THE POLITICAL ECONOMY OF ENVIRONMENTAL PROBLEMS AND POLICIES: CONSCIOUSNESS, CONFLICT, AND CONTROL CAPACITY*

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Abstract

The political economic perspective on environmental issues poses these as dialectical conflicts, with competing sets of social interests in natural resources: use-values involving direct utilization of natural resources for subsistence, habitat, or recreation by citizens, versus exchange-values, which require transformation of natural resources into commodities that can be marketed. Dialectical struggles to maximize the "value" of ecosystems and their components thus characterize modern societies, and especially modern states.

The state in contemporary advanced industrial societies is of necessity involved in this dialectical relationship to the natural environment. It has accepted simultaneous responsibilities to enhance economic development, on the one hand, and to meet the social needs of their constituents, on the other. In the first role, state officials seek to increase capital accumulation and tax revenues, in part through fostering greater industrial access to natural resources. Conversely, in their latter role, state agencies are pressured to provide clean air, clean water, and safe communities to their electorates. States thus oscillate under varying sets of social, economic and political pressures between syntheses of this dialectic: the economic, in which use-values are largely dismissed, the managed scarcity, in which considerable volatility in state responses to exchange-value and use-value interests occur. A third synthesis, the ecological one, in which exchange-values are dismissed, has been advocated by "deep ecologists", but has never been attempted.

Struggles around natural resources in the modern era are primarily variants of the managed scarcity synthesis. These revolve around the limited capacities of most ecosystems to meet both exchange- and use-value needs, on the one hand, and the political-economic power of the competing interest groups, on the other. The complexity of modern struggles is enhanced because most use-value interested citizen groups also depend on wages, which are a by-product of the modern *treadmill of production* , which uses profits from environmental extraction to develop more capital-intensive ways of extracting still more resources. Capital owners and managers attempt to accelerate the treadmill by skewing citizen consciousness in two directions: (1) that resource extraction is compatable with citizen use-values, and (2) when this persuasion fails, that citizens' own exchange-value needs must take precedence over their use-value interests. To this end, the social control of environmental impact assessment, as

well as other forms of unconsciousness-making are relied upon, to tilt state action towards permitting expanded extraction from ecosystems.

Modern environmental conflicts are, therefore, viewed here as struggles centering on access to natural systems, and involve the allocation of scarcities to producers, consumers, and workers. They are reproduced intranationally and internationally, at ecological levels ranging from the local to the global, within the modern world-system.

THE ROLE OF POLITICAL ECONOMY IN GLOBAL ENVIRONMENTAL CONFLICTS: AN OVERVIEW OF INTERESTS & STATE STRUCTURES

In the past two decades of western industrial society, there has been more attention paid to the physical-biotic basis of societal functioning than at any previous time in industrial history. By "attention" I refer to verbal, written, and other means of social communcation about the natural environment. Paradoxically, it is by no means clear that there has been net improvement in the functioning of this natural environment (Commoner, 1987; World Resources Institute, 1992; Worldwatch Institute, 1991). This is so despite the historically-unprecedented proliferation of policymaking devoted to some form of "environmental protection". During this period, moreover, political attention to such problems has ranged from local concerns to national, international and increasingly, to global concerns (e.g., Dowie, 1992; Dunlap & Mertig, 1992; Gore, 1992; Falkenmark, 1990). Indeed, within this relatively short period, there have been two United Nations conferences on environmental issues, in Stockholm in 1972 and Rio de Janeiro in 1992.

This paper seeks to lay out an explanation for this paradox, applying some general paradigms of political economy to the particulars of environmental conflicts. Most of the examples here are drawn from the social-environmental context of the United States, since it is the terrain I know best. However, many of the general arguments will apply, to varying degrees, to other industrial, industrializing, and underdeveloped states in the modern world-system (e.g., Buttel, 1985; Lipietz, 1987; Redclift, 1987; Court, 1990; Gould & Schnaiberg, 1993). Political economy is one theoretical perspective on social structure and change. It examines economic class structures and their social consequences, including socioeconomic and political dynamics. One crucial focus from political economy is its emphasis on sociopolitical legitimation and social control of economic and related activity. It seeks to trace the roots of both stability and change in sociopolitical conflicts (Mankoff, 1972: 6). In the case of environmental conflicts, this seems especially appropriate. Analysts have increasingly offered 'solutions' to emerging global environmental problems such as global warming, ozone depletion, and water scarcity (e.g., Vaahtorantz, 1990), often through a program of *sustainable development* (Ayres, 1989; Court, 1990). However, the view I present in this chapter shared a critical stance towards the "new globalism" (Redclift, 1987; Davis, 1991; Gould & Schnaiberg, 1993; Hecht & Cockburn, 1992), which is not

necessarily new (e.g., Groves, 1992) nor solely global (e.g., Newhouse, 1992; Buttel & Taylor, 1992) in nature.

This chapter's view notes that the most salient global social force is the diffusion of liquid capital. From this perspective, I view global problems as the outcome of the interaction between powerful global force representing the interests of capital-owning classes in industrial societies, and the political, economic, and social forces of classes, sectors, and social groups in every social and economic context where this capital has been applied. Thus, the patterns of conflict depicted in this chapter apply to a considerable degree to every level of environmental disorganization, from the local to the global (e.g., Brown & Mikkelson, 1990). My emphasis in this chapter differs somewhat from the recent view of Buttel and Taylor (1992). They call for environmental sociologists to concentrate on the institutions regulating the global economy itself, and its relation to global environmental change. The guiding assumption of this chapter, in contrast is that many (though not all, e.g., Gould & Schnaiberg, 1993) of the dynamics of these global economic and environmental regulatory agencies are shaped by the processes outlined here.

My central goal in this chapter is to understand why and how "environmental problems" have been subjected to varying but generally limited political responses in the United States in the twentieth-century. Variability and limitation have been largely independent of the scientifically-assessed levels of pollution or depletion of ecological systems. Rather, they reflect changes in the power and interests of capitalist producers, social and political movements, and state agencies and actors. Put otherwise, the environment rarely "speaks for itself". It requires social agents to raise political-economic claims about physical-biotic environmental problems, much as is the case with any overtly social problem (e.g., poverty or racism -- see Spector & Kitsuse, [1977]).

The basic conceptual-theoretical paradigm I will use here is as follows. All actors involved in political-economic conflicts around environmental issues have interests in using some parts of ecological systems (Catton & Dunlap, 1989). Further, it can be argued that environmental conflicts are about the scarcity of these ecosystem elements, as experienced by groups or social classes. They are thus struggles over decisions to allocate or restrict access by such classes or groups to ecosystems. Moreover, these interests are organized within the structure of modern industrial society that I have elsewhere labelled the treadmill of production (Schnaiberg, 1980: ch. 5; Gould & Schnaiberg, 1993).[1] This treadmill

and its associated class structure is reproduced by a shared commitment of virtually all actors in advanced industrial society to some form of economic expansion, in order to meet their material needs.

The core logic of the treadmill is that ecosystem elements are converted by capitalists through market exchanges into profits. Capitalists reinvest some of these profits in more productive physical capital, which requires still greater ecosystem access to "efficiently" operate this equipment, i.e., to generate exchange values and eventually profits by using this equipment in and on ecosystems. This technological change in turn raises the capital-intensification of production. Thus, because a growing share of national production is then required to repay capital owners, expanded ecosystem use is necessary. Production must generate enough surplus to support this outlay to capital owners, to provide enough additional exchange values and social surplus to supply an adequate level of wages to maintain consumer demand, and to generate enough tax revenue to cover social expenditures of the state. This need for increasing exchange values typically accelerates the environmental demands of modern treadmills. It is this dominant institutional and cultural commitment to expanding the production of commodities that many contemporary social and ecological theorists see as the root of alienation of humans from natural ecological systems (e.g., Schumacher, 1973; Devall, 1980; Evernden, 1985).

One way of decomposing the treadmill is to examine social classes and their segments within it. At its simplest, we can contrast the major conflicts between capitalist producers and environmentalists, and the role of the state as "mediator" of these conflicts. Producers, whether capitalist or socialist (Goldman, 1972; Stretton, 1976; Feshbach & Friendly, 1991), are largely organized around environmental resources. They attempt to capture the exchange values of such resources through the producers' operation in various economic markets. Because of the routinized calculation of monetary profits, these producers are highly conscious of their material interests in access to such natural resources. Producers mobilize all forms of control capacity (social, political, and economic assets) to capture the exchange-values in markets, as well as to influence the modern state, which partly regulates access to ecosystems. Part of the treadmill's bias is that exchange-value benefits are often specific individual goods (e.g, wages, jobs, social security payments), while environmental use-value benefits are diffused collective goods (e.g., clean air, clean water, nature preserves). Individual workers and their

families are thus more attentive to their "interests" in the treadmill expansion than in ecosystems, ceteris paribus.

Environmental movement organizations and participants usually have more diffused and diverse mixtures of use-value interests in ecosystems. These range from biological sustenance (from air, water, and agricultural land) to recreational or aesthetic interests in these systems viewed as natural habitats. This interest in use-value is usually not directly tied into these movements' activity in economic markets. (One exception is the Nature Conservancy, which purchase tracts of land in the marketplace, and converts them into nature preserves rather than resources for production.) However, economic issues such as the levels of taxes for waste or sewage disposal are nonetheless involved in many of these conflicts. By ignoring this distributional issue, environmental movements and environmental agencies become more vulnerable to attacks by potential movement supporters representing the poorer, more disempowered social classes within the United States (van Vliet, 1990; Bullard, 1990; Schnaiberg, 1991; Bryant & Mohai, 1992; Betz, 1992; Gould, 1992).

Similar intersocietal conflicts against "elitist" environmental movements and their proposals for rainforest protection have emerged from those mobilizing the more-disempowered and impoverished groups in third-world societies. Paradoxically, as Rudel and Horowitz (1993) note, it is the allocation of capital from industrial-society elites (as well as indigenous elites) that has helped deforest tropical rainforests, in the process diminishing the traditional livelihoods of the peasantry. This control over resources exerted by capital controlled by industrial-society elites has led to widespread but generally-ineffectual opposition (Redclift, 1987; Davis, 1991; Gore, 1992; Rudel & Horowitz, 1993; Stonich, 1990; Wad et al., 1991). Such interclass and international conflict intensified at the United Nations conferences, from Stockholm in 1972 to Rio in 1992 (Bidwai, 1992; Hecht & Cockburn, 1992; Begley, 1992; Adler & Hager, 1992; Little, 1992). With the declining economic status of the middle class in the United States, as capital is increasingly allocated outside the U.S. (Barlett & Steele, 1992), the burden of environmental protection may also become an issue among middle-class voters and their environmental movement organizations (Landy et al., 1990). This would parallel the recent upsurge of concern among minorities and the poor (Schnaiberg, Gould & Weinberg, 1992; Bullard, 1990; Bryant & Mohai, 1992).

