

## Trumpeter (1993)

ISSN: 0832-6193

### Unexpected Harmonies: Self-Organization in Liberal Modernity and Ecology

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Modern liberal thought has been consistently "Promethean" in its overall tenor, exalting the human at the expense of the nonhuman. Followers of the deep ecology movement, by contrast, present a radical challenge to Western Prometheanism, promising to reintegrate humanity into the natural world. Most representatives of each perspective find little in common with the other.

The bulk of environmental writings assume that liberal philosophical and political principles are exceptionally ill suited to provide the foundation for an ecocentrically sensitive perspective. 1 As a consequence, ecological thinkers have usually looked towards the critics of liberal modernity for guidelines when developing analyses of modern society and a program for its reform. In the 20s and 30s this frequently led to flirtation with various romantic right wing ideologies. The Nazi Party even had a green wing. 2 Today the flirtation is more often on the political left. "Eco-marxism" and Murray Bookchin's "social ecology" are contemporary examples. 3 In this paper I want to make the perverse sounding claim that, despite appearances, certain schools of liberal political and economic thought may well provide the soundest framework for integrating ecocentric insights into social thought.

Social-philosophical approaches which favor market economies, representative democracy, and emphasis upon procedures over outcomes in social policy usually are termed liberal in the broad sense. But there can be different reasons and approaches for coming to similar conclusions about contemporary society. In fact, there are two broad approaches to understanding and analyzing society which we often label liberal, and the common ecocentric critique of liberalism applies to them very unequally.

#### Individualist and Evolutionary Liberalism

One school of liberal thought conceives the individual as in some sense the irreducible social unit, the other conceives individuals in significant degree to be social products, even though society itself is the result of individual volition and creativity. The first sees the individual as analytically and ethically prior to society. The second argues that ultimately this distinction cannot be made.

The first school of liberalism has been intellectually and politically dominant. Its precursors include thinkers as diverse as Descartes, Hobbes, Locke, Destutt deTracy, Bentham and the Mills. All modes of liberal thought which utilize rational self-interest, natural rights, or utilitarianism as foundations for their social theory tend to fall within this tradition. For purposes of social analysis, they tend to take individual choices as given and irreducible.

Today this perspective encompasses theorists as diverse as Robert Dahl, John Rawls, Murray Rothbard and the Robert Nozick of *Anarchy, State and Utopia* but not of *The Examined Life*. Included within this tradition are 'constructivist' liberals such as Dahl, who believe that the state should play a powerful role in creating the good society, as well as those making legalistic, individualistic, or egoistic criticisms of constructivism and of the state, such as Rothbard and the early Nozick. All these perspectives are essentially Promethean. A non-Promethean perspective such as that advocated by followers of deep ecology necessarily attacks its fundamental analytical and ethical foundations.

Liberalism's second great tradition is quite different. Its perspective is a co-evolutionary one, conceiving society and social institutions as the largely unintended outcomes of practices rarely deliberately chosen by the people employing them even as people themselves are largely social products. Among its early exponents were the Scottish philosophers David Hume, Adam Smith, and Adam Ferguson. Its chief contemporary proponent has been F.A. Hayek. Other contemporary scholars associated with this perspective include Aaron Wildavsky, Michael Polanyi, Peter Berger, and Thomas Luckmann.

While both kinds of liberal thought value (with varying degrees of consistency) societies ordered by procedural rather than end-specific rules, some considerable degree of market autonomy, representative democracy, and equalitarian legal standards, their differences are as important as their similarities. The first school I term "individualist" not because all its advocates are political individualists, but because their fundamental unit of analysis is the individual. In this sense, even Robert Dahl's egalitarian utilitarianism is individualistic. Individualist liberal thought has often (although not always) consciously molded itself upon Newtonian physics and has been strongly influenced by the ideal of the exact sciences and mathematics.

I term the second tradition "evolutionary" because of its focus on self-organizing processes as being as fundamental to social phenomena as the beings whose actions generate them. Evolutionary liberalism has had a long and reciprocal relationship with the precursors of ecological science, particularly evolutionary theory. <sup>4</sup> The common intellectual insight which unites evolutionary liberalism with ecological theory is that ordered relations can arise without anyone deliberately devising that order through processes we now term self-organizing. What has generally prevented this connection from being explored is that evolutionary liberalism emphasizes the competitive elements in social self-organization just at the time when more emphasis is being placed on the cooperative elements in ecological and natural evolutionary relationships. In fact, as we shall see, both are present in both.

Within the liberal tradition, evolutionary liberal models of social life have generally taken a back seat to the more individualistic approach. I believe this is because the evolutionary approach has never promised the precision of measurement and the hope for certainty and control that has for so long captivated many philosophers and social scientists, especially those fantasizing their future as "social engineers." Even individualist perspectives which provided anti-constructivist arguments did so through clear, exact, and neatly deductive approaches to the good society leaving little room for the unknown or uncertain. Locke's *Second Treatise* is the most famous early example, and Hume's critique of it is one of the clearest early examples of the evolutionary perspective.

Evolutionary liberalism is, by comparison, much less appealing to those craving certainty or control, for it offers but little. Evolutionary liberalism makes no claim to predict particular future events. At best it can make what Hayek calls abstract "pattern predictions" of the probable results of proposed changes. <sup>5</sup> Neither does it offer a rigorous intellectual system by which every issue can be in principle settled, as do the natural rights and utilitarian schools of ethics. Instead, the evolutionary liberal perspective offers what we might term strong rules of thumb. In politics the evolutionary

approach focuses upon basic constitutional questions, but within that framework is relatively neutral on public policy. Individualist liberal thought is much more easily applied as a guide to day to day public policy. Unlike individualist liberalism, the evolutionary school seeks to cultivate the conditions for desirable change rather than to plan, manage, direct, or control such change - either by engineering it or by subjecting action to absolute standards of individual justice. 6 It is not by chance that "cultivate" is an agricultural concept whereas the other terms are technological. This shift of metaphor points to the fundamental gulf separating the two varieties of liberal thought.

