of society without coercion. The basic idea is that it is acceptable (if maybe costly) to have or inherit a perhaps superfluous ruler, so long as there is no coercion. The 'ruler' is merely a planner, a guide, an example. 'Laws' are not backed up with coercion. 'Carving the block' coercively is seen as counter-productive, since it would break up the community.

Control or domination breaks the natural order of society, coercion removes the basic elements of voluntary simplicity; they are appropriately met with resistance. Government is said to be a sort of disorder. Government is indeed a main source of disorder, where government means coercive government. People are difficult to keep in order because those above interfere. Indeed this is seen as the only reason that people are difficult to keep in order.^{56,57} The more laws there are, the more disorder is possible, the more disorder there is. The more ways that order is imposed, the more ways there are to ferment disorder.

Natural order is the Way, the recommended way. Imposed order is counter-productive. There is reciprocal resistance to the imposition of deviant order. This would hold even if social organisers tried to impose Tao itself. Indeed, to attempt to impose Tao would be to go astray. Such points help to explain why little satisfactory detail is given on social and political organisation. For the requisite organisation, such as it is, follows natural patterns and natural social structures (whichever they are). No doubt details would be (in the style of Aristotelian ethics) largely descriptive of what happens in cases where social affairs were functioning well.

Even so, rather more needs to be said about how society accommodates 'deviants' of various sorts, as to how anti-social and unenvironmental activities are curtailed, what support structures natural arrangements afford, and so on. These matters are attended to locally by society, not by a remote and mostly indifferent state. As in modern anarchism, an important distinction is taken for granted between local society and the *state* or *empire*. (By contrast, in contemporary texts, especially those of economic orientation, the state is often confused with society, social roles are transferred to the state, and it is even claimed that what society wants is what the state does). In Taoism, as in nineteenth century social anarchism, society functions along natural lines; the state is essentially otiose. Society is self-regulating. No doubt small markets that do not yield excess profits flourish; no doubt artisans abound and live well but not extravagantly; no doubt local people make inputs to the arrange-

ments of their social affairs. However, most of these background details go largely unstated. Nonetheless, some significant features of social practice are revealed; for example,⁵⁸ the worthy are not exalted or rewarded; competition is not promoted; there is no unnecessary accumulation of possessions; and consumerism and the manufacturing of wants is discouraged. In short, all the main approved features of modern economic behaviour — the sources of greed, discrimination and strife according to Taoism⁵⁹ — are gently set aside; they do not represent natural, or satisfactory, ways.

Just as nature can operate by itself without a director or ruler, so a confederation can run itself without an emperor or president. True, there may be one or more rulers. However a Taoist ruler / sage 'exercises' *non-dominating* authority. He has no personal power. He imposes nothing on others. He transmits worthwhile tradition but does not impose it. He is said to transmit it through eternal edicts, but these are principles proffered or advice at best. He does not attempt to legislate or require the good. Society is like the individual, it cannot be coerced into doing right things. And it should not be. At work is a teleological model of 'transcendent' good, comparable to a theory of natural law, but even more akin to recent deep environmental theory. No more than cooperating individuals in a social matrix are required for the good. A ruler, or organiser, does not attempt to require the good for society. He takes no action and the people are transformed by an exemplar ruler. He is a ruler on a Gandhian model, but even so not a visible charismatic leader. Unlike contemporary models, the ruler is not a jet-setter or super-consumer; he is not usually seen on television; indeed, he may not be seen at all, but only known about, with his or her existence merely rumoured.

As with 'authority', other social and political terms are similarly turned around, and even subverted. The 'empire' ceases to be a coercive power, but turns into a natural super-regional order under general guidance of the Tao. "Possessing the empire" even comes to mean something like attunement to Te. The 'power' of a ruler is not coercive. It is exemplary. The best rulers are those whose existence is merely known by the people. Thus they are not rulers or leaders, but models for personal development. (For Deep Ecology, the corresponding role would be that of 'eco-saints'). Rulers are not apart from society, but central to society's ideals. Society could have a great many 'rulers' (kingly people) or it could consist entirely of 'kingly people'. Like Christ, a Taoist ruler 'leads' from within or behind. The people seeing the life of the sage choose to do likewise.

An ideal ruler is a non-interfering exemplary ruler. The sage understands the fundamentals of Tao, and practices accordingly. So Taoism reinterprets the notion of 'ruler', equating ruler with the supreme role model, such as the sage. The meaning attributed to 'ruler' becomes that of following Tao. The ruler is one who deviates little from the Tao. This is his 'power'. Someone who deviates little from the Tao is kingly, that is, to observe another subversion of terminology, he shows an all-embracing impartiality. The sage and the 'ruler' are but two important examples of an ideal life. A more general model is also sketched⁶⁰ of the best type of person — a person "who in his dwelling loves the earth", but who also loves humanity, and order, and competence, and profundity.

While Taoism is decidedly short on structural details for organising large human populations, which are no longer self-regulating, it nonetheless transmits significant political messages, which deep theory needs to assimilate. Taoism has been attacked, like other similar alternative political forms — Morris's *social anarchism*, for example, and Illich's *convivial*

society — as being conservative, as seeking anachronistically to turn the clock back to some ancient village communal life-style, better left far behind. Such attacks do not cohere. Such considerable changes, as Taoism envisages, from the status quo, can hardly be represented as conservative. To be sure, there are conservative elements in Taoism, as in the most radical environmental movements — for instance the desire to conserve elements of the natural environment that the 'conservatives' wish to exploit or destroy. (The term 'Conservative', like many a political terms in heavy popular use, breaks down under conceptual overload.)

While backward-looking glances at an idealised past is a conservative tendency, which is anathema to forward-looking progressives who prefer to leave the past obscured in a heavy

cloud of dust, the past, with its actual features, its blocked possibilities, and its paths not taken, remains important to all main political persuasions. Against anarchistic positions, progressives like to lodge the charges both that the past never was ideal, that virtually everything that matters (not, surely, forests inhabited by wild creatures) was far worse than the enlightened present, and that anarchism has never really been achieved in the past. Again the charges do not cohere.

It should be evident that Taoism was, and remains, a radical position. It represents a severe attack on mainstream civilization, on the themes of the dominant social paradigm. It discards or upsets many mainstream values, and most mainstream ways of organising and doing things. It holds up instead examples of very different lifestyles as being more much preferable, and offers a path, simple and modest, between insufficiency and excess.

Notes and References:

1. The connections are remarked upon in some of the prime texts for Deep Ecology. See, for example, B. Devall and G Sessions, *Deep Ecology: Living as if Nature Mattered*, Gibbs M. Smith, Layton, Utah, 1985, p.100, and R. Sylvan, 'A Critique of Deep Ecology', *Radical Philosophy* 40 and 41 (1985), pp.2-12 and 10-22. Not all the connections assumed in Deep Ecology sources are correct, however; in particular, Taoism does not deductively deliver the platform of Deep Ecology. At most, it informs the platform, which it would, if taken seriously, alter.

2. A critical exposition of Deep Ecology, which surveys the main themes, is ventured in R. Sylvan, 'A Critique of Deep Ecology', *Radical Philosophy* 40 and 41 (1985), pp.2-12 and 10-22. In several significant respects, Taoism offers a (retrospective) improvement on Deep Ecology, which is but one deep ecological position. Another, presently being worked out in some detail, is Deep-Green Theory, the ecological part of a more comprehensive Deep Theory, which is intended to cover a much broader range of philosophical ideas. As will begin to become evident, Taoism proves to be a very congenial position for Deep Theory, and for Deep-Green Theory in particular.

3. We have not attempted to cover in full all the features of Taoism which are of contemporary philosophical interest; but a fuller treatment should be an eventual objective of Deep Theory.

4. Deep Ecology offers a different perspective on Taoism than has been arrived at before. Not only can Taoism further Deep Ecology, therefore, but the compliment can be returned. A comparison of Taoism with deep ecological theory, however, can hardly be our only objective; as an essential preliminary, much effort must be directed at systematising Taoism. In the course of this outside endeavour, we succumbed to a rather too familiar, still taunting challenge: namely, to draw something philosophically solid, of contemporary relevance, from the ancient Taoist texts. A key element in our attempt to pull off something mind-expanding has been an object-theoretic interpretation of perhaps the most vexing part of elusive Taoist theory, the "metaphysics": Taoism lends itself to natural systematisation in terms of *noneism*. For not only is the theory woven around certain striking objects — Tao, Te, Tzu-jan, and others, not included in Deep Ecology — and not only does it cleverly exploit an object-theoretic cosmology, but it is also opposed to (and is highly resistant to) reductionistic practices. That is, like noneism, Taoism takes a non-reductionist stance. It is in part for such reasons that Taoism avoids the common-sense implausibility and scientific naivety of many other positions, old and new: for instance, that everything reduces to water or air or fire or matter or energy or superstrings or

Evidently, in advancing such noneist claims and other claims about what Taoists say or imply, an interpretation is adopted, when, often enough, other rival interpretations of the central texts are supportable. Indeed such a small body of theoretical work as the basic Taoist texts comprise is far from categorical and is bound to admit of a plurality of interpretations. The main arguments we should offer for the selection we make from the basket of admissible interpretations are these: (1) the interpretation we offer is very straightforward and is mostly an 'obvious reading'; (2) for the most part, elements of such an interpretation have already been offered, in other connections, by others much better informed than we are about the Chinese texts; and (3) that it is a relevant and important interpretation for deep ecological purposes. Finally we should remark that we are essentially concerned with the systematisation of only the first two Taoist texts (the *Lao Tzu* and the *Chang Tzu*) and focus upon the *Lao Tzu*.

5. W.T.Chan, *The Way of Lao Tzu (Tao-te ching)*, Bobbs-Merill, New York, 1963,40

6. W.T. Chan, *A Source Book in Chinese Philosophy*, Princeton University Press, 1963,p.202.

7. For a detailed contemporary presentation of such a cosmological cycle, see R.Sylvan, 'Towards an Improved Cosmological Synthesis', *Grazer Philosophische Studien* 25/26 (1985-1986), 135-178. In Neo-Taoism (for example, Kao Hsiang) such a cycle is disputed, on standard ontological grounds (see W.T. Chan, *op.cit.*, supra 6.)

8. W.T.Chan, *op.cit.*, supra 5, 16.

9. W.T.Chan, *op.cit.*, supra 5, introduction, p.20. Also: W.T. Chan, *op.cit.*, supra 6, p.177.

10. W.T.Chan, *op.cit.*, supra 5, introduction, p.8

11. W.T.Chan, *op.cit.*, supra 5, 4.

12. *Ibid*, 11.

13. *Ibid*, 11.

14. Rudiments of object-theory are however coupled with a curiously narrow doctrine of names, perhaps as a concession to rival Chinese schools and with a view to making its nonstandard position devastatingly clear. (This would parallel then the contemporary concession of reference to mainstream schools, in virtue of which nonexistent objects are not referents; there are no referring terms, 'referential names', which signify them). According to this doctrine of names, only what is a concrete, individual and partly at least describable in quite particular ostensive terms is nameable (or at least primarily nameable). As Wang Pi, an early commentator, indicated, names have a restricted role, naming requiring circumscription, "the name that can be named point[s] to a particular affair" (Wang Pi, 'Commentary on the *Lao Tzu*', Translated by A. Rump and W.J. Chan, University of Hawaii Press, Honolulu, 1979, p.1). Thus, the main transcendental notions are not nameable, Tao in particular. Tao, though a 'great form', though at least apparently 'named' honorifically in several ways, is not named thereby, but is nameless, because not suitably circumscribed, because not a particular (affair). Similarly for the other central notions of Taoism, such as Te; though they can be described, in approximate fashion, they cannot be named. 'Tao', 'Te' and the like are not (primary) names, but rather (like 'God' and 'Vulcan' in contemporary theories) condensed descriptions. They could be said to be titles. 'Name' has been contracted, perhaps unduly, to 'primary name'.

There is another very important reason for eschewing names, or at least treating them — and descriptions — with due caution. Names come with classification, with conceptualisation, with carving the whole block, with the imposition of a theoretical grid on the seamless Whole. Usual metaphysical theories presuppose one or another of standard, narrow and limiting, conceptualisations and classifications, some perspective already carving up the Whole. Names, basic to the linguistics of such carving operations, have a major role in the worldification, in breaking up the One, which is simple and undifferentiated, and typically a major role in imposing a single impoverishing theoretical grid. Part of the point of the 'uncarved block' image — which symbolises the One, the One simple and undifferentiated, the unity behind all multiplicity - is to understand the purity and unity of Tao before conceptualisation, before naming, before the differentiating and perhaps distorting conferring of names.

15. See the excellent summary of Taoist descriptions in W.T.Chan, *op.cit.*, supra 5, introduction, pp.6-7

16. *Ibid*, p.6 and 7.

17. In this representation Taoism invites comparison with Plato's structure of Forms, appropriately neutralised (in the object-theory fashion Reid urged: see R.Routley, *Exploring Meinong's Jungle and Beyond*, R.S.S.S., Australian National University, 1980), or still better, though again neglecting the dynamism of Tao, comparison with the pre-Socratic Logos. But to see overarching Tao as an axiological ontology, after the pattern of Plato's Form theory, would be to import unwarranted Western assumptions. Though Tao is a 'great form', and there is no doubt room in the generous object framework for other (unhypostatized) forms,

main Platonic forms such as Beauty, Truth and Goodness do not feature large in the Tao-te Ching. They are distinguished, and set rather to the side, in the final chapter. Other forms, less emphasized by Plato, are more important, such as Simplicity, Frugality and Non-competition, as well as Tao itself, the supreme form, also the One, which supplants the static Good of Plato's scheme and is coupled with a dynamic path component.

18. As D.L.Hall ['The Metaphysics of Anarchism', *Journal of Chinese Philosophy* 10 (1983),49-64] claims *Te*. is often translated as *virtue*, sometimes *power*; but often *telos* captures the meaning better.

19. Kuo Hsiang, *Commentary on Chuan Tzu*, p.328

20. B.Watson, *The Complete Works of Chang Tzu*, Columbia University Press, New York, 1964.

21. *Ibid*, 2

22. Kuo Hsiang, *op.cit.*, supra 19, 330-331. When Hall and others try to argue (like Neo-Taoists) that the Taoist totality is without beginning — contrary to Hall's other material about Being coming from Non-Being — what they actually present, and mean, is 'without a creative beginning'. And that is right: there is no *Creatio ex nihilo* as per Genesis. But it is false that there is no cosmogony. There is: and while there is no creation, a making by someone, there is a beginning. (See W.T. Chan, *A Source Book in Chinese Philosophy*, Princeton University Press, 1963, p.202).

23. In this respect, Hall is well off track. The Taoist point is that naturalness is not such a prominent feature of human affairs, because of the imposition of excess laws, regulations and so on. Taoist sensibility is only bizarre from the erroneous perspective of the dominant Western paradigm.

24. W.T.Chan, *op.cit.*, supra 5, 77 and 29.

25. *Ibid*, 18.

26. *Ibid*, 67: but different, overlapping lists are presented in, for example, *Lao Tzu*, supra 5, 19.

27. *Ibid*, 67.

28. *Ibid*, 19.

29. *Ibid*, 19.

30. W.T.Chan, *op.cit.*, supra 6, p.177.

31. W.T.Chan, *op.cit.*, supra 5, 68.

32. This is revealed in D Elgin's very detailed account, *Voluntary Simplicity*, Murrow, New York, 1981. Strictly, much further detail is called for here: namely, a set of conditions is needed, as is an elaboration of the Taoist form of frugality, and then the connection between the conditions of the three basic elements of Tao — frugality, deep relatedness, and not daring to be ahead in the world.

33. W.T.Chan, *op.cit.*, supra 5 (introduction), p.14.

34. An illuminating philological comparison of *wu-wei* activity with *anarchism* is developed in R.T. Ames, 'Taoism and the nature of nature', *Environmental Ethics* 8 (1986), pp.317-350. 'The sympathy between [them] lies in their common reference to activity performed in the absence of coercively determined constraints. . .'. As Ames observes, the comparison operates not only at the political and ethical levels, but bears upon cosmology also, negating a coercive ruler or planner in the beginning of things. For an integrated treatment of *wu* principles, which generally reject forms of imposition and control, see Hall, *op.cit.*, supra 18, pp.59-60.

35. W.T.Chan, *op.cit.*, supra 5 (introduction), p.13.

36. When 'all activities follow their specific principles, that is nature' (W.T.Chan, *op.cit.*, supra 6, p.202): deviation from Nature accordingly occurs, namely when some activities do not follow their principles. As for destruction, 'Do not let man destroy Nature' (W.T.Chan, *op.cit.*, supra 6, p.207).

37. W.T.Chan, *op.cit.*, supra 5 (introduction), p.11.

38. W.T.Chan, *op.cit.*, supra 5, 55.

39. *Ibid*, 31,30,46.

40. W.T.Chan, *op.cit.*, supra 5 (introduction), p.5.

41. Given the hostility to war, it has been regarded as passing strange, not to say puzzling, that Lao Tzu sketches military tactics and other allegedly devious political strategies. The strategies are however but an application of Taoist principles and techniques to warfare, politics etc. Nothing excludes application of these techniques to what are accounted, in general, unnecessary evils (which must sometimes, on other Taoist grounds, be countered). Nor, to meet the main criticism, need any deceit or deviousness be involved; nor is it. The legalist tactic, 'In order to grasp, it is necessary first to give' is said to involve 'an element of deceit' 'undeniably', and 'worse' is 'morally questionable' (W.T. Chan, *op.cit.*, supra 5, p.17). But in order for me to grasp your hand in a normal handshake, it is necessary first for me to give my hand. There is no deceit here, nothing morally questionable. All the tactics permit of benign construals, of a Taoist kind. Consider, for instance, 'In order to contract, it is necessary first to expand'. In order to bend a copper pipe to the intended angle, it is better to bend it first further than required. The transformation of water to ice (both favoured natural items for symbolic purposes) neatly illustrates the Taoist principle (which is however hardly necessary), and shows softness and weakness turned into hardness and strength.