In contrast to producers, then, environmental movement organizations have diverse, conflicting, and unclear consciousness about environmental protection

issues (Gould, 1991a; Weinberg, 1991b). Their assessment of potential use-values from ecosystems are more indeterminate than are many of the market exchange-value estimates done by producers (Meidinger & Schnaiberg, 1980). Workers and their labor organizations fall somewhere in the middle of this continuum. They have both exchange-value interests in ecosystem access as workers in production organizations that are subject to environmental protection regulation, and use-value interests as citizens living in ecosystems that are being disorganized by these production organizations (Schnaiberg, 1983a, 1983b, 1986; Burton, 1986; Buttel, 1986; Rohrschneider, 1991). These groups, who constitute the bulk of the class structure, are thus potential adherents of environmental movement ideologies (Mitchell, 1980). But they are always equally capable of being politically mobilized by capitalist classes who employ them in labor markets, and who supply them in consumer markets.

Much environmental movement activity has increasingly focused on the political arena, where various actors/agencies attempt to influence the modern state. The state is more than a neutral mediator of competing interests, however. Modern structural theories of the state have moved well beyond the earlier academic consensus around this pluralistic model of mediation (Buttel, 1985), although the concept of mediation still exists at the local and national level (e.g., Crowfoot & Wondolleck, 1991; Bukro, 1992; cf. Schnaiberg, 1992). Three major perspectives on the advanced industrial state have emerged in the past twenty years, each of which has some relevance for this chapter.

Instrumentalist views of the state (Miliband, 1969) conceptualize it as an agent of the interests of the capitalist class. State actors and agencies reflect the domination by the activities of the members of the dominant class of capitalist producers. A revision of this perspective by Poulantzas (1973a, b) envisioned the state as a reflection of the entire class structure of advanced industrial societies. This structural concept of the state theorized that the major goal of the state apparatus was to reproduce the capital logic of the society, with a broader and longer-term perspective than that imposed by the immediate interests of any segment or fraction of the capitalist class itself. The most recent reformulation of the state, most widely expressed in the work of Skocpol (1980) and her students offers a more complex and dynamic view of the state. State actors and agencies are conceptualized as having some autonomous interests of their own, and this becomes a factor in determining state actions. As well, this concept of a state-logic argues that the state's policies are more volatile than suggested by the earlier

conceptualizations. The embeddedness of the state in national and world-systemic contexts produces a historical and comparative variability across time and states because of the opportunities and constraints that this offers to state actors and to various classes in advanced industrial societies.

My own perspective in this paper is that the state has severe internal conflicts around environmental issues. It has a dual role as both a facilitator of capital accumulation and economic growth, and as a social legitimator of the socioeconomic structure for the citizenry (O'Connor, 1973, 1988). The former role commits the state to looking at environmental resources for their exchange-values. Conversely, the latter leads the state to view ecosystems' capacities to produce the use-values (as habitat and/or biosocial resources) of various constituents, who are among the political constituencies of state actions. These conflicts are often expressed both across state agencies, such as the overt and persistent struggles between the Environmental Protection Agency (EPA) and the Department of Commerce (Landy et al, 1990; Yaeger, 1991). These are the familiar public battles over environmental regulation. Even more complexity is added, however, by the conflicts within state agencies and actors (e.g., Hawkins, 1984). State agencies' missions and the careers and powers of state actors take place within the context of a dynamic capitalist society and a world-system with changing competitiveness and alterations of capital and natural resource flows (Lipietz, 1987; O'Connor, 1988). The final sections of the paper outline the resulting policy shifts over the past five U.S. administrations, in the face of such dynamics.

A major unpredictability within the treadmill is the level of material interest and the political expression of such interest by those who are largely dependent on wage income derived from the treadmill. Another major form of dependency is a product of the increasing unemployment and underemployment of working and middle class segments, which itself reflects the acceleration of the treadmill through increasing capital intensification of production (Blumberg, 1980; Barlett & Steele, 1992; Schor, 1991). These segments rely on expanding transfer payments from the state (which in turn, "earns" its revenues by taxing the surplus generated by the treadmill). These groups are numerically the largest components of the modern class system. In their individual work roles, for example, many environmental movement participants often have market exchange-value interests in ecosystems, limiting their political activity. Likewise, the actions of many worker-citizens who are not committed to environmental movement organizations are

determined partly by their interests as workers and as taxpayers, and partly as ecosystem users (O'Connor, 1988; Gould, 1991a,b).

Consciousness-raising conflicts, as I will note below, often involve competing attempts to mobilize political commitments from these working and middle classes, to support either environmental protection or production expansion. Such classes represent, after all, a clear majority of actors in the pluralist model of the U.S. polity. They are not permanent constituents of any environmental movement organizations (cf., Mitchell, 1980). However, they may be either adherents or constituents of environmental movement organizations in any given historical moment, or in any particular environmental conflict (Burton, 1986; Morris, 1992; Schnaiberg, Gould & Weinberg 1992). These social classes and segments can thus be seen as one element of the political context within the state-logic theory of Skocpol (1980), and thus are targets of state policies. Thus, the political economy of environmental problems emerges from the conflict dynamics of these competing interests in both the politics and markets (Lindblom, 1976; O'Connor, 1988) of the modern treadmill of production. These dynamics evolve around of the nature of the state, as well as the state of nature.

'ENVIRONMENTAL PROBLEMS': FROM THE STATE OF NATURE TO THE NATURE OF THE STATE

To understand the origins of modern environmental problems, we need to appreciate how the environmental interests of actors outlined above relate to the physical-biotic organization of ecological systems. The history of expanding industrial production has provided the data to outline a dialectical conflict between social and ecological organization in advanced industrial societies (Schnaiberg, 1980: pp. 423-4; Grove, 1992). Dialectical conflicts emerge when social systems have two or more goals which cannot simultaneously be met. Essentially, the dialectical tension in relationships between modern societies and their environments emerges from two axioms: (1) most elements of ecological systems cannot meet both exchange-value needs and use-value needs; and (2) the treadmill of production places a primacy on exchange-value uses of ecosystems, while other ecological uses are a biological and social necessity for all classes. The following propositions delineate the dialectical connections between social and environmental structure.

The Societal-Environmental Dialectic

i. Societal production in industrial societies involves withdrawals from and additions to natural ecosystems, in the process turning ecosystem elements into social resources, producing exchange values and profits in the markets of the treadmill of production;
ii. Such withdrawals and additions disorganize the physical-biotic structure of these ecosystems, while producing these exchange values;
iii. Ecosystem disorganization2 decreases the use values of ecosystems, restricting, among others, social access to recreational habitats, health-sustaining biological supports (air, water, food), and also future levels of social production (exchange values).

This skeletal dialectical model begins to lay the groundwork for a political-economic analysis, but is not itself political-economic. Three possible political-economic syntheses are possible resolutions of this dialectical system. The first is an economic synthesis, which has predominated in U.S. history and that of most other industrial societies. In this arrangement, the state largely fosters capital accumulation, and supports primarily the exchange values of ecological systems. Only severe ecosystem disorganization is attended to, and only when it threatens productive systems. State "environmental" policies are localized and short-term.

A second synthesis is one of managed scarcity, where the state attempts some minimal regulation of access to ecosystems by various classes of users. State agencies and actors seek to maintain some balancing of environmental exchange values and use values for competing actors, class segments, and classes (Hawkins, 1984). To some extent, this characterizes the modern era of "environmental protection" in the U.S. and elsewhere.

A third synthesis is an ecological one (Schumacher, 1973; Evernden, 1985). Here the state attaches a primacy to ecological system protection, emphasizing use-values (including the value of preservation of existing species and habitats) over exchange values. This is consonant with the proposals of "deep ecologists" (e.g., Devall, 1980) and neo-Marxists who advocate a reorganization of the social relations of production (e.g., Buttel & Larson, 1980; O'Connor, 1988). Their goal of a sustainable society is, however, rarely supported by modern U.S. state policies (cf., Hays, 1969).

The determinants of the syntheses to these dialectical conflicts include the following: (1) social, economic and political actors' interests in various elements of ecosystems, and (2) the power that each group of actors has in pushing its interests in various economic markets and/or political arenas, and (3) emergent institutional structures that reflect these interests and powers. In short, we need to understand how the motives (consciousness) and power (control capacities) of various social class segments shape the dynamics of political-economic conflicts and lead to particular syntheses, as classes and class segments seek to control ecosystems for their own interests. Generally, I outline below how the modern treadmill of production produces an enduring systemic bias towards the economic synthesis, and against the ecological synthesis. The closing section outlines how this bias eventually is reflected in U.S. state policies around environmental research, environmental protection and economic expansion, and how variations in the managed scarcity synthesis are explicable by historical variations in consciousness, conflicts, and economic contexts (O'Connor, 1988).

A simple contemporary example will suffice to trace out the dynamics of these syntheses and associated interest structures. Currently, there is much concern about toxic wastes of all kinds, yet despite much rhetoric there is no ecological final solution for most of these wastes, which range from PCBs (polychlorinated biphenyls) to high-level radioactive waste from nuclear power plants. In Illinois, for example, Outboard Marine Corporation used Waukegan's harbor on Lake Michigan for many years as a dump site for production wastes, including PCBs. After ordering an end to dumping by Outboard Marine, the Environmental Protection Agency attempted to clean up the harbor by dredging the accumulated wastes. But there appeared to be no practical way to dredge without dispersing PCBs farther into the Lake and its fish populations. For a long period, the harbor was essentially sealed off, and left largely inaccessible to producers and many recreational users, although there is a new and active marina located adjacent to the plantsite (Bukro, 1985). [Recent industrial ion exchange technologies have recently been applied, to reduce the PCB sediment hazards, although the outcomes are unclear at this writing.]

If we analyse this conflict from a political-economic perspective, the following emerges. Outboard Marine managers and their stockholders had an interest in using the harbor as a "sink" for their hazardous wastes (Catton and Dunlap, 1989), since this reduced the cost of producing outboard motors. Moreover, as a large and powerful firm in a small city, they avoided political-legal

threats for many years, essentially keeping the harbor as an industrial sink. The economic values associated with this industrial production were dominant among the local, regional and national populations and institutions. When other potential users of the harbor -- boaters and fishermen, among others -- became aware of fish and water contamination and resulting health hazards arising from contact with the water or fish, they argued for an EPA suit against Outboard Marine, under water pollution legislation provisions.