Biocentric insights are fundamentally antithetical to individualist liberalism. At its best, individualist liberalism can offer good market-based means for cleaning up pollution and preserving things which can bring in an adequate profit. Terry Anderson and Donald Leal's work is an example. Useful as such approaches are for some public policy issues, they cannot incorporate an appreciation for creatures that have no instrumental value for, and cannot be morally equated with, human beings, such as furbish louseworts, spotted owls, and snail darters. Nor can they deal with the noninstrumental values of those things which also possess instrumental value, such as cattle and redwoods. Indeed, unless it postulates human value in advance, individualist approaches can only deal with human beings in terms of their instrumental utility. Further, it begs the question of how property rights are to be delineated. 7

Some such as Roderick Nash would apparently hold that individualist liberalism, due to its ethical concern for individuals, offers much to biocentric thinking. But the examples he cites, the utilitarian philosophy of Peter Singer and natural rights philosophy of Tom Regan carry implications which are deeply subversive to respect for nature as a whole. The opposition of many "animal rights" advocates to protecting endangered species when plentiful individuals of nonendangered species will be killed in the process is a direct outgrowth of these philosophies. They are scientifically and environmentally absurd. 8

Evolutionary liberalism, too, despite its more modest assessment of individual capacities, has tended to treat human beings in isolation from their natural environment, although not their social one. F.A.Hayek, perhaps the most influential of recent evolutionary liberals, was an enthusiastic cornucopian. Aaron Wildavsky delights in puncturing the most hysterical claims of environmental alarmists. At first glance, at least, the evolutionary approach seems to offer little to enrich a biocentric perspective.

## **Self-Organization**

In the natural and social worlds alike we find processes occurring wherein beings acting with only the most meagre awareness of the relationships within which they enter nevertheless collectively generate complex and ordered relations serving to maintain a rich and productive environment for them all, over time. The so-called "balance of nature" is rarely if ever at equilibrium, however that term is defined, but neither is it without order valuable to its inhabitants. This order is maintained by a process of continual mutual adjustment. Because no participant can grasp the details of, let alone direct, such an order, it is called a spontaneous order or self-organizing system. 9 Self-organization seems to operate at a planetary scale, as the Gaia hypothesis suggests, within specific ecosystems, and may even influence the process of evolution.

Similar self-organizing processes exist within human societies. Within the human world they arise by people following relatively simple procedural rules while pursuing whatever goals they wish. Here too the complexity of the overall order far exceeds our capacity to grasp except in the most abstract way. Language is an example, as is the maintenance and evolution of many customs. 10

The modern age is frequently said to be an age of organizations, for large organizations are highly visible within it. Nevertheless it may more justly be termed an age of self-

organization, for never before have human beings subjected themselves so completely to social processes which they do not and cannot control.

Effective control is based on knowledge, and the most typically modern institutions of market, science, and liberal democracy utilize knowledge far more complex than can be grasped by any human mind. The collapse of socialist economies has brought this point home with ruthless clarity in economic affairs. The same holds true for science, where no scientist can grasp much of the whole, and liberal democracy, where the political process vastly exceeds the powers of any person fully to grasp. We are still coming to grips with the implications of this state of affairs.

Evolutionary liberals focus on understanding the self-organizing processes within the modern world. They believe that on balance such processes have benefitted those who make use of them because, while the overall social environment has been rendered less subject to conscious control, it has also enabled anyone to make use of much knowledge and insight from others about which he or she will be personally unaware.

Science, democracy, and the market are the three most uniquely liberal institutions. Each is understood very differently from individualist and evolutionary liberal perspectives. They are also often the three institutions most subject to critique by ecocentric theorists, but that is a matter I will discuss below. For the moment I want to focus only on the market as the self-organizing process the logic of which is most likely to be familiar with my readers. 11

From an evolutionary liberal perspective, the market order is first and foremost a process by which the plans of many different people with different purposes and values can be brought into greater harmony than would be possible by any other means. Equilibrium, the perfect coordination of plans and knowledge, is never attained, but within the market forces are generated which continually move the process as a whole in that direction, even if the same process is also continually shifting it away from that state. Market competition is considered a discovery process, for it is only by competition that ever better information is brought to the attention of consumers and producers alike, information to better help them attain their plans. Competition from this perspective promotes greater and more complex levels of cooperation.

Market processes are usually said to be competitive rather than cooperative. However, market orders are neither uniquely nor unusually competitive in the usually thought of senses. Personal rivalry is hardly unique to the market or to market based social orders.

Market competition occurs at many different levels. First, there is the general competition of all goods vying for the buyer's dollar. Second, there is competition between different goods which meet roughly the same needs or wants, from the buyer's point of view. Third, there is competition between producers of similar goods. Fourth, there is competition where an entrepreneur develops an entirely new good which can render obsolete whole classes of older products. Fifth, there is competition among businesses to attract and keep the best employees, and among employees to get and keep the best jobs.

All these types of competition are important in market orders, but those forms which are most unique to them (and other self-organizing social systems) are largely impersonal and anonymous. By contrast, the fifth form of competition, often the most personally irksome, is hardly unique to market institutions. Political parties, bureaucracies, and academic departments all have more than enough of it. It is not competition which is unique to markets, it is a particular type of competition which is unique: that arising from allowing anyone free access to willing buyers.

