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Allan Schnaiberg, Northwestern University

Chapter 31: *The Economy and the Environment*

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1. SOCIAL SCIENTIFIC VS. ECOLOGICAL ANALYSES

In many ways, the relationship of “the environment” and “the economy” is straightforward. Nature provides the material support for both humans’ lives and their production systems. It also removes the unusable waste products of this production, through human dispersal of societal wastes into ecological systems, with some decomposition/absorption inside these systems. *Ecosystems* (Odum 1969) are organized and somewhat stable arrangements of nutrients and living species. For many decades, this nurturing role of nature was taken for granted and viewed as unproblematic. But from at least the early part of the 20th century to the present (Hays 1969; cf Mumford 1963), biological and later, social scientists became aware of a negative feedback loop from the economy into ecosystems.

As Schnaiberg (1980) conceptualized it, societal production withdrew from ecosystems ever-growing materials needed for production, and added to ecosystems ever-more massive waste products from economic systems. These activities increasingly deplete and pollute, and thus have the potential to disrupt the organized structure and functioning of ecosystems (Odum 1969). Societal efforts to inhibit such disorganization are hampered by the existing political-economic institutional arrangement that the history of economies has generated. Paradoxically, organizations and individuals with the greatest

economic, social and political power are typically those who have utilized depletion and pollution processes for their particular interests. Ecosystems are seen as private assets for many economic organizations, especially with the increased globalization of production. In contrast, environmental movements and community organization see ecosystems as public goods. These alternative goals for the utilization of ecosystems gives rise to the *societal-environmental dialectic*. Essentially, it is a dialectical system of values, because society wants both economic and ecological outcomes, and yet these outcomes are in tension/conflict with one another.

This chapter will first outline the potential and the limits for social scientists to study these interactions. First, the intellectual boundaries of natural versus social scientists are delineated, as are the problematic relationships between these disciplines. In many ways, this chapter is restricted to the analysis of economic (and political) **organizations** and **institutions** (Hoffman & Ventresca 2002). The chapter is focused on the tensions between ecological and economic structures. It notes how reductions of such tensions have either been incorporated into economic systems, or deflected by such systems. Competing abstract models are outlined, showing how previous socio-economic systems have empirically related to ecosystems, and contrasting this with how competing norms for future *sustainable* socio-economic systems (IUCN 1980) have emerged. Distributional tensions of these models of economic/ecological interaction are then sketched:

“From a sociological perspective, it is never sufficient to *the* environment as having been protected. The question must always be asked, for whom and from whom has it been protected?” (Schnaiberg 1980: 5)

Following this theoretical analysis, the chapter offers a concrete case study of contemporary recycling policies in the United States (which are less effective than many European policies). This analysis grounds some of the abstractions of the previous sections. Sections following lay out some of the major dimensions of distributional conflicts about utilizing environmental resources. Who actually gets to use ecosystems, and how? Competing social movement organizations and ideologies are examined, in terms of how they deal with existing national inequalities of resource utilization and growing transnational inequalities. Even in a period of *global* warming, “global” policies (as in the Kyoto accords) are greatly influenced by the interests and actions of national and transnational economic organizations (Gould et al 1995; cf Canan & Reichman 2002, Buttel & Taylor 1992, Fisher **2003**).

This distributional framework is more closely explored in a section dealing with claims about environmentalists’ *elitism*, and about the incidence of environmental *injustice* (or *racism*) in the political-economic rule-making for accessing ecosystems and limiting their protection. Some parallel issues are explored in the distinction between local economic organizations and national/transnational ones, in terms of their sensitivity to environmental problems affecting local populations.

Finally, the chapter is concluded by contrasting the more pessimistic theory of the *treadmill of production* (Schnaiberg 1980) with the more optimistic theory of *ecological modernization* (Mol 1995, 1996). In general, the former stresses conflicts between economic growth and environmental protection, while the latter stresses that the social order is incorporating a serious protection of ecosystems. Our analysis points to areas of convergence between the two theories, as well as their more apparent divergence.

This chapter differs substantively from the thoughtful analysis by Johannes Berger in the first *Handbook* edition (1994, ch. 31). To a considerable extent, Berger took on the challenge of evaluating the severity of environmental problems, a task we leave here to other researchers. Next, Berger only peripherally addressed the distributional features of both environmental problems and environmental protection policies, which I consider the central feature of the economic/environmental relationship. Third, Berger tended to focus his analysis on cultural and individual factors affecting this relationship. In contrast, I have chosen to examine the embeddedness (Granovetter 1985) of environmental problems/policies within contemporary political-economic structures. To some extent, then, the two chapters complement each other, with Berger's stressing perhaps more theories of order, this chapter more theories of conflict.

One of the first dilemmas of examining the interaction between the economy and its natural systems is the dependence of social science on natural science disciplines for both data and theories. Within the United States, it was natural scientists (Carson 1962, Commoner 1970, 1972, Weinberg 1972, Westman & Gifford 1973) who first called attention to modern U.S. environmental problems. They saw ecosystem disruption impacting upon both the life of both human and animal/plant populations. In turn, they faced a dilemma that was the mirror image of our own. They sought to create public policies for reducing pollution and depletion, writing proposals for economic and social change. As insightful and informative as these scholars and public intellectuals were, however, they had little expertise in the political-economic functioning of the modern economy. Both of these scientific boundary problems continue to exist. Recently, natural scientists have called for sustainable *biodiversity* (World Commission 1987), while economists have transformed this into a plea for sustainable *development*, and even for sustainable *growth*, growing the economy while sustaining ecological biodiversity (Daly 1996a,b).

Social scientists continue to have limited expertise to evaluate the changes in the ecological systems. They are forced to depend on natural science research in universities, as well as on government and industry reports, for their assessments of the severity of “environmental problems”. (Dietz & Rycroft 1987). Yet there is much dissent both among scientific and technical “experts” (Buttel & Taylor 1992). Few social scientists

have enough scientific background to adjudicate between such contending claims. Recent examples include issues of the degree of global warming, and the impact of industrial chemicals such as chlorine, etc [Buttel & Taylor 1992, Lomberg 2001, Sonnenfeld 2000]. Moreover, these arguments have also been socially framed by a variety of social and economic organizations – whether of environmental movements or of industrial trade associations. Some differences are due to competing scientific data. But these groups also engage in a political competition. They either see environmental problems as “fully” or “only” at a certain level. Economic agents emphasize environmental protection changes from the past economy, while environmentalists stress the gap between the present environmental impacts and a sustainable future. (Schnaiberg & Gould 1994: x).