42. W.T.Chan, *op.cit.*, supra 5, 42.

43. B.Watson, *op.cit.*, supra 24, 2.

44. W.T.Chan, *op.cit.*, supra 5 (introduction), p.10: also, p.107.

45. W.T.Chan, *op.cit.*, supra 6, p.207.

46. *Ibid*, p.206.

47. W.T.Chan, *op.cit.*, supra 5, 6.

48. W.T.Chan, *op.cit.*, supra 6, p.201.

49. W.T.Chan, *op.cit.*, supra 5, 3.

50. W.T.Chan, *op.cit.*, supra 5 (introduction), p.20.

51. W.T.Chan, *op.cit.*, supra 5, 80.

52. Some verses of the *Lao Tzu*, of which this is one example, support a rival, sinister interpretation. According to this sinister interpretation (pointed out to us by David Garrett, a student at the University of Auckland), the *Lao Tzu* represents not what it has been taken to be, but a work addressed, like Machiavelli's *The Prince*, to a Prince, on how to pacify and control the people. Thus weapons, though held and sharpened, will not be displayed; wealth, though inequitably distributed, will not be shown; the people will be kept ignorant, through lack of information and education; and so on. Fortunately many other verses contradict decisively this interpretation. In particular, Taoism denies the need for a Ruler. While there will be those who are much better attuned to Tao, such as sages, even they are in no position to rule or to impose upon others. Moreover, should they endeavour to do so, they would jeopardise or negate their own accord with Tao. Authoritarian rule Machiavelli-style is thus politically counter-productive.

53. The claim promoted recently that Taoism is a natural ally of alternative technology, and prescribes as much, is rather naive in the light of the Taoist texts.

54. W.T.Chan, *op.cit.*, supra 5, 80.

55. J.P.Clark, *The Anarchist Movement*, Black Rose Books, Montreal, 1984.

56. W.T.Chan, *op.cit.*, supra 5, 57.

57. *Ibid*, 58.

58. *Ibid*, 3.

59. W.T.Chan, *op.cit.*, supra 5 (Introduction), p.103.

60. *Ibid*, 60.

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The Way: An Ecological World-view

by

Edward Goldsmith

I think we must be very grateful to Arne Naess for having coined the term Deep Ecology, a term that has certainly caught the public's imagination and that is now here to stay. We are also indebted to him and his colleagues, George Sessions, Bill Devall and Warwick Fox, to name the most obvious ones, for having so ably sketched the views and policies of the Deep Ecology Movement.

I thoroughly agree with the eight principles set out by Naess in the 'Platform of Deep Ecology' (see Box, page 130). Deep ecology seems to differ from the more pragmatic and matter-of-fact views and policies of the Ecology or Green movement that has developed during the last twenty years, largely in its very necessary subjective, emotional and slightly mystical approach.

Deep Ecology has of course been much criticized, and the criticisms have often been constructive, as are, I feel, those published in this issue. Henryk Skolimowski, for example (page 125) thinks that Deep Ecology needs its own cosmology and eschatology. I see eschatology as being very much a part of cosmology. Grover Foley (see page 119) calls for the formulation of the laws of ecology or Deep Ecology, but Arne Naess sees Deep Ecology more as a forum for those who share similar views on man's relationship with nature than as a clearly formulated world-view or cosmology, and does not seem to think that such a set of laws is necessary. I disagree. In my view, only a clearly formulated world-view is likely to give rise to a comprehensive and clearly formulated strategy for assuring the preservation of what remains of the biosphere — and, hence, the survival of our species.

Sixty-Seven Principles

What I propose to do in this essay (if what follows can be thus termed) is to propose a very tentative world-view or cosmology in the form of a set of 67 laws or principles, which are seen as governing the Cosmos and the cosmological process.

I shall take the Cosmos to be the ecosphere or Gaia — that is to say nature, or the biosphere, taken together with its interacting atmospheric environment — viewed subjectively, emotionally and mystically as it has always been viewed by vernacular man, and as I am convinced it must be viewed if we are to survive.

I doubt if these laws will be accepted by the Deep Ecology Movement. Among other things, they are concerned with a host of theoretical issues, with which few are likely to be conversant.

Those who are — our mainstream biologists, ecologists and anthropologists — will certainly reject them. I hope they do. If they do not then I know that the laws must be seriously wanting, for I regard today's mainstream natural sciences (biology, ecology and anthropology) as being very seriously misguided — especially mainstream ecology.

The Perversion of Ecology

Thus if Ecology is "the study of the structure and function of Nature"¹ or indeed of Gaia,² as Eugene Odum — possibly the last holistic ecologist in academia — sees it, then modern academic or scientific ecology is not ecology at all. It does not even admit that Gaia exists, let alone that the ecosphere (a more formal term for Gaia) has an overall structure or associated function.

Early academic ecologists at the turn of the century, on the other hand, might well have accepted the implications of the Gaia thesis, but since the 1940s and 1950s, ecology has been progressively perverted so as to make it conform ever more closely with modern reductionistic and mechanistic science, a story which is told very eloquently and very convincingly by Donald Worster in his seminal book *Nature's Economy*,³ a book which should be compulsory reading for all those in the ecology or Deep Ecology movement.

Significantly, modern scientific ecology has developed little theory and almost no laws. This point has been made by a number of the more thoughtful ecologists. Ramon Margalef, for instance, notes that "ecologists have been reluctant to place their observations and their findings in the frame of general theory. Present day ecology is extremely poor in unified and ordered principles".⁴ Peters has also noted that "ecology has been criticized for being richer in metaphor than in true theory".⁵ Haskell has gone so far as to say that "It is no more possible to make present ecological theory produce accurate predictions than it is to make a wild cherry tree produce fancy dessert cherries."⁶

This is not surprising. Laws are developed to explain observed regularities. A world displaying such regularities is necessarily an orderly world, but the order of our biosphere is denied by modern ecology. Glacken, for instance, tells us that "there is disorder in the universe and order must be proven not assumed".⁷ However, I regard it as fundamental to the world-view of ecology or Deep Ecology that the world is on the contrary highly orderly.

Indeed, to accept the Gaia thesis, which even mainstream scientists will very soon have great difficulty in rejecting without serious loss of credibility, is to see the ecosphere as a cybernetic system, capable of acting as a single unit for the purpose of maintaining its stability or homeostasis in the face of environmental challenges. For this to be possible the ecosphere must be seen as highly orderly, indeed as a highly *organized* co-operative enterprise, very much as the Natural Theologists of the 18th century saw it, and very much too as are all other natural cybernetic systems — the human organism for instance. This means that, contrary to what Glacken tells us, the onus must be on mainstream ecologists to prove that the opposite can possibly be true.

In listing what I take to be the principles of ecology (or Deep Ecology), I was faced with the problem that the constraints to which the ecosphere is subjected, and hence the laws that govern its structure and function are highly interrelated. This means that it is difficult to list any one of them without first having listed the others. I have only been able to get round this problem by resorting to cross-references and to a certain amount of repetition, for which I seek the reader's indulgence.

Another problem has been that in order to list the laws in something approaching a logical order, I have been forced to intersperse the more fundamental laws with the very much more secondary ones. In order to accentuate the fact that the laws are not of equal importance, the statement of the more fundamental laws has been put in ***bold italics*** and the accompanying explanations in italics.

Finally, it may be worth noting that this essay is, in essence, a summary of a book I have been writing (on and off) for some decades, and which may yet, one day, appear somewhere in print.

* * * * *

1. Ecology is the study of the structure and function of Gaia, or of Gaia as a total spatio-temporal system.

Ecology, in the words of Eugene Odum is the study of "the structure and function of nature".⁸ Since Odum accepts that nature or the biosphere, together with its atmospheric environment, constitutes a single living system which Lovelock refers to as Gaia, after the Greek goddess of the Earth, and which we can also refer to as the ecosphere, we can, and Odum agrees, consider ecology to be the study of "the structure and function of Gaia", or we might say "the structure and function of the ecosphere".

Because Gaia is organized hierarchically, both in space and in time (see **Principle 31**), being made up of systems at different levels in the spatio-temporal Gaian hierarchy, ecology must include the study of systems or life-processes at all levels in that hierarchy. Studied ecologically, molecules, biological organisms, vernacular societies, populations, and ecosystems, must all be seen in the light of their role — both structural and functional — in assuring the stability (see **Principle 37**) of Gaia.

This holistic definition is in stark contrast with the current, highly reductionistic definition of ecology as "the relationship of organisms with their environment".

* * * * *

2. Ecology is the study of Gaian laws.

To study the structure and function of the ecosphere is to seek out their pattern, and hence to determine how the ecosphere is ordered (see **Principle 20**). The basic or general features of this pattern or order are non-plastic (see **Principle 46**) which is but a way of saying that they display continuity or stability (see **Principle 37**). This means that a Gaian, or ecospheric, structure and function are subject to constraints, that is they are governed by laws.

Such laws, moreover, are not mere statistical regularities, as mainstream science tells us, but the conditions of order — constraints to which Gaian structures and processes must be subjected if they are to display that order. Such constraints can be violated, as in heterotelic life processes (see **Principle 65**) but then there is a price to pay — namely reduced biospheric order with all its consequent discontinuities and maladjustments.

The increasing incidence and severity of discontinuities of all sorts such as wars, massacres, droughts, floods, famines, epidemics, and now climate changes are but part of the price that our modern industrial society must inevitably pay for violating, in so drastic a manner, the fundamental laws of the ecosphere.

* * * * *

3. Ecology is a non-disciplinary study.

Ecology must accept von Bertalanffy's thesis⁹ that natural systems at all levels in the Gaian hierarchy (such as cells, organisms, vernacular societies, ecosystems, etc.) are similar in both structure and function (see **Principle 24**), which means that they are governed by the same laws. Those laws — the laws of General Systems — which von Bertalanffy sought to establish, must also be the *laws of ecology*, that is the laws that govern the structure and function of the Gaian hierarchy. Ecology is thereby non-disciplinary.

At a lower level of generality, different specialized disciplines are required to study divergences in structure and function among different forms of life. Such disciplines, however, must share common ecological generalities. In this way, they can be coordinated so that they may serve to paint between them a coherent picture of the structure and function of Gaia, which is impossible today using disciplines that have evolved in isolation and that are often very difficult to reconcile with each other, ecology and economics providing but the most obvious example.

* * * * *

4. Ecology is holistic.

The 'individualistic ecology'¹⁰ taught in our universities today is an aberration. Reductionist science looks at the parts in isolation, but the ecosphere is more than the sum of its parts; it is also the way these parts are organized, and, since the parts, both at a molecular and at a cellular level are very much the same in all living things, that organization is critical.

Biological, and hence ecological, diversity (see **Principle 26**) are thus achieved by organizing the same basic materials in

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a multitude of different ways. It is because of the way these materials are organized that a mammal differs from a bird, a bird from a reptile and a tropical ecosystem from an Arctic ecosystem.

The parts, moreover, are organized *functionally*, indeed *purposefully*, if this term is to have a *meaning* within the context of the ecosphere (see **Principle 22**), so as to fulfil differentiated roles in Gaia's strategy (see **Principle 37**). They are organized by their evolution and hence their ontogeny and their behaviour (see **Principle 17**) to fulfil such roles. This means that their status, and meaning, can only be determined by considering what are these specific roles and how they are fulfilled.

To study systems in isolation is thus self-defeating. Such an enterprise cannot reveal either their status or their meaning. It is but an exercise in scientific obscurantism and mystification.

* * * * *

5. Ecology is subjective.

Because of the adaptive nature of the evolutionary life processes — with their ontogenetic and behavioural components, that, over the last three thousand million years, have given rise to the complex and highly stable biosphere that industrial man has inherited — one must postulate that natural systems, including man (see **Principle 18**), have, in general, been *cognitively adjusted* to their specific environments.

Goethe noted how this was true of man. In the words of Worster:

"Goethe considered that there was 'a perfect correspondence between the inner nature of man and the structure of external reality, between the soul and the world.' The World was thereby a reflection of man's own image and man in turn reflected nature's order, the two being inseparable. This called for a subjective and emotional attitude to nature."¹¹

It is only with the systematic destruction of the biosphere, or real world, and hence of the environment to which we have been cognitively adapted by our evolution, and its equally systematic replacement with the technosphere or surrogate world of which we have had no evolutionary experience, that we have become *cognitively maladjusted* (see **Principle 32**) to our environment — as, indeed, have other living things to theirs. In such conditions, we are no longer capable of intuiting its basic features.

The attempt to replace subjective by objective knowledge is a vain one. Man has no more been designed to entertain objective knowledge than has any other living thing. Objective science is an illusion. Subjective, value-laden, metaphysical assumptions underlie all scientific propositions. This is admitted by the more thoughtful scientists and philosophers of science. Thus, the great C. H. Waddington admitted that "a scientist's metaphysical beliefs have a definite and ascertainable influence on the work he produces."¹² Karl Popper also realized that "scientific discovery is impossible without faith in ideas which are of a speculative kind, and sometimes even quite hazy; a faith which is completely unwarranted from the point of view of science and which, to that extent, is 'metaphysical'."¹³

* * * * *

6. The generalities of subjective ecological knowledge are subconscious.

We are not necessarily aware of the metaphysical knowledge that underlies our world-view.

Michael Polanyi referred to such knowledge — knowledge that we cannot formulate in words — as ‘ineffable’.¹⁴ Such knowledge, being the most general and fundamental (see **Principles 46** and **47**), plays a very much more important role in determining our behaviour than does the knowledge of which we are aware.

This does not seem to impress epistemologists, nor philosophers of science nor scientists themselves, for whom knowledge remains conscious knowledge — that which we can formulate in words, or better still in figures. Only such knowledge is taken to be based on observation and reason and, thereby, to be objective, scientific and true.

Ecological knowledge must refer to the whole hierarchical organization of our knowledge (see **Principle 46**) — including the generalities that are largely subconscious and the particularities that are conscious. It is on the basis of such knowledge that behaviour is mediated at all levels of the Gaian hierarchy.

The role played in our behaviour by conscious, empirical and rational knowledge has in any case been grossly exaggerated. If our digestive systems and the circulation of our blood were governed by conscious, empirical and rational decisions, we would not survive a single day. If our adaptive relationship with our internal environment must be conducted by the unconscious parts of the brain, so must our adaptive relationship with our external environment; more precisely, it must be controlled by the predominantly subconscious knowledge, built into the cultural patterns of the vernacular societies in which man until recently lived. Things were then done not because they were deemed scientifically desirable, economically viable or politically expedient but because they were originally done that way by the society’s mythical ancestors who lived in the era in which the social laws were definitively established.

In this way, our external environment, like our internal environment, was protected from the depredations that would otherwise have been caused to it by out-of-control, conscious, empirical and rational knowledge. For this reason alone, as Jim Lovelock¹⁵ points out, one must reject the thesis popular among environmentalists that man is, or can conceivably be, a conscious rational ‘steward’ of the natural world.

* * * * *

7. The most fundamental ecological knowledge is acquired by intuition.

Observation, and induction based on it, are taken by empiricists and mainstream scientists to provide the only means of acquiring scientific knowledge. This can be criticized on many counts. First of all, observation is not the objective measuring rod it is supposed to be. On the contrary, it is highly subjective, involving as it does the interpretation of data in the light of the observer’s subjective model, or cybernism (see **Principle 45**), of his relationship with his environment.

Induction simply does not occur, except perhaps in very simple forms of life. Knowledge is not built up that way at all, as

Popper and others have clearly demonstrated. It is built up instead by developing a subjective mental model or cybernism by means of a complex organizational process, much of which occurs at the subconscious level.

Other epistemologists and philosophers of science have attached greater importance to ‘reason’ as a means of building up knowledge, without taking a great deal of trouble in defining that term. In particular, such philosophers see deduction from basic principles as an important (rational) means of acquiring knowledge. This is yet another process that probably does not occur in nature, since it is not from isolated principles but from a subjective, partly subconscious model or cybernism that knowledge is derived and the process involved is more akin to the model builder’s ‘simulation’ than to the epistemologist’s deduction.

All these cognitive processes, however, whether they be observation and induction, or reason and deduction, only provide a means of acquiring conscious knowledge. No legitimate method, however, is proposed for the acquisition of subconscious knowledge. Yet there must be such a method; indeed, it must be that which we make use of to acquire our most fundamental ecological knowledge.

This method is best seen as the process whereby the most fundamental features of this relationship are interpreted in the light of the largely subconscious generalities or metaphysical principles underlying our world-view, one that reflects the total spatio-temporal experience of our cultural group in its dealings with Gaia. Such knowledge is usually referred to as *wisdom* and the method of acquiring it is normally called *intuition*.

* * * * *

8. Ecology is emotional.

Ecology is a way of looking at the world, a subjective and emotional way, not just an objective and rational one. It involves seeing the world, as does the mystic, with wonder, with awe and with humility — as something to feel part of, to love and to cherish rather than to exploit, let alone systematically to transform as modern man is doing.