This consciousness of local groups of the ecological-health problem emerged in part from the general rise in ecological consciousness of the late 1960s and 1970s. The resulting legislation and implementation led to monitoring by EPA and other water control agencies in 1975. The latter regulations were compromises in the political-economic conflict in the U.S. between capitalist producers and expanding environmental movement organizations, leading to tension within the state organization, between economic growth and environmental protection agencies and actors. Outboard Marine mobilized economic development agencies in Waukegan, in Springfield, Illinois, and in Washington, D.C., to substantiate their claims that they would be driven to bankruptcy by clean-up costs, tapping into treadmill exchange value interests and values.

In contrast, environmental and recreational movement organizations attempted to galvanize the Illinois and federal Environmental Protection Agencies around use values. They sought to terminate the dumping (which was successful), and to remove the accumulation (which was not). Stockholders of Outboard Marine had a clear exchange-value interest in fighting the clean-up, and recreational users of the harbor areas had a clear use-value interest in cleanup of the harbor. Other actors were more mixed in motivations: local political figures stood to lose substantial tax revenue if Outboard Marine closed (Gould, 1991a). Employees of the firm had wages and employment hanging in the balance, a frequent issue in "job blackmail" (Kazis & Grossman, 1982).

Because of the corporate power of Outboard Marine, dumping accumulated to a point where clean-up became feasible only by a costly damming of the site, and isolating the contaminated sediments to avoid dispersal into Lake Michigan. It was unclear for a prolonged period whether the environmentalist organizations have the power to induce the state to pay for such a clean-up (Gould, 1991a,b). At one point, the EPA administrator approved a 21 million dollar plan under the Superfund provisions, which cycles money from chemical producers into a cleanup fund. However, the Superfund program itself has such a long waiting list

that thousands of sites are on waiting lists. This lengthy list itself reflected the inadequacy of current management in the U.S. state's managed scarcity synthesis of pollution problems. Moreover, it was also a reflection of the power of economic actors to avoid higher cleanup cost allotments.

The largely-silent Waukegan harbor reflected this stand-off between the consciousness and control capacities of these competing actors. Interestingly, there are boating and even recreational fishermen who still use these waters, despite the closing of Waukegan beaches; this illustrates the unpredictability of the consciousness of many use-value interest groups. This quasi-inaccessibility of this natural resource nicely reflects the ambivalence of the state in expending substantial fiscal resources to clean up a single waste site. It also indicates how rarely a managed scarcity synthesis clearly allocates ecosystems to use-value interests. Since revenues spent primarily for use-value interests in Waukegan will not predictably generate new taxes, employment, or powerful political support for the government actors/agencies, this state resistance reflects treadmill biases (Evernden, 1985).

The length of the list of uncompleted Superfund projects is also a crude indicator of the state's ambivalence about use-value access to ecosystems. EPA wants to "do something" to please use-value interests. But it does not want to extract too many fiscal resources from exchange-value interests to follow through on ecologically-meliorative measures. This type of managed scarcity synthesis essentially officially designates an existing problem of ecological scarcity for use-value interests, and limits future access by some exchange-value interests, but does little else (Gould, 1992; Weinberg, 1991).

This example illustrates the mixture of ecological and political-economic treadmill constraints on environmental conflicts. Water transport features of Lake Michigan represent an ecological constraint. Species of fish and lake water layers will both decline in social utility for many users if PCBs are more dispersed. Conversely, the political capacity of Outboard Marine to evade costly clean-up charges through the damming procedure represents a political-economic constraint. Large firms regularly and routinely challenge regulatory agencies such as the Environmental Protection Agency. They raise the costs and diminish the efficacy of litigation by both environmental movement organizations and state agencies. And because of the institutionalized commitments to economic growth, and the legitimacy of state support for capital accumulation to accomplish this, even environmentalists are forced to weigh capital accumulation drags imposed by

reallocating social surplus to environmental cleanups rather than new investments. Crudely put, even these political agents of use-value interests are simultaneously committed to expanding exchange-values from many ecosystems (Evernden, 1985; Devall, 1980).

Local constituencies are likewise split along lines of competing uses of ecosystems and competing models of distribution of costs to permit access to such environmental amenities. Historical biases of the treadmill were reflected in an historical accumulation of waste and ecological disorganization in Waukegan; this history thus limits other use-value access in Waukegan. Yet a commercial marina recently built despite a clear consciousness of the PCB contamination is now operating in these polluted waters, bringing some exchange-values revenues into the city and permitting some recreational boating uses of the harbor area. Again, this complex pattern of exchange and use value accessibility and inaccessibility serves as a safety valve for the state, legitimating rather limited environmental protection. This limited action is explored in the following section.

CONFLICTS OF INTEREST: UNRAVELLING THE MANAGED SCARCITY SYNTHESIS

From the above discussion, it seems crucial that we understand the mechanisms by which both ecosystems and political systems limit access to ecosystems. An ecological perspective on scarcity emphasizes that societal production involves withdrawals from and/or additions to ecosystems, which produce pollution and/or depletion. These withdrawals/additions create ecological imbalances, altering the composition of living species or nonliving substances, upsetting dynamic equilibria of ecosystems (Schnaiberg, 1980: ch. 1).

But from a political-economic perspective, there is an even broader concept of scarcity. Most classes, class segments and institutions in the modern class structure experience and define scarcity as increased difficulty in attaining their use-values or exchange-values from ecosystems. At the early stages of the conservation-efficiency movement (Hays, 1969) the conflicts were between competing capitalist and precapitalist producers. The goal was sustained-yield production, a reasonably overt and straightforward type of conflict. Much of the conflict was within the capitalist class, with competing exchange-value interests. With the rise of organizations devoted to environmental preservation, a more complex set of conflicts was introduced. But the preservation movement itself was

also largely elitist, with conflicts located within the dominant class, and largely localized.

But the growth of modern environmental movements by the 1970s represented a broader range of challenges to the dominant capitalist producers, generating more complex conflicts around surplus distribution (Schnaiberg, 1980: ch. 8; Buttel & Larson, 1980; Morris, 1992; Schnaiberg, Gould & Weinberg 1992; Dowie, 1992; Schnaiberg, 1992c). In the example of the previous section, the PCBs dumped by Outboard Marine were a threat to that corporation. But another high-tech firm, ATD (Myers, 1984), grew as it developed a new technology designed to extract pollutants like PCBs from Waukegan harbor sediment, concentrating them in preparation for burial or incineration. Likewise, firms like Waste Management have become multi-billion dollar enterprises through the rise in environmentalists' consciousness and their control capacity to put waste control on the state's managed scarcity agenda, coupled with the rapid growth of industrial waste products (Schnaiberg, 1992a,b).

Thus, while the major response of capitalist actors has been to resist much new environmental regulation designed to enhance the use values of other classes, another segment of this dominant class has extracted new exchange values from environmental protection activities of the state. Moreover, in keeping with Skocpol's (1980) and other recent conceptions of a somewhat-autonomous state, political support for some types of environmental protection is also designed to preserve corporate access to productive resources for a longer term (sustained yield). As with the early conflicts outlined in the Pinchot era (Hays, 1969), this puts the state within Miliband's (1969) model. Essentially, the state substitutes a longer-term view of sustained yield for the short-term calculus underlying political resistance by capitalist managers and stockholders. This view serves the capitalist class in the future, although it may impose burdens on particular contemporary capitalists (O'Connor, 1988; Schnaiberg & Weinberg, 1992).

Since environmental protection itself produces several types of social scarcity for classes other than capital owners, new conflicts over the implementation of these state policies also emerges. Ecologically-based scarcities engender substantial community resistances from NIMBY (not-in-my-back-yard) groups. They see modern industrial waste storage and processing sites as increasing the scarcity of these local groups' use-values from local ecosystems. On a purely economic level, as well, the costs associated with environmental protection introduce new socioeconomic scarcities, regardless of whether environmental

protection equipment is funded directly through taxation, issuance of public finance bonds, or through pass-through of corporate costs of pollution abatement. All of these act to reduce the discretionary income of and/or transfer payments by the state to working and middle-class segments of society (Bullard, 1990; Bryant & Mohai, 1992). Environmental movement organizations often see themselves as acting to redistribute use-values to a broader social constituency (cf., Mitchell, 1980; Buttel & Larson, 1980; Schnaiberg, Gould & Weinberg, 1992). But many working and middle class segments of the society resent and resist the resulting costs and scarcities of environmental protection (Schnaiberg, 1983a, 1983b, 1986; Burton, 1986; Buttel, 1985,1986; Buttel & Larson, 1980).

To understand contemporary political-economic conflicts, then, we need a more elaborated concept of social scarcity. One way of restating the framework of interests posed initially in this chapter is in terms of scarcity. As a defining element of the environmental dialectic, I noted above the important fact that ecosystem elements usually have limited capacity to meet the competing demands of political-economic interests (Schnaiberg, 1985).

This is a central dilemma for state policymakers, who are increasingly called upon to intervene politically in what have historically been capitalist market transactions (Lindblom, 1977; O'Connor, 1988). This history of an economic synthesis, moreover, exerts a strong institutional bias in favor of exchange values, as opposed to use values of ecosystems. This is a key element in applying Skocpol's (1980) analysis of state policymaking to environmental regulation. But she and others pursuing this state logic (e.g., Buttel, 1985, 1986; O'Connor, 1988) also point to political conditions that can partly offset this bias. Accumulated disruption of ecological use-values, disseminated scientific research about this, and the rise of a modern environmental movement industry (McCarthy and Zald, 1976) have all served to provide some of these political conditions. This explains why the U.S. and other advanced societies have moved some distance towards the managed scarcity synthesis of the environmental dialectic, rather than remaining at the economic synthesis.

Lake Michigan can be used to illustrate the conflict around interests in ecosystems. It provides exchange values for capital owners who use water (1) as a physical or chemical component of their production, (2) as a cooling resource, or (3) as a site for dumping waste products. Conversely, it has use values for residents around the Lake, ranging from potable water, a habitat for fish used for

consumption or recreational fishing, a site for other recreational activities, and a sink for dumping human and domestic wastes (Catton & Dunlap, 1989).

Generally, the greater the range of properties of water required for use, the stricter the requirements are for water quality by industrial or other users. Severely polluted water is acceptable for dumping toxic, other industrial or domestic wastes, but not for production of many chemical or biological products, or for sustaining fish or human life. In terms of its industrial cooling capacity, the crucial elements are temperature and volume of the water. Waters heated by a nuclear plant may thus be problematic for a nearby steel plant, though acceptable for swimmers. But waters polluted by a municipal sewage treatment plant may still be acceptable for cooling uses, as well as recreation uses such as boating.

In the modern treadmill organization, under the managed scarcity synthesis, one extreme of the ecological continuum is a highly disorganized ecosystem. It also represents, paradoxically, a potential source of exchange value for various waste treatment firms. Modern examples include waste management conglomerates dealing with toxic and nontoxic wastes, firms involved in removing asbestos from public buildings, and Superfund cleanup organizations removing hazardous wastes from dump sites. Even more paradoxical is the rise of modern recycling as one means of waste treatment, which has enhanced the profitability of many large-scale corporations (Schnaiberg, 1992a,b).