2. ALTERNATIVE MODELLING OF THE ECONOMY'S RELATION TO THE ENVIRONMENT

Over the last forty years, there has emerged a broad literature on how the economy impacts on the natural environment. From the interaction of this literature and the representation of competing economic and social interests, a number of approaches dealing with how much and how to *protect the environment* have emerged.. The *use-value* of some ecosystem component is a measure of how well the resource can be used to sustain a variety of needs of the human population. In contrast, the *exchange-value* of some ecosystem resource is a measure of how economically profitable will be the processing of this element for markets.. Most ecosystem elements cannot be used to

simultaneously maximize use-values and exchange-values. Yet modern societies desire both kinds of values, creating what was noted earlier as a *dialectical tension* between economic and ecological organization.

Three distinct syntheses of these dialectical conflicts can be observed: *economic*, *managed scarcity*, and *ecological* (Schnaiberg 1975, 1980: 422-428) They all address the question of how far the state should impose some control over how society utilizes ecosystems, based on (1) a set of assumptions about the severity of ecological disruptions,, and suggesting (2) a set of policies to regulate socioeconomic access to ecological systems. Each model, in short, assumes (1) the mechanism and the degree to which the *economic* structure impacts on its environment, and (2) the necessity and policy for how such environmental disruption should be treated by the state.

Each of these models thus makes assumptions about how *ecological* disruptions impact on economic activities. Specifically, they offer evaluations of whether and how:

- 1. ecological disorganization can inflate economic costs
- 2. ecological disorganization can present hazards to human health
- 3. ecological disorganization can cause the abandonment of specific economic units
- 4. ecological disorganization can cause major economic disasters
- 5. ecological disorganization can threaten the entire political-economic system.

Conversely, each model differs in the political-economic norms it suggests for whether and how:

- 1. economic activities should utilize natural resources
- 2. economic organizations should relate to the natural resource systems they use
- 3. economic organizations should make decisions about resource utilization
- 4. economic organizations should relate to the state's environmental regulatory system
- 5. economic profits should be allocated to production, to environmental protection, and to influence politically state and non-governmental environmental organizations

Chart 1 outlines the major differences among the three types of syntheses.

**Chart 1: CONTRASTING SYNTHESSES TO THE
SOCIAL-ENVIRONMENTAL DIALECTIC**

<i>Synthesis</i>	<i>ECONOMIC</i>	<i>MANAGED SCARCITY</i>	<i>ECOLOGICAL</i>
<i>Importance of Environmental Protection</i>	no policies	minimal to major policies	central to policies
<i>Constraints On market Forces</i>	none	minor to substantial	domination of markets
<i>Political-Economic Constraints Protection agencies/movements</i>	total	near-total to predominating	(theoretically) none

A. ECONOMIC MODEL

All economic activities which are profitable **should** be carried out, so long as there are investors willing to risk capital, in this). All ecosystems should be made available to *productive* uses model (Bluestone & Harrison 1982, Logan & Molotch 1987, Logan & Swanstrom 1990, Harrison 1994, Gordon 1996). To a considerable extent, this is the dominant model that most industrial societies followed prior to the rise of modern environmental protest.

In this utilization of resources in societal production, little distinction is made with regard to the ecological characteristics of the resource systems. Only the ecosystem's utility for creating value is treated as important. In many ways, neo-classical economic theories, and especially the theory of the firm, adhere to this model. The latter indicates that the rational organization of the firm is to incorporate all the **positive** externalities of production, while erecting economic, legal, and political barriers against internalizing its **negative** externalities (Mishan 1987, Boulding 1971).

Decisions about resource utilization here are made exclusively by the firm's decision-makers, in conjunction with the owners of properties containing resources for *extraction* (e.g. non-surface land ownership) or *use* (e.g., private land or bodies of water). To some extent, this follows on Ronald Coase's (1960) theory that negative externalities should first be treated by private negotiation. Political regulation of such use of natural and economically useful property is opposed as both inefficient and politically inappropriate. Coase, in contrast, saw such state intervention as necessary when negotiations failed.

Recent court cases have split, for example, on whether environmental regulation over private properties is a *taking* by the government. If so, then governments must reimburse resource owners for all profits foregone, when the state restricts certain forms of development on the lands owned (an opportunity-costs approach). Costs of doing business in the firms affected here include substantial legal and social expenses.

Economic organizations thus resist state legislation, and the enforcement of environmental protection laws. Resistance may include “public interest advertising” to undermine the arguments of environmental movement NGOs, staff appearance at political hearings, and contributions to political candidates who support the firm’s position. In recent years, it has also included creation of fictive organizations opposing various regulations, including internet websites for the “wise use movement” and the “balanced energy movement” (e.g, Howard 1992).

B. MANAGED SCARCITY MODELS

This model is more complex and substantially more heterogeneous than the other two. It essentially recognizes that economic activity generates **both** ecological disorganization, **and** exchange **and** social use values. Dialectical tensions between economic growth and ecological protection are most overt in this model. But the problems of commensuration (Espeland, etc) and the diversity of interests have made it difficult to achieve much political consensus over time and place as to what are appropriate state policies. Schnaiberg (1973) argued that the common denominator of all such policies is that the state restricts access of various categories of users to certain components of ecosystems. Ultimately, ecological impact of ecosystem depletion and disorganization disrupt economic production. Here, the state reduces the risk of this outcome by imposing *anticipatory* restrictions, to create an *imposed scarcity of access* to these ecosystems. Policies can also restrict use-value users. Social scientists have primarily studied

restrictions imposed on economic organizations which have exchange-value interests. In part, this is because the latter offer an object of study that is organized, enduring, and somewhat analytically accessible through public archives (Schnaiberg 1994).

Coase (1960) outlined a set of neoclassical economic theories about how to manage negative social externalities such as pollution, early in the modern period of environmental concern. He suggested that spillover costs and benefits will not occur, and that government intervention was not necessary when (1) property rights were clearly defined, (2) the number of people involved was small, and (3) bargaining costs were negligible. For most contemporary pollution, however, none of these conditions hold. Government's role, he argued, should then be first be to encourage bargaining wherever possible, rather than to get involved in direct restrictions or subsidies. A related bargaining approach is dealing with liability through lawsuits. But this solution is limited to cases in which the damaged parties can afford to initiate the suit, or in the case of many people, can organize to sue (Harr 1997?, Brown & Mikkelsen 1997).