When competition and conflicts of interest exist, in the market or in any other self-organizing system, it is the role of their impersonal procedures and processes to ensure

that they tend to benefit the system as a whole, in the sense of promoting the general well-being of most of its participants most of the time. When those threatened by competition are able to personalize the principles and rules under which they operate, they usually do so in order to shield themselves from personally unpleasant effects which benefit others. Tariffs, quotas, and some occupational licensing requirements are examples of such actions.

It is interesting to reflect that if animals could alter ecological rules in their individual favor, this problem would be as pressing for a self-organizing ecosystem as it is for self-organizing social systems. If deer could vote, it is likely that all wolves, cougars, and coyotes would be imprisoned. Some deer - those who otherwise would have been eaten - would be better off as a result. In the short run, perhaps all deer would be, since they now need not *worry* about being eaten. It would be an animal rightist's paradise. But these benefits would be short-lived and at the ultimate expense of the community as a whole, including future generations of deer. In the absence of predators, overpopulation would - as it frequently has - devastate the land's capacity to carry even the original population in good health. Procedural rules, by maintaining purely formal and impersonal standards of fairness, lend themselves to being utilized for the widest variety of possible purposes. To be sure, some specific goal might be better served by different rules. But only such an impersonal and abstract system of rules lends itself to serving an indefinite and uncertain variety of individually chosen ends.

## **Cooperation and the Market**

Even most advocates of markets insufficiently acknowledge that high levels of cooperation are also necessary in order for people to be able to compete successfully in the first four ways listed above - the forms of competition largely unique to the market order. There must be cooperation between suppliers of raw materials and those who produce goods from those materials, and the importance of cooperative relations within a firm's internal organization is increasingly recognized by all.

The reasons for this oversight are, so far as I know, barely explored. Perhaps part of the explanation rests with economic theory. Beginning with a one-sided reading of Adam Smith, economic theorists have generally argued that the market's virtues arise from people serving the wider interest by pursuing their self-interest. <sup>12</sup> This approach to economic theory has been one of the most impressive achievements, in both good and not so good respects, of individualist liberal thought.

Traditionally, economics has developed its analysis by teasing out the logical implications inherent in the concept of "economic man". Such a being is defined as "self-interested." Only a few economists, such as F.A. Hayek and Ludwig Lachmann have perceived that "economic man" is an unnecessary element of economic theory.

To be sure, if economic men and women did exist, they would generate the same sort of price system as exists in a market economy. But this is because the market is impersonal. If we had a similarly complex market economy populated by altruists with equally limited knowledge of the impact of their choices, equally impersonal market processes would be generated. Impersonality is generated by the system and cannot be directly traced to the character of the human beings operating within it.

The economic man construct has blinded most economists to many cooperative possibilities within the market. For example, the successes of worker-owned firms in a variety of businesses indicates that internally highly cooperative businesses relying on motivations more complex than the merely instrumental can compete successfully with more traditionally organized ones. Indeed, a major problem with many worker-owned cooperatives has been that they were so *successful* within the marketplace that their shares became too valuable for new workers to be able to afford as the older workers

came to retire. Spanish cooperatives have apparently found a way around this stumbling block. 13

Cooperation and competition do not exist along a continuum. They are not opposites; their relationships are much more complicated and paradoxical. Who competes, who cooperates and how are the relevant questions when examining any social institution, not whether or not "competition" or "cooperation" exist. Both do and probably always will.

## **Ecology and the Market**

A one-sided reading of the market as purely competitive blinds many ecologically sophisticated people to the fascinating similarities between markets and ecologies. Such people grasp the intricate intertwining of competitive and cooperative relationships within an ecology, but do not see that similar processes exist in market orders. Holmes Rolston III, is in a minority in grasping the similarities 14

Like business, politics, and sports, ecosystems thrive on competition. In a natural community the cougars are the critics (if we may put it so) that catch the flawed deer, and thereby build better ones, as well as gain a meal. Alternatively, the fleet footed deer test out any cougars slow enough to starve.... In both [human and natural] communities, helping is subtly entwined with competition. There is a biological, though not a cultural, sense in which deer and cougar cooperate, and the integrity, beauty, and stability of each is bound up with their coactions.

Hayek has distinguished between an economy in the sense of a household's or firm's budget and what he terms a "catallaxy." The difference is that while an economy serves a single set of ends, a catallaxy "serves the multiplicity of separate and incommensurable ends of all its separate members." 15 This distinction proves crucially important in determining how we think about ecology.

The dominant reductionist approach to scientific ecology, termed "bioeconomics," is similar to the neoclassical view of the economy as allocating a given set of resources so that as many competing ends are served as possible, with the most important being served first. Such an economy can be viewed as operating efficiently or inefficiently, as in the economy of a household or a business. From this perspective, ecosystems are analyzed in terms of their "net production," that is, how many calories of energy are left over after the energy/matter consumed in respiration is deducted. Such a model studies the "energy budgets" of plants and animals under various circumstances. Its language is characterized by the theoretical importance of "productivity," "efficiency," "yield," and "crop." Natural ecosystems are analogized to industrial concerns.

Discussing the implications of bioeconomics, Donald Worster argues that: "it is not fanciful to attribute to the mechanistic, energy-based bioeconomics of the New Ecology a built-in bias towards the management ethos, and even toward a controlled environment serving the best interests of man's economy." 16 Bioeconomics is ecology as "economy," not "catallaxy."