Thoreau considered that no true understanding of the Earth was possible that was not based on ‘love’ and ‘sympathy’, which for Worster “is the capacity to feel intensely the bond of identity or kinship that unites all things within a single organism”¹⁶ — which indeed man must feel if he is to behave as an integral part of Gaia, rather than as a heterotelic (see **Principle 65**) parasite that simply churns her up.

This attitude is of course irreconcilable with the paradigm of reductionist science which above all demands total objectivity, and in the words of Roszack “a Cosmos stripped clear of all the emotional and spiritual qualities men and women theretofore have found in the natural world.”¹⁷

But the elimination of such emotionalism as subjectivity from science — and hence from modern scientific ecology — is an illusion, as is clear from the outbursts of emotional indignation with which the scientific establishment greeted the publication of works such as Rachel Carson’s *Silent Spring* and Denis and Donella Meadow’s *Limits to Growth*, both of which undermined basic scientific assumptions and thereby threatened their status and prestige.

Reductionist science is in fact as emotional as it is subjective, for scientists are humans and as such have not been designed by

their evolution to be unemotional any more than they have been designed to be objective.

* * * * *

9. Ecology explains events in terms of their role within the total spatio-temporal Gaian hierarchy, not just in terms of the single event or cause that triggered them off.

In terms of mainstream science, an event is seen as being caused by another event that preceded it in time and which can be correlated with it statistically without necessarily justifying this correlation on the basis of any serious theoretical considerations.

This notion of causality was essential to the Newtonian world-view. Indeed, in a world made up exclusively of space and motion, there was no need for anything more than this crude notion of causality — no appeal to serious explanation was required.

As shown elsewhere, it was necessary too that the cause should precede the effect (*see Principle 22*). Though the Newtonian paradigm has been abandoned, in theory at least, the notion of cause has been retained because it fits in so well with the present paradigm of science. Its retention, however, prevents us, among other things, from understanding pathological — i.e. heterotelic (*see Principle 65*) — events occurring within natural systems.

Infectious diseases, for instance, are not 'caused' by microbes as modern medicine continues to assure us — an interpretation that is very convenient to the pharmaceutical industry that churns out vast amounts of poisons for killing off the microbes. On the contrary, as René Dubos, the founder of the ecological approach to health, pointed out, infectious diseases are caused by a breakdown in the balance between man and the microbial population that inhabits him and indeed must inhabit him, if his metabolism is to function properly.

The true 'cause' of an infectious disease is thereby not the microbe that triggered it off but the circumstances that led to the breakdown in this critical balance — or, more precisely, the local reduction in the critical order of Gaia (*see Principle 21*).

Like all other discontinuities, infections can also, and perhaps more usefully, be seen to have been 'caused' by a diversion from the optimum behaviour pattern, from the 'Path' or 'Way' (*see Principle 49*), which leads to the preservation of that critical order — a principle that was fully understood by vernacular peoples (*see Principle 53*).

But then the term 'cause' is rarely used to refer to such general changes, and theoretically cannot be, since the very notion of an optimum behaviour pattern to which behaviour must be geared smacks of teleology (*see Principle 22*), hence of that ultimate scientific taboo — the final cause.

For that reason it is best to abandon the use of the term 'cause' altogether and use instead the term 'explanation'. An ecological explanation, of course, is one that examines the process in the light of an ecological model of the ecosphere as a total spatio-temporal system (*see Principle 16*).

* * * * *

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10. Ecology studies natural systems in their natural Gaian context.

Life processes can only occur normally within a certain range of environmental conditions (*see Principle 35*), those that bear some relationship to those in which the systems evolved and grew up (*see Principle 34*). It is only by studying life processes in these conditions that they can be understood and, in particular, that normal processes can be identified, and thereby distinguished from abnormal processes — the physiological from the pathological, and hence the homeotelic (*see Principle 49*) from the heterotelic (*see Principle 65*).

Life processes occurring in 'controlled laboratory conditions' — that is, in totally artificial conditions which have *no counterpart in the real world* — can provide little information on the role these processes play in assuring the critical order or stability of the ecosphere (*see Principle 50*) and cannot thereby serve as a basis for the understanding of the real world.

* * * * *

11. Ecology is qualitative.

In the 1940s, ecology was transformed into an 'exact' science. This meant above all expressing it in the medium of mathematics. The Oxford ecologist Arthur Tansley played an important role in this transformation. He denied the existence of anything



K. Goldsmith

Vernacular man has lived in harmony with his environment for thousands of years. His success rests on a deep understanding of the need to follow 'the Way', whose principles are embedded in the cultural norms of tribal society and which are essential for maintaining Gaia's 'critical order'.

in ecology that could not be strictly quantified and examined by the reductionistic (analytic) method of science. In this way, in the words of Worster, he sought to rescue ecology "from the status of a vaguely mysterious moralizing point of view and make it instead a hard-edged, mechanistic, nothing-but discipline, marching in closed ranks with the other sciences".¹⁸

As the result of the work of Juday, Lindeman and also of Odum, the functioning of ecosystems came to be explained in terms of the energy that flowed through it from one trophic level to the next and in terms of laws of classical thermodynamics. This had disastrous consequences. As Worster notes: "By reducing the living world to ingredients that could be easily measured and graphed, the ecologist was in danger of removing all the residual emotional impediments to unrestrained manipulation."¹⁹

This approach is in any case unjustified on purely scientific grounds in that it means that the factors and the relationship between the factors that were now taken into account in ecological explanations are no longer those that are relevant, but instead *those that happen to be quantifiable*. Unfortunately, however, the most important features of ecosystems, indeed of natural systems in general, such as organization, hierarchy, stability, creativity and so on, are not easily quantifiable. As Sibatani notes, "systems in which the elements characteristically interact. . . are notoriously intractable to mathematical analysis."²⁰

What makes the enterprise even more futile is that the scientific concepts that are routinely quantified have never even been properly defined. In biology, for instance, as Woodger notes "nothing is more striking. . . than the contrast between the brilliant skill, ingenuity and care bestowed upon observation and experiment, and the almost complete neglect of caution in regard to the definition and use of the concepts in terms of which its results are expressed."²¹

An example is competition. Merrell²² lists no fewer than twenty-eight different ways in which the term is used. Clearly to quantify concepts that have never been defined is to endow them with an air of spurious accuracy,²³ when they are in reality vague and misleading.

The truth is that mathematics is *not the language of nature*. Nor, of course, it might be argued, is English or any other man-made language. But then qualitative language is more flexible

and can be used to express vivid metaphors that provide a more accurate picture of the ecosphere than can the more precise language of mathematics.

* * * * *

12. The 'truth' of an ecological proposition is the extent to which it fits in with the world-view of ecology.

All attempts to establish a rigid dichotomy between scientific (and hence supposedly valid) and non-scientific (and hence supposedly invalid) propositions have now been discredited.

The notion that '*empirical verification*' provides such a criterion — the underlying principle of Logical Positivism, — was discredited long ago by Karl Popper. The criterion of 'falsifiability', which Popper proposed to replace verification, has now also been shown to be unacceptable. Even 'operational verification' is no criterion, since the effects of any act or operation in which one has a strong psychological stake are still judged subjectively — its failure, for instance, being invariably attributed to various technical factors, rather than to the basic validity of the operation and of the principles that rationalize it. Thus, in spite of the terrible failure of economic development in the Third World, its 'desirability' remains unquestioned. Instead slight changes in the way development policies are implemented are proposed to eliminate its worst abuses, hence 'rural development', 'eco-development', 'appropriate development' and now 'sustainable development' — all of which are basically euphemisms adopted by the Development Industry to placate its critics.

The myth that a scientific proposition is radically different from other propositions has been exploded by enlightened epistemologists such as Alfred Kuhn, Paul Feyerabend and others. From their writings, it emerges that a scientific proposition is no more than one that conforms to the reigning scientific paradigm or world view.

One must thereby conclude that the validity of an ecological proposition can only be judged by the extent to which it fits in

with the largely subconscious and subjective world-view of ecology. To ask more of it is to ask the impossible.

* * * * *

13. Ecology serves to rationalize the world-view of ecology.

Ecology reflects and serves to rationalize a specific world-view, one which we can refer to as 'the world-view of ecology', in the same way that science, economics and the other disciplines into which our modern knowledge of the world is divided, reflect and serve to rationalize the *world-view of modernism*.

This means that in terms of the former world-view, man's welfare and prosperity are seen as maximized by adopting that Path or Way (see **Principle 51**) that best serves to achieve and maintain the critical order (see **Principle 21**) of the ecosphere: by contrast, in terms of the latter world-view, welfare and prosperity are seen as being maximized by adopting that path that best serves to favour the development and preservation of the technosphere.

Since the biosphere and the technosphere are in direct competition with each other, the expansion of the latter necessarily leads to a corresponding degradation and contraction of the former. The two world-views are thus diametrically opposed to each other.

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14. Gaia is One.

*Deep Ecologists refer to this principle as 'the central intuition'. It is well-named. The unity of the world has been intuited by all known vernacular societies. As Father Placide Tempels writes, "for primitive man the supreme wisdom consists in seeing the universe... as reflecting the unity of the order of living things."²⁴ This intuition has been confirmed by Jim Lovelock in his seminal book *Gaia: A New Look at Life on Earth*.*

* * * * *

15. Gaia is a spatio-temporal system.

Gaia, like all natural systems, exists in time as well as in space. There can be no atemporal system any more than there can be a non-spatial process. Julian Huxley noted how this is true of a social system:

"...We are beginning to grasp that societies, like the individuals which compose them, and like life in general, have a time-dimension. They are process, and their direction in time is as important a part of their nature as their organization at any particular time."²⁵

To see Gaia and her constituent natural systems (see **Principle 24**) as both entities and processes is for us very difficult. Among other things, our language distinguishes clearly between the spatial and the temporal as if they were totally distinct. I shall thus continue to use the term 'system' or 'natural system' when I wish to accentuate the spatial aspect of a spatio-temporal

'entity-process', and 'process' or 'life-process' when I wish to accentuate its temporal aspect. This is far from satisfactory, but the alternative is worse.

* * * * *

16. Gaia is a total spatio-temporal system.

The visible living thing which we take to be the biosphere is but an 'evolutionary stratum' — the tip of an evolutionary iceberg, so to speak, for its past is still present, in the sense that the information transmitted from generation to generation, from one 'evolutionary stratum' to another, reflects the experience of the whole spatio-temporal system, stretching back into the mists of time. This means that the past still controls the present as indeed it does the future, and, from the cybernetic point of view, still exists.

This must be true since the most general and hence the most fundamental information (see **Principle 46**) is *non-plastic*, that is it is modifiable only over a very long period of time. This general information reflects the system's total experience, while it is only the more particular information into which the former is differentiated that is plastic, and whose modification serves to adapt the general information to changing environmental conditions so that it may serve to adapt the total spatio-temporal system to such conditions rather than merely the contemporaneous 'evolutionary stratum'.

This is quite clearly so in a vernacular tribal society. Its pattern of behaviour conforms with the traditional laws, which coincide with the laws governing the Gaian hierarchy of which it is part (see **Principle 18**). These laws are seen as having been enacted by the original ancestors at what Radcliffe Brown calls "the Dawn period"²⁶ and are thereby regarded as sacred and inviolable. They thereby reflect the experience of the society as a total-spatio-temporal system.

A tribal society has been referred to as a 'gerontocracy', in that it is governed by its elders. It would be more appropriate to refer to it as a 'necrocracy' in that it is really governed by its dead or more precisely by its physically dead, for the ancestors still control the behaviour of their descendants and, cybernetically speaking, still exist.

It is only by viewing Gaia and her constituent sub-systems in this way that one can understand evolution (see **Principle 17**) and its constituent life processes.

* * * * *

17. Gaia is evolution seen as a total spatio-temporal system.

More precisely, evolution is the process whereby the Gaian total spatio-temporal system achieves and maintains its maximum stability by adapting to its changing environment. Evolution involves life processes, both ontogenetic and behavioural, and occurring at each level in the Gaian hierarchy.

These life processes are highly co-ordinated, which means that they are interconnected by 'feedback loops'.

The Gaian total spatio-temporal system, as it evolves, is best seen as throwing out 'feelers'. The feelers are individual genera-

tions or ontogenetic processes and they themselves throw out further feelers in the form of behaviour.

Information is fed back by the behavioural feelers to the ontogenetic feelers and is further fed back to the Gaian total spatio-temporal system.

The notion that behaviour provides the information required to help mediate ontogeny — and indeed evolution itself — is one that serious students of evolution have found hard to avoid, in spite of it having been tabooed by William Bateson and August Weissmann and more recently by Francis Crick.

Lamarck's original formulation offended neo-Darwinist susceptibilities, but the notion was reformulated by Baldwin and Lloyd Morgan and later by Waddington, Schmallhausen and, still more recently, by Piaget.

A life process mediated by blind, one-way instructions that cannot be monitored and which are thereby unamenable to correction when they stray from the optimum course or Way (see **Principle 51**), is unknown in the natural world, and indeed inconceivable. The neo-Darwinist contention that genetic instructions proceed in this manner to dictate the course of evolutionary change cannot thereby be taken seriously.

* * * * *

18. Man is an integral part of Gaia.

*Man, when organized into a vernacular society and when observing the traditional laws of his society, as they have been observed by untold generations of his ancestors, is an integral part of Gaia. Such societies have co-evolved with the ecosphere so as to fulfil their differentiated functions within its hierarchy. They thereby contribute to her overall stability, and are subject to all the basic laws (see **Principle 2**) governing life processes on this planet.*

*Man when organized into the institutions that are the essential constituents of the technosphere (see **Principle 52**) is no longer a differentiated member of a vernacular society, nor indeed of the Gaian hierarchy. However, both he and the technosphere of which he is now part still depend on Gaia for their survival, since it is from the biosphere that they must extract the vast bulk of the resources that they require, and it is to the biosphere that they must consign their wastes.*

Attempts to show that man is qualitatively distinct from other living things, and is thereby not subject to the laws governing other forms of life within the Gaian hierarchy, are simply not serious. If man has a soul, or is endowed with 'consciousness', 'reason', 'intelligence', the ability to predict the future etc. then so are other forms of life. The notion that non-human living things are all mere robots reacting blindly to external stimuli, which trigger off responses like a light-switch triggers off an electric light, is demonstrably false. To believe, as mainstream Neo-Darwinists do today, that the evolutionary process that has brought into existence the incredibly complex and sophisticated biosphere of which man himself is part can be explained in these terms — or, more precisely, in terms of the functioning of a generator of randomness in conjunction with that of a sorting-machine — while man's misguided and paltry achievements — the production of computers, electric toothbrushes and atom bombs — are the product of intelligence, reason, consciousness and so on., is simply laughable.

If it requires intelligence and reason to produce these crude artefacts, then it requires incomparably greater intelligence and

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"The biosphere and the technosphere are in direct competition with each other, and the latter can only expand at the expense of the former."

reason to create the biosphere and its constituent systems. Indeed, if man is intelligent and rational, then the evolutionary process must be incomparably more intelligent and rational.

* * * * *

19. Vernacular man plays only a minor role in the workings of Gaia.

Being humans, we are understandably more concerned with the fate of man than of that of other forms of life. Deep Ecology, however, regards man as no more important than other animals, the 'Principle of ecological egalitarianism' being a lynch-pin of Deep Ecology.

Jim Lovelock and Lynn Margulis consider that, from the Gaian point of view, man is of little importance. It is bacteria that are mainly responsible for developing the biosphere and its atmospheric environment, and for assuring the stable relationship between the two. It may be truer to say that it is Gaia herself, not just her microbial constituents, that by her own efforts has evolved (see **Principle 23**) to her pre-industrial climax state, and that, in this process, man had a very much smaller role to play than did the bacteria — but he did still have a role.

In ecological terms, man is a carnivore and a herbivore, and his principle ecological function — though there are many others — is to maintain qualitative and quantitative controls on herbivore populations and on those of primary producers (vegetation). If he were eliminated, the populations on which he preyed would become less viable qualitatively and might indeed expand in an uncontrolled way. This would to a certain extent disrupt the critical order of the ecosphere (see **Principle 21**) and hence the latter's stability, even though the human role would probably soon be assumed by other carnivores and herbivores.

Man and other carnivores and herbivores are thus necessary constituents of the ecosphere, for without them, the living world would be far less stable. Primary producers, who alone can harness the energy of the sun, are even more important, since without them there would be no herbivores or carnivores. Bacteria can be considered still more essential, since without them

the world would not be capable of supporting any of these forms of life.

This is not an anti-human position to adopt, as critics of Deep Ecology would undoubtedly maintain. Man is an integral part of the ecosphere. It is only by maintaining the latter's critical order or stability (see **Principle 21**) that man can maintain his own stability and that his real needs (see **Principle 37**) can thereby best be satisfied. Man's interest and Gaia's interests are one. It is the fundamental flaw of the world-view of modernism to ignore this perennial truth.

* * * * *

20. Gaia displays order.

*The ecosphere is not a random assortment of living things, but, on the contrary, it displays order (see **Principle 21** and **Footnote after Principle 22**). It is hierarchically organized (see **Principle 31**) and is a highly differentiated and functional organization of natural systems whose constituent parts, rather than being random, have specific roles to play, either as contributing to its homeotelic complexity (see **Principle 26**) or to its homeotelic diversity.*

*The ecosphere is equally orderly when seen as a life process. Indeed, its temporal order closely reflects its spatial order. More precisely, they are but different ways of looking at the same spatio-temporal order (see **Principle 15**).*

*Thus evolution, the Gaian life-process and its constituent life-processes (ontogeny and behaviour), are arranged in an ordered and correspondingly predictable manner. They proceed, for instance, in a hierarchical manner from the general to the particular (see **Principle 46**) and by the process of differentiation; they are cumulative in the sense that the different phases do not merge with the preceding ones, but rather supplement them; and they are sequential (see **Principle 47**) in that they occur in a specific order. They also move by jumps from one level of organization to another (see **Principle 30**), and they are highly co-ordinated, goal-directed or purposive, the goal being the achievement of*

overall Gaian stability (see **Principle 37**).