A non-market approach is to apply direct government controls or taxes to reduce negative externalities or spillover costs, or to provide subsidies or government provision where spillover benefits exist, using direct controls or specific taxes which can be levied on pollution. This constituted the early stages of modern environmental protection, after the creation of the U.S. Environmental Protection Agency in 1969. Many other states

followed this lead, and they often sustained more enforcement than did the EPA itself. But the early modern period of enforcement created substantial economic mobilization against environmental protection legislation and enforcement (Landy et al. 1990, Yaeger 1992, **Gould et al 1993**).

In turn, such resistance by economic organizations led to the political creation of new *markets* for externality rights (Meidinger 1986). Pollution control agencies initially decide on the acceptable amount of pollution in a particular region. Then they create *rights* that firms can purchase to allow them to pollute. At high prices, polluters will either stop polluting or buy other firms' rights, rather than acquire expensive pollution abatement equipment. Other firms will sell their rights, because they may be able to reduce their pollution at a lower cost. In theory, environmental movements as well as producers can buy rights, although this is hardly evident except for the traditional form of the Nature Conservancy buying land for preservation purpose. A market for air pollution rights has thus expanded, along with other forms of *cap and trade* policies (Meidinger 1986, Tietenberg 2002, Rose 2002.).

These models acknowledge that the **primary** responsibility for the use of natural resources rests with the market, and this limits state activity (Logan & Swanstrom 1990). However, the state **also** has an enduring responsibility to set sociopolitical limits on such resource utilization. The state's environmental protection policies should help maintain

use values associated with protected ecosystems. But the state also must remain mindful of the exchange values of investors' and workers' exchange-values associated with resource use (jobs, profits) [Logan & Molotch 1987, Logan & Swanstrom 1990]. In effect, this model advocates the state's *political* creativity is in selectively increasing the scarcity of access to some resources. State regulation may thus exist through rationing by price, if surcharges or fines are used, or by direct command-and-control policies, where outright access to resource is controlled or simply prohibited (as in many conservation policies), or through the more recent cap-and-trade marketing of environmental degradation rights.

Managed scarcity models can be relatively apolitical. Situations of this type are less politicized when ecological problems permit greater economic development. In the early part of the 20th century (Hays 1968), early *utilitarian* criteria for resource use were highly visible and political. Experts created estimates for maximizing the *sustained yield* of a given local land and water system, and they discouraged less efficient uses. Activists here were professional scientists who assessed ecosystem parameters, and provided input to government resource agencies. They often supported more concentrated economic uses, as permitting *sustained yields*. However, in *preservation* conflicts, where little or no economic activity was permitted (Hays 1968), the petitioners were those interested in maintaining use-values of wilderness, often against the interests of major economic entities.

More recent state policies acknowledge a broader need for direct education of political and economic managers. They include training for policies of environmental protection (pre-production) and/or of remediation (post-production). Failures of environmental protection here are often theorized as due to ignorance and misinformation, and more scientific studies are encouraged (Lowi 1986). These apolitical research and training approaches seem most validated when new scientific data about human health hazards emerges, since it is harder to ignore these clearer hazards (cf Brown & Mikkelsen, 1997; Sheehan & Wedeen 1990). To some extent, recent models of 'ecological modernization'¹ (Mol 1995) follow this pattern (see section 8). Economic agents incorporate *some* ecological concerns in their decision-making. In most cases, though, the firms respond only because of the state's increase (or projected increase) in their *de facto* prices of resource access. Paradoxically, though, many of these firms also attempt to discredit the scientific basis for the state's interventions (Brown & Mikkelsen 1997, Dietz & Rycroft 1987)

Other forms of managed scarcity models emphasize far more political or contested terrains. Economic organizations protect their exchange value interests in natural resources, through various forms of political influence. The treadmill of production

¹ See section 8 below.

model² explicitly views economic growth as simultaneously threatening natural resources and ecosystems, and serving to accumulate more corporate power, which it uses to dampen the state's enforcement of environmental protection. Generally, this pole of the managed scarcity dimension touches on *prohibitions* of access to some resources, and not manageable increases in the prices of accessing these resources.

C. ECOLOGICAL MODELS

These models largely focus on ecosystem protection, especially on sustaining biodiversity in all ecosystems. They are all normative, and not descriptive of past economies. The *deep ecology* (Evernden 1985, Devall 1980) model views *homo sapiens* as but one specie. Its needs/desires are not deemed as philosophically **more** important than those of any other species. Domination of ecosystems by humankind is rejected as philosophically illegitimate. No serious account is taken of the economic or social costs of this position, for populations, for political institutions, and for economic organizations. The empirical record for such an approach is invariably drawn from preindustrial societies, especially nomadic groups that are pre-pastoral. From this perspective, we can either argue that deep ecology is politically radical, or apolitical with regard to the political economy of contemporary industrial societies.

² See section 8 below.

Earlier forms of this model have been largely educational and persuasive. But some recent non-government organizations have emerged, which practice overt political protest and even sabotage. This includes animal rights movements, as well as those protecting wilderness areas. In the U.S., this has included actions such as planting nails in trees to be harvested, thereby removing their economic harvesting and lowering their commercial value, and burning some experimental forests involved in genetic engineering research. Recent experiences of terrorism in 2001 has led the U.S. government to label these more extreme social movements as *eco-terrorists*. The Attorney-General viewed direct action against producers, or even the threat of such actions, as a political threat, in contrast with the actions of “mainstream” environmental groups (Jarboe 2002). Presumably, the latter fall well within the economically-more benign managed-scarcity model.

A more recent evolution of this model is that of *sustainability* (World Commission 1987). Starting from initial concerns about *sustainable bio-diversity*, this model has undergone a variety of transitions. Many of the resulting variations, such as sustainable development and especially sustainable growth (Daly 1996a,b) can more properly be classified as managed scarcity models. But the early models advocating *biodiversity* (IUCN 1980) are properly included in the ecological model. They focused primarily on the use-value benefits of biodiversity (and some exchange values, such as natural pharmaceuticals). But they largely avoided discussing the level and social distribution of the costs of such regulations (Goldman 1998).

Ecological models tend to promote direct rationing of natural resources, protecting a variety of ecosystems and species from economic exploitation by economic organizations. This tends to maximize conflict between these advocates and representatives of most economic institutions (Redclift 1986,1987, Baker et al 1997, Schnaiberg 1997) when the model is introduced to policy debates (European Community 1993, United States National Commission on the Environment 1993, Weinberg et al 1995, President's Council on Sustainable Development 1994, 1997, 1999). Conversely, when their model is discussed in "merely academic" settings, it is treated as an alternative *philosophy*, and not a plan for *action* (Willers 1994). The boundaries between social scientists and philosophers writing about this model are often quite blurred, as a result.