It is perhaps significant in this regard to observe that calorie production analysis need make no reference to living processes, it is so reductionistic in that it abstracts from life itself. While its inspiration was modern thermodynamic physics, it is later developments in physics which have undercut this mechanistic and reductionistic ideal. 17 Biological reductionism has been shown to confront serious theoretical barriers to successfully completing its program. Instead, as physicist Paul Davies observes, "each new level in the hierarchical organization of matter brings into existence new qualities that are simply irrelevant at the atomistic level." 18 Equilibrium thermodynamics is apparently a deeply

misleading framework for comprehending living systems. Bionomics abandons real living beings in the name of a simplistic abstraction, in a manner similar to neoclassical economics' embracing "economic man" as opposed to real human beings.

We are brought back to an earlier, more holistic way of viewing ecology in which processes, not structure and function, merit the most theoretical attention. Most spectacularly, recent years have seen the rise of the "Gaia Hypothesis," developed by James Lovelock and Lynn Margulis, which resurrects the holistic argument on a far vaster scale than before, arguing that the earth itself is best conceived as a living entity.

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Holistic or organismic views of ecology do not attempt to reduce the natural world to any single set of standards. They instead focus upon the incredible intricacy of environmental relationships and, after Darwin, the extraordinary creativity of evolutionary processes. Indeed, when we take our eyes away from the lifeless abstraction of calorie production, in order to encompass the multitude of life forms around us, we no longer know how to make such a system "efficient" because no single goal or scale of goals exists.

In discussing ecological ethics, Rolston notes that: 20

There is a kind of order that arises spontaneously and systematically when many self-concerned units jostle and seek their own programs.... In culture, the logic of language and the integrated efficiency of the market are examples.... In nature, our ecosystem systematically generates a spontaneous order, an order that exceeds in richness, beauty, integrity, and dynamic stability the order of any of the component parts, an order that feeds (and is fed by) the richness, beauty, and integrity of these component parts. The organismic kind of creativity (regenerating a species, pushing to increase to a world-encompassing maximum) is used to produce, and is checked by, another kind of creativity (speciating that produces new kinds, interlocking kinds with adaptive fit plus individuality and looseness).

In the same intellectual framework, Hayek writes that "a policy making use of spontaneously ordering forces...cannot aim at a known maximum of particular results, but must aim at increasing, for any person picked out at random, the prospects that the overall effect of all changes required by that order will increase his chances of attaining his ends." He adds that "the goal of such a policy must be to provide a multi-purpose instrument which at no particular moment may be the one best adapted to the particular circumstances, but which will be the best for the great variety of circumstances likely to occur." 21 This is Rolston's "integrated efficiency." So we are brought back to the similarities between ecological science and insights developed by Michael Polanyi, perhaps the first theorist to grasp the importance of self-organization in modern social institutions. To be sure, society cannot be reduced to biological processes, but both ecology and society appear to be examples of self-organizing systems, or spontaneous orders.

Interestingly, a variant of Hayek's standard for good public policy provides a good test of ecological policy. How might the greatest variety of organisms be most encouraged? Or, closer to his way of phrasing it, how to encourage circumstances such that any particular variety of organism, chosen at random, will be most likely to flourish? The variety of organisms is analogous to the variety of unknown plans which the market process can accommodate. A type of organism, as distinguished from an individual, is, in a sense, a plan for living. Each separate type offers a different approach to how life can be lived.

Such a standard, unlike efficiency, is also in harmony with long-term evolutionary processes. Stephen Jay Gould made some wise observations about the role of efficiency and creativity in evolution, arguing that 22

...the watchwords for creativity are sloppiness, poor fit, quirky design, and above all else, redundancy...bacteria are marvels of efficiency, simple cells of consummate workmanship, with internal programs, purged of junk and slop, containing single copies of essential genes. But bacteria have been bacteria since life first left a fossil record 3.5 billion years ago - and so shall they probably be until the sun explodes.

If evolution operated primarily on the basis of efficiency, it "would generate no structural complexity, and bacteria would rule the world." 23

## Science

Science, like economic theory, can be defended in terms which are either individualistic in the sense I use this term, or evolutionary. Individualistic science seeks to discover the "scientific method." It focuses on ideals of prediction and control, with the experiment as the ideal scientific procedure, and is at least sympathetic to reductionism, where life is "nothing but" chemistry and chemistry "nothing but" atomic physics.

The evolutionary perspective focuses instead on science as a self-organizing system of knowledge, growing out of the scientific community. Its members gradually develop a cluster of scientific procedures based primarily upon their ability to convince other scientists of their usefulness in investigating whatever it is that scientists are investigating. 24

It is interesting to note that Evelyn Fox Keller describes two ways of conceiving science suggesting this same dichotomy. She distinguishes between a science which focuses on law and a science which focuses on order. The latter conception, she argues, is more adequate to its subject. 25

An interest in order rather than law could imply far-reaching changes in our conception of science. Most directly, it would imply a shift in the focus of scientific inquiry...to an interest in the multiple and varied kinds of order actually expressed in nature. The former focus has historically described physics better than biology; a focus on order might look more to the biological sciences than to physics for its model. And within both...priorities might be expected to shift away from hierarchical models of simple, relatively static systems toward more global and interactive models of complex dynamic systems.

...the conception of nature as orderly, and not merely law bound, allows nature itself to be generative and resourceful - more complex and abundant than we can either describe or prescribe. In this alternative view, nature comes to be seen as an active partner in a more reciprocal relation to an observer, equally active, but neither omniscient nor omnipotent...