All those with occupational interests in these firms also share some exchange-value interests. Such organizations, their professional associates and other employees, and other high-tech firms that design systems to reduce industrial and municipal wastes, have an exchange-value interest in the existence or projection of disorganized ecosystems (O'Connor, 1988: 31-32). The presence of these exchange-use interests makes for a more complex consciousness-raising conflict. Public (and social movement) consciousness of ecosystem disorganization is, after all, a necessary element in expanding the markets for their waste treatment services. Likewise, following Skocpol (1979, 1980), state actors charged with environmental protection maintain their professional careers by expanded public fears of ecosystem disorganization, whether real or hypothetical.

At the other ecological extreme, national wilderness areas that restrict productive uses serve to maximize recreational use values of various classes. This approximation to an ecological synthesis severely limits exchange values from these particular ecosystems. But even here, there are producers of camping equipment who derive exchange values from the availability of such recreational

areas, as do other recreational service industries. Preservationism is thus not purely a use-value interest structure within the modern treadmill. State actors use this diversity of interests in generating support for policies approaching ecological syntheses.

Hence scarcity is an interactive outcome, reflecting ecological properties of ecosystem elements and social users' criteria for use. A third interactive element is relative cost. For users with either very small volumes of need, or with ready availability of monetary resources, the scarcity experienced will be smaller for a given degree of ecosystem disorganization. Because of the inequalities of fiscal resources in highly-stratified treadmills of production, this further biases policymaking towards capitalist class segments.

Air pollution, for example, is a major problem for poor inner-city residents suffering from respiratory ailments. They continuously require high-quality air to avoid physical deterioration, and yet have limited control over their ambient air quality. Moreover, they lack the financial resources to move to less-polluted environments or to buy air purifiers. And they lack the political resources to mobilize local governments to reduce air pollution in their areas. Generally, they are reliant on middle-class welfare movement organizations to fight for state allocation of funds sufficient for oxygen bottles and other low-cost alternatives to pollution-abatement. Alternatively, they most rely on the "trickle-down" of pollution-control benefits from middle-class environmental movement organizations (cf. Mitchell, 1980; Schnaiberg, 1983a, 1983b).

POLITICAL CONSCIOUSNESS IN THE MANAGED SCARCITY SYNTHESIS: WASTE MANAGEMENT EXAMPLES

One final extension of a sociopolitical concept of scarcity is required to outline modern political economic trajectories. Political conflict initially arose from tensions within the historically-dominant economic synthesis. Withdrawals from and/or additions to ecosystems from larger-scale production had diminished other users' exchange values and use-values from these U.S. ecosystems (Hays, 1969; Schnaiberg, 1980). Environmental reform legislation emerged within a new managed scarcity synthesis in the Johnson and Nixon administrations. In turn, these policies were implemented in the Nixon, Ford and Carter administrations, and led to both anticipated and unanticipated scarcity consequences. (In sharp

contrast, the Reagan and Bush administrations struggled to abandon the managed scarcity thesis, and move towards an economic synthesis [e.g, Landy et al., 1990]).

While representing a change in state policy and some relations of production, this managed scarcity synthesis left intact most of the class structure and institutional arrangements that created and reproduced the treadmill of production (Buttel, 1985; O'Connor, 1988). To some extent, however, state policies altered both the degree and the costs of access by capitalists to ecosystem elements. This "solution" to the scarcity of environmental use-values produced by the economic synthesis itself imposed new scarcities (Schnaiberg, Gould & Weinberg, 1992). This contradiction emerges from the fact that ecosystems cannot satisfy simultaneously all the users competing for the values/functions of a given ecosytem element. Thus the state-logic of managed scarcity policymaking entails creating new scarcities within a class structure that had previously been organized within the economic synthesis.

Managed scarcity syntheses can thus reduce but not eliminate dialectical tensions. Political-economic conflicts recur as struggles between interest groups competing for access to common ecosystem elements. For example, acid rainfall conflicts emerge from an ecological constraint. The atmosphere can be used as a sink for airborne sulfur dioxide (in the form of sulfuric acid) and other by-products of combustion (Catton & Dunlap, 1989). But there is a concomitant risk that rivers, forests, and even humans will ultimately suffer some loss of functioning because of the deposition of sulfuric acid in rainfall (and other parts of the water cycle). In the 1960s and early 1970s, power companies and other industrial producers used tall smokestacks to avoid conflict with local environmental groups around local air pollution. The consequence of this problem-solving was the generation of new long-distance water pollution problems. Gould (1991b) notes the international component of this, as Canadian opposition to U.S.-origin acid rainfall rose, largely as a nationalist rather than an environmentalist policy.

As one outcome of this strategy, consciousness patterns were significantly altered. Because environmental groups at some remove from the production sources cannot identify the acid rainfall polluters with any precision, capitalist producers benefitted from the long-distance air transport of pollutants in two ways. They avoided political conflict with local environmentalists and state agencies. Likewise, state agencies and actors benefit from a "solution" that mollifies local use-value interests, without imposing high exchange-value costs on local capitalist producers. Moreover, this solution blurs the traces of producers' exchange-value

usage of the atmosphere enough so that these more remote producers cannot be politically confronted by environmentalists and state agencies in the destination ecosystem of the pollutants. [The more socially-visible national boundary between Canada and the U.S., and the patterns of rainfall, in contrast, permitted Canadian politicians to oppose the "importing" of U.S.-generated acid rainfall (Gould, 1991b).]

Producers' costs of building high stacks for dispersion of pollutants was quite low. Hence, this "solution" only modestly increased their costs of access to atmospheric dump-sites. These costs were much lower than switching to cleaner fuels and electrotatic or other stack cleaning systems which the EPA has imposed on producers in areas of higher air pollution. Conversely, the losers in this solution were the users of ecosystems where acid rainfall is deposited, and those state actors responsible for environmental protection there. State policymakers and enforcers were then confronted by frustrated use-value interests, as well as those capitalist producers whose ecosystem use was curtailed by ecosystem degradation (Landy et al.., 1990).

One way of outlining the consciousness raising and lowering dimensions over such managed scarcity policies is to consider typical political responses of protagonists. Table 1 can be seen as a set of conflict repertoires (Tilly, 1986) for environmental movements, their capitalist protagonists, and state agencies. Conflict initially ranges around assertions about problem severity [levels i-ii of Table 1]. Ecosystem disorganization is seen as a matter of social survival, the environmentalist extreme (Schnaiberg, 1980, ch. 1), or as essentially nonexistent, the producer extreme. While environmentalists use consciousness-raising activity to widen and deepen constituencies and adherents who will share some alarm at ecosystem disorganization, producers engage in consciousness-lowering activity.

A second layer of conflicting claims is about the causes of the problem (levels iii-iv of Table 1). Environmentalists argue that ecosystem disorganization is a specific outcome of production decisions, and that changes in production will eliminate the problem. In opposition, producers either disclaim any contribution of production to the problem, or minimize their share of the problem. Equally boldly, they may claim that the problem is a generalized outcome of all production, or of industrialization itself ("pollution is a by-product of our way of life"). Earlier and recurrent academic theorizing about environmental degradation as an outcome of population growth, consumer affluence, or "runaway" technology (Schnaiberg,

1980: chs. 2-4; Schnaiberg & Gould 1994) has further legitimated some of these self-serving producer counterclaims.

The third tier of conflict repertoires is over typical benefit-cost allocations (levels v-vii of Table 1). Environmentalists often minimize consciousness about the amount and allocation of costs (Landy et al., 1990). They also project certain, substantial and egalitarianly-diffused major social benefits from environmental protection. They rarely are concerned with the financial problems of research. Producers play the opposite role, emphasizing the certainty and large scale of environmental protection costs, and the uncertainty, inequality, and modest social returns on environmental investments.

Finally, we have a more recent partial inversion of these alignments, in the fourth tier (levels viii-ix in Table 1). This was earlier present in some form of tentative agreement between protagonists that energy conservation was a social and economic good, although environmentalists often extolled reductions in usage, while producers pushed for development of more efficient capital equipment (Stern & Aronson, 1984: chs. 2-4). It is also evident in recent programs of recycling, which involve large-scale remanufacturing, using wastes as feedstocks (Schnaiberg, 1992a, b; Schnaiberg & Weinberg, 1992). This represents a different socioeconomic choice than more direct re-use of consumer and producer wastes. For both these examples of policy conflicts, there was far less conflict, as exchange-value gains by corporations can be viewed as consistent with environmental protection goals.

To illustrate the benefit-cost claims, we can turn to the numerous "not-in-my-back-yard" or NIMBY voluntary associations (Schnaiberg, 1986c) that have been created to eliminate or preclude toxic waste sites in their communities. They raise consciousness about the individual-level threats to human health that such sites entail (in contrast to more diffuse collective environmental protection). Producers, in contrast, broadcast widely the need to find an inexpensive 'sink' to put their industrial wastes. They stress the loss of jobs in the labor markets and the rising costs of goods in the consumer market, in the absence of such sites. Each new chemical that is considered, or each new waste disposal site or process, appears to trigger the use of these repertoires by contending actors. Each party to the conflict attempts to mobilize resources (economic, political, social) for ensuring its own access to ecosystems for its primary use-values or exchange-values. Recent conflicts over toxic wastes begin with intensive consciousness raising and lowering efforts by environmentalists, waste handlers, and industrial waste

generators. Issues center on the predictability, severity, and manageability of the human health impacts of toxic wastes (or all industrial wastes).

Municipal waste disposal conflicts are somewhat less intense, because of the complex sources of municipal wastes (human, domestic, commercial and industrial), and thus of the complex interest structure. Conversely, radiation hazards of nuclear power accidents represent a clear source and immediate interest structure. Anti-nuclear conflict was thus often much more aggressively waged by regional and national environmental groups, such as at the Seabrook, New Hampshire plant.

TABLE 1 ABOUT HERE

An alternative way of characterizing Table 1 is to consider these claims and counterclaims as competing norms for allocating ecological scarcity. Local toxic waste groups are ultimately interested in maintaining or expanding their use of the local ecosystem for breathing, drinking water, and habitat/space for recreation (Crowfoot & Wondolleck, 1991; cf. Schnaiberg, 1992). These are often different patterns of conflict than those over municipal waste disposal, say, because of the fact that human wastes are a major part of the problem. This often induces local environmentalists to soften their attacks (since they are themselves both waste-generators and local tax-payers).

At the opposite extreme, national and regional anti-nuclear movement organizations wage fierce battles around local plants, partly because they are not local consumers or rate-payers for this electric power. Industrial waste handlers seek to preserve or expand their access to land or water sites (or air, in the case of incinerators), since they earn their profits from such transactions. The generators of toxic wastes also seek to preserve various waste-sites. Their costs will rise if waste-disposal sites are eliminated (i.e., their access to ecosystem sinks will both diminish and become more expensive), potentially reducing their profits because of their diminished competitiveness in markets.