3. DISTRIBUTIONAL DIMENSIONS OF ECONOMIC-ENVIRONMENTAL RELATIONS: INTERNALIZING & EXTERNALIZING ENVIRONMENTAL COSTS

The three models handle the normative issue of how to distribute the benefits and costs of natural resource usage in different ways. Each proposes different norms for directing economic development. One recent example of the complexities of social control was the Bush administration's proposal (2001) for a new national energy policy, under the direction of Vice-President Cheney's National Task Force on Energy. Under managed scarcity, the dominant U.S. policy for controlling economic interests, such deliberation

should have involved both economic and ecological issues. Yet legislative subpoenas have produced evidence that only major energy corporations contributed to the national plan, while environmental groups were only nominally “consulted” in brief and separate meetings (Democratic Staff 2002). This seems very close to the economic model. It suggests that the U.S. has a far less stringent managed-scarcity policy. Indeed, the Bush administration advocated considerably more of an economic model than did the previous Clinton administration.

The standard neo-classical economics (Coase 1960) viewed environmental problems in a conceptually clear fashion. Pollution was a negative externality of a firm’s operation, and the firm needed to be encouraged to internalize this externality to raise national welfare. Although this was a logical approach, it failed the test of political reality. The theory of the firm argued for the firm to maximize its profitability by internalizing positive externalities and evading negative externalities, which clashes with this internalization directive. In social-historical and political-economic history, moreover, it is the latter model which dominates in the U.S. and increasingly, in the global market. Left to the dictates of market forces, pollution and depletion would largely be ignored, to the point where it had reached a critical point in which it threatened market actors and transactions. By then, it would be difficult to control, leading to an “overshoot” model of resource extraction (Catton 1982).

We have an interesting analogue in the case of the Y2K problem. Older computer programs were going to deal with the year 2000 as if it were the year 1900. This was because of the earlier use of a 2-digit code for year, instead of the 4-digit code used in later computer programs. Later machines had higher memory and greater ease of manipulation of data storage. Although there was much political *attention* paid to this problem in the very late 1990s, little political *regulation* was achieved. Scenarios were prepared, anticipating a major economic collapse on January 1, 2001. Government agencies were alerted, with emergency operation plans. But little state *control* was mobilized to regulate the private sector. Despite, or more likely **because of** these dire predictions, firms and computer service organizations managed to muddle through January 1, 2001, with few major problems in any country. The threat of economic collapse of markets stimulated a variety of approaches to deal with the Y2K problem. Market hazards thus created market solutions. In this case, “overshoot” did not materialize.

Some economic model adherents see a similar future for resolving problems of resource exhaustion and pollution. When the problems become severe enough for firms, market messages will create new incentives for technological innovation in the private sector (cf. Catton 1982). Paradoxically, though, many of these analysts also encourage public subsidies to ease this transition, such as in moving from fossil fuels to renewable energy resources. While such state subsidies are encouraged, public disincentives for polluting

and depleting are strongly opposed. For example, in 2002 the U.S. evaded fuel economy legislation, while also promoting the use of hydrogen fuel cells over the next few decades.

Managed scarcity model adherents have a more tolerant view of both state incentives and disincentives. Because these modelers recognize some of the benefits of economic development, as well as the costs of environmental degradation, they have a variety of strategies they accept, for state intervention into the market's disruptions of ecosystems. For the most conservative of the managed scarcity modelers, subsidies are strongly preferred: "let the market decide" is a catchword for this group. These adherents favor a variety of new markets for air pollution trading permits, and similar principles for dealing with global warming, landfill reduction, and other environmental challenges (Rose 2002, Tietenberg 2002, Levin & Espeland 2002, Meidinger 1986).

The use of permitting to encourage toxic waste avoidance through corporate recycling was supposed to be the outcome of the Resource Recovery and Conservation Act (RCRA) of 1976. Yet later analyses indicated that little such recovery of solvents and other chemicals had emerged, except where firms saw them as cost-effective (Yaeger 1991, Landy et al. 1990). Likewise, cleanup provisions of the Superfund program, built on modest surcharges for waste emitters, have proven to be woefully inadequate to reclaim most of the polluted areas (Yaeger 1991, Weinberg et al. 2000).

For those modelers at the more radical end of the managed scarcity continuum, there is far more support for penalties such as fines, increased taxes, and even prohibition of access to some ecosystems. In addition, these are often more social-welfare oriented modelers. They thus became key supporters of rising claims about “environmental injustice” and “environmental racism”, which arose in the late 1980s in the U.S.³. Mobilization of local and national social movement organizations was largely coordinated and staffed by people of color (Gedicks 1993; Bryant & Mohai 1992, Bullard 1990, 1993, 1994, Hurley 1995, D 1996, 1998a,b, 2001). But they still had to rely on the state apparatus to adjudicate their claims of their unequal burdens of environmental degradation. These included high levels of lead concentration and air pollution in dense neighborhoods in the cities, and rising rates of lead poisoning and asthma in these areas. One political achievement of this movement was President Clinton’s creation of an Environmental Justice Office within the Environmental Protection Agency (although it was undermined in the Bush administration).

Finally, ecological modelers tend towards a prohibitive approach by the state. Market forces are the primary engine driving ecological disorganization, and species elimination. Ecological modelers thus favor a retreat from modern economic structures, through a “back to the land” or “living off the land” strategy (Devall 1980, Evernden 1985). This

³ See section 6 below.

can be seen as either a radical or a retreatist strategy (Merton 1957), depending on whether these actions are intended to politically socialize other social groups, or merely as personal accommodations to the “environmental ethic” (Devall 1980).

In the next section, we trace how environmental policymaking has been shaped in one arena, through the mixture of political will and political capacity of a variety of use-value and exchange-value interest groups.

4. ‘INTERNALIZING’ NEGATIVE ENVIRONMENTAL EXTERNALITIES: THE CASE OF SOLID WASTE

An extreme illustration of the distributive impacts of environmental problems and solutions noted above is the case of recycling of solid wastes. Weinberg et al (2000) carried out an analysis of urban recycling in the Chicago region in the 1990s. One purpose of the study was to examine whether recycling was actually an early template for *sustainable development*, as discussed in section 2. At the time of their study, there had been over a decade of innovation in urban recycling, and the researchers believed this was an important case study of both *attaining* and *sustaining* better socio-environmental outcomes of production. It was also a test of theories of *ecological modernization* ((Mol 1996, Spaargaren 1997).[see section 8], and an arena in which to analyze distributive changes produced by this U.S. “environmental” policy.