. . . It suggests a science premised on respect rather than domination, neither impotent nor coercive but, as knowledge always is, inevitably empowering.

## Biocentrism and Evolutionary Liberalism

Nonanthropocentric ethics rooted in respect are community-specific. 26 The types of relationships we have within communities determine the ethical obligations we have within them. The ethical obligations entailed in a community of political and juridical equals is different from those required for the ecological community. But both, and indeed all other ethics embedded within community relations, involve respect for fellow



members. No one is properly simply a resource to another.

Callicott notes that "as a general rule, the duties correlative to the inner social circles to which we belong eclipse those correlative to the rings farther from the heartland when conflicts arise." For example, my obligations to my family are usually more demanding than those to my country. However, obligations to the outer circles, as Callicott puts it, can "demand choices which affect, in turn, the demands of the more interior social-ethical circles." 27 For I have an obligation to feed my children, but in all or virtually all cases this does not override my obligation not to steal from strangers, even though in general my obligations to my children far outweigh those to strangers. A similar situation exists with our relations to the natural world. My need to feed my children does not as a rule override my obligation not to cause the extinction of benign forms of life harmed by my occupation. In such a case I am obligated to change careers, no matter how personally inconvenient this may be.

The deep ecology movement opens to us the insight that we are members of communities which exceed the human, and that appropriate action in any community is never fully instrumental. This insight no more hobbles human creativity than does my not being allowed to shoot my neighbors hobble my freedom. In both cases I am free to act however I wish, so long as I do not destroy the respect based rules which frame the communities of which I am a part. 28

The implications of deep ecology for liberal institutions are not so critical as most of its advocates have argued. In terms of the liberal understanding of these institutions, however, the implications are very critical indeed. In abandoning the Promethean ideal we abandon the idolatry of power, technique, and competition which has characterized most liberal thinking. In doing so, evolutionary liberal thought can find a place in a much more harmonious world view than exists in its present uneasy conjunction with ethical Prometheanism.

Idolatry of power in the liberal sense refers to uncritical advocacy of expanded personal control over resources - with the nonhuman world considered simply as a source for resources. The liberal concern with the misuse of power has been confined solely to the human world. Idolatry of technique refers to the uncritical acceptance of ever more sophisticated refinements of power made possible by the onesided development of instrumental reason. Idolatry of competition refers to liberal theory's one dimensional praise of competition without attending either to its costs or to the role cooperation also plays in successful democratic and market orders.

Attention to the natural communities within which human communities exist situates each more deeply and broadly within an ethical framework. We are called upon to become fellow members of the community of life, rather than its lords and masters. Any perception of loss this entails grows from ignorance, for in losing our dreams of domination we find, at last, a home. But none of this necessitates a critique of basing social orders upon procedural rules capable of generating complex forms of cooperation within a self-organizing process. Indeed, to reject such an order not only separates human life from the natural world, it also will drastically diminish the overall quality of human well-being. But how might we harmonize self-organizing processes in nature with those in society?

## **Liberalism and the Environment**

From an evolutionary liberal perspective, self-organizing social systems are effective because they make it easier for people to cooperate. They do this by simplifying social relations through separating means and ends. This simplification can result in the increased standardization and homogenization of human relationships in many areas of life, including science, the market, and liberal democracy.

Science's success stems in large part from its developing a few simple and powerful techniques for winning agreement within the scientific community, at the cost of ignoring elements of experience not easily amenable to such approaches. A similar simplification occurs in democracy. Voting ignores differences in the qualities of voters' judgements. The fool's vote counts as much as that of the sage. (If only we could gain agreement as to which is which!) Democratic procedures are not concerned with the merit of any particular proposal. They simply provide a framework wherein citizens can advocate any measures they wish, be they wise or foolish. As with science, issues are decided as the outcome of a process over which no one exercises any control or, in the strict sense, responsibility.

In the market, the "cash nexus" and rules of contract reduce the need for agreement to an absolute minimum. All any person need be concerned with is whether or not s/he expects to be better off after an exchange than if it did not take place. No concern for or sympathy with the other party is necessary, although it may be present. While the market's self-organizing process is based upon agreement, the minimal agreement necessary is purely procedural and instrumental.

Each of these systems leads to enormous social gains. But there are costs as well. These costs are inseparably connected with their strengths. Many liberal theorists have long argued that it is the market's very impersonality which makes it possible for people who differ in many respects to cooperate nevertheless. Market ethics are procedural and are not concerned with the outcomes which result so long as all parties have acted within the rules of contract. However, no one can be aware of the overall impact of his or her actions in a market. If we did know the ultimate outcome of our actions, cooperation would be more difficult, because we would have to agree not only on procedures but on their outcomes.

It is one thing for me to buy from you and not care what you do with the money I pay you. This is how the market simplifies cooperation. But I also may be unaware that you did things in order to get the product to market which I find deeply repugnant. Until recently, tuna fishing for the American market entailed the mass killing of dolphins. Until environmental activists publicized the killing, consumers did not know that such horrendous methods were used. They bought their tuna blissfully unaware of the full cost of production. Dolphin-safe tuna is ever so slightly more financially expensive. Given a clear choice, many Americans proved willing to pay a few cents more for it. But such choices are rarely clear. The very complexity of the division of labor makes such knowledge hard to discover and hard to disseminate.