Generally, producers' objectives in these conflicts are to maximize their physical and financial accessibility to ecosystem elements, in order to extract maximum exchange-value from these transactions. Environmentalist social movement organizations generally seek to maximize their access to ecosystem elements for their use-values (often acting in the name of a broader social constituency, of course). From the state-logic of Skocpol (1980) and others, state

agencies face different political-economic contexts in dealing with each of the resulting conflicts. They confront the above conflicts of interests. Additionally, though, they operate in a diversity and volatility of local, regional and national economic conditions, which themselves partly dictate the intensity of claims and counterclaims.

As international competition has intensified, for example, the expenses of waste treatment have become a more important contested terrain. They represent a growing component of production costs and social expenses of all levels of government. State agencies must deal with the fact that both increased capital outlays and higher tax rates are necessary to treat wastes, and these both influence the competitive market struggles in the modern world system. For state environmental agencies, there is a publicly-stated desire to maintain social use-values, while not impinging overmuch on producers' exchange-values (Hawkins, 1984). In effect, these agencies seek to maximize a kind of political exchange-value in their regulatory behavior (Lowi, 1979, 1986). As Hawkins (1984) has noted, whatever the legislative authority for environmental agencies may be, the state operates within the broader political-economic context of capital accumulation represented by the treadmill of production. I turn next to outlining this broader institutionalized structure of the treadmill.

TREADMILL BARRIERS TO ENVIRONMENTALISM: LIMITS OF CONSCIOUSNESS & CONTROL IN ENERGY POLICYMAKING

Central to the modern treadmill has been the expansion of production away from localized subsistence and into national and international markets (Gore, 1992; Buttel & Taylor, 1992; Barlett & Steele, 1992). At the core of this historical process is the accumulation of social surplus. Capital owners use parts of the surplus generated in each period to invent and produce more economically-efficient physical capital. These technological forces of production are more intrusive into ecosystems. But they simultaneously generate more economic, political, and social power for the capitalist class. These core processes comprise most of the dialectical tensions in the state's environmental policy-making (Schnaiberg, 1980: ch. 5; Stretton, 1976; Buttel, 1985; O'Connor, 1973, 1988; Buttel & Taylor, 1992; Schnaiberg & Gould 1994).

The resultant institutional and class structure of the treadmill is complex and variable, but a general trend is acceleration. Without massive political intervention,

the institutional apparatus of the modern treadmill impels investors, managers, workers, and state bureaucrats to demand ever-greater ecosystem utilization, to accompany ever-greater capitalization of production (Schnaiberg, 1980: ch.5; Commoner, 1977). Economic market actors of the treadmill routinely emphasize the exchange-values flowing from ecosystem usage. Additionally, state actors must extract, through taxes and other allocations from the treadmill, the funding of transfer payments (O'Connor, 1973). Whether these social expenses are in the form of corporate gifts, corporate taxes, or individual taxes, all of these represent allocations of economic surplus from the treadmill (O'Connor, 1988).

Thus, one of the expressions of the near-hegemonic power of the institutionalized treadmill and its dominant capitalist class is the perception of most social classes of their dependence on "economic growth" for their future welfare. There have certainly been treadmill critics (e.g., Schumacher, 1973; Mishan, 1967; Galbraith, 1971, Commoner, 1977), suggesting that the treadmill is less than perfectly hegemonic (Lipietz, 1987; Redclift, 1987). But the treadmill's major social institutions diffuse a dominant belief in the necessity of increasing the social surplus through accelerating the treadmill (Schumacher, 1973; Schnaiberg, 1982).

Two central issues that arise within the treadmill's dominant classes and economic institutions are: (1) how to generate more surplus, and (2) how to allocate the surplus that has been generated (O'Connor, 1988). In modern capitalist systems, we can treat surplus as closely allied to corporate profits, although they are not synonymous. The equivalent in socialist or state capitalist systems is the level of social profit accruing to a state organization (Stretton, 1976; Schumpeter, 1950; Feshbach & Friendly, 1991). The class structure of the treadmill hegemonically reproduces a need for greater surplus generation. But actual state policies of surplus allocation are quite variable in comparative-historical perspective (Buttel, 1985). This results from the ecological reality that ecosystems cannot actualize all exchange-value and use-value interests (O'Connor, 1988). This core ecological factor generates many of the dialectical tensions in Skocpol's (1980) state-logic argument.

Under the Carter administration, for example, the state allocated more surplus to public employment. This policy was generally labor-intensive and produced fewer ecological withdrawals and additions per job generated. In the Reagan and Bush administrations, by contrast, the state subsidized high-technology, highly-capitalized defense industries. Generally, this created substantially higher withdrawals/additions per job created. Owners of the physical capital of the

defense industry received much of the funding. However, their capital equipment required much raw material, energy extraction, and waste dumping. Thus, while both state policies are consistent with the macrostructure of the treadmill, their ecological impacts were materially different in degree and type. In contrast, the Clinton administration seems wedded to accelerating the treadmill by expanding production and using some of the resulting surplus to fund both environmental protection and social expenses.

Generally, the treadmill structure of modern societies implies a structural commitment to anti-ecological behavior (Schumacher, 1973; Evernden, 1985; Devall, 1980). Absent some political movements by environmentalists, then, the "solution" to the problem of the treadmill would normally be the economic synthesis. Modern environmentalist movements and state agencies address the surplus issues of numerically and politically dominant treadmill proponents on two levels First, they argued that surplus should be generated with the lowest level of ecosystem withdrawals and additions "possible" per unit surplus generated. Second, because much of this surplus will nonetheless disorganize ecosystems in ways inimical to the use-values of citizens, some significant share of the generated surplus should be allocated to protecting these use-values as much as "possible". From a political-economic perspective, there is wide lip-service paid to these principles even by many treadmill proponents. The most recent version of this lip-service is the concept of sustained development (Court, 1990). Political-economic conflict then occurs only later, in determining what economic action is "feasible" (Mitchell,1980; Morrison, 1986; Redclift, 1987; Davis, 1991; Hecht & Cockburn, 1992), as noted above. The following shifts in consciousness over environmental policymaking have occurred under the past five U.S. administrations:

i. Under the Johnson and Nixon administrations, ecological consciousness-raising takes place about the threatened decreases of the use-value of ecosystem degradation, which led movements into legislative lobbying and judicial litigation.

ii. Under Nixon, Ford, Reagan, and Bush administrations, political consciousness-raising about the enduring power of dominant capitalist class emerges, because of their exchange-value interests in ecosystem resources, as these actors fight against legislation and legal sanctions.

iii. Under Nixon, Ford, Carter, Reagan and Bush administrations, economic and political consciousness-raising about the challenge to the existing class structure, posed by implementation of environmental legislation, occurs. Such challenges result from the higher costs of access to ecosystems, which reduce many exchange-values, and some use-values of many ecosystems.

iv. Finally, under the Clinton administration, there promises to be more complex issues of consciousness-raising, with the dual concerns about economic issues (recession, employment and competitiveness with new physical technology) and global environmental issues (such as ozone depletion and deforestation). The stance of the educated middle-class, which was economically squeezed under the Reagan-Bush administrations, seems likely to be a crucial factor in tilting policy closer to a more egalitarian economic synthesis, or towards a more egalitarian planned scarcity synthesis.

Let me illustrate one of these conflict trajectories very briefly, across these recent U.S. adminstrations. During the Ford and Carter administrations, the OPEC embargo on oil and the associated increase in crude oil prices led to many new attacks on the logic of the treadmill. While Schumacher (1973) led a movement to dismantle the treadmill and substitute a more subsistence-like stable intermediate technology, a less-radical energy proposal emerged from Lovins (1977) for a soft energy path. Crudely put, Schumacher sought to reorganize the treadmill. Lovins merely sought to alter the treadmill's withdrawals of potential energy sources from ecosystems, and additions to ecosystems from the transformation of this potential into socially-usable energy forms. Schumacher sought a change in forces of production in the modern class structure, and also implied a change in the eventual relationships between labor and capitalist classes (Schnaiberg, 1982; 1983c). Lovins merely sought a change in the forces of production associated with energy transformations, with little change in capital-labor class relations.

Both these proposals moved far afield from the usual agendas of modern social movements. These movements usually emphasize redistributive goals, i.e., allocation of surplus only (Schnaiberg, 1982). But environmentalists now moved into the arena of capital accumulation (Friedland et al., 1977; Morrison, 1980; cf. Lowi, 1986). This historically-unprecedented economic-environmental ferment of the Ford-Carter period followed the anti-pollution challenges of the Johnson and

Nixon administrations. What they ultimately produced was a modest change in the ratio of energy consumption per unit GNP (Schnaiberg, 1985a). This was achieved mostly by the state in the Carter administration mandating higher prices of energy and improved energy efficiency in many commercial and residential applications. In short, what emerged was mostly a change within the treadmill, rather than an elimination of the treadmill. Why?

The overly-simple answer is that both these proposals posed some threat to the existing class structure of the treadmill of production (O'Connor, 1988; Redclift, 1987; Davis, 1991). Schumacher would have dismantled much of the physical capital that produced surplus, reallocating existing surplus towards meeting basic human needs and protecting natural systems. Similar proposals underly the more recent models of sustainable development (Court, 1990; Davis, 1991). Unless the existing capital-labor class structure were to vanish, these are usually utopian proposals (Schnaiberg, 1982, 1983a, 1983c; O'Connor, 1988; Schnaiberg, Gould & Weinberg, 1992). Moreover, even if the treadmill passes away and Schumacher's or the Brundtland Commission proposals (Davis, 1991) for sustainable development were to be implemented, many of the factors that led historically to the emergence of an industrial class structure and its treadmill would eventually re-emerge.

Schumacher's or the Brundtland Commission proposals were not a serious threat to the modern class structure if they were designed to operate in self-selected voluntary communities (Schnaiberg, 1982). But if an entire society embraced an ideology of self-sufficiency and small-scale enterprise, a new form of social relations of production, the existing class structure would be transformed (O'Connor, 1988). Historical evidence suggests that emergent inequalities would raise pressures to reproduce variants of the old class structure (Lipietz, 1987; Redclift, 1987). Unlike Stretton's (1976) detailed class conflict scenarios, though, Schumacher's plan dealt with political conflict within the existing class structure. Hence we have no model from him outlining how the existing treadmill class structure would collapse, and what its potential for re-emergence would be.