There is of course an element of randomness in all organizations or natural systems, but Gaia strives (see **Principle 23**) to reduce randomness to a minimum. This occurs as her constituent ecosystems develop from their pioneer state to their climax state (see **Principle 39**). As this occurs, Gaia evolves to achieve the maximum possible stability that her internal and external environments (see **Principle 37**) render possible.

To suggest, as do the neo-Darwinists, that randomness provides the basis for Gaian evolutionary change is grossly to underestimate the sophistication of the evolutionary process and of its constituent life-processes (see **Principle 17**). It is also to mistake disorganized redundancy or randomness (see **Footnote after Principle 22**) with the organized redundancy or diversity (see **Principle 26**) which provides the basis for genetic recombinations and the other informational (cybernismic) reorganizations that play a key role in important adaptive changes (corrections) at different levels in the Gaian hierarchy (see **Principle 66**).

* * * * *

21. Gaian order is critical.

There is an infinity of possible orders, corresponding to an infinity of possible ways in which Gaian resources could be organized so as to achieve an infinity of possible purposes. A mad giant could possibly reorganize Gaian resources on the planet to suit his specific purpose. It would display *his* order and life processes within it would be governed by *his* laws — those that prevented them from diverting from the achievement of *his* purpose.

The order of the ecosphere is also a special sort of order. What is more this order is *critical*. It is only if it is maintained that the ecosphere can achieve its overall goal, that of maintaining its stability (see **Principle 37**), thereby providing the optimum environment (see **Principle 34**) for its constituent natural systems at all levels in the hierarchy (see **Principle 31**), and thus of dispensing its unique and indispensable benefits.

This critical order is referred to in the early ecological literature as 'the balance of nature'. Frank Egerton refers to it as "ecology's first paradigm",²⁷ but this paradigm has been rejected, along with all other holistic ecological concepts, by modern ecologists seeking to reconcile ecology with the paradigm of reductionist science. This is largely because it cannot be reconciled with the principle of progress, which is fundamental both to reductionist science and to the paradigm of modernism which it reflects.

The order of Gaia when seen temporally as a life-process is also critical. When reductionist scientists insist on the randomness of life processes, they imply that the latter are geared to the achievement of an unlimited number of possible end-states. This notion is irreconcilable with the spatio-temporal aspect of natural systems. A digestive system is indisassociable from the process of digestion, a reproductive system from that of reproduction, an organism from the associated life processes that it was designed to fulfil. Indeed if the physical structures display order, so must the associated life-processes. It is the order of the *total spatio-temporal system* that displays the requisite order, and it is this order which it is the overriding goal of Gaia to preserve.

22. Gaian processes are teleological.

If the order of Gaia, seen as a spatio-temporal process, is critical, this means that it must necessarily tend in a very specific direction: in other words, it must be purposive or teleological, in that it seeks to achieve a goal or end-state.

For a number of reasons,* this notion is irreconcilable with the world-view of reductionist science and that of modernism which it so faithfully reflects. Indeed teleology is taboo. Only man, because of his 'intelligence', his 'consciousness', and his 'reason' (see **Principle 17**) is seen to be capable of purposive behaviour. Other living things are, at best, seen as behaving 'as if' they were purposeful or teleological, or else they are said (even by such great thinkers as Waddington and Monod) to be 'teleonomic' — a euphemism, as Medawar notes, for teleological — which implies that their goal-directedness is exclusively the result of having been programmed, like cybernetic machines, with the appropriate instructions. To suggest that natural systems are teleonomic instead of teleological means ignoring all the vital information organized by developing systems on the basis of data derived from the larger systems within which they develop. More precisely, it ignores the way the instructions are directed or oriented (see **Principle 46**) by the larger systems, so as to assure that they help mediate homeotelic behaviour (see **Principle 49**), namely that behaviour which will assure the stability of the Gaian hierarchy as a whole — the ultimate goal of vernacular living things. It ignores too the fact that programming is not a random process. Who did the programming and why? If living things are endowed with instructions, it is because these instructions were developed over hundreds of millions of years, along with all the other adaptive features of Gaia, as part of a teleological strategy for achieving Gaia's overriding goal of maximizing her stability.

* * * * *

* The argument that the world is highly ordered and purposeful has always been one of the main arguments for the existence of God, the divine intelligence that alone could have created it. Paley, one of the chief proponents of natural theology, carefully studied science so as "to show that the universe was in all its details redolent of God's purpose."²⁸

Nineteenth century scientists were particularly keen to eliminate God from the emerging paradigm of science. 'Naturalistic' explanations were what they sought and that was one of the chief attractions of Darwinism.

As Sir Peter Medawar writes, it is upon the notion of randomness "that geneticists have based their case against a benevolent or malevolent deity and against there being any overall purpose or design in nature."²⁹

The postulate of randomness is also a defence against various vitalistic explanations, such as the *entelechy* of Dreisch and the *élan vital* of Bergson.

Teleology also implies the perfect adaptation of the constituents of the biosphere. This had anti-evolutionary implications, and as Ospovat notes "made it attractive to the guardians of religion, morality and order",³⁴ and correspondingly less attractive to social reformers, and those who believed in progress.

For the same reason, it is necessary to postulate a random world in order to legitimize the enterprise of global development. If the world were highly orderly — if its structure were critical — then how could one justify economic development which inevitably involves changing, indeed transforming, the way things are organized on this planet?

Another essential reason for randomness, is that it is essential to the mechanistic concept of life processes and to one of its key components, the idea of physical causality.

Teleology as a final cause — one that succeeds rather than precedes the effect — is thus unacceptable to mainstream science. The notion of a living thing "striving after a future goal retained as some kind of image or idea", as Ernst Mayr puts it, is incompatible with the mechanistic view of the world.

23. Gaia and her constituent life processes assure by their own efforts the development and maintenance of Gaian order.

Lamarck realized that evolution was the work of living things. He saw them as active, dynamic and creative. However, the Darwinian view of living things as passive and robot-like and as responding slavishly to the dictates of an unnamed external manager (selection by an undefined external environment) has unfortunately come to prevail. There is no evidence of any kind for the Darwinian view, but it is more in keeping with the paradigm of reductionist science and the world-view of modernism that it reflects.

Jim Lovelock, Lynn Margulis and their colleagues have now shown that it is to the dynamic, creative, co-operative and co-ordinated activities of living things (in particular, bacteria) that we must attribute the development or evolution of Gaia.

It is also to the sustained efforts of living things that we must attribute the maintenance of the critical Gaian order. If it were not for their co-ordinated efforts, Gaia would revert to her original randomness — to that state of chemical and thermodynamic equilibrium from which she sprang.

Vernacular people knew that it was by their efforts that the order of the Cosmos could be maintained. Indeed this was their most fundamental belief and their cultural behaviour pattern was geared to the achievement of this overriding goal (see Principle 51).

* * * * *

24. Gaia is made up of natural systems.

Gaia is made up of natural systems such as cells, organisms, vernacular societies and ecosystems. These are, in many respects, very different from each other, living as they do at different levels in the Gaian hierarchy, but *their basic generalities are very similar*. This so impressed Ludwig von Bertalanffy, one of the two founders of 'General Systems Theory', that he regarded them as 'isomorphic' (from the Greek 'iso' = 'same' and 'morphos' = 'form'), although they could equally well be referred to as 'isotelic' (from the Greek 'iso' and 'telos' = 'goal'). Paul Weiss defines a natural system as "a complex unit in space and in time, whose sub-units co-operate to preserve its integrity and its structure and its behaviour and tend to restore them after a non-destructive disturbance."³²

This is a valuable definition. It states what must be the fundamental features of all natural systems if they are to preserve the critical order of Gaia. Significantly Lovelock defines Gaia in very similar terms.

* * * * *

25. Gaia is the source of all benefits.

It is only through the normal vernacular workings of Gaia that it is possible to derive those benefits that are alone capable of satisfying the real needs developed by all natural systems, including man, during the course of their evolution — namely,

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Co-operation is the most fundamental interrelationship between natural systems. Without co-operation between the parts of a natural system, be it a biological organism, a family, a community or even an ecosystem, the system could not hold together or exist as a unit of adaptive life processes — still less could it compete with other systems.

their biological, ecological, social, aesthetic and spiritual needs.

Nonetheless, it remains fundamental to the world-view of modernism that needs can best be satisfied through the functioning of the technosphere. This, of course, serves to rationalize the goal that modern societies have set themselves — that of economic development or 'progress', which involves the systematic substitution of the technosphere or surrogate world for the biosphere or real world (see **Principle 40**).

The surrogate world, however, mainly satisfies material needs and also generates money—the currency of the surrogate world. But there is no evidence that, in normal conditions, man has any real need for either of these commodities. He has lived for perhaps as much as 95 per cent of his tenancy of this planet without them—primitive money fulfilling a largely social rather than economic purpose.

If we need material goods and money today, it is only because we have created aberrant, and necessarily short-lived, socio-economic conditions in which these commodities are required to gratify our real biological, ecological, social, aesthetic and spiritual needs, which, hitherto could be satisfied without them. Money, in fact, is not the currency of nature.

That the Cosmos is the source of all benefits is a fundamental belief of all vernacular peoples.

* * * * *

26. Gaia displays the maximum 'complexity' compatible with the maintenance of the requisite diversity.

The distinction between complexity and diversity is not normally made by modern mainstream ecologists, yet it is an essential one. Complexity and diversity, as I propose to use the terms, are in competition with each other.

A complex system is one whose structure is highly differentiated, so as to permit correspondingly differentiated life processes which achieve a correspondingly high degree of homeostasis, or homeorhesos, in specific environmental conditions. Julian Huxley referred to the development of complexity, used in this sense of the word, as 'anagenesis'.³³

By complexity, I mean 'organized complexity', not the 'random complexity' of mainstream ecologists, such as Robert May,³⁴ who see complexity as leading to increased instability or reduced homeostasis. This would be so if by complexity they mean random complexity, for one cannot increase the stability of a system by introducing random elements into it (the rabbit into the Australian ecosystem, for instance). Systems in fact strive to prevent the development of randomness (i.e. of random complexity) and will seek to eliminate random elements.

Complexity is one of the means of enabling a system to increase its stability within a specific range of environmental

conditions. This is only justified if the system can predict that such conditions will be maintained. Since there must be a physical limit beyond which it cannot expand, one too that cannot be exceeded without adversely affecting Gaia's critical order, to increase complexity must mean reducing diversity.

Diversity is *organized*, as opposed to *random*, redundancy. It is a measure of all the slightly different but structurally and functionally similar sub-systems of which it is composed, but which, rather than contributing to the complexity of the life processes it mediates, contributes instead to the number of slightly different life processes that the system is capable of mediating. Diversity is not thereby a measure of what the system does, but rather of all the things it *could do*, if it were necessary to do them. It is a measure, too, of the improbability of the environmental conditions to which the system can adapt. The development of diversity in the sense in which I am using the term was referred to by Julian Huxley as 'cladogenesis'.³⁵

As controls become internalized (see **Principle 48**), systemic complexity and diversity are complemented by cybernetic complexity and diversity.

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27. Co-operation is the primary Gaian relationship.

Co-operation (whether of the type referred to as 'commensalism', 'symbiosis', or 'mutualism') is the most fundamental interrelationship between natural systems both at the same and at different levels in the Gaian hierarchy.

Without co-operation between the parts of a natural system, be it a biological organism, a family, a community or even an ecosystem, the system could not hold together or exist as a unit of adaptive life processes — still less could it compete with other systems.

Jim Lovelock, as already noted, accentuates the essential co-operation between the constituents of Gaia, without which she could not maintain her homeostasis in the face of change (see **Principle 24**). Paul Weiss takes co-operation between the parts of a natural system to be one of its fundamental features (see **Principle 24**).

Unfortunately with the breakdown of social, economic and ecological systems under the impact of economic development, the level of co-operation in all these systems has drastically declined. Worse still, in taking the disintegrating biosphere as the norm, sociologists, economists, and ecologists have mistaken the tumor for the healthy organism and have thereby lost sight of the essential co-operative nature of the climax biosphere, their attention being monopolized instead by the radically increased level of pathological or heterotelic (see **Principle 65**) competition that is a necessary feature of disintegrating, atomised,

competitive, neo-pioneer systems.

Kropotkin's attempt to redress the balance in his famous book *Mutual Aid*,³⁶ written as a reaction to T. H. Huxley's Romanes Lecture, fell on deaf ears. There was little room in the world-view of modernism for co-operation and by that time the paradigm was already firmly entrenched.

In the late 1970s, ecologists began to rediscover co-operation, or 'mutualism' as they prefer to call it. Douglas Boucher's recent *Biology of Mutualism* sums up changing attitudes in this field. The mutualism of today's mainstream ecologists, however, is still of a reductionistic and mechanistic variety, as Boucher himself admits.³⁷

* * * * *

28. Competition is a secondary Gaian relationship.

Competition — an external type of control — is a secondary Gaian interrelationship. Co-operation is a primary interrelationship, since without it there would be no living things capable of competing with each other, and indeed no ecosphere (see **Principle 24**), whereas without competition there would only be a reduction in the order of the ecosphere resulting from the elimination of the external quantitative and qualitative controls which it provides. It is to be noted that, in any case, these external controls play a greater role in a pioneer system (see **Principle 40**) than in a climax system (see **Principle 39**), where they are largely replaced by internal controls.

Unfortunately, mainstream scientists are members of a disintegrated neo-pioneer society (see **Principle 40**) which they misguidedly take to be the norm, and which provide a model of the biosphere as a whole. As it happens, in a neo-pioneer society the level of competition is very much higher than in a normal or climax society. Much of this competition is thereby heterotelic (see **Principle 61**).

However, in the light of the world-view of modernism, this heterotelic competition is regarded not only as normal but as indispensable to the functioning of society, its economy, its ecosystem and of the ecosphere itself. Indeed, Herbert Spencer went so far as to decree that the "struggle for survival", which leads to the "survival of the fittest", provides the very basis for progress. Adam Smith transferred this notion to economics, Darwin to biology (his natural selection being but a biological version of the invisible hand), and modern mainstream ecologists to ecology.

More recently, the Nobel Laureate Ilya Prigogine and his many disciples have formulated the principle in a new language — that of 'non-linear thermodynamics' which glorifies discontinuities or 'fluctuations', such as wars, famines and epidemics, which are seen as the basic conditions of progress, through the creation of 'dissipative structures', and hence as the best means of assuring our welfare and prosperity.³⁸

What they have all failed to realize is that as a system moves towards its climax, and hence 'progresses' in the biospheric or Gaian sense of the term, its parts become more highly integrated, controls become internalized, and life processes become less competitive and more co-operative. In such conditions, those who prevail are not those who are 'fit' in the Darwinian sense of the term, but rather those who *fit-in* — that is, those who have learned to fulfil their differentiated functions within their social

system, and who are thus properly socialized.

Far from being admired in vernacular society, the 'fit' — in the Darwinian sense of the most individualist and aggressive, the Rambos in fact — are, on the contrary, eliminated by the society's 'immune-system', or ostracized for failing to observe its traditional laws and, hence, for behaving in a random way that threatens the critical order of their society and ecosystem — very much as a tumour is random to, and threatens, the critical order of a biological organism.

The Rambos, the tumours, the ecological intruders, such as the rabbit in Australia and the imported elm-bark beetle mutant in the United Kingdom, are, in fact, engaged in heterotelic (see **Principle 65**) competition with the normal differentiated members of the system on which they prey.

Today, the technosphere itself, or the surrogate world that is being systematically built up through economic development, is engaged in a similar heterotelic competition on a global scale with the biosphere or real world.

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29. In vernacular systems competition and co-operation are homeotelic.

Within each natural system — and, hence at every level in the Gaian hierarchy — there is an optimum ratio of co-operation to competition, a state of affairs which is reflected in the homeotelic behaviour pattern of a vernacular society.

In a vernacular human family, co-operation predominates, as it does (but to a far lesser degree) in a lineage group and, again, (to a still lesser degree) in a community, while in the society at large there is considerable competition, which increases as we move to the ecosystem in which it lives and that may be inhabited by rival social groups.

One could possibly draw a gradient to show the optimum rate at which co-operation gives rise to competition as we move from the family to the ecosystem. Co-operation and competition which is below or equal to the optimum required at a particular level in the hierarchy or along the optimum gradient is homeotelic; that which occurs below the optimum is homeotelic but insufficient; and that which is above the optimum is heterotelic. The gradient would also measure the degree of order in the environment and hence in the larger system that provides this environment. It could thus be referred to as the *competition/co-operation gradient* or the *order gradient*. It also measures the proportion of complexity to diversity (see **Principle 26**) and could thus be referred to as the *complexity-diversity gradient*.

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30. Gaian order is not homogeneous but varies at each level of organization with the type of organization that is achievable at that level.

Biological organisms display order but cannot expand to create Gaian-size organisms. There is a limit to the size of organisms, determined, among other things, by the limit to the extendability of the bonds that hold together their constituent parts.

In a social system, the bonds in question are the family bonds and they will not extend very far. There is thus a limit to the size of a society capable of acting as a unit of homeotelic behaviour. A monolithic nation state does not satisfy these conditions in any way, for it is not a vernacular, self-regulating homeotelic system but one that is asystematically controlled by an alien agent, the State. It is thereby tending in a biospherically random (heterote-lic) direction — and does not display biospheric order.