The market's impersonal character is what has allowed economics, more than any other social science, to claim to have discovered laws with predictive power. Human beings themselves are not particularly predictable, and the less we know about an individual, the less predictable s/he becomes. But the market process abstracts away our humanness. It requires us to know nothing specific about individuals. (This is why economic man has seemed such a fruitful simplification.) And unlike science and democracy, it operates largely through quantified relationships, making prediction even easier. But while independent of human character, market processes are not neutral in their impact upon that character. Hayek has termed the market a school for rationality.<sup>29</sup> If by rationality we mean instrumental rationality, I believe his point is profoundly correct. The market has greatly expanded our capacity to find and develop resources to satisfy our needs, wishes, and desires. But in the process, it has altered those desires by rewarding actions that treat nature as only instrumental to them.

But the instrumental type of reasoning thereby encouraged has the same impact upon our perceptions of the world as does objectivistic scientific analysis: it tends to narrow our awareness to purely instrumental relationships. Everything becomes an object. Something is a resource, generally, only when its utility depends upon its being changed. And

certainly we are tempted to increase its utility by changing it.

The market as it has developed does not make noninstrumental action impossible. The success of the Nature Conservancy is an outstanding example to the contrary. But it does "load the dice" in favor of expanding the scope of what is valued solely as means to our ends. I can choose to pursue values other than money profit maximization by participating in the market, but by doing so I will probably gain access to fewer resources than someone of equal talents who pursues profits alone. He or she will take advantage of some financial opportunities which I willingly forgo - just as a bank robber will take advantage of opportunities we would both reject.

Success as defined by the market and success as defined by individuals are not the same thing. Success as defined by the market means that as a result of exchanges, a person controls more resources than before, and is therefore better able to engage in market exchanges. But as an individual I may choose a lower income (market failure) the better to practice or pursue nonmonetary goods. As a result I am less able to engage in market exchanges than I might have been.

In terms of efficient market production this is as it should be. If the market were truly a neutral means for realizing human goods, the expansion of instrumental rationality would be pure gain. But as it is not, there is also a loss connected with undervaluing the noninstrumental qualities of things which can also be valued purely instrumentally. The failure to appreciate this is the fundamental weakness in free market environmentalist's suggestions that privatizing the environment would not weaken environmental values.

The market alone cannot provide a good society for the same reason that traditional science cannot by itself give us an adequate grasp of the world in which we live. <sup>30</sup> Both the market and science are vital to human well-being, but because their strengths are so intimately connected to their weaknesses, they are, even in combination inadequate to sustain a good life for most people. And those who do live a good life will tend to be at somewhat of a disadvantage in purely market oriented transactions.

The market process, like the ecological, is self-organizing, mixing competitive and cooperative actions. In both cases, order arises out of the structure of rules which channel the actions of their members. The unifying principles underlying liberal self-organizing institutions are procedural equality among human beings and formal consent. In market orders these principles are manifested through the rules of contract and exchange. Property rights are what is contracted and exchanged in economic transactions. It is to the concept of property rights that we must turn, if the market order is to be harmonized with the ecology which sustains it. If it cannot be, then evolutionary liberal thought cannot truly be harmonized with ecocentric insights.

Let us begin with land. Nowhere does any liberal justification for property rights appear more arbitrary than in the case of land. Nor are the historic origins of existing patterns of ownership any more ethically compelling. Virtually all land has been violently seized within the past few hundred years, and usually many times before. Even in market terms, the value of land has less and less to do with the contributions of its "owner" but rather reflects patterns of demand largely uninfluenced by its owner's actions.

None of this argument justifies state ownership or management of land, which has often proven even more harmful and arbitrary, as the socialist world demonstrated. It suggests instead that something is wrong with the entire concept of ownership.

While not all land-owners act in a destructive fashion, those who act more responsibly do so for moral reasons not implied within the concept of ownership. Intrinsic values in Naess' sense can be destroyed solely to serve instrumental ones without overstepping a landowner's right to do whatever s/he wants with his or her property. <sup>31</sup> This right is in a

real sense despotic. It is a grant of a domain of absolute power that may subject not only human artifacts, but animals, land, air, and water to arbitrary whim.

Most market-oriented approaches to solving environmental problems have focused on expanding the role of property rights in the air, underground water, rivers, the sea, and so forth. But they do not question the basic assumption that ownership should be despotic. Consequently, their proposals leave no room for addressing those aspects of nature that are not purely instrumental to human desires.

Even within the market order as it presently exists, restrictive covenants and land trusts are increasingly used by present owners to restrict the capacity of future owners to exercise despotic control. These measures have been developed in large degree to protect noninstrumental values which traditional property rights could not safeguard. <sup>32</sup> While limiting the power of owners, they no more result in the collapse of the market order than did abolishing slavery or legislation protecting some animals. But because the market as it exists is not a neutral ground for exchange, simple reliance upon independent adoption of such mechanisms alone will likely not harmonize liberal society with deep ecological insights.

It seems to me that the solution to our problem can be drawn from the work of Hayek, who points out that preserving a self-organizing market requires us to act in ways which often go directly against our short-run expediency. Often it seems as if a short-term economic problem can be solved simply by setting aside the rules generating the market order. For example, the Rural Electrification Administration subsidized electrical power delivery in the United States beginning in the 1930s. Obviously this was a good thing for the farmers who benefitted. Much of the harm was and continues to be invisible. Even in narrowly economic terms, these measures virtually wiped out research in small-scale solar, wind, hydroelectric, and alcohol-based power generators. With traditional power sources artificially subsidized, research in alternatives was killed for forty-five years..<sup>33</sup> We can never determine the losses in undiscovered possibilities which these subsidies caused.

In any given instance, the expected gains from overriding the rules generating a market may well appear to be greater than the usually unknown disruptions such actions will cause. Consequently, the principles generating a market order must always trump political pressure to override them if the order is to continue. Principle should override expediency. <sup>34</sup> Exactly the same argument can be applied to our relationship with the natural world for exactly the same reasons.