In western Europe, the approach of the state has been to (1) encourage the use of returnable containers, wherever possible, and (2) to coerce manufacturers to retain responsibility for their product's lifetime, in terms of the solid wastes entailed by the use of their products. For reasons that go beyond this chapter, this appears to be working, in contrast to the U.S. approach. In the U.S., while there emerged a popular will for strong recycling programs, the capacity of environmentalists to influence recycling organizations was severely limited (Lounsbury et al., forthcoming).

In the U.S., the disposable container industry and their business customers formed a "public interest" organization in the 1950's, *Keep America Beautiful*. During the 1960s to the 1980s, this organization promoted the reduction of "litter" on city streets, urging municipalities to have waste containers and citizen consumers to use them for waste containers. With the rise of concern about toxic wastes in the 1970s, many social groups became concerned about having any landfills (solid or liquid waste) near their communities, and an alarm was raised about "running out of landfills" for America's wastes. This led to more state and industry attention to earlier environmentalist pleas to *conserve resources* by recycling waste materials. This was a strong element of political will in the early 1980s (Weinberg et al 2000).

Unlike the case of western Europe, though, American industries sought a different arrangement for solid wastes. Municipalities were encouraged to create curbside

recycling, with cities paying the costs for accumulating post-consumer wastes in residential settings. The expectation was that the accumulated wastes would then be sold on the market, as recyclable materials for use as industrial feed-stocks. Thus, the state could recapture its expenditures by such revenue generation. This appeared to be a “win-win” game for both environmentalists and firms, as well as the state. Moreover, in cities with diminished labor opportunities for the unskilled, sorting recyclable goods also promised to be a new source of stable employment (Weinberg et al., 2000).

Within less than a decade, however, cities discovered that their recyclable material sales garnered limited revenues. In part, this was due to a substantial rise in the supply of recyclable materials, which lowered the market prices. In part, it was due to the reluctance by many firms to retool, in order to use recyclable rather than virgin materials in their production facilities. Ironically, as prices for recyclables plummeted, some firms adopted recyclable materials because their prices were substantially below those of virgin feed-stocks. Thus, it was the economic and political capacity of firms that drove the trajectory of recycling, creating a new recycling industry (Lounsbury et al., forthcoming) without a substantial goal of reducing local environmental problems.

If we examine the distributive outcomes of this scheme, it soon becomes clear that local governments were in effect paying subsidies to firms using recyclables, by covering the costs of curbside recycling. Moreover, environmentalists had initially proposed

voluntary recycling as a use-value scheme, to preserve natural resources. But the new recycling system increasingly became dominated by transnational waste-handling firms such as Waste Management and Browning-Ferris (themselves later absorbed by other waste disposal firms). For these production intermediaries, the key element was profitability. Capital was widely used to reduce sorting costs, and the laborers involved were often ill-paid and worked in hazardous and uncomfortable work environments. As a result, sorting laborers in recycling organizations had very high turnover, reducing the predicted stability of their employment (Pellow 1996, 2001). Since many of these new workers were people of color, it became clear that another form of environmental injustice had been achieved – environmental *solutions* as well as problems entailed disproportionately larger burdens for workers of color (Pellow 1998a,b, 2001).

The outcome of the recycling “boom” has been a curious one. More materials have been diverted from landfills. Yet paper waste, which constitutes the dominant volume of landfill, has been only modestly reduced. Environmentalists’ push for resource conservation has been replaced by a commodified view of waste materials. It is the materials’ exchange value, rather than either their use value or the use-value potential of expanding waste dumpsites, that has determined the actual level of recycling-and-remanufacturing (Lounsbury et al, forthcoming). Some modest ecological protection has been achieved, but the system is largely driven currently by economic rather than

ecological criteria. In many ways, then, this is a minimalist form of managed scarcity, bordering on an economic synthesis (Weinberg et al 2000).

Recycling, in the words of one environmental activist who had earlier started community-development types of recycling program, “has become an industry”(Lounsbury et al, forthcoming). In the process, one may ask: did the waste-handling and remanufacturing firms internalize the negative ecological externalities of disposable products? Or did they externalize many of these, and only arrange for the positive externalities of state subsidies to support this new industry?

5. THE PARADOX OF ECOLOGICAL EXPLOITATION AND POLITICAL-ECONOMIC CONTROL

The case of recycling illustrates how expansion of a firm’s market share and profit facilitates the firm’s political capacity to use its economic power to environmental protection legislation and enforcement. In various states, this has taken a number of forms, such as:

State organization

- collaboration with armed forces and/or police to discourage ecological protest (Goldman 1998)
- campaign support for favored electoral candidates (Meyer 2002)
- lobbying against environmental legislation (Meyer 2002)

Regulatory bodies

- influencing environmental enforcement provisions in administrative committee deliberations (Lowi 1979)
- influence over the public sector's enforcement over environmental laws, such as by lobbying against adequate funding for agencies, and administrative resistances (Landy et al 1990)

Labor

- threatening organized and unorganized labor by using "job blackmail" (Kazis & Grossman 1982) to induce labor's support for the state permitting more access to natural resources by the firm
- threatening local and regional officials of job losses and tax base reductions by threatening to move elsewhere, if environmental regulations are enforced (Longworth 1998, 1999)

Scientific organizations

- influencing scientific research away from environmental problems and towards production expansion (Schnaiberg 1980: VI, Sheehan & Wedeen 1993)
- hiring scientists to attack environmentalist claims (Dietz & Rycroft 1987)

Mass publics

- creating social support groups for the firm, using traditional media and websites (Howard 2002)

- directing public relations against environmentalist themes and attacks on the firm [Blumenstyk 2003]
- conducting campaigns to reassure publics that the firm is “environmentally responsible”(Hoffman and Ventresca 2002; Meyer 2002)

In each of these domains, the economic organization is mobilizing the profits from past natural resource utilization, and allocating them to influence future social policy, designed to allow the firm even more access to natural resources.