This principle was not understood by the holistic ecologists of the Chicago School which flourished in the 1940s under the direction of Warder Allee. They saw that co-operation and integration increased with ecological development, and assumed that this process could occur at a global level — giving rise to a vast co-operative and highly integrated global community from which war would be eliminated. They ignored, however, the factors that must limit the size of co-operative and integrated societies, and failed to distinguish the latter from the nation states, whose expansion is only limited by bureaucratic inefficiency, and the costs of the armaments required to control their alienated inhabitants.

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31 Gaian systems are organized to form a hierarchy or homearchy.

Gaia is organized to form a hierarchy. Thus, molecules are organized to form cells, cells to form organs and tissues, the latter to form biological organisms which, in turn, are organized to form families, vernacular communities, ecosystems and so on. Each system, as both Paul Weiss and Arthur Koestler, in particular, have pointed out, is at once part of a bigger system and at the same time composed of smaller systems. That is why Koestler chose as the symbol of the system, or of the 'holon' as he called it, the double-faced Roman God, Janus, who looks at once in both directions.³⁹

Since the relationship of the smaller systems to the larger systems, and eventually to Gaia herself, is one of homeotely, the term homearchy could be used to replace hierarchy, a much abused term that has never been properly defined. (Even in the two main symposia held on this subject, one organized by Lancelot Law Whyte and one by Howard Pattee, the term 'hierarchy' was used by the participants in a number of different and conflicting ways). Koestler suggested that the term 'hierarchy' be replaced by 'holarchy'.

Gaia, when seen as a life process, is also organized to form a hierarchy or homearchy or holarchy. Thus behavioural processes must be seen as the spatio-temporally differentiated constituents of ontogenetic processes, and ontogenies as the spatio-temporally differentiated constituents of the Gaian evolutionary process (see Principle 17). This is rendered possible by the functioning of informational feedback interrelationships within the hierarchy of life processes (see Principle 17).

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32. The environment is the larger system.

The environment is a term that is largely undefined. Darwinists

and Neo-Darwinists see it as somehow capable of displaying discriminatory and highly teleological behaviour in 'selecting' from among the members of a population those that are the 'fittest'. Once one sees Gaia as a hierarchy, however, then it becomes clear that, at each level in the hierarchy, the larger system provides its constituent sub-systems with their immediate external environment, their less immediate external environment being provided by the systems higher up in the hierarchy.

It is thus not an undefined environment that 'selects', but the larger system itself, which like all natural systems, is capable of discriminatory and teleological behaviour (see Principle 22).

In the same way, at each level in the hierarchy, a system's internal environment (to use a term coined by Claude Bernard) is provided by the smaller systems lower down in the hierarchy.

The ecosphere itself provides its constituent systems with their total internal and external environments.

* * * * *

33. The hierarchy is the field.

Natural systems are arranged to form a spatio-temporal 'field'. Each system is, on the one hand, made up of the hierarchy of smaller systems that comprise it — its internal environment — and is, at the same time, part of the hierarchy of larger systems — its external environment.

The ecosphere is its total field.

* * * * *

34. Systems are most stable when living within the internal-external environment; in other words, when situated in the field within which they evolved and grew up.

A natural system is designed by its evolution, and hence its ontogenetic development (see Principle 17), to live within a specific field, or limited range of internal-external environments. It is when doing so that a natural system is best able to contribute to the stability of the Gaian hierarchy and, hence, best to maintain its own stability and ensure that both Gaian needs and its own needs are best satisfied.

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35. Adaptive homeotelic behaviour is only possible within specific 'environmental parameters'.

A system can only be maintained along its course or Way (see Principle 51) in an internal and external spatio-temporal environment or field that has not diverted too far from the optimum, i.e. that to which it has been adapted by its evolution and upbringing.

The range of environmental conditions to which a natural system can adapt is contained within its 'environmental parameters'.



Brundtland Commission

Vernacular societies have only been able to preserve their structure and culture in relatively unchanging environments. Few have been able to withstand the dramatic changes induced by contact with industrial man.

It is significant that vernacular societies have only been able to preserve their structure and culture in relatively unchanging or slowly changing environments. Few have been able to withstand the dramatic changes induced by contact with industrial man.

Modern economic development inevitably causes the internal and external environments of vernacular peoples to diverge beyond the limits of their environmental parameters. Once this point has been achieved, their cybernetic mechanisms break down. Others may take over, but then they can only maintain a lower level of stability, involving greater discontinuities. If this process continues, then eventually, only the most rudimentary external controls are operative, those, in fact, that are provided by the 'Four Horsemen of the Apocalypse'. The rapid degradation of the global environment under the impact of our economic activities has reached a point where this state of affairs is beginning to obtain globally and at almost all levels in the Gaian hierarchy.

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36. Systems at different levels in the Gaian hierarchy are homeotetically mutualistic.

If the climax state is the optimum for an ecosystem, and indeed for the ecosphere, the overall ecosystem, and if such a system provides its sub-systems with their optimum environment—that in which their stability is maximized—it must follow that their 'interests' coincide, and that life processes that satisfy the needs of the climax whole (the ecosphere) must also be those that also satisfy the needs of its differentiated parts. Such life processes are thereby homeotetically mutualistic (whether co-operative or competitive) all the way up the Gaian hierarchy.

37. The goal of Gaian life processes is the achievement and maintenance of stability.

The goal of Gaian life processes is to achieve and then maintain the basic features of Gaian order in the face of environmental challenges. This is the same as saying that their goal is the achievement and maintenance of Gaian stability—defined, in a dynamic context, as the reduction to a minimum of discontinuities.

A stable developing biological system is said to be 'homeorhetic', a term coined by C. H. Waddington (from the Greek words 'homeo' = same and 'rhesos' = flow). Such a system maintains itself on its critical path or 'chreod' (from the Greek for 'necessary course'), that which will enable it both to attain its optimum end state or goal, and, at the same time, though Waddington does not say this, to contribute to the stability of Gaia, that is, to behave homeotetically to her. Waddington's chreod is thereby 'the Way' (see Principle 51) of a developing biological system.

A homeorhetic system will be capable of correcting divergencies from the central chreod, and hence of maintaining its stability in the face of environmental challenges, so long as these occur within its environmental parameters (see Principle 35).

Once a stable system has achieved its climax state, it becomes 'homeostatic', a term coined by the physiologist Walter Cannon (from the Greek words 'homeo' = same, and 'statis' = state). A homeostatic system is one that maintains its basic order—and (though this was not noted by Cannon) that of the hierarchy of larger systems of which it is part, i.e. the Gaian hierarchy that is homeotetic to it—in the face of environmental challenges, and is capable of correcting any divergencies from it, again so long as these occur within the system's environmental parameters.

Jim Lovelock has shown how Gaia herself is a stable system in this sense of the term. Paul Weiss regarded the achievement of stability as a basic feature of all natural systems, at all levels of organization.

A stable system can also be regarded as one that is under control. An unstable system, on the other hand, is one that is out of control, its self-regulatory mechanisms (which are essential to control and to the maintenance of stability) having broken down—as is the case with our modern industrialized society. Such a society can only be kept functioning, very precariously, and at the cost of moving in the direction of ever greater instability, by such asystemic controls as the state bureaucracy, and market institutions.

Hollings distinguishes between stability and resilience,⁴⁰ a distinction that Waddington rejected.⁴¹ The former is simply stability achieved by increasing complexity, the latter stability achieved by increasing diversity—as is adaptive to a disordered environment.

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38. Gaian changes occur for the purpose of preventing more general and more disruptive changes.

Orderly or controlled change from a pre-established paths or chreod (see Principle 37), leading to the establishment of modified chreods or Way and a modified climax, occurs not *per*

se nor as a means of achieving some anti-Gaian end-state (progress), but rather as a means of avoiding bigger and more disruptive changes that would adversely affect the generalities rather than the particularities of Gaia's critical order.

The goal of evolution is thus what Julian Huxley called *stasiogenesis* as opposed to *anagenesis*. Evolutionary change ceases to occur once an evolutionary climax is achieved. This explains the very long periods during which species underwent no change at all, and the very rapid and concentrated changes that occurred when conditions favoured the achievement of new climaxes — situations in which it could be predicted that stability would be increased, that is in which the probability of the occurrence of discontinuities, as well as the seriousness of such discontinuities, would be further reduced (see **Principle 37**).

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39. When developing Gaian systems achieve their most stable state — their climax — they cease developing.

As vernacular systems evolve or develop, their relationship with their internal and external environments is marked by ever smaller and less frequent discontinuities until an end state is achieved, at which point stability can no longer be increased. When this point is reached, systems, at all levels in the Gaian hierarchy, can be said to be as well adapted as possible to their respective environments and hence to Gaia as a whole, which is thereby as stable as is possible in the circumstances.

This must be the ideal situation. At the level of the ecosystem, it is referred to as the *climax* — the adult state, so to speak. Once achieved, the system becomes homeostatic rather than homeorhetic (see **Principle 37**). It then changes minimally since there is no need for further change, and energy and resources are only used for maintenance and repair (see **Principle 58**).

Because this principle makes nonsense of the idea of progress, which is fundamental to the world-view of modernism (see **Principle 40**), the principle has been abandoned by modern mainstream ecologists.

The first ecologist to do so was Arthur Tansley at Oxford. He decreed that man with the aid of science and technology could outdo nature and achieve a different, and better, climax which he called the 'anthropogenic climax', seeking thereby to rationalize and legitimize the idea of progress. This is very much the position of today's mainstream ecologists.

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40. Progress is anti-evolutionary.

If evolution is seen as random — as neo-Darwinists and reductionist scientists in general see it — then there can be no anti-evolutionary process. However, once evolution is seen as a teleological (see **Principle 22**) and homeotelic process, tending towards the achievement and maintenance of maximum Gaian order and stability — the climax — then if it is misdirected (see **Principle 65**) and tends instead in the direction of reduced Gaian order and stability — the disclimax — or its neo-pioneer

state, then it must be regarded as heterotelic, pathological and indeed as *anti-evolutionary*.

A climax social system is one which is designed to fulfill its functions within a climax ecosystem — or, more precisely, within the climax ecosphere. That is why the tribal vernacular society is the most highly developed, and why a modern institutionalized society, which can only subsist in a neo-pioneer or disclimax ecosystem, is a *neo-pioneer* or *disclimax society*. This explains why what our scientists, sociologists and economists have taken to be social or economic development or social evolution is in fact *regression to a lower state of evolutionary and hence of social development*.

That the climax biosphere which man inherited cannot be improved by man and hence that any notion of progress is an illusion was clear to vernacular man. Lao Tsu, for example, asks:

"Do you think you can take the world and improve it?"

I do not think it can be done.

The world is sacred.

You cannot improve it.

If you try to change it, you will ruin it

If you try to help it, you will lose it."⁴²

Progress is regressive and anti-evolutionary. It involves, in effect, reversing three thousand million years of evolution by systematically substituting a biospherically random (see **Footnote after Principle 22**), atomised, low-complexity (see **Principle 26**), low diversity (see **Principle 26**), predominantly competitive (see **Principle 28**), externally and asystemically controlled (see **Principle 48**), heterotelically organized (see **Principle 65**), and hence immensely unstable (see **Principle 65**) organization of resources — the technosphere — for a biospherically ordered (see **Principle 20**), teleological (see **Principle 22**), organized, high-complexity (see **Principle 26**), high diversity (see **Principle 26**), predominantly cooperative (see **Principle 27**), internally and systemically controlled (see **Principle 48**) and homeotelically organized (see **Principle 49**), and hence highly stable, organization of resources (see **Principle 37**) — the biosphere — with its associated atmospheric environment (Gaia, the Ecosphere).

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41. Natural systems are self-regulating.

If natural systems, by their own vernacular efforts, have succeeded in maintaining the critical order and stability of the biosphere for hundreds of millions of years, it can only be that they can function as cybernetic systems.

Walter Cannon has shown how biological organisms are capable of maintaining their homeostasis. Eugene Odum also sees ecosystems as cybernetic systems. Roy Rappoport, and Gerardo Reichel-Dolmatoff and his colleagues have shown how this is also true of tribal societies in New Guinea and Amazonia respectively, and Jim Lovelock and his colleagues have shown that this is true of Gaia herself.

As systems disintegrate under the impact of economic development, they become less stable (see **Principle 65**): this implies that environmental challenges are less effectively countered and corrected, and that discontinuities correspondingly increase. As this occurs, sophisticated internalized controls become inoperative, and the only controls that remain are crude external controls.

42. A cybernetic system is endowed with a set of instructions, whose implementation, in the light of its total experience, enables it to achieve its goal of maintaining overall Gaian stability.

These instructions are organized hierarchically, with the more general, non-plastic instructions (see Principle 44) — those that reflect the experience of the total Gaian spatio-temporal system and which reflect the system's basic features — being differentiated into the more particular and more plastic instructions (see Principle 44) which reflect the system's most recent experience, that of the sub-system in the latest evolutionary stratum, and which determine the system's less basic features.

As the system disintegrates, so is the continuity of the instructions with which it is endowed disrupted. It is then endowed instead with a new set of instructions that reflects no more than its most recent experience within the technosphere, whose implementation enables it to achieve the heterotelic goal of contributing to the technosphere's continued expansion and, hence, to the further degradation of the biosphere on which it is (heterotelically) parasitical (see Principle 65).

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43. The instructions with which a system is endowed are non-plastic.

General instructions, which reflect the experience of the total spatio-temporal system, as opposed to that of its most recently developed spatio-temporal parts, are non-plastic and hence immutable in the short-term at least. This is the only way in which continuity and hence stability can be maintained. That is why genetic information is non-plastic. If it were plastic, then there would be nothing to prevent zebras from engendering baby wildebeasts and vice-versa.

That is also why cultural information, that which serves to mediate the behaviour of climax societies, must also be non-plastic. If it were plastic, then it would display no continuity or stability, nor would the societies involved, each generation being forced, as it is today, to develop *ad hoc* heterotelic (see Principle 65) expedients for dealing, ever less successfully, with its growing problems.

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44. A self-regulating system is endowed with a model of its relationship with its environment.

Kenneth Craik was perhaps the first to show the role of the mental model in the mediation of human behaviour. Enlightened anthropologists such as Reichel Dolmatoff are now making it clear that the cybernetic behaviour of vernacular societies (see Principle 41) is based on a cultural model, formulated in the language of mythology.

The model, however, is indisassociable from the instructions (see Principle 42) with which the system is also endowed, and

is thereby subjective. It provides a picture not of the environment itself, but of that relationship between a system and its environment that seems relevant to the achievement of the former's goal. In other words, it is not just an academic model but a *teleological* model — the one that best serves to guide the mediation of an adaptive (homeotelic) behaviour pattern. More precisely, it provides the system with the information required to implement its non-plastic instructions by enabling it to adapt its less plastic instructions to changing environmental conditions.

Such an instruction-model complex, I refer to as a *cybernism* (see Principles 45 and 46). A genome falls within this category, as does a gene-pool, a brain and the cultural pattern of a vernacular society.

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45. All information within the biosphere is organized into a cybernism.

The normal scientific concept of information, as developed by Shannon and Weaver, is undoubtedly of use to communications engineers, but it plays no role in the strategy of the biosphere.⁴³ Biospheric information is not divided up into atomised and isolated 'bits', but is organized instead into a cybernism. In fact, it is best defined as a cybernismic organization, to which both cybernismic complexity (see Principle 48) and cybernismic diversity (see Principle 48) contribute. It is in the light of the information organized in a cybernism that data relevant to the achievement of a system's goal are detected, interpreted and transformed into information that is used for mediating adaptive (homeotelic) life processes. This must be true at all levels in the Gaian hierarchy, including that of the vernacular human society. As such a society breaks down, the model, like the instructions, and hence the cybernism itself, ceases to reflect the system's total spatio-temporal experience, and comes instead to reflect the recent short-term experience of its cognitively maladjusted parts (see Principle 64). Under such conditions, the cybernism serves to mediate heterotelic as opposed to homeotelic behaviour.

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46. The generalities of the cybernism with which a system is endowed are non-plastic.

The generalities of a system's cybernism are also non-plastic in line with the instructions that govern it. The particularities, in terms of which these generalities are differentiated, are on the other hand plastic, so that they can be adapted to new environmental conditions in that way that will permit the preservation of the generalities, and hence of the cybernism's basic features.

The cybernism thus maintains its own homeostasis in the face of environmental change. Lerner has shown how this applies to the genome and has formulated the principle of 'genetic homeostasis'.⁴⁴ A.F.C. Wallace has shown how societies will do everything in their power to preserve their world-view, or social cybernism, in the face of information that might cast doubt on the validity of its basic axioms. He referred to this as the principle of 'cognitive preservation'.⁴⁵

Significantly people can rarely be induced to abandon an obviously unadaptive world-view by rational arguments. Something approaching a religious conversion is required, as pointed out by William Sargent in his well-known book, *The Battle for the Mind*.⁴⁶ The process involved is isotelic (see **Principle 24**) to 'genetic recombination', which must be seen as the basic mechanism of radical evolutionary change. This religious conversion could be referred to as a 'neural-recombination', though it is more specifically the information organized in the neurons of the brain that is reorganized, or that is recombined, to give rise to a new world view or cybernism.

The vast literature on messianic or 'revivalist' movements, as Wallace refers to them, is of particular relevance to this issue. These give rise to cultural transformations that are occasionally adaptive to new conditions.