Property rights should reflect not just efficiency in meeting human desires, but should also take account of our place in communities other than the purely human. Thus, there can be no right to create toxic wastes or products which neither degrade nor recycle, and the costs of neutralizing toxins and recycling should be incorporated into the costs of production. Not doing so subsidizes production of harmful substances, ensuring that someone else will pay the price of their manufacture. The byproducts of all nonhuman forms of life are ultimately recycled in a nonharmful form that helps perpetuate life as a whole. Already the human failure to observe this principle has led to serious problems with groundwater pollution and the like. To say that remedying these problems will be expensive should carry no more moral weight than the complaint that a slave owner cannot "afford" to free his slaves.

Further, utilization of a renewable resource must maintain the fertility required for indefinite renewal. The reasoning behind this principle should be obvious. Even in terms of self-interest, the "long run" always arrives. More appropriately, the principle of membership in a community requires it, regardless of how "inconvenient" this will be for current logging, fishing, and agricultural practices.

A second principle is that putting resources to human use must maintain a diverse flora and fauna. There can be no right to cause extinction, with the exception of organisms generally lethal to human life, such as smallpox. Certainly there can be no right to destroy forever any form of benign life in the pursuit of a goal not absolutely essential to human survival. Such an action is an assault upon the beings destroyed, as well as upon all future generations of human beings. We should be reminded of Hayek's standard for public policy: that it "aims at increasing, for any person picked out at random, the prospects that the overall effect of all changes required by that order will increase his chances of attaining his ends." 35 As the ecological community values species rather than individuals, the needed modification here is only that each species should generally have its opportunity to flourish relatively unhindered by human activities.

A balanced perception of the world and our place in it, requires that Aldo Leopold's land ethic must hold: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." Leopold's land ethic stands in the same relation to ecology as Hayek's ethical principle regarding society. Each is an application of the same insight. The deep ecological approach, then, is not antagonistic to evolutionary liberalism in the tradition of Hume and Hayek. It only limits it by placing liberalism's insights within a larger and deeper context of nested communities.

Far from being hostile to ecological insights, the development of the self-organizing institutions defended by liberalism marks the first discovery of potentially ecologically harmonious social processes since the demise of hunting and gathering societies. But its potential in this regard has only begun to be explored. At bottom, the deep ecology movement challenges only evolutionary liberalism's anthropocentrism. The ultimate result of this challenge is enrichment of the liberal tradition rather than its negation.

## Notes

1. A recent example is in Robyn Eckersley's otherwise excellent *Environmentalism and Political Theory: Toward an Ecocentric Approach*, (Albany: State University of New York Press, 1992) where she devotes less than five pages to dismissing the importance of liberal philosophy for environmental political thought.
2. Anna Bramwell, *Blood and Soil: Wlather Darre and Hitler's 'Green Party'*, (Bourne End: Bucks, 1985) and also her *Ecology in the 20th Century: A History*, (New Haven: Yale University Press, 1989).
3. See for example the discussions and citations in Eckersley, 75-178.
4. F.A. Hayek, "The Legal and Political Philosophy of David Hume," *Studies in Philosophy, Politics, and Economics*, (New York: Simon and Schuster, 1967) 106-111.
5. Hayek, "The Theory of Complex Phenomena," *Ibid.*, 22-42.
6. The evolutionary liberal approach can be distinguished from some conservative schools of thought, such as that of Michael Oakeshott, largely by their more optimistic assessment of our capacity to understand the principles of social self-organization, and help them function more effectively. See Michael Oakeshott, *Rationalism in Politics*, (London: Methuen, 1962).
7. Terry L. Anderson and Donald R. Leal, *Free Market Environmentalism*, (Boulder: Westview Press, 1991). See also Robyn Eckersley, "How Much Am I Bid?: Economic Rationalism Gone Wild" in S. Rees, G. Rodley, and F. Stilwell, eds., *Beyond the Market: Alternatives to Economic Rationalism* (Pluto Press, 1992).

8. Tom Regan, *The Case for Animal Rights*, (Berkeley: University of California Press, 1983) and Peter Singer, *Animal Liberation: A New Ethics for Our Treatment of Animals*, (New York: Prentice Hall 1975). Roderick Nash struggles with the problems of integrating animal rights and ecological thinkers under a common rubric in *The Rights of Nature*, 137-160, although ultimately I believe he is unsuccessful. For a critical examination of these issues see also J. Baird Callicott, *In Defense of the Land Ethic*, (Albany: State University of New York Press, 1989), 15-47.

9. Paul Davies, *The Cosmic Blueprint: New Discoveries in Nature's Creative Ability to Order the Universe*, (New York: Simon and Schuster, 1988); Ervin Laszlo, *Introduction to Systems Philosophy: Toward a New Paradigm of Contemporary Thought*, (New York: Gordon and Breach, 1972), and Joanna Macy, *Mutual Causality in Buddhism and General Systems Theory: The Dharma of Natural Systems*, (Albany: State University of New York Press, 1991).

10. David Hume, *A Treatise of Human Nature*, Roy A. Rappaport, *Pigs for the Ancestors: Ritual in the Ecology of a New Guinea People*, (New Haven: Yale University Press, 1984); Noam Chomsky, *Syntactic Structures*, (The Hague, 1957).