In contrast, the social groupings attempting to increase the scarcity management by the state typically have limited resources. While they may have greater public trust, this is frequently and increasingly under attack (e.g., Lomborg 2001) by firms, trade associations, politicians, and state agencies. But the *economic* mobilization capacity of most of these organizations is far smaller than the economic capacity of firms to engage in political mobilization. It is true that national labor organizations can mobilize some substantial campaign contributions (Schnaiberg & Weinberg 2002). But they are usually unable to participate in all the backstage work of regulatory committees, and committees shaping the scientific agenda (Lowi 1979). They lack both the legitimacy and the capacity to match the aggregate political and economic capacity of the successful firms. Finally, they lack the power to create (or promise to create) new capital outlays and new jobs, as well as future tax revenues.

6. ENVIRONMENTALIST ELITISM, ENVIRONMENTAL RACISM AND INJUSTICE AND SOCIAL INEQUALITIES IN ENVIRONMENTAL PROTECTION

Yet another strategy of the firm has been to further discredit environmental movement organizations and environmental regulatory agencies, by claiming that the latter are insensitive to the needs of “workers and the poor” (Schnaiberg et al 1993). The core approach of many environmental movements and regulators is to create and manage some form of scarcity. The 1990s was an era of rising profits, increasing inequalities of wealth, and rising wage inequalities. Given this situation, many less-affluent groups saw their future as heavily tied to an ever-expanding economy, built around increased capital investment and profits. This “corporate-centered” form of development (Logan and Swanstrom 1990) was thus supported by both many of the socially disadvantaged. It was also supported by state officials, who face responsibility for growing social welfare demands.

Since the bulk of the membership and leadership of national U.S. environmental organizations is largely white and middle-to upper-middle class (Dunlap & Mertig 1992), the charge of “elitism” is quite credible. The absence of a durable labor-environmental coalition has further contributed to this charge (Kazis & Grossman 1982). Indeed, unlike many of the mainstream environmental groups’ professional class members, minority

group workers only gained livelihoods in the modern technological production process by a kind of trickle-down economics. They were the very last group to benefit from the unusual expansion of the Clinton era, in contrast to the information-age professionals and dot.com owners and workers. These workers continued to eke out low wages and welfare benefits. Yet they increasingly suffered from increased rates of asthma, lead poisoning, and other urban outcroppings of toxic waste production (Brown & Mikkelsen 1997). Paradoxically, they also found similar inequalities in the *environmental protection industry* that was emerging. The clearest example is in recycling, where skilled workers were mainly white and middle class. The most degrading work, sorting raw and partly-sorted garbage, fell to workers of color (Weinberg et al., 2000, Pellow 2001). Many such inequalities were also reproduced throughout the pollution-control industry, as discussed below.

Hence, the environmental injustice and racism groups were available for mobilization against the national environmental movement organizations. Economic interests emphasized “environmentalist elitism” charges, as a divide-and-conquer strategy. Firms most involved in such fragmenting strategies had disproportionately engaged in creating inequalities in exposure to all forms of pollution, including toxic waste distribution. This raised a challenge for mainstream environmental groups to adapt their agenda to address *social* as well as *ecological* distributional outcomes (Szasz 1994). They needed to enlist

the support of both environmental justice and labor groups (these latter groups themselves often at loggerheads).

Interestingly, there have actually been few studies of the socio-political orientations of mainstream environmental movement organizational **members**. It is difficult to evaluate just how insensitive environmentalists actually are to social distributional concerns (Ehrenreich 1990). This is the case despite the many social surveys of public opinion about environmental problems (Dunlap & Mertig 1992). One of the early studies (Mitchell 1980) was most instructive, however. It sampled the membership of five national environmental movement organizations in the late 1970s. One significant finding was that few of these members had ever been involved in previous social movements, including those which **had** emphasized social equity. This included the civil rights struggles, the anti-poverty campaigns, efforts at creating equal opportunity and treatment for women, and the anti-Vietnam war movements. The last of these were concerned both with *international* equity, as well as domestic equity. It noted how the U.S. minority population was disproportionately exposed to the hazards of battle in Vietnam, including toxic chemical exposure [Agent Orange] from herbicide use in the war.

In the United States, the charge of “environmental racism” and “environmental injustice” was raised formally in the late 1980s (). Data from the 1997 United Church of Christ

study showed the disproportionate location of polluting facilities in areas where there were concentrations of people of color, and impoverished populations. Initially, movements against such “environmental racism”, as such maldistributions came to be labeled (Bullard 1990, 1993, 1994, Bryant & Mohai 1992) focused on the injuries done to people of color. Later, some of these approaches were broadened to incorporate victims from non-minority low-income populations as leading to a broader concept of *environmental injustice* (Pellow et al 2001). Some scholars and politicians denied that environmental *racism* was a driving force for the skewed distribution of hazardous wastes. They argued this was an issue of social class and led to environmental *injustice*, but not one of racism (Pellow 2001).

These reports became a foundation for an increasing mobilization of local organizing by minority groups, and the creation of a national coordinating center (Bullard 1994). To some extent, these groups served to focus attention on the polluting and profiting firms, adding a social and health perspective to the ecological arguments of environmental movement organizations. Yet they also critiqued mainstream environmental movements that the plight of minorities and the poor had largely been ignored by them (Bullard 1993, 1994, Pellow 19998a,b, 2001). And these low-income groups suffered from **both** the health and recreational limitations imposed by expanding firms, using local air, water, and land resources, **and also** from a lack of economic subsistence. Thus, they

experienced an extreme outcome of the economic-environmental dialectic (Pellow 2000, 2002, Pellow, Weinberg & Schnaiberg 2001).

At minimum, this critique suggests that many of the environmentalist members tended to eschew “political” involvement and discourse (Eliasoph 1998), especially before their involvement in environmental movements. Moreover, with the rise of environmental regulation in the 1970s, it is also likely that environmental activists had more economic opportunities from the regulatory process. This included work in government agencies applying rules, and/or in firms attempting to minimize the costs of compliance. Ehrenreich (1990) noted that for middle-class professional groups, there was little tension between their “liberalism” and their occupational security. In contrast, for workers facing factory shutdowns or diversions of investment in their communities, environmental protection did have direct immediate and/or opportunity costs. Issues of “job blackmail” (Kazis and Grossman 1982), where managers mobilized workers to resist local environmental enforcement or lose their jobs, were quite potent forms of mobilizing workers. These groups did also have use-value interests in clean air and water in their *communities*. But, as noted below, they also had exchange-value interests in their *jobs*, pulling them into supporting jobs that entailed pollution and depletion (Brown and Mikkelsen 1997). Unlike middle-class workers, moreover, their jobs and their homes were often in the same polluted community.