The world-view of modernism, which rationalizes and validates present suicidal policies, is still firmly entrenched, and misguided efforts are being made to preserve it in the face of all the mounting evidence that it is both false and destructive. It is nevertheless under assault, and must eventually lose all credibility and collapse. Revivalist movements — hopefully inspired by ecological ideas — may play a critical role in achieving this end, and may eventually give rise to homeotelic societies which would seek to recreate the order of the biosphere, in so far as this is now possible.

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47. Instructions are provided sequentially.

If life processes are sequential, it is because they are mediated on the basis of a specific sequence of instructions that are interpreted in the light of the cybernism, and hence differentiated from and adapted to existing conditions.

Each stage in a life process must be triggered off by the occurrence — or, as control becomes internalized, by the prediction of the occurrence — of a situation which will be influenced by the preceding stage. The more orderly the process (as in the development of an embryo), the more essential it is that the informational sequence be respected.

The information, what is more, must be derived from the appropriate source, that to which the system is called upon to adapt at each stage in the sequence. Thus a child in a vernacular society derives its earliest and most general cultural information from the family. Subsequently, it is subjected to the influence of its peer group, and it later emerges into the community as a whole, from which it will then derive the complementary information that is required at that stage in its upbringing. If the child is to be properly socialized, the information from the appropriate source must thereby be made available *in the correct order*.

Information from sources extraneous to the system (asystemic), or made available in the wrong order, is random to the developing system and can only interfere with socialization and give rise to heterotelic behaviour.

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The Way embodies the behaviour pattern that conforms to the laws of the Cosmos. It is only by following the Way, as vernacular man fully realizes, that nature can be induced to dispense its unique benefits and human welfare can thereby be maximized.

The idea of subjecting a child to a massive barrage of random data in no particular order, simply on the principle that the more knowledge the better, is indefensible, and an educational policy, such as ours, that is based on such a notion can only give rise to increasing social and ecological disorder.

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48. The internalization of control involves the development of cybernismic complexity and diversity.

The complexity of any life process not only depends on systemic complexity but also on the associated cybernismic complexity, which provides the instructions (*see Principle 42*) and the associated model — that is, the cybernism (*see Principle 45*) — in the light of which the instructions are directed or oriented, and hence the information required to assure the mediation of those life processes that are adaptive to specific environmental conditions, and that are thereby homeotelic to the larger system.

In the same way, cybernismic diversity is required to ensure the mediation of a diversity of life processes that are adaptive to a wide range of possible environmental conditions (*see Principle 26*).

For more sophisticated organisms, there ceases to be the trade-off between complexity and diversity; in the development of the neo-cortex for example, both cybernismic complexity and diversity are correspondingly built-up. Were it not for this, individuals would have to sacrifice an increasing measure of systemic diversity in order to achieve a similar degree of adaptiveness to a specific range of conditions — and thereby correspondingly reduce their ability to adapt to the requisite range of possible challenges that they might encounter in a disorderly environment.

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49. Natural systems are homeotelic to Gaia.

All vernacular life-processes are geared to the achievement and maintenance of Gaian order and stability. I refer to such life-processes as *homeotelic* (from the Greek 'homeo' = same, and 'telos' = goal). Life processes, on the other hand, which are purely egotistic, and that do not contribute to gaian order, I refer to as *heterotelic* (from the Greek word 'hetero' = different, and 'telos' = goal). Such life-processes are abnormal and indeed aberrant.

This view is diametrically opposed to that now in vogue in mainstream scientific, sociological and ecological circles. In such circles, living things are seen as seeking exclusively to

maximize the random proliferation of their own genes — the ultimate goal of life within the biosphere — a principle clearly formulated by Richard Dawkins in his book, *The Selfish Gene*.

On the other hand, behaviour that is not altogether egotistic is referred to as 'altruistic'. It is regarded as a special case, and explained away in a highly contrived way, so that it should not appear to invalidate the preposterous thesis of the 'selfish gene'.

This is but a means of rationalizing, and hence legitimizing, the atomization of modern society, and the competition and aggression that characterize it.

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50. Homeotelic life processes are designed to satisfy the needs of the Gaian hierarchy as a whole, not just those of a constituent part.

Natural systems are all in dynamic interrelationship, not only at the same level in the Gaian hierarchy but also at different levels. A change occurring to one system will thus have a 'ripple effect', which will affect to a different degree all the other systems in the Gaian hierarchy. As Garrett Hardin put it, "You can't do only one thing".

What is important is that 'the ripple effect' should be beneficial — in other words, that it should contribute to Gaian stability. A homeotelic act does just this. It seeks to satisfy the needs of all the systems that make up the Gaian hierarchy, and hence those of the ecosphere itself. It is thus a *solution multiplier*.

A heterotelic act, on the other hand, is only designed to have an effect on one system, at most a few, without regard for its effects on all the others, and will thereby create a veritable wave of maladjustments that will themselves create further and further waves of maladjustment, especially among cognitively maladjusted systems (*see Principle 65*), thus correspondingly reducing the stability of the Gaian hierarchy. It is thus a *problem multiplier*.

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51. Vernacular man follows the Way.

The Way may best be defined as the behaviour pattern that conforms to the laws of the Cosmos (the ecosphere or Gaia) and is thereby homeotelic to it.

The socialized members of a vernacular society abide by the traditional law because that law has been enacted by the ancestors 'in the Dawn Period'. They also observe the traditional law because they see it as being the law of the Cosmos, and hence of the whole cosmic hierarchy.

Bulldozing radioactive waste. "Our modern science-based society generates an increasing number of materials which have played no part in the strategy of nature and which must simply accumulate in some form, which, because of their toxicity, must seriously interfere with Gaian life processes."



This law is best referred to as *the Way*. It is only by following the Way, as vernacular man fully realizes, that nature can be induced to dispense its unique benefits and human welfare can thereby be maximized. As Hesiod wrote:

"When men do justice and do not go aside from the straight path of right, their city flourishes and they are free from war and famine. . . For them the Earth brings forth food in plenty, and on the hill the oak tree bears acorns at the top and bees in the middle; their sheep have heavy fleeces, their wives bear children that are like their parents."⁴⁷

Radcliffe-Brown noted how this was also true of the worldview of the Australian aborigines:

"Man is dependent upon what we call nature; on the regular succession of the seasons, on the rain falling when it should, on the growth of plants and the continuance of animal life. But, while for us the order of nature is one thing and the social order is another, for the Australian, they are two parts of a single order. Well-being, for the individual or for the society, depends on the continuance of this order free from serious disturbance. The Australians believe that they can ensure this continuance, or at least contribute to it, by their actions, including the regular performance of the totemic rites."⁴⁸

Many vernacular societies had a word for the Way, a word that often also referred to the order of the Cosmos. The ancient Greeks referred to it as 'Dike', which also referred to the order of the Cosmos that it served to maintain. The term also meant 'justice' or 'righteousness'. Significantly, it was by observing the traditional law or 'nomos' that one also followed the Dike, and thereby helped to maintain both the order of society and that of the Cosmos.

The Chinese concept of 'Tao' also refers to the order of the Cosmos and to the path that must be followed in order to maintain it. As Jane Harrison writes: "Tao is like Dike, the way, the way of nature; and man's whole religion, his whole moral effort is to bring himself into accord with Tao."⁵⁰

Among the Indians, the Vedic concept of 'R'ta' was very similar. As Maurice Bloomfield tells us:

"The processes whose perpetual sameness or regular recurrence give rise to the representation of order, obey R'ta, or their occurrence is R'ta. 'The rivers flow R'ta'. . . The year is the path of R'ta. The Gods themselves are born of the R'ta or in the R'ta; they show by their acts that they know, observe and love the R'ta. In man's activity, the R'ta manifests itself as the moral law."⁵¹

The Vedic poet, as Krishna Chaitanya notes, knew that to obtain Nature's bounty, man must obey R'ta. "For one who lives according to Eternal Law, the winds are full of sweetness, the rivers pour sweets. So may the plants be full of sweetness for

us."⁵²

The Avestan concept of 'Asha' was very similar, as is the Buddhist concept of 'Dharma'. De Groot described Dharma as "the universal law which embraces the world in its entirety."⁵³

The Way is that behavioural strategy which all men must follow if they are to contribute to the critical order of the Gaian hierarchy, and hence to maximize their welfare. Indeed, it is the opposite to that strategy which we are today induced to follow and which, by contributing to the ephemeral order of the technosphere (which is heterotelically parasitical on the biosphere), must correspondingly lead to Gaia's contraction and degradation.

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52. Institutional society abides by a heterotelic law, that is the law of the technosphere. It is best referred to as the anti-way.

If, in vernacular society, there is a clear notion of the Way — that is, of the correct path that man must take in order to maintain the order of his society and that of the Cosmos itself — there is also a notion of the *wrong Way* — that which violates the traditional law and thereby brings about a reduction in the order of the Cosmos.

Among the Greeks, the anti-Way was often referred to as 'ou themis', the opposite to 'themis' (which occasionally was used to mean 'social order' and occasionally to mean 'the order of the pantheon', as well as the path to be followed to achieve such order). Among the Indians of the Vedic period, it was referred to as 'an-R'ta', the opposite to R'ta, and among the Buddhists as 'Adharma', the opposite to Dharma.

In the language of the Melanesians, to adopt the anti-Way (and hence to divert from the traditional law) is seen as violating a taboo. "An act is taboo", as Roger Caillois writes, "if it disrupts the universal order which is at once that of nature and of society. . . Such behaviour is the source of all disasters." As a result of breaking a taboo, "the Earth might no longer yield a harvest, the cattle might be struck with infertility, the stars might no longer follow their appointed course, death and disease could stalk the land."⁵⁴ This notion is almost certainly common to all tribal

peoples, whether in Africa, Asia, America or Oceania, and undoubtedly was also common to the tribal peoples of ancient Europe.

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53. In a vernacular society, discontinuities such as epidemics, floods and droughts are seen as the inevitable consequences of diverting from the correct path or the Way.

If to divert from the Way is to cause a reduction in the critical order of the Gaian hierarchy, then it must lead to the destabilization of the individual's relationship with his society and the society's relationship with its environment. Such destabilization can only be reflected in all sorts of maladjustments or discontinuities, such as epidemics, floods, droughts, famines and wars. The vernacular diagnosis for such disasters, however simplistic it might seem to those reared on the scientific world-view, is *in fact correct*. What is more, it is the only diagnosis that will lead to a homeotelic solution, one that consists in correcting the offending diversion from the Way, and thereby restore the critical order of the Cosmos.

By contrast, to see the discontinuity as being triggered off by a single event or cause that is antecedent in time (see Principle 9), as we do today, is to justify the adoption of technological expedients aimed at neutralizing the guilty 'cause' (using pesticides, for instance, to kill off guilty pests, radiotherapy to kill off a guilty tumour etc), but which are thoroughly heterotelic (see Principle 65) and which only succeed in masking the real 'cause' of the problem.

To interpret the problem in terms of single causes is thus to be guilty of the Great Misinterpretation (see Principle 66).

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54. Economic life processes in a vernacular system are homeotelic and follow the Way.

All natural systems, whether organisms, societies or ecosystems make use of resources, and the distribution of those resources within them must be governed by the same general laws (see Principle 2) — those that assure that it contributes to, and is thereby homeotelic to, the achievement and maintenance of the Cosmic hierarchy.

It must be obvious that resources are so distributed within that highly integrated system which is a biological organism. Food is digested and nutrients distributed to where they are required in order to keep the organism as a whole functioning as effectively as possible.

Starvation triggers off a highly homeotelic rationing system, assuring that nutrients are first provided to essential organs, such as the brain, the heart and respiratory system, and only after that to less critical organs and tissues.

That the same principles apply at the social level among vernacular societies has been well documented by the more enlightened economic anthropologists and economic historians, such as Marcel Mauss, Karl Polanyi, George Dalton, Raymond Firth and others. In such societies, there is no formal economy,

the units of economic activity corresponding to the basic social units, namely the family and the community, both of which are integral parts of the Gaian hierarchy. The economic activities undertaken by these social groups are, to use Polanyi's term, "embedded in social relations."⁵⁵ They thereby serve social rather than purely economic ends, and are thus under social control and that of the Gaian hierarchy.

In a modern economy, such control has broken down. Institutional (economic and political) groupings which have replaced social groupings are an integral part of the technosphere, and are thereby parasitical on the biosphere.

The goal of those who lead these institutions is the satisfaction of their own individual interests, regardless of the consequences on the biological, social and ecological systems that make up the Gaian hierarchy ('politics are politics' and 'business is business').

Indeed, instead of serving to maintain the critical order of the biosphere, which is the goal of homeotelic economic activities, the modern economy serves, on the contrary, to transform the biosphere so that it may serve to accommodate the maximum throughput (extraction, transformation, distribution, consumption) of resources. Economic activity thereby comes to serve the opposite function from that for which it was designed. Not being subjected to the sophisticated internal controls of a climax biosphere—but only to the very much less sophisticated external controls of an increasingly degraded and pioneer-like biosphere — economic activity expands anarchically, as does a malignant growth, until such time as the biosphere becomes so

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degraded that it can no longer accommodate it.

Since in a truly vernacular society, economic activity is homeotelic and self-motivating (*see Principle 23*), no financial incentive is required to assure the homeotelic distribution of resources. Financial transactions are minimal, and hence Gross National Product (GNP) is zero, or near zero. As a society disintegrates, however, and as more functions previously fulfilled by vernacular processes must be paid for, so GNP increases. GNP thus provides a vague measure of the extent to which heterotelic economic processes have replaced homeotelic ones and hence, by implication, a measure of biospheric disintegration.

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55. In a vernacular ecosystem, the consumption of resources is homeotelic.

If production in a vernacular ecosystem is homeotelic to the Ecosphere, so is consumption. This not only serves the interests of the consumer, but those of the Gaian hierarchy as a whole. Indeed, from the Gaian point of view, consumers, at each level in the food cycle (*see Principle 56*), must consume, since it is by doing so that they apply quantitative and qualitative controls on the populations on which they live, and thereby contribute to maintaining the critical order of the Ecosphere.

Under such conditions, "there is no free fast", since failure on the part of the consumers to consume what must be regarded as the optimum resources would relax these controls, leading to a disruption of the biosphere's critical order.

It is only once this disruption is under way, and consumers start consuming more than the optimum, that Barry Commoner's principle that "there is no free lunch" becomes applicable.⁵⁶

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56. In a homeotelic economy all resources must be recycled.

All life processes require material resources. The biosphere, however, though it may be an open system from the point of view of energy, is a closed system from the point of view of materials. This means that in order to prevent the running down of the biosphere, and to permit the increase in order that has characterized the last few thousand million years, the raw materials of life are exploited in an extremely subtle way, each of them being recycled via complex social and ecological processes, thus permitting their constant re-use and avoiding their accumulation as waste.

The most basic of such processes is the 'food chain', which should really be referred to as the 'food cycle', whereby the primary producers (grass, algae, phytoplankton) which alone can harness the energy of the sun, are eaten by herbivores, who in turn are preyed on by carnivores, while their dead bodies together with other dead matter are eaten by scavengers, and what remains is broken down by micro-organisms into the nutrients required by the primary producers.

All living things (including vernacular man) co-operate in assuring the success of this key cycle, without which life could

not be sustained. Vernacular man believes that what is taken from the Earth has to be returned to it, often as a reparation for what they see as a crime.

This seems to have been the case among the ancient Greeks, as is implied in the sole surviving fragment of the writings of Anaximander:

"Things perish into those things out of which they have their birth, according to that which is ordained; for they give reparation to one another and pay the penalty of their injustice according to the disposition of time."⁵⁷

Gerardo Reichel Dolmatoff shows how this attitude is also held by the Kogi Indians of Colombia.⁵⁸ The anthropological literature on the subject is in fact considerable.

This principle is also clearly reflected in the moving grace repeated before each meal by those who follow the teachings of the British philosopher John Bennett:

*"All life is One,
And everything that lives is Holy.
Plants, animals and men,
All must eat to live and nourish one another.
We bless the lives that have died to give us food:
Let us eat consciously,
Resolving by our Work
To pay the debt of our existence."*⁵⁹

Unfortunately, few in the modern world see things that way any longer. Our industrial society ignores this critical constraint. Economic growth is a one-way process, the biosphere being systematically transformed into the technosphere and technospheric waste, both of which, from the point of view of the biosphere, constitute waste or randomness — a process that cannot continue indefinitely.

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57. In a homeotelic economy, no wastes can be generated which cannot serve as the resources for other life processes.

As Barry Commoner points out, nature does not generate a chemical substance for which it does not also generate the appropriate enzyme for breaking it down into those elements required as the resources for other life-processes.

Our modern science-based society, however, generates an increasing number of materials (synthetic organic chemicals, for instance, in which category we must include most modern pesticides) which have played no part in the strategy of nature and which must simply accumulate in some form, which, because of their toxicity, must seriously interfere with Gaian life processes.

Today, our ground water supplies are increasingly contaminated. Pollution is rapidly reducing the capacity of the seas, in particular the North Sea, the Mediterranean, the Baltic, and the Adriatic, to sustain complex forms of life. Forty per cent of the flatfish in many parts of the North Sea suffer from tumours; the seal population is dying off, having in an increasingly diseased state for many years; sea bird populations are ever less capable of reproducing themselves, with ever worse breeding failures; and vast algal blooms are invading the North Sea and the Baltic, depriving the infested areas of oxygen.

Chemical waste disposal on the land is increasingly difficult. About \$100 billion (some say \$300 billion) are required to 'clean

up' America's 40,000 or so known waste dumps — a sum that will never be made available. Not surprisingly, more and more chemical wastes are now being dumped in the Third World with the connivance of crooked politicians. The problem is, in fact, completely out of control — and the biosphere becomes ever less capable of supporting complex forms of life.