11. On the market, see F.A. Hayek, *Rules and Order*, (Chicago: University of Chicago Press, 1973); *Individualism and Economic Order*, (Chicago: University of Chicago Press, 1948); Ludwig Lachmann, *The Market as an Economic Process*, (Oxford: Basil Blackwell 1986). On science, see Michael Polanyi, *The Logic of Liberty*, (Chicago: University of Chicago Press, 1951); and "The Republic of Science" in *Knowing and Being: Essays by Michael Polanyi, Marjorie Grene, ed.*, (Chicago: University of Chicago Press, 1969); John Ziman, *Reliable Knowledge*, (Cambridge: Cambridge University Press, 1978), *Public Knowledge*, (Cambridge: Cambridge University Press, 1968). On democracy, see Gus diZerega "Democracy as a Spontaneous Order" *Critical Review*, Spring, 1989, 206-240, and "Elites and Democratic Theory" *Review of Politics*, Spring, 1991, 340-372.

12. Kenneth Lux, *Adam Smith's Mistake: How a Moral Philosopher Invented Economics and Ended Morality*, (Boston: Shambhala 1990). Lux's title is unfortunate, for his assessment of Smith is on the whole balanced. His real target is those economists (nearly all of them) who read Smith in a one-sided way.

13. *Ibid.* 169-190.

14. Holmes Rolston, III., *Duties to Ecosystems*, in *Companion to A Sand County Almanac*, ed., J. Baird Callicott, (Madison: University of Wisconsin Press, 1987), 250.

15. F.A. Hayek, *The Mirage of Social Justice*, (Chicago: University of Chicago Press, 1976), 108.

16. Donald Worster, *Nature's Economy: A History of Ecological Ideas*, (Cambridge: Cambridge University Press, 1985), 314.

17. A good introduction is Nick Herbert, *Quantum Reality: Beyond the New Physics*, (New York: Anchor, 1985).

18. Paul Davies, *The Cosmic Blueprint: New Discoveries in Nature's Creative Ability to Order the Universe*, (New York: Simon and Schuster, 1988) 101, and also 100-106, 142-146; see also Ernst Mayr, *Toward a New Philosophy of Biology: Observations of an Evolutionist*, (Cambridge: Harvard University Press, 1988), 8-23; and Henri Atlan, "Uncommon Finalities," in William Irwin Thompson, ed., *Gaia, A Way of Knowing: Political Implications of the New Biology*, (Great Barrington, MA: Lindesfarne Press,

1987), 110-27.

19. James Lovelock, *The Ages of Gaia: A Biography of Our Living Earth.*, (New York: W. W. Norton 1988), Lynn Margulis, "Early Life: The Microbes Have Priority." William Irwin Thompson, ed., *Gaia: A Way of Knowing: Political Implications of the New Biology*, 98-109; Lawrence E. Joseph, *Gaia: The Growth of an Idea*, (New York: St. Martin's Press, 1990); Davies, 131-2.

20. Rolston, 256-7.

21. Hayek, *Rules and Order*, 114-5.

22. Stephen Jay Gould, "The Horn of Triton", *Natural History*, December, 1990, 15.

23. *Ibid.*, 18.

24. Compare, for example, Michael Polanyi's approach in *Personal Knowledge*, (Chicago: University of Chicago Press, 1958) with that of Ernst Nagel, *The Structure of Science*, (New York: Harcourt, Brace and World, 1961) or Karl Popper, *The Logic of Scientific Discovery*, (New York: Basic Books, 1959).

25. Evelyn Fox Keller, *Reflections on Gender and Science* (New Haven: Yale University Press, 1985), 134-5. For a case study of the kind of science she recommends see her *A Feeling for the Organism: The Life and Work of Barbara McClintock* (New York: W. H. Freeman, 1983).

26. For example. see Holmes Rolston, *Environmental Ethics: Duties to and Values in the Natural World*, (Philadelphia: Temple University Press, 1988).

27. Callicott, *In Defense of the Land Ethic*, 93-94.

28. See Callicott on Native American land ethics, *Ibid.*, 177-219.

29. Hayek, *The Political Order of a Free People*, (Chicago: University of Chicago, 1979) 75-6.

30. The same point holds true for liberal democratic theory, which usually ignores the importance of small face to face political communities, such as town and neighborhood meetings. But exploring this issue takes us away from our focus on biocentrism and liberal theory. For insightful discussions of these issues from the perspective of liberal democracy, see Alexis deTocqueville, *Democracy in American* vol. I, (New York: Schocken Books, 1961) 52-99. See also Thomas Jefferson's letters on "ward democracy." There are many such letters. Among the most important are his to Governor John Tyler, May 25, 1810; John Adams, Oct. 28, 1813; Joseph C. Cabell, Feb. 2, 1816; Samuel Kercheval, Sept. 5, 1816; and John Cartwright, June 5, 1824.

31. Arne Naess, *Ecology, Community and Lifestyle*, (Cambridge: Cambridge University Press, 1989), 56-61.

32. On land trusts see Jennie Gerard and Sharon Johnson, "Sunshine Agriculture and Landtrusts," Wes Jackson, Wendell Berry, and Bruce Colman, eds., *Meeting the Expectations of the Land: Essays in Sustainable Agriculture and Stewardship*, (San Francisco: Northpoint Press, 1984), 126-134. See also the several essays on the subject in *The Trumpeter: Journal of Ecosophy*, Vol. 7, No. 1, Winter, 1990.

33. Richard Stroup and John Baden, "Property Rights and Natural Resource Management," *The Literature of Liberty*, Vol. 2, No. 4, September-December, 1979, 26-33.

34. Hayek, *Rules and Order*, 55-71.

35. Hayek, *The Mirage of Social Justice*, 114.

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