Another way of examining the distributional conflicts around environmental protection is to more broadly contrast the powers and orientations of *local* groups of citizens, with the *national* and *global* range of firms (Barnet & Cavanagh 1994, Longworth 1998, 1999). The tensions in mediating these conflicts is also apparent in the ambiguous and ambivalent role of *national* environmental movement organizations.

7. LOCALISM: “NOT IN MY BACKYARD” VS. “NOT ANYWHERE”

The following factual vignette represents many of the distributional insensitivities of national movement organizations to local working-class citizen workers. This is an apparent dialogue between a Caucasian, upper-middle class representative of a national environment organization (NEMO), and a working-class African American representative of a nearby poor de-industrialized African American community (LMC). But note that this devolves into two monologues:

NEMO: We'd be delighted to work with you in solving your community's problems.

LMC: Great! What we really need are funds to help stop the rat migration from the riverbanks into the neighborhoods.

NEMO: Well, what I would suggest is that we send over some of our experts on community environmental problems.

LMC: We know what our major problem is: but we don't have money to solve it.

NEMO: I think we should really send you some experts....

LMC: But that's not what we need....

As is true with many human service organizations, the organization was responding according to its capacity [Hasenfeld and English, 1975]. In contrast, the local organizer was setting forth his community's needs (Silver 1998). In this case, NEMO eventually sent its experts, and LMC then withdrew from contact with NEMO. The vignette can be seen as one example of environmental racism. Or it may be viewed as the contrast between national environmental movement organizations with *some* power and resources, and local workers with *little* power and resources (Weinberg 1997a,b,c; cf Shuman 1998).

From the 1970s onward, this context provided a dilemma for environmental organizations. Much of the initial local mobilization (Weinberg 1995) was of more educated, and more affluent non-minority groups. It tended to be in suburban areas, typically resisting **new development** of economic activities that threatened the quality of the local environment (Portney 1991). Economic agents began to label this a "not in my backyard" movement, in effect accusing these groups of self-interested behavior, and of not taking their "fair share" of environmental hazards. In response, many national environmental groups feared being labeled as "elitist" if they supported the local protest groups, and of insensitivity to "local development needs" for employment and an

increased tax base. Others covertly formed coalitions with these groups, helping to train and educate local activists (e.g, Weinberg 1995, Gould et al 1996, ch. X).

However, even without national environmental movement support, many of these community organizations did deflect new polluters from coming into their communities. Portney (1991) concluded that there was no way for toxic waste incinerator firms to find any welcoming community. Many of these communities were upper middle-class suburbs and thus created some effective barriers to importing polluting industries. It is important to note that the conflicts between *local* use-values and exchange values here were often minimal. These local bedroom suburb residents earned their income *outside* the community. Hence, they could focus primarily on the environmental use-value qualities of protecting their local residential environments (paradoxically, they often also increased their exchange values around their property, since prices were often enhanced by local preservation of environmental amenities).

In contrast, many of the cases of environmental racism and environmental inequalities more broadly deal with **existing production facilities**. Most workers mobilized were often responding to direct health hazards they perceived from these plants (Brown & Mikkelsen 1997). Most of the participants were working-class, and some faced economic losses if the plant closed down, ostensibly because of increased costs of environmental compliance (Gibbs & Levine 1982, Levine 1982). Yet the health threats, especially

when associated with their children, were powerful enough to threaten their most basic use-values (Szasz 1994). We have some data on only a limited range of these protests, where a national environmental movement arrived on the scene, and thus afforded national media (and scholarly) attention to these conflicts.

After years of struggle, more than 800 families were eventually evacuated, and cleanup of Love Canal began. National press coverage made Lois Gibbs a household name. Her efforts also led to the creation of the U.S. Environmental Protection Agency's "Superfund," which is used to locate and clean up toxic sites throughout the United States.

After her successful struggle Gibbs received 3,000 letters from people all over the country, requesting information on how they could solve the toxic waste problems in their area. In response to their pleas, Gibbs formed the Citizens' Clearinghouse for Hazardous Waste in 1980 (later renamed Center for Health, Environment and Justice). CHEJ is a grassroots environmental crisis center that has provided information, resources, technical assistance and training to more than 8,000 community groups around the nation. CHEJ seeks to form strong local organizations in order to protect neighborhoods from exposure to hazardous wastes. Gibbs works extensively with diverse ethnic communities and is strengthening the environmental justice movement.

A central component of CHEJ's work is connecting local leaders by providing a forum for creating collaborative strategies, alliances and coalitions for meeting shared objectives. [Goldman Environmental Prize website]

Nonetheless, even with sporadic national environmental movement assistance, many of these protests achieved little change. Protests are undermined because these are not bedroom suburbs, where environmental protection is more affordable. Most of these are cases where the local workers are working in the plants located in their community of residence. Protestors are either living near the production facilities, and/or near the toxic dumpsites used by the firms (Melosi 1981, Pellow 2001) . Sociologically, we can infer that most of these workers are working-class. Few have had political experience dealing with local, national, and transnational agencies of government and the private sector (Weinberg 1994). Caucasian and minority populations both lack power, connection, and influence over the political-economic system (Levine, Brown & Mikkelsen 1997, Weinberg 1995

One dismal assessment of these local protests is that they are a “lose-lose” game. Mobilized workers are attacked by their neighbors, who are working for the polluting firms. Settlements of the cases are deferred for many years, and even then are not sufficient to compensate local victims (Szasz. 1990). Brown & Mikkelsen (1997) celebrate the successes of local groups who create “popular epidemiology” and use this

to generate industrial changes. But few have been able to create an effective form of local environmental protection. Moreover, they have often lost employment. This is, in part, what led to new legal regulation of industrial “brownfields”, toxic waste sites which had been abandoned by previous investors, and in which potential investors feared being charged with a cleanup. (EPA 2002, Reisch & Bearden 2003, under Comprehensive Environmental Response, Compensation and Liability Act [CERCLA or Superfund]. New regulations forced some internalization of exiting costs on previous owners. It is too early to tell how effective this was, however, and many cities instead supported cleanups from local public funds.

Portney (1991:138). in reflecting on the “NIMBY” movements’ resistance to siting toxic waste incinerators, proposed a model of risk-substitution for selected communities.

"The focus of substitution is on acknowledging that siting the hypothetical facility (at least as practiced to date) can and often does, indeed, represent new, often unfamiliar and unpredictable, risks to people who live in nearby communities. In risk substitution, the emphasis is on finding sites in communities where people are already living with what they consider (or perceive) to be very high. perhaps even unacceptably high, risks. The foundation of risk substitution strategies is the idea Rethat people may well be willing to trade uncertainty about new risks if these risks are substituted for risks they know or believe to be very high."