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58. As a developing homeotelic system approaches its climax, and thereby ceases to grow, so does it make use of less resources, which are now only required for maintenance and repair.

As this process occurs, so the system becomes correspondingly less dependent on the availability of such resources. In addition, it has a lower impact on its environment, whilst its consumption of resources and its generation of wastes (which will serve as the resources for other processes [see Principle 56]) reach their optimum, that which will prevent any shortages and at the same time prevent the accumulation of wastes, and thereby any increase in randomness.

By contrast, our modern society, committed as it is to the uncontrolled, or runaway, process of economic growth (which multiplies problems rather than solving them, and which interprets these problems in such a way as to rationalize expedients that require further economic growth and hence the use of further resources) will, as it develops, make use of ever more resources, which will still further increase its impact on its environment, thus causing ever greater resource shortages and the accumulation of ever greater amounts of wastes or biospheric randomness — further increasing overall instability.

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59. As a system develops towards a climax state, so it comes to generate an increasing proportion of the resources that it requires.

In order to ensure its necessary supplies, a system will not allow itself to become dependent on external sources of nutrients and other resources unless it can predict that supplies can be maintained. This is most likely when they are generated by the system itself; hence systems will tend to generate more and more of the resources they require as they develop towards their climax state — and reduce their consumption of resources that they cannot generate. Eugene Odum notes that this applies to ecosystems as they develop towards their climax.⁶¹

Our industrial society, on the other hand, in order to exploit the so-called 'economies of scale', and in order to specialize in the production of those products that it is best capable of producing (the principle of comparative advantage), increases its consumption of those resources that it does not itself produce (the components of the products it manufactures and those products which are produced most 'economically' by other societies), thus increasing rather than reducing instability.

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60. The technology made use of by vernacular societies is homeotelic and thus follows the Way.

In a vernacular society, all technological activities like all the economic activities that they serve are 'embedded in social relations'. They fit into the society's cultural behaviour pattern, playing a differentiated role within it. Technology is thus under social and ecological control and is homeotelic to Gaia.

This being so, technology transfer is very difficult in a vernacular society and indeed rarely occurs. Mary Douglas describes, for instance, how the Lele, who live on one bank of the Congo River, persist in making use of their own relatively simple technologies, although they are well acquainted with the more sophisticated technologies made use of by the Bushong who live on the opposite bank of the river. It does not occur to the Lele to make use of Bushong technology, since the latter does not fit in with their own cultural pattern, nor is its use rationalized (and hence validated) by their metaphysical beliefs and mythology.⁶²

As a society disintegrates, however, these controls become less effective and technology, like the economic activities that it renders possible, gets out of control and comes exclusively to serve the interests of one or more interest groups, at increasingly intolerable social and ecological costs.

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61. In a vernacular society, political activities are homeotelic and thus follow the Way.

In a homeotelic society, the units of political activity, like those of economic and technological activities coincide with the natural social groupings, the family, the community, the society itself. There are no formal institutions or governments. The elders, and in some cases the chiefs, are first and foremost citizens — that is, differentiated or properly socialized members of the social system, rather than professional members of a socially heterotelic institution. Nor do they gain financially from their political activities, although these provides them with social prestige. Nor do they really govern in the sense in which the government of a modern nation state governs, their role being limited to enforcing the traditional law — that which assures social homeotely, and that which thereby best helps to maintain the critical order of the Cosmos.

This does not mean that all changes are avoided, only that changes are measured or controlled and occur only as a means of preventing bigger and more disruptive changes (see Principle 38).

The modern state is alien to society and to the Gaian hierarchy. It is under no effective social or ecological control. It is, in effect, just another interest group, concerned with little more than its own petty interests which almost invariably conflict with those of the society it is supposed to serve.⁶³ Unfortunately, this particular interest group also controls the police, the army, and to a large extent the media and the law-courts. For that reason, and there are many others, the policies that serve its petty interests, and which largely coincide (in both capitalist and socialist nation states) with those of the most powerful economic interest groups, are very difficult to bring back under Gaian control.

62. In a vernacular society, education is homeotelic and thus follows the Way.

Margaret Mead defines education as "the cultural process. . . the way in which each new born individual is transformed into a full member of a specific human society, sharing with the other members a specific human culture." In other words, education is differentiation within a social system. It is thus the means whereby a vernacular society reproduces itself, so as to maintain its continuity or stability, and hence the preservation of its critical order and that of the Gaian hierarchy of which it is part.

As a society disintegrates and becomes heterotelic, such education becomes impossible since, if there is no society, new-born individuals cannot be socialized into it. One cannot learn to become a differentiated member of something that is no more. Education then degenerates, as it has in our modern society, into institutional as opposed to vernacular education: it involves no more than the communication to youth of socially random information (see **Principle 47**), which is designed to enable them to fulfil their heterotelic functions within the technosphere, which being (heterotelically) parasitical to the biosphere, can only contribute to the latter's further degradation.

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63. In a vernacular society religion is homeotelic and thus follows the Way.

The gods of a vernacular society are the spirits of the biosphere. They are organized, what is more, in a way that reflects the society's subjective view of its critical order.⁶⁴ In this way the organization of the gods serves to sanctify that of the biosphere.

Reichel Dolmatoff convincingly demonstrates (with reference to the Indians of Colombian Amazonia) that the pantheon of a tribal system provides it with a model of its relationship to its natural environment, on the basis of which it can mediate an adaptive behaviour pattern, monitoring any diversions from it and correcting them.⁶⁵ With the social and economic destruction that necessarily accompanies economic development, this homeotelic religion is disrupted. The gods cease to have any relationship with society and with the biosphere of which it is a part, which become desanctified. This desanctification of the real world provides modern man with a licence to destroy it.

Religion, instead of being homeotelic, and thereby serving to maintain that behaviour pattern or Way that leads to the preservation of the critical order of the Cosmos, becomes 'other-worldly'. Its concerns shift to a different world and the behaviour it gives rise to becomes purely heterotelic, as is that inspired by the mainstream religions of today. The role of such other-worldly religions is then but to provide the alienated inhabitants of the degraded world that economic development brings into being with individual succour, which may help them to accept their lot but which does not lead them to improve it.

Earthly protagonists of such religions even go to considerable lengths to rationalize economic development, and the conditions it brings about, in theoretical terms, as did the non-conformists, who as Max Weber⁶⁶ pointed out, so convincingly played a decisive role in triggering off the industrial revolution. In this way, the adepts of such religions *can at once serve God while systematically annihilating his creation.*

We have no alternative but to recreate, along with a homeotelic society, a homeotelic religion, in which the gods are those of such a society and of the Cosmos of which it is an integral part — Gods which can only be served by restoring their creation and preserving it with religious zeal.

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64. As the environment at each level in the Gaian hierarchy diverts from the optimum, so will maladjustments at all these levels correspondingly increase.

The more Gaian order is disrupted and the environment diverts from that to which a system has been adapted by its evolution, the less well can they satisfy the system's real needs. Stephen Boyden refers to this as the principle of 'phylogenetic maladjustment' (more recently he has used the term 'evo-deviance').⁶⁷

Boyden regards the 'diseases of civilization' — ischaemic heart-disease, tooth-carries, most forms of cancer, diabetes, peptic ulcer, appendicitis, varicose-veins — whose incidence increases with per capita GNP, itself a measure of the rate at which the technosphere is expanding and biospheric order is being disrupted, as the symptoms of evo-deviance.⁶⁸ More precisely, they should be seen as the symptoms of evo-deviance at a biological level.

Crime, delinquency, alcoholism and drug-addiction (over and above what, in a given society, is homeotelic to it), child-abuse, schizophrenia and suicide (as Durkheim showed in his famous study *Le Suicide*⁶⁹) must also be regarded as the symptoms of growing alienation — or of evo-deviance at a *social level* — as experienced by people living in any anonymous mass-society in which they are deprived of their normal social environment (the family and the community) [see **Principle 53**].

Epidemics affecting man and non-human animals and plants are but the symptoms of evo-deviance at an ecological level, caused by the disruption of ecosystems and, hence, of the cybernetic controls that prevent population explosions among pathogens and their vectors.

Floods and droughts are also the symptoms of evo-deviance at the *ecological level*, since those conditions created by economic development necessarily involve deforestation, erosion and desertification and must necessarily increase the incidence and severity of floods and drought. By contrast, in a climax ecosystem, everything conspires to reduce their incidence to a minimum.

Finally, the pathetic failure of our scientists, economists and sociologists, armed with all their computers, laboratories, and sitting as they are on mountains of 'scientific knowledge', to understand the world they live in, is, above all, a symptom of evo-deviance at the *cognitive level* or of cognitive maladjustment — of which the most fatal manifestation is the *Great Misinterpretation* (see **Principle 66**).

The world they have helped create is unintelligible to man; he is simply not designed by his evolution to comprehend it. It has no meaning to him. As economic development proceeds, man is thereby condemned to living in a world to which he is ever less well adapted biologically, socially, ecologically and cognitively, and also, aesthetically and spiritually.

He thereby becomes increasingly alienated from a world ever less capable of satisfying his real human needs.

65. Instructions that are interpreted in the light of a cognitively maladjusted system will give rise to misdirected, and hence heterotelic, life processes.

Misdirected life processes must be seen as heterotelic. Heterotelic processes may satisfy, albeit imperfectly, some specific needs of a natural system. However they are unlikely to satisfy all its needs, and will in any case do so in a way that prevents them from contributing to the overall goal of maintaining Gaian order.

Thus, by taking a mistress, a man may at least satisfy sexual and psychological needs. However, in so far as this diverts him from fulfilling his husbandly functions towards his wife, his paternal functions towards his children, and thereby prevents him from maintaining the critical order of his family — an essential component of the critical order of the Gaian hierarchy — it is a heterotelic relationship.

Technological solutions to problems caused by the disruption of natural systems are of necessity heterotelic. They are what Stephen Boyden calls 'pseudo-adaptations'.⁷⁰ Consider the present epidemic of tooth decay which is known to be largely caused by eating junk food. The homeotelic solution is to correct the diversion from the appropriate heterotelic diet by readopting the appropriate homeotelic diet, that which man has been adapted to by his evolution. Such a solution, however, would be cognitively unacceptable. It would be seen as reversing the course of scientific and technological 'progress' that has brought the junk food into being.

It would also be politically and economically unacceptable — that is, it would not be tolerated by all those asystemic institutions (political and commercial) whose very *raison d'être* is to provide heterotelic expedients. Hence the problem is dealt with by providing those whose teeth have decayed with false teeth — a 'pseudo-adaptation' which mainstream scientists have failed to distinguish from a real adaptation, or, in the language of this essay, a *heterotelic adaptation* as opposed to a *homeotelic one*.

The principal failings of such a heterotelic adaptation are, firstly, that the false teeth are no real substitute for the real ones; secondly, that they must be paid for whereas the real ones are free; and, thirdly, that it only addresses one of the very many problems caused by the consumption of junk foods. These tend to be considerably devitalised, containing less proteins and trace-elements than fresh food, thus leading to malnutrition and hence a reduced resistance to disease. Moreover, junk foods also tend to be contaminated with pesticide residues and chemical additives of all sorts. For both these reasons, and there are others, junk foods are the main cause of such diseases of civilization as cancer, diabetes, diverticulitis, peptic ulcer, appendicitis, ischaemic heart-disease, and indeed tooth-decay, all of whose incidence increases with per capita GNP.

In addition, the production of junk foods on the present scale has altered the character of agriculture, which is now largely geared to producing the raw materials for the food-processing industry. Such an agriculture involves large-scale monoculture, and the intensive use of machinery and chemicals. It is environmentally very destructive, leading to erosion and desertification on a grand-scale. It is also socially destructive, leading to the annihilation of sound rural communities, and to the concentration of the population in vast overcrowded cities.

In other words, we are faced with the typical 'ripple-effect' or 'chain-reaction', caused by the widespread adoption of a set of associated heterotelic expedients in the food industry. Tooth-

decay is only a minor ripple, a small almost insignificant link in the chain reaction that must cause maladjustments throughout the Gaian hierarchy. To treat it heterotelically, by providing its victims with false teeth, will do nothing to stem the tide of the destruction. It does little more than mask one of its symptoms, rendering it correspondingly more tolerable to the public, thereby helping to perpetuate the chain reaction towards disaster.

* * * * *

66. Cognitive maladjustment in the modern world leads to the *Great Misinterpretation*.

Cognitively maladjusted modern man invariably refuses to face the indisputable fact that the problems that confront him are of his own making, or, more precisely, the inevitable consequence of economic development or progress — a totally heterotelic enterprise — to which he is fully committed politically, economically, psychologically and, indeed, quasi-religiously. On the contrary, modern man will persuade himself that if these problems occur, it is because economic development, and hence 'progress', *has not progressed far enough*. Thus if so many Third World people suffer today from malnutrition and famine, it is, he will persuade himself, because they are *underdeveloped*. If their agriculture could be modernised sufficiently, if they could be induced to buy from us a sufficient number of tractors, combine-harvesters, artificial fertilizers and chemical pesticides and, of course, build more dams to provide the requisite irrigation water, then these problems would rapidly be eliminated.

If they suffer from poor health, the same principle holds; economic development would provide them with the modern hospitals, the trained doctors and the pharmaceutical preparations that would rapidly make them healthy.

I refer to this as the *Great Misinterpretation*. It is consistent with the dogma, basic to the world-view of modernism, that nature provides man with no real benefits (*see Principle 25*), and that all benefits are man-made (*see Principle 25*), the product of scientific, technological and industrial progress, which is thereby seen as providing a panacea for all man's problems.

The *Great Misinterpretation* is of course very convenient; it is the only interpretation, in fact, that can justify progress, and by the same token, satisfy the political and economic interests of the institutions that provide these man-made 'benefits', and on whose functioning, as development proceeds, we all become increasingly dependent.

Not surprisingly, the *Great Misinterpretation* has become institutionalized as the fundamental dogma of the world-view of modernism.

* * * * *

67. The development of the world-view of ecology is the *Great Reinterpretation*.

I have sketched very tentatively indeed what I take to be some of the more important laws or principles of the world-view of

ecology. The reader will see that they are closely interrelated, relatively consistent, and thereby provide at least a vague idea of the lines along which we should proceed in the development of a coherent and comprehensive ecological world-view. It is only once we are all imbued with such a world-view, that it will be possible to reinterpret the nature of the terrible problems that confront us today — to undertake, in fact, the Great Reinterpretation.

These problems must be correctly identified as but the symptoms of the degradation of natural systems at all levels (biological, social and ecological) in the hierarchy of the ecosphere under the increasingly intolerable impact of our economic activities.

In the light of this world-view, it must also become clear that the impact of these activities must be systematically reduced, and that this, in effect, means creating a new society that is structurally and cognitively geared to the achievement of a very different goal from that of the society we live in today. It means building up our biological, social and ecological wealth, the only wealth that can satisfy the real needs of living things including man. It means, in effect, a return to the Way — to a pattern of behaviour that recognizes that the Earth is sacred, and that it is only by respecting its sanctity that it will continue to dispense to us those unique blessings that must constitute the only real and lasting wealth.

* * * * *

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This paper is shortly to be reprinted in booklet form. Orders should be sent to: The Ecologist, Worthyvale Manor, Camelford, Cornwall, U.K..



Books

Animal Pharms

LIVING WITHOUT CRUELTY, by Mark Gold, Green print publications

This powerful and well-documented book has, up to a certain point, an unanswerable case — namely that there must be a change in our eating habits both for the improvement of human health and for the elimination of the monstrous 'Animal Pharms' that commercial interests have introduced into agriculture. The role that cholesterol, found only in animal foods, plays in causing heart attacks is common knowledge. Less well-known is the fact that humans have an intestinal tract four times as long as most meat-eating animals; this increases the risk of meat putrefying in our intestines, which were designed for a fibre-rich diet, and suggests we are not such an omnivore as is commonly supposed. "In New Zealand," Mark Gold points out, "where a powerful dairy industry ensures that butter intake per head is the highest in the world and other full-fat dairy produce is consumed to excess, they also have the highest coronary disease rates in the world, a national problem with obesity and the highest cancer of the colon rates in the 35 to 64 age group."

Within the Animal Pharms, the animal victims would die of disease (apparently, 50 per cent, of pig carcasses show "typical purple pneumonic lesions on the tip of the lung lobes") were they not kept alive by antibiotics. This causes drug resistance, "a highly transferable trait" which can affect humans. The use of antibiotics, and the hawking around of young calves at markets, produces a cocktail of bugs which scientists believe plays a part in salmonella infection. The *Farmers Weekly* noted in 1985 that "Britain is sitting on a salmonella time bomb. There are not enough effective drugs to treat it." It is also thought that hormone growth promoters, banned by the EEC and known to be carcinogenic in humans, are illegally finding their way into meat. Then there are prostaglandins,

minute doses of which can bring a whole herd into season at the same time, not to mention BST which is now on trial in Britain, the aim being to squeeze another 25 per cent of milk out of our overworked cows. Interestingly, trade unions report that workers in the meat industry of both England and America have an above-average cancer rate, especially of the mouth and throat.

Apparently we could support a population of 250 million in the United Kingdom on a vegetarian diet. Instead, our greedy habits necessitate the importation of millions of tons of animal feed, mostly soya, some of which is imported from Third World countries with undernourished populations. In the 12 months dating from September 1983, when famine was already a massive problem in Ethiopia, Britain actually bought more than 1.5 million pounds worth of linseed cake, cottonseed cakes and rape-seed meal from that country. Far from becoming vegetarian, however, we are even now exporting our Animal Pharms to the Third World, so that tortured poultry can gobble the protein needed for half-starved humans.