Lovins' (1977) plan was less in conflict with the surplus-generating relations of production of the treadmill. But it would have required enormous capital expenditures to redesign our energy systems. He ignored the problems posed for many capitalist producers (and labor groups) in reallocating surplus to new energy facilities. In effect, Lovins' proposals foundered because he confused energy use-values with energy exchange-values. He dismissed the existing political structure

of fossil and nuclear fuel interests as irrational and epiphenomenal, rather than as economically comprehensible and politically potent. Existing energy industry owners did, however, gather new social legitimacy from Lovins and other energy activists. Among other strategies suggested by Lovins work, they proceeded to market energy conservation to their consumers. This permitted continued profitability from existing physical power plants and reduced their capital needs for rapid expansion of facilities, while simultaneously presenting themselves as environmentally-responsible capitalists.

To be sure, many other flowers bloomed during the Carter administration, through a mixture of venture capital and state recycling of tax money (in the form of tax incentives or outright grants). Wind and solar energy incentives blossomed for a short time, including the Solar Energy Research Institute (SERI) and even the National Center for Alternative Technology (NCAT). Shale oil pilot projects went forward in Colorado. Many new high-technology firms innovated various passive and active solar and wind designs, as well as housing retrofitting for energy conservation, ranging from insulation to new heating and cooling appliance designs. But all of these ultimately undergirded the treadmill by relying on market criteria for success or failure beyond the pilot plant stages (Schnaiberg, 1982, 1983c). And market criteria simply reproduced the class structure of the treadmill.

Most of the state support for alternative energy systems were abandoned in the political marketplace when Reagan's economic policies were implemented. Nuclear energy retained the state's political support, despite its diminished economic attractiveness after the Three Mile Island accident and rising safety costs. Otherwise, conventional treadmill rules for economic survival regained their dominance within most classes. The state merely tinkered with the existing allocation of surplus and generation of future surplus. Much of the state apparatus has since reverted to its usual treadmill role of facilitating capital accumulation and reproducing existing class structure. This energy issue has re-emerged in yet a different context in the Clinton administration, with energy reductions being advocated for multiple U.S. goals, including international competitiveness, reductions of U.S. contributions to global warming, as well as national security. Such variable treatment of energy issues thus illustrates once again the persistent limits entailed in a managed scarcity state synthesis, albeit with considerable variability in historical salience of different limits (cf. Buttel & Taylor, 1992).

What does this example imply for the broader environmental conflict? It suggests that the breadth and depth of commitments to the treadmill are repeatedly

underestimated by environmental movement participants and their allies in state agencies, which Morrison (1973, 1976, 1986) calls institutionalized movement organizations (cf. Morris, 1992; Gould et al. 1993). The near-hegemonic aspect of the treadmill is illustrated in a recent statement by the Executive Director of the Environmental Defense Fund:

> "If environmentalists worry about the impact of a dam, for example,they had better address the water-supply or power-supply problem the dam was proposed to solve. They must concern themselves with the science and economics of environmental protection. Jobs, the right of stockholders, the needs of agriculture, industry and consumers for adequate water and power - all of these issues must become part of the new environmentalist agenda." [Krupp, 1986; emphasis in the original]

Environmentalists potential represent a challenge movement (Gamson, 1975), threatening capitalists and their allies in the state with new litigative and legislative pressures. Such challenges are heightened when environmental disaffection is occasionally added to the disaffections of those who have smaller or declining shares of social surplus. Major changes in capital flow in the modern world-system (Buttel, 1985; Lipietz, 1987) have altered opportunity structures in the U.S.. One consequence is that there are temporarily-shared interests and coalitions among the poor, semi-skilled and skilled blue collar workers who have become technologically-displaced, and even among the managerial-technical staff displaced by mergers, capital flight, and other corporate restructuring (Blumberg, 1980; Knapp, 1987; Barlett & Steele, 1992; Schor, 1991). In the Carter administration, such coalitions argued for 'lifeline' energy pricing for the poor, and increased occupational health enforcement. Under Reagan and Bush, the coalitions seemed to occur more often around toxic health hazards to communities (Schnaiberg, 1983b, 1986c, 1987; cf. Burton, 1986; Buttel, 1986; Landy et al., 1990), and attention was redirected away from many other ecological disruptions produced by an expanded treadmill (Schnaiberg, 1993). In the new Clinton administration, there is a less clear picture: displaced middle class workers could conceivably coalesce with other groups that declined during the Reagan-Bush years (Lardner, 1993; Newman, 1988, 1993) to demand state support of investment in technologies that would produce more employment and more environmental protection. Much of this potential has been deflected by the middle class emphasis

on tax relief, in contrast with working class and underclass lobbying for jobs and homes (Gould et al., 1993).

Table 2 about here

Table 2 outlines changing state policies in recent American politics around environmental issues by each recent U.S. administration. As Table 1 had suggested, there are considerable advantages for treadmill proponents to stop environmentalist consciousness-raising as early in the process as possible. Denial that any ecological disorganization exists is a preferred option. It is generally the least costly and exposes treadmill institutions to the least social and political scrutiny (Friedland et al., 1977). Much of the environmental politics in the Johnson and Nixon administrations was centered around this level of consciousness. In general, environmentalists won this round of conflict. They spearheaded the institutionalization of a historically-unprecedented range of voluntary organizations and a new and reorganized set of state agencies, especially the Environmental Protection Agency (Morrison, 1973, 1976, 1986).

These 1960s struggles, in turn, led to a new level of institutionalized conflict around environmental consciousness in the Nixon and subsequent administrations. For example, the National Environmental Policy Act of 1969 mandated (in section 102) a form of environmental impact assessment -- a new mode of political consciousness-raising. It required all agencies of the state to prepare environmental impact statements whenever their actions had major ecological consequences. Such state actions thus scrutinized included direct state investment (e.g., dam building), or indirect support of others' investments (e.g., licensing off-shore drilling). This supposed ecological consciousness-raising, though, typically generated a low quality of many environmental impact statements (Schnaiberg, 1980: ch. 7; Meidinger & Schnaiberg, 1980; Landy et al., 1990).

Subsequent litigation extended NEPA by mandating a social impact assessment procedure as well. While many social scientists viewed this as a new opportunity to show the social costs of many ecologically-malign projects and programs (O'Connor, 1988), SIA has been attenuated in its implementation. Indeed, the original litigants sought just such an attenuation. They argued for the political need to balance ecological losses of a project against socioeconomic gains (in the immediate case, a power plant).

In my view, this was a successful effort by the dominant capitalist class to reinstate the hegemony of the treadmill into the very heart of legislation naively perceived as anti-treadmill. NEPA's very structure permitted this claim to succeed because it was itself was a compromise bill that raised environmental concern only in the context of treadmill goals (Buttel, 1985; Schnaiberg, 1980: chs. 6-7). But SIA litigation was only one of many strategies used by treadmill proponents to counter environmentalist consciousness-raising and more stringent state intervention in the treadmill (e.g., Beneviste, 1981; Lundqvist, 1980). The routinization of impact assessment, which follows from the application of these strategies, subsequently became transformed into just another transaction cost of modern industries (Schnaiberg, 1980: chs. 7, 9). Generally, this outcome follows the following four classes of strategies used by capitalist producers to reduce the state's managed scarcity intervention in the treadmill:

i. Reduce initial problem consciousness by underreporting withdrawals and additions in environmental impact statements.

ii. Reduce implementation of environmental protection policies by slowing the state's environmental agencies in their litigative and administrative activities, as well as in their basic and applied environmental research.

iii. Reduce enforcement actions by hampering the research and regulatory monitoring effort of state agencies and environmental movement organizations, through resisting access to production and disposal sites where withdrawals and additions occur, through underreporting violations, and through lobbying against research and regulatory agency funding.

iv. Raise public and political resistance to environmental enforcement by generally raising perceptions of economic losses associated with implementation of environmental policies, by threatening to close plants or by actually relocating capital to other sites or other societies.

Such routinization of impact assessment proceeds through two processes. Each reproduces the existing class structure of the treadmill. First, the historical dominance of treadmill accounting is biased towards economistic data, and away from much ecological and other non-economic social welfare criteria (Schnaiberg,

1980: ch. 7; O'Connor, 1988). Second, the procedures for NEPA accounting are heavily biased towards existing data sources, reproducing this bias and limiting new ecological research (Schnaiberg, 1980: ch. 6). Scientific data-generation processes are structurally unbalanced. The disciplines of economics and management sciences are well-financed and continuously reinforce the treadmill. Pro-environmental disciplines such as biology and ecology are much less consistently and adequately funded. Hence they cannot offer such a continuous and persuasive counter-message (Schnaiberg, 1977; 1980: ch. 6). Other scientific disciplines such as chemistry and physics are much more drawn to support of technological change within the treadmill than they are towards expanding a critical impact research program. They further legitimize the modern treadmill (as well as expanding its capacity for surplus generation) and its values. All of these tensions are reflected in the organization of the state's impact assessment processes. The net result of these tendencies is a systematic bias that overstates treadmill economic benefits and understates ecological and social costs of new treadmill projects and programs (Meidinger & Schnaiberg, 1980; Schnaiberg, Gould & Weinberg, 1992; Gould & Schnaiberg, 1993).

Not only is there a systematic bias in the data available for scientific assessment, but there is an equally strong bias in the capacity to disseminate such data for political consciousness-raising purposes (Wright 1992). Treadmill representatives are supplied with substantial consciousness-facilitating resources -- advertising, public relations, intergovernmental relations, or public service communciations. These outlets all reinforce the perception of the treadmill as a social and an individual good. They do this routinely, powerfully, and often quite creatively (Schnaiberg, 1980: chs. 5-6). In contrast, dissident environmentalists are operating sporadically, often weakly, and not always very creatively to document individual stakes in collective environmental protection goods. The social movement organizations within the environmental movement industry depend on volatile voluntary efforts, with only a limited professional staff.

Moreover, the state's environmental regulatory agencies have an unusual structure and mission. Normally, as Friedland et al. (1977) have noted, state agencies have a primary mission of either capital accumulation or social legitimation. The former types of agencies "cloak themselves...[with] the ideology of technical planning and professionalism...[to] discourage any attempts at popular intervention" (Friedland et al., 1977: 458). In contrast, the latter agencies operate so that "their policies are far more visible....[in order to] attract the political

participation of groups who are excluded from the benefits of economic growth or who may even by its victims" (ibid.: 458-459). Environmental agencies (such as the EPA) involved in consciousness-raising and conflict adjudication with treadmill institutions have both types of characteristics. And they have little historical precedent to guide their political and technical staffs (Landy et al., 1990).

Because of the complexities of ecosystem disorganization and the threat of regulation for modern capitalists (Hawkins, 1984; Lash, 1984; Landy et al., 1990), the EPA and other environmental agencies are continuously adjudicating between economic growth and environmental protection goals. As one consequence of this, they require highly professionalized staff -- litigative and political staff at least as much as scientific staff -- to protect the agency from capitalist class reactions. Conversely, they desperately need the political support of environmental movement organizations and broader public constituencies for renewing their funding and missions. The balance between the two needs has shifted substantially in recent administrations, as I note in the final section.