While he formally limits these existing risks to be environmental ones, it is clear that this same model could equally be used for social or economic risks as well. It is almost certain that the communities being referred to are precisely those where environmental inequality is evident. They include immigrants, people of color, low-income populations, and politically marginal groups who tend to have to bear such hazards. Pellow (2001) has outlined the case of Robbins, Illinois, a desperately poor African American community. Under Illinois law, toxic waste incinerators received subsidies, making Illinois an attractive state in which to operate. But most local movements opposed such incinerators. Robbins was willing to accept it, because of the jobs and taxes it promised. In stark contrast, most of the middle-class communities *around* Robbins strongly protested both the incinerator and Robbins's acceptance of it. After a relatively short period of operation, moreover, the incinerator closed when Illinois withdrew its subsidies. Robbins argued that its neighboring communities were racist and insensitive. Opponents argued that Robbins's local government had been suborned by the developers.

National environmental movement organizations have not universally withdrawn from these existing-plant conflicts, but neither have they mobilized around these working-class populations. Local mobilization by these politically-marginalized populations seems energized only where the families are subject to severe *health* risks. Yet these same risks should also be part of the agenda of national environmental movement organizations. It is

ironic that many epidemiological hazards of plant wastes are actually scientifically easier to document than more complex environmental and social impact assessments (Schnaiberg 1986, Meidinger & Schnaiberg 1980). For residents who live where they work, scientific assessments of local health hazards may approximate occupational safety and health research. Such more predictable and larger impacts can be more readily measured than ecosystem impacts in diffused geographic settings. Furthermore, these impacts are more measurable than are the potential *future* impacts of unbuilt production facilities, as in the future investment situations characteristic of “NIMBY” groups. Thus, there is a broader scientific basis for claims about these localized “environmental problems” (Spector & Kitsuse 1977). Hence,, the absence of major environmental movement *participation* in such local protests may be seen as more political than scientific (cf. Weinberg 1997c).

At the local level, then, we see local economic inequalities translated into political ineffectiveness of environmental protection movements on many planes.

- Lower-income groups suffer more local hazards from nearby production (and extraction);
- They have more difficulty in mounting political campaigns opposing these sources, because of their conflicts between negative use-values of much of this production, coupled with positive exchange values from associated jobs;

- They are further hampered by both technical and political obstacles to creating epidemiological studies of their hazardous conditions;
- They draw little support from national environmental movement organizations;
and
- They are also limited by having little voice in local, regional, and national governance.

Lois Gibbs was an early working-class activist in the Love Canal conflict, around toxic waste dumps that appeared to have had health impacts on nearby families (Levine 1982, Gibbs & Levine 1982). Her mobilization arose in the following context:

In an interview in April 1997, she said, "One was when I read a report that was done in 1976, two years before I got involved. It was a cost-benefit analysis of Love Canal. Its hazards and risk to community were estimated at \$20 million versus who would benefit. It put a dollar amount on my head and my children's heads – I was not thinking about my neighbors yet. And because my husband only made \$10,000 and my children were only likely to make \$10,000, we were not very important. I guess the families there had an average income of \$12,000. I read that and said, 'What the hell does this mean? How can you do a cost benefit analysis on people's lives and their health? You gotta be kidding. Somebody is

deciding what our suffering and what we are worth.' I was blown away by that."

[Redd website]

Perhaps the most articulate expression of the frustration of less powerful groups with their representation in "environmental" forums was the argument put forth against the World Summit for Sustainable Development (WSSD) in Johannesburg in 2002. This critique was addressed against domestic and transnational environmental protection procedures, including those in state agencies and even in many "non-governmental organizations" [NGOs]. The indigenous actors' protests below are an extension of many of the frustrations and complaints by U.S. environmental justice groups:

"The UN-selected groups as well as some continent-hopping professional protesters will most likely still go and sit or fight with participating governments at this summit in South Africa, but many hundreds if not already thousands of civil society organizations and individuals have terminated their plans and stepped off the road to Johannesburg. ...

Prof. Tsuma Hamisi in Kenya adds: "Even if I would be paid to participate, I will not go, because I do not want to be part of another scam just fooling the world - Rio was enough. In those days in Rio we still thought that concerned people of this world could make a change through such a conference with the so called "world leaders", but today we know that positive change only is brought by peoples' hard and determined work on the ground..."

Instead of wasting thousands of dollars for air polluting travels by plane ..., we save our money and spirit for real, positive and pro-active work on the front We don't want to be part of a conference for which moneys are stolen from the people in order to host an event, which only serves to cover the global deals and misdeeds of the military-industrial complex and their bootlicking governments...

The summit will just be another public relations gimmick by and for those who continued to collect our knowledge and vision over the last thirty years since Stockholm [the first global summit], in order to produce them as their own bright ideas and to feed them back to U.S., while secretly putting the strategic countermeasures in place against those of our demands, which don't fit into their money oriented concepts...

Who will benefit from the summit?", asks Patricia Hutton,who worked over 15 years with a non-church-based medical charity in South-America... 'The poor people in the suburbs of Johannesburg.... *will have to destroy their last own natural resources, because their livelihood has been destroyed and their resource base has been exploited by others...*

...the time seems to be near, when again the deprived "stick-holders" team up and provide some serious lessons to those who divide the earth among themselves only and to those, whose NGOs stand for: Nothing Goes On!... the global bandwagon has left the people behind again. ... [ECOTERRA email 2002; italics mine]

Such angry and anguished responses to environmental NGO's reflect the despair of the powerless communities (Goldman 1998). Yet all environmental problems have *localized* impacts, although they may also have a dispersal that can be as broad as global. The "stick holders" or local *stakeholders* are affected by these negative externalities of production. This is especially painful and poignant when health hazards from toxic wastes from plants or their dumpsites materialize – even more so when the diseases are fatal, and the victims are children (Brown & Mikkelsen 1997). Children are socially deemed as "innocent" victims. Unlike their parents, they have no direct exchange interests in the production that is negatively impacting on them⁴.

Political concern about U.S. environmental racism has thus been achieved by minority organizations, not environmental movements. Similarly, much of the protest in third-world countries arose from indigenous groups there (Goldman 1998). In the U.S., minority groups, who organized around health risks, achieved some direct political influence during the Clinton regime. A presidential order required all federal agencies in their permits, rulings and activities, to screen for environmental racism/injustice. This