Meat production also makes a major contribution to pollution. In the South and East Netherlands, due to slurry seeping into the water table, water will be undrinkable for hundreds of years and we are due for some of the same problems over here, especially in East Anglia. Meat-eating has the added disadvantage of the animal concentrating the chemicals used in crop production. "In the diet of the average house", Rachel Carson concluded as long ago as the early 1960s, "meat and any product derived from animal fats contains the heaviest residues of chlorinated hydrocarbons and other pesticides."

Mike Gold's argument extends to encompass the pharmaceutical industry, also based upon animal suffering in the shape of largely irrelevant vivisection experiments. The book also includes vegan recipes and useful household hints on cruelty-free products. My only reservation concerns Gould's vision of a holistic vegetarian paradise. There all is compassion to man and beast. There the lion lies down with the lamb. Much as one would like to see such a vision made reality, I doubt whether it can ever come about on planet earth. Even a soya bean field needs defending against predators... However, even if a vegetarian heaven is ultimately unobtainable, we have no reason to be complacent about the drug-polluted carnivorous hell that exists at the moment.

Joe Potts

Joe Potts is a freelance writer with an interest in the environment.

Fall-Out from Chernobyl

SOMETHING IN THE WIND — Politics after Chernobyl, edited by Louis Mackay and Mark Thompson, Pluto Press, 1988.

This book has the strengths and the weaknesses of all collections of essays by several authors — a breadth of view but an inconsistency in quality and depth. One of the high spots is a long chapter by Zhores Medvedev, describing the development of nuclear power in the USSR. This is a story at least as interesting as that of the Magnox/AGR development in the United Kingdom, and it has some of the same themes — the origins in plutonium production reactors, the excessive power of the civil nuclear lobby, and, in particular, the role of national pride in the irrational preference for indigenous reactor designs. As always, Medvedev writes succinctly.

The main problem with producing books — as opposed to articles or pamphlets — on fast-changing subjects is the length of time it still takes to publish. It must have been very frustrating that the White Paper on privatising electricity appeared during the period between writing and publication — especially for Martin Ince, whose essay deals with the ways in which states underpin nuclear power in the face of economic reality. It would be interesting to read his views on a proposal which, if enacted, recognises the uncompetitiveness of nuclear power by compelling the distribution companies to contract for a proportion of nuclear-generated electricity.

The book contains an interesting chapter on anti-nuclear protest in Eastern Europe and the USSR, where Chernobyl had an immediate effect, and another on protest in the Third World, where the impact of the accident was less immediate, although the chapter contains a useful account of the incident at Goiânia.

Nonetheless, I have taken issue with one of the central themes of the book. A contribution by Pratul Bidwai, which discusses the effects of development technologies and policies on the Third World, maintains that nuclear power is one of a broad range of environmental problems — from desertification and land destruction to poor health care and industrial exploitation — that are imposed on the Third World by the First World. It seems to me that Goiânia — careless, casual and waiting to happen in scores of derelict hospitals and unguarded dump sites — provides a better example than Chernobyl, if only because electricity has to be manufactured close to its point of use, and the essence of First World exploitation of the Third World is cheap manu-

facture and export. The one obvious example of Third World environmental damage caused by nuclear power is uranium mining and its tailings, which are not even mentioned.

Insofar as this book has a consistent theme, it is to set the Chernobyl disaster into the context of North/South development. Mary Kaldor, in the preface, draws a specific comparison with Bhopal. But one of the most striking passages is in the introduction, where the editors describe in some detail the sequence of events in the reactor control room that lead to the accident. The impression left on me was how very hard the operators had to work, how deliberately they had to break their own rules, to get the reactor to blow up. Was it so difficult at Bhopal? I doubt it.

John Valentine

John Valentine is a freelance writer, specialising in nuclear issues.

An Unhealthy Age

HEALTH GUIDE FOR THE NUCLEAR AGE, by Peter Bunyard, Papermac, £7.95, (Available from *The Ecologist*, Worthyvale Manor, Camelford, Cornwall.)

The declared purpose of this book is to give practical advice so that people can take the initiative and protect themselves in the event of radioactive fallout from a nuclear accident. In order to do this, Peter Bunyard has devoted quite a lot of his book to simple, straightforward accounts of what radiation is, where it comes from, and what we know of its effect on people. He covers the questions of consumer products, radon in homes and food irradiation.

The author then proceeds to describe the nuclear fuel cycle, explaining clearly what is involved from mining to waste disposal, by way of re-processing. The book is at its best in the descriptive account of all the physics processes involved; however, there are no references and no bibliography, with the result that the text makes assertions, sometimes attributed to individuals. I would have to say that it is the assertions on the health effects of radiation with which I have some difficulties. I consider it misleading to state:

"One effect of radiation may be to impair the body's immune system so that not only cancers but also others diseases — in

particular infectious diseases — can develop and become fatal. AIDS — the auto-immune deficiency syndrome that is caused by the human immuno-deficiency virus (HIV) — has just such an effect and its victims are likely to develop cancers and serious infectious diseases simultaneously."

Each sentence alone may be accurate, but their juxtaposition gives the impression that radiation and AIDS are in some sense synonymous.

Bunyard also says that the conclusions of Alice Stewart (who wrote the Foreword to the book) may explain why the childhood cancer rate has been much higher than expected in regions where there have been discharge of radioactive materials. Again the author uses the subjunctive and therefore criticism can be countered by saying it was speculative, but in practice it has not been possible to correlate discharges with the cancer incidence, despite using risk estimates taken from Alice Stewart's work. Most people now consider that perhaps something other than environmental radiation may be the cause, if cause there is.

The book also gives a misleading impression on dose limits, both in the text and the associated figure, by confusing occupational dose limits with those for the general public and not distinguishing the National Radiological Protection Board's advice for a single site, which is a fraction of the limit, not a limit in itself.

Having said that, in my opinion, some of the assertions on health effects are taken from the more critical end of the spectrum of views on the effects of radiation, the book goes on the deal rather well with nuclear accidents, the consequences for food and the environment and finally makes an attempt to show pictorially what foodstuffs may be of concern for infants, children and adults in different weather conditions.

There are good descriptions of the Chernobyl and Three Mile Island accidents in readable terms, and a comprehensive account of the effects of Chernobyl across Europe. The book goes to some lengths to explain the differences in approach to control of foodstuff distribution by different European countries, which led to so much confusion. There is a whole chapter on foodstuff contamination, again describing the physical processes and the problems of having to make decisions in accident situations.

Peter Bunyard's book can be summarised by: "Be aware and do not necessarily trust the statements by Government authorities." He sees decisions as individually-based, advice having been provided by independent agencies and the individual being sufficiently informed to make

the decision. There is certainly a long way to go in public education and Government will always have to take control of an emergency situation. Overall, I believe the book to be a good attempt at a vexed subject, but I would really like to see a second edition so that all aspects may all be brought to the same level of reliability.

R.H. Clarke

R.H. Clarke works for the National Radiological Protection Board

Slaughter of the Innocent

DECIMATION OF WILDLIFE: JAPAN AS NUMBER ONE, by Tom Milliken, Asia-Pacific Peoples Network/ Sahabat Alam Malaysia (43 Salween Road, 10050 Penang, Malaysia), 1988.

This short book will be a valuable source of information to anyone with a concern for the endangered wildlife of the world, or who lives or works in, or simply even visits Japan and much of Asia. While many people are now aware that Japan is the world's largest single — and perhaps most wasteful — consumer of tropical hardwoods, the facts put forward by Tom Milliken show Japan as an extraordinary 'black hole' for rare and threatened plants and animals of all kinds, sucking in endangered species from all over Asia and turning them into decorations, medicines or delicacy foods on a quite gargantuan scale.

The West has not really seen anything like this since the decline of European empires and the mass slaughter of wildlife by colonizing whites in North America, but Japan is apparently making short work of many of those species whose habitat has somehow survived the chopstick and plywood appetite of the Japanese logging industry.

Tom Milliken, an American biologist who has lived and worked in Japan for many years, reports on both the tidal wave of skins, shells and live animals entering the country, and the legal efforts being made to stop it. Like joining a sinking Noah's Ark it seems, species go into Japan but they do not come back out. Despite being a party to CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) with effect in 1980, Japan and her wildlife traders have pulled strings and cut corners so that many of the treaty's provisions are circumvented. Milliken notes that "Japan holds the dubious distinction of having more reservations or endangered species that

any of the other 95 Parties to CITES" — in other words, Japan still permits trade in more than a dozen of the world's rarest creatures, placed on Appendix 1 of the Convention. These include six types of whale, three sea turtle species and three monitor lizards.

That is not all. By laundering through third countries (most notably Singapore, a belated joiner of CITES, and Taiwan, still outside CITES); by use of illegal documents (for example the three Cameroon lowland gorillas — two died and one ended up in Taipei Zoo, Taiwan); and by masking illegal trade by dubbing species 'captive' (such as 100 live rare Asian Arowana parrots — supposedly but fictitiously bred in Taiwan), Japan's wildlife appetite is relatively little affected by CITES regulations.

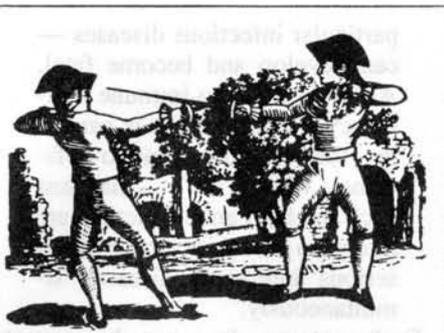
— Milliken's report summarises the extraordinary volume of the trade in wildlife. TRAFFIC (the organisation Trade Records Analysis of Flora and Fauna in Commerce for which Milliken works and which was set up by WWF to monitor the trade) calculates that 70,000 parrots are imported live into Japan each year: in 1985, these included at least nine illegal, rare species. Suitcases and other tourist luggage leaving Bangkok for Tokyo has been found bulging with an assortment of species that would equip the most irresponsible zoo or taxidermist's shop: white handed gibbons, rhesus monkeys, a moor macaque (Indonesian, endemic and 'totally protected'), fruit bats and blue crowned pigeons from New Guinea. On top of that, Japan takes in 150 tons of crocodile of crocodile skins — half illegally — rare lizards from as far afield as Bangladesh, 15,000 Malayan Pangolins (mostly via Singapore), a hundred kilos of bear gall bladder (830 Himalayan bear's worth) and musk from 30,000 dead musk deer. Not to mention the import of 73,222 kilograms of skins and 21,094 kg of beko sea turtles from Indonesia — in violation of CITES (Japan is the world's largest consumer of sea turtles). Then there are the 40,000 Bengal Cats, the snow leopards, the tigers and the leopards.

Of course since Tom Milliken's original paper setting out the problem — on which the book was based — the situation may have improved slightly. WWF Japan and TRAFFIC are making stalwart efforts to mobilise public opinion, as is Friends of the Earth Japan, which has succeeded in getting the issue of tropical forests debated in the Japanese Parliament. But it has not changed much.

This book deserves to be read, and acted upon.

Chris Rose

Chris Rose is an ecologist, now Director of Media Natura: The Conservation Awareness Trust.



Letters

Meat or Veg?

Dear Sir,
I hope you will allow me a little more space to reply to John Seymour's letter (Vol.18, Nos2/3).

Although most western vegans live in towns and cities, to my mind, the logical conclusion of vegan philosophy is to find our place as part of nature. Organic agriculture (using animal manure as fertilizer) is effectively a more sustainable techno-fix than artificial fertilizers and could allow the rest of industrial society to carry on to destruction.

The ecological difference between 'perfect' organic agriculture and 'perfect' veganic agriculture (using vegetable compost rather than manure) are slight in terms of long-term damage when compared to conventional agriculture.

The main difference is one of area. There are more than 15 million acres of arable land in Britain. Approximately one fifth of an acre is needed to feed an average vegan. About 12 million acres would be required to feed the population of Britain on a vegan diet, so John Seymour would not have to plough up any grassland and roughly 35 million acres of current agricultural land could be left to revert to natural woodland or managed to grow compost materials, wood for biofuels and so on.

I would agree that compost heaps are slightly inferior to animals as a means of replenishing fertility, in as much as it probably requires more human or machine energy to operate. However, animals are more choosy about food than compost heaps and significant fossil fuel is burnt growing and moving winter feed crops and spreading manure, even on organic farms heading for self-sufficiency.

Both animals and compost heaps have the same problems: using a large area for non-tree plant material

and liberating heat, carbon dioxide, methane and other gases to the atmosphere, thus contributing to the greenhouse effect. The only way of truly restoring the nutrients and organic matter lost in food is to return human sewage to the land. This is one reason why I would favour tree crops, as the risk of contamination is greatly reduced.

Although these practical matters are important, I consider the crucial issue to be one of health: is a vegan diet at least as healthy as one based on animal products? From the evidence so far, it would seem that vegans are as fit and strong as non-vegans and probably more resistant to illness, especially chronic diseases. Osteoporosis and vitamin B12 deficiency are actually more common amongst meat eaters, and possibly even among lacto-vegetarians, than among vegans.

Yours Faithfully,
Tim Turner,
Bristol.

Bitter Bracken

Dear Sirs,
I have recently read 'Bracken: Friend or Foe?' (Vol.17, No.6; Nov./Dec. 1987) by Marjorie Sykes and the letter critical of it from Andrew Smith.

'Warabi', the Japanese name for bracken, is one of the most favoured national wild vegetables in my country. As soon as Spring comes, many people go into the fields and pick the young warabi leaves. They then boil them with ash (or, in more modern times, with sodium bicarbonate) and then soak them well in running water.

Warabi's carcinogenic properties are known in Japan. Professor Iwao Hirono of Tokyo University isolated the carcinogen chemically in 1984. However, the substance is soluble in water and becomes unstable when in contact with alkalis.

Cooking warabi in the traditional manner can therefore render it almost innocuous. But according to my own experience, bracken in Britain is far harsher in taste than relative species in Japan or the west coast of north America. I would not therefore recommend bracken to your readers as a 'food for free'.

Yours Faithfully,
Makio Okabe,
Nagano-ken,
Japan.

Classified

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DIARY DATES AND COURSES

URBAN WETLAND MANAGEMENT SEMINAR, 3rd February 1989, 9a.m.-5p.m. Details from: Mrs. V. Norman, Polytechnic Urban Pollution Research Centre, Queensway, Middlesex, Enfield, EN3 4SF. Tel: 01-368 1299, Ext 2466.

The Year of the Microscope 1989. Commemorative Meeting, 11 and 12 September 1989 at The Royal Institution, London. Details from: The Royal Microscopical Society, 37/38 St. Clements, Oxford OX4 1AJ (Tel: 0865 248768).

University of Reading Agricultural Club—Annual Conference to be held on Monday 6th February 1989 at 7.15 pm. Admission free. The theme is 'Agriculture and the Environment'. Details from the conference organiser: Robert Dickenson, Earley Gate, Whiteknights Road, Reading RG6 2AT.

THE CENTRE FOR PROFESSIONAL ADVANCEMENT is again holding various conferences and courses on subjects such as Evaporation Technology, Process Plant Start-up, Good Design Parameters for Laboratories, Fundamentals of Biochemistry etc. Please contact the Center at Palestrinastraat 1, 1071 LC Amsterdam, The Netherlands.

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Wageningen

Agricultural University

INTERNATIONAL CONGRESS 'FUTURE OF BUTTERFLIES IN EUROPE: Strategies for Survival' Wageningen, The Netherlands, April 1989.

An international congress on the conservation of butterflies in Europe will be held in Wageningen, The Netherlands, from 12 to 15 April 1989.

The meeting will review the current knowledge on butterflies in order to set up a working programme for their conservation in Europe.

The planned themes are: The status of butterflies in Europe; Mapping; Population dynamics; Isolation; Monitoring; Management policy; Perspectives in conservation.



The congress is being organised by the Department of Nature Conservation of the Wageningen Agricultural University, in cooperation with the Dutch Butterfly Foundation and the Netherlands Entomological Society.

Requests for further details should be directed to the Congress Building, International Agricultural Centre, P O Box 88, 6700 AB Wageningen, The Netherlands.

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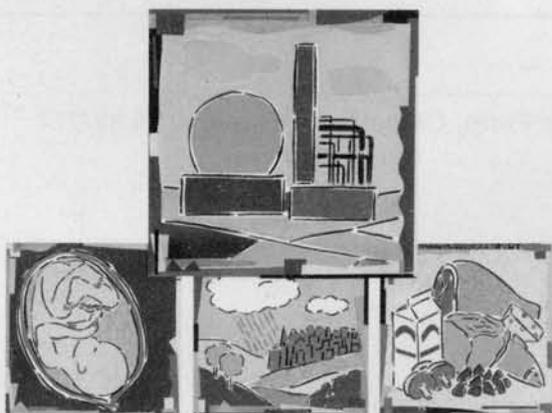


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PAPERMAC

Whether we like it or not we live in the nuclear age. The explosion at Chernobyl brought home the reality that living with nuclear power has its dangers. Yet despite accidents the nuclear industry is pressing ahead with its plans for new power stations. Therefore, it is essential we know more about its implications for our health.

- ★ How sensitive are we to radiation—the different effects on different people. How old we are plays a crucial part.
- ★ Radiation in everyday life—are some locations more dangerous than others and is there anything we can do?
- ★ Manmade radiation—where does it come from and are the levels safe?
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