The resulting state activity is a mixture of Lowi's (l979, 1986) model of technical-bureaucratic backstage negotiations, along with more public consciousness-raising by the EPA. To some extent, the former represents some degree of collusion with the capitalist class in order to lower public consciousness, to avoid some public pressures on EPA to "do something!". As the earlier statement of the Environmental Defense Fund Director suggests, moreover, even environmental movement organizations feel some of these same political pressures owing to the near-hegemonic structure of the treadmill. Such nongovernmental voluntary associations, let us remember, also require political and fiscal support from various publics, which requires diversion of substantial resources for mobilizing these supporters.

In short, there is substantial resistance to a genuinely balanced "scientific" treatment of environmental (and social) costs and economic benefits of the treadmill (Schnaiberg, 1980: chs. 6-7; O'Connor, 1988). Imbalances exist in the scientific component (data availability) , as well as in the advocacy component (persuasion) of such balancing. Sometimes the imbalance actually favors environmentalists. Threats to life or to some especially-valued habitat or specie are vividly registered through skillful use of the media. But these important exceptions do not negate the reliable, routine, and repetitive recommitment to treadmill values evident in media and other socializing institutions. Morrison (1973, 1976, 1986) has forcefully argued, in line with the model of Friedland et al.

(1977), that the state agencies are an institutionalized arm of the modern environmentalist movement. But this is a much weaker form of institutionalization than that routinely reproducing treadmill values, consciousness, and organizations. This is amply indicated by the attenuation of political influence of such agencies in the Reagan and Bush years (e.g., Buttel, 1985, 1986; Lash, 1984; Landy et al., 1990; Mintmyer, 1992).

A thought-experiment serves to point out this asymmetry. Imagine a conference on the future of the United States which had no representatives of major capital interests. Generally, this is unimaginable. But the selfsame conference could still take place, even today, with no representatives of environmental entities, either of movements or state agencies. One does not have to be a neo-Marxist to appreciate that the nature of the treadmill economy is at the very base of modern industrial societies like the U.S. (Schumpeter, 1950). Virtually all actors, including dissidents, acknowledge this despite their dissidence. The treadmill is currently the source of all social surplus, and this surplus ultimately supports the state. Thus, social movement organizations that challenge (Gamson, 1975) the existing principles allocating this surplus have a formidable task of offsetting such political and sociocultural momentum.

Paradoxically, only if the treadmill could be dismantled could its consciousness-influencing powers be diminished along along the dimensions noted above. But environmentalists who project a nontreadmill future consistently ignore the fact that they must coexist with the treadmill's class structure until that future is reached (Schnaiberg, 1982, 1983c). This coexistence viewed by utopian environmentalists (Evernden, 1985; Devall, 1980) is rather like the biblical allegory of the lamb lying down with the lion. The Realpolitik is that the lion sleeps much better.

Interestingly, in the world of Realpolitik, the power of the treadmill is often expressed by its proponents as threats to dismantle capital stock. Workers and citizens alike are often confronted with treadmill actors threatening to move their productive capital elsewhere when confronted with new environmental protection demands (Schnaiberg, 1986b, 1987). This potential loss of treadmill participation, whether expressed in terms of job blackmail threats (Kazis and Grossman, 1976) or of rust-belt tax base and employment losses (Bluestone and Harrison, 1982) drives many labor and community groups to withdraw support from some environmental causes. With the increasing globalization of capital flows, moreover, this fear is intensified, as the U.S. state has far less influence over the

allocation of capital from U.S. capitalists, with their capacity to invest abroad (Lipietz, 1987).

The conservative interpretation is that workers are revealing a political preference for the treadmill (Rorhschneider, 1991). My own view is that there are few viable options for all but a handful of workers with monopolies of skills or control over unique resource locations (Barlett & Steele, 1992; Schor, 1991). Interestingly, even these last privileged status groups benefit from the surplus allocated by the treadmill in numerous ways. Treadmill income, for example, permits consumption of expensive handicrafts or custom services (e.g., wilderness guide activity) performed for tourists or wealthy patrons. Little economic activity in the modern world-system is in fact unconnected to that global structure (Buttel & Taylor, 1992). And much of that global system rests upon the treadmill of production in the industrial world (Stretton, 1976; Lipietz, 1987).

THE FUTURE OF ENVIRONMENTAL POLICYMAKING: FROM LINEAR SCIENTIFIC CONSCIOUSNESS TO DIALECTICAL POLITICAL-ECONOMIC CONFLICT

New scientific and political consciousness about environmental costs of these global treadmill systems has unquestionably emerged in the U.S. state within the past two decades. But even within the scientific community there are historical political-economic factors affecting the demands for and supply of environmental awareness, which are largely independent of the changes in ecosystem disorganization (Schnaiberg, 1975; 1980: ch. 6, 1986a; Wright, 1992). The same is true throughout environmental movement organizations and in their various attentive publics (O'Connor, 1988). While ecological changes are never totally irrelevant to environmental conflicts, they also never determine policy outcomes. This reflects a modern variant of Karl Marx's principles of political action:

> "men make [environmental] history, but they do not make it just as they please: they do not make it under circumstances chosen by themselves, but under [ecological and political-economic] circumstances directly encountered, given, and transmitted from the past." (adapted from Feuer, 1959: 320)

Ecosystem disorganization must be perceived, defined, evaluated, and disseminated by various social entities with use-value interests. Therefore, any societal changes which either directly or indirectly alter the resources of such actors also influence their capacity to blow an environmental whistle. In turn, such use-value groups exist within the exchange-value interest structure of the treadmill. Increasingly, social scientists are coming to view all scientists as social actors, reflecting structural and personal conditions in their work (e.g., Latour & Woolgar, 1986). Scientists are structurally classified as scientific laborers (Schnaiberg, 1980: ch. 6). They are thus reactive to many types of market changes. Resources for basic environmental impact research, both among impact scientists in universities and applied scientists in regulatory agencies such as the EPA (Schnaiberg, 1986a), have been highly volatile in the past 25 years, and especially under Reagan and Bush administrations (e.g., Minztmyer, 1992). So too have been resources of the environmental movement industry.

Under the Reagan and Bush administrations, good scientific theories and estimates of environmental disorganization processes have been withdrawn from the agendas of scientists and political advocates alike, and placed into a scientific-political inventory (Schnaiberg, 1986a). In this state of limbo they awaited more favorable political-economic conditions (e.g., resources for research, attentive audiences). While the new Clinton administration, with its environmental Vice-President, Al Gore, Jr. (Gore, 1992) was anticipated by environmentalists to infuse new energy into environmental policymaking, the treadmill pressures on the new administration to provide deficit reduction, new employment, and new investment incentives are likely to offset this environmental protection orientation (Schnaiberg & Gould, 1994: ch. 10). There <u>are</u> changes in international collaboration on global warming and species protection under the new administration, however, and new approaches to an "energy tax". These political variations are broadly consistent with the arguments of Skocpol (1980) about the state-logic of policymaking, in which contextual factors play an important role in shaping the trajectories and policy outcomes.

Nowhere was this type of strategic retreat clearer than in the case of the EPA under its Administrator Ann Gorsuch (Landy et al., 1990). Her Reaganomics-based ideology stifled EPA's scientists from exploring many environmental problems (Szasz, 1986). A similar scenario occurred in James Watt's tenure as secretary of the U.S. Department of the Interior, which undermined ecological consciousness within that agency (Claybrook, 1984; Lash, 1984; Burton, 1986).

While organized environmental and other movements stimulated the removal of these two administrators, the damage to environmental science and regulation of that period was largely irrevocable. Recent evidence by former administrators under the Bush administration (e.g., Mintzmyer, 1992) suggest a continuity of prior pressures. (It is still too early at this writing to evaluate the Clinton nominees and their priorities.)

The battlegrounds were shifted by Reagan's economic synthesizers from the political frontstage to the executive backstage (Lash, 1984; Lowi, 1979, 1986). Congressional struggles over legislation were replaced by battles over appropriations and detailed regulatory procedures. Federal administrative pressures on regional offices to defer regulatory sanctions rose as part of the same processes (Lash, 1984; Claybrook, 1984; Commoner, 1987). Agencies such as the EPA consequently faced additional problems in recruiting and retaining competent scientists and lawyers. These professionals' usual constraints (Schnaiberg, 1980: chs. 6-7; 1986a) were now exacerbated by new intra-agency barriers imposed by Reagan's program for an economic synthesis. All of these historical patterns challenge Morrison's (1976, 1986) assertions about the institutionalization of environmentalism in state agencies (Buttel, 1985, 1986). At the very least, they raise questions about the degree of such institutionalization, or at least the policy-effectiveness of these state agencies (cf. Dunlap, 1987).

But direct restraints on scientific consciousness-raisers and their state and movement allies constitute only one factor influencing recent volatility in environmental policymaking. The declining competitiveness of the U.S. economy in the modern world-system has imposed substantial chastening of labor of all types. Skilled and unskilled blue-collar jobs in manufacturing have been transferred from many U.S. communities to foreign-based plants, themselves often built with capital in flight from America (Blumberg, 1980; Bluestone & Harrison, 1982; Lipietz, 1987). College-educated groups, the backbone of environmental movement organizations (Mitchell, 1980), have also been negatively impacted, as has the middle-class in general (Knapp, 1987; Schnaiberg & Goldenberg, 1989; Schor, 1991; Barlette & Steele, 1992; Newman, 1988, 1993; Lardner, 1993).

These publics were mobilized in unprecedented ways by environmental movements in the Johnson-Nixon years to support the new legislation of managed scarcity (Morrison, 1973, 1986). But both scientific and other labor segments have increasingly struggled with personal economic troubles (Mills, 1959). There has been recent growth in concern about environmental problems, and some

movement expansion in response to Reagan's anti-environmental policies. But this was not translated into stricter control of treadmill acceleration in most of the Carter, Reagan and Bush years (Dunlap, 1987; Lash, 1984; Landy et al., 1990). Capital owners have often become more resistant to environmental regulation or enforcement. They face new cost competition from overseas, and thus are even more motivated to fight "unproductive" investment in pollution control (Lipietz, 1987). The fiscal crisis of the state (O'Connor, 1973), most recently evidenced in the U.S. by sharply-rising budget deficits, further restricts state support for environmental research. Ironically, the sharp rise in such deficits in the Reagan and Bush years are largely a result of the diminished effectiveness of his economic syntheses, and not of increased environmental protection (Lipietz, 1987; O'Connor, 1988). With the emphasis of the new Clinton administration on a form of global competitiveness "with a human face" (Reich, 1991) and an "environmental face" (Gore, 1992), it is unclear what these tensions will produce in implemented policies (Lardner, 1993).

Economic strains on environmental scientists and other labor segments interact in complex ways within the treadmill (O'Connor, 1988). For example, environmental professionals may gravitate away from public employment in environmental protection when there are (1) good industry positions utilizing their technical-environmental skills, and/or (2) unstable opportunities in the state's environmental protection agencies. Under some conditions, though, more of a skilled scientific group is attracted to public service when private-sector opportunities diminish sufficiently. The question then emerges: will there be sufficient public service employment when there is lowered surplus generated by the treadmill's private sector? Only a strong political coalition around use-values and the exchange value interests of labor can reallocate surplus in this way, viz.,to simultaneously protect the environment and provide socially-useful employment of skilled human capital (O'Connor, 1988).

Trajectories of managed scarcity conflicts are illustrated by the issue of acid rainfall. Acid rainfall and associated global warming processes have likely been growing since air pollution regulation of the late 1960s was implemented (Gore, 1992), due to increased levels of sulfuric acid and carbon dioxide. But both the ecological additions (and subsequent withdrawals of species) and the political-economic context have been changing (Morrison, 1986; Buttel & Taylor, 1992). Ecological impacts of acid rainfall grew sufficiently to retain the environmental movement's attention. But there was also more resistance in the 1970s and 1980s

by major trade assocations and the capitalist class in general. They feared projected increases in production costs necessitated by future control over combustion processes. And their resistance was sufficient to prevent both major state research efforts and the legislation of new managed-scarcity regulations (e.g., Lash, 1984; Buttel, 1985).

One can perhaps envision the ongoing political-economic conflicts around every stage of managed scarcity, from initial consciousness to policy implementation, as a kind of political see-saw, reflective of the dialectical shifts in Skocpol's (1980) state-logic. Challenges from environmental use-value groups rise and fall, depending on changes in their consciousness, mobilization, and resources. These changes reflect actual ecological disorganization, and the capacity of scientific laborers to identify and publicize these changes. Responses and counter-challenges from the capitalist groups also vary according to their resources and the demands on their budgets from competitors, consumers, and state regulators (O'Connor, 1988).

From the perspective of many state officials -- elected and bureaucratic -- an ideal balance exists when enough surplus is being generated to permit a sufficient allocation to both capital owners (for economic growth) and environmental constituents (to enhance environmental entitlements). This requires delicate political juggling, and a great deal of luck. In recent periods, surplus generation appears to have been more problematic because of changes in world competition (O'Connor, 1988; Lipietz, 1987). Thus the state tilted away from environmentalist support, moving closer to the economic synthesis (Gore, 1992). Ironically, movement towards this synthesis seemed to contribute to the further decline of the middle and much of the working class (Blumberg, 1980; Knapp, 1987' Barlett & Steele, 1992; Newman, 1993; Phillips, 1989, 1993). These classes are distracted by personal troubles (Mills, 1959), and the capitalist class urged them to see environmental issues as responsible for their economic issues (O'Connor, 1988). State transfer payments rose, in part to deal with the problems of unemployment and underemployment. Moreover, under Reagan's and Bush's fiscal policies, state indebtedness rose still more sharply, attenuating allocations for environmental research and enforcement, as well as for other social expenses. In turn, this historical legacy of huge state deficits and indebtedness has further reduced the Clinton administration's potential to act in socially- and environmentally-benign ways, using standard treadmill logic.

Yet we must remember that this is a dialectical and not a linear process. Reaganism revitalized many movement organizations, by slashing much environmental enforcement. He thereby generated new movement and public fears about health hazards (Burton, 1986). His supply-side economic policies also reactivitated the movement fears characteristic of the Johnson-Kennedy period, about loss of habitat and sustenance (Schnaiberg, 1980: ch. 1), especially illustrated by growing toxic waste conflicts (Dowie, 1992; Morris, 1992). Likewise, the prospects of a more socially-sensitive Clinton administration has spurred new interests in coalitions of environmentalists and social welfare movements. This is perhaps symbolized by the 1993 election of Reverend Dr. Benjamin Chavis, Jr., as head of the National Association for the Advancement of Colored People: he coined the term "environmental racism" in his work for the United Church of Christ in the 1980s.

In contrast to the utopian beliefs of deep ecologists (Devall, 1980), appropriate technologists (Schumacher, 1973), or radical theorists (e.g., Ophuls, 1977) of the l965-80 period, then, the culmination of environmental consciousness-raising produced more volatility within the treadmill. It did not lead to a transition to an ecological synthesis that would have dismantled it (Buttel and Larson, 1980; Buttel, 1986; O'Connor, 1988). The radical environmentalism that Lowi (1986) characterized as "cost-oblivious" was eventually displaced in the Carter-Reagan period by environmental liberalism, which he labels as "cost-conscious", and there was strong pressures in the Reagan and Bush years to revert back to the economic synthesis (Lash, 1984; Dunlap, 1987; Landy et al., 1990; Yaeger, 1991), and a modified managed scarcity approach in the Clinton administration (Reich, 1991). In like manner, the more recent rise of a "model" of *sustainable development* (Redclift, 1987; Davis, 1991; Court, 1990) seems likely to follow a similar path of accomodation to existing capital interests (Schnaiberg & Gould, 1994).

Lowi (1986) and Buttel (1985, 1986) see the future paths of environmental conflict as more intense in relatively decentralized states like the U.S., in contrast with countries such as Sweden, Canada, and West Germany. I concur with these projections. However, I am far less certain about the future historical changes in either the state attentiveness or ecological outcomes of future policymaking. Consciousness and control capacity within the class structure of the treadmill have, as noted above, fluctuated substantially in the past two decades of U.S. history. But they have produced only limited managed scarcity policies.

This is understandable when we face the fact that environmental conflicts are redistributive conflicts about access to ecosystems and the allocation of different types of social scarcity (Burton, 1986; Buttel, 1985; 1986). Environmental conflict operates within a class structure that is highly resistant to fundamental changes in the social relationships of production (O'Connor, 1988). In part this explains the lower effectiveness of U.S. environmental protection, because the U.S. state is less autonomous than Sweden, for example (Buttel, 1986), and thus less free to confront the dominant capitalist class. While environmentalists see society as embedded within the biosphere, national and international ecosystems are simultaneously embedded in an equally-enduring political-economic system. Consciousness and control conflicts among different ecosystem users reflect their search for support of other social class segmments, in their efforts to sway state agencies and actors. Thus variability in the managed scarcity synthesis is likely to be large and unpredictable in the foreseeable future (Meidinger & Schnaiberg, 1980; Schnaiberg, 1986c; O'Connor, 1988; Schnaiberg,Gould & Weinberg 1992; Schnaiberg & Gould, 1994).

NOTES

1. Although my usage of the concepts of exchange-value and use-value borrows heavily from Marxist frameworks, I deviate substantially from many theoretical principles and concepts of neo-Marxism. For a more explicitly neo-Marxist analysis, which only partly concurs with my formulation, see the recent essay of James O'Connor (1988). Other perspectives somewhat more consistent with my own here are those of Buttel and Larson (1980) and Buttel (1985). The latter coincides more with the limited expectations of social redistribution through modern environmental protest posited in this chapter than does the earlier paper, which preceeded the regressive policies of the Reagan administration. O'Connor, in contrast, sees more progressive possibilities in modern environmentalism as one possible outcome of the conflicts it adds to the conjuncture of broader crises of capitalism. I shared more of this view some ten years ago, before Reagan and Bush took office (Schnaiberg, 1980: chs. 8-9); my optimism has diminished substantially in the intervening years (e.g., Schnaiberg, 1983a; 1983c), with the strains imposed both by the constraints imposed by OPEC and the flight of American capital away from the U.S. (e.g., Bluestone & Harrison, 1982; Blumberg, 1980; Lipietz, 1987; Barlett & Steele, 1992; Phillips, 1989, 1993; Newman, 1988, 1993).

2. Despite an eloquent argument to label this as environmental "degradation", I prefer the term disorganization (Lee Freese, personal communication, 1989). In this, I choose to emphasize the social rather than the ecological factors, and reflect human interests in the environment rather than the interests of other species (cf. Evernden, 1985). There are costs to this, but I believe that a political-economic perspective must perforce examine competing social forces operating in the modern state. Other non-human species are thus represented in this chapter only by the social movements that represent them in political discourses. "Degradation" is, from my perspective here, a socio-political consciousness-raising term, and it ignores the political-economic implications when consciousness is suppressed (e.g., Hays, 1969).

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Table 1. MANAGED SCARCITY CONFLICTS: COMPETING CLAIMS

	Environmentalist claim	Producer counterclaim
PROBLEM SEVERITY ISSUES:		
i.	Ecological disorganization is being produced	There is no ecological disorganization being produced.
ii.	There is major ecological disruption "known": we don't need to postpone action for future research.	Some ecological disruption is already occurring, but it is minor; we would need costly ecological and community research to establish any "problem".
CAUSAL ISSUES:		
iii.	The disorganization is socially produced, not "naturally-occurring."	There is some disorganization, but it is not really socially produced.
iv.	There are mechanisms for reducing or eliminating this disorganization without stopping or slowing societal growth	The ecological disorganization is socially produced, but it is an inevitable by-product of societal growth.

BENEFIT < COST ISSUES:

v.	There are technologically-feasible ways of controlling the disorganization already available or near at hand.	We are currently unable to control this disorganization, and will need costly production and ecological research before any production options can be weighed.
vi.	We can easily afford to implement the corrective technologies, through implementation of regulatory rules, including fines for producers who violate them.	There are some corrective options possible, but they are costly to use, and producers will need some incentives to make them feasible.
vii.	Social benefits from environmental protection are far greater than are the relatively modest costs of implementing them.	The costs of correcting these ecological problems really exceed any benefits of melioration.

COST < BENEFIT ISSUES *:

viii.	Social and ecological benefits of recycling [re-use] are greater than economic costs	Economic and ecological benefits of recycling [re-manufacturing] are greater than economic costs
ix.	Social and ecological benefits of energy conservation [reduced use] outweigh economic costs	Economic and ecological benefits of energy conservation [increased efficiency] outweigh economic costs

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*Issue arena of relatively low conflict.

Table 2: Recent U.S. Environmental Policy-making

	Dimension	
	Synthesis	***Issues#***
Political Administration		
Johnson-Nixon	Managed Scarcity	•Costs of pollution.
Carter	Managed Scarcity (bordering on ecological)	•Costs of pollution control. •Energy conservation. •Soft energy paths. •Resource equity.
Reagan-Bush	Managed Scarcity (bordering on economic).	•Economic growth with cost-effective pollution controls •New production technologies
Clinton	Managed Scarcity [oscillating between economic & ecological poles]	•Environmentally-"benign" technologies. •International pollution control. •Government market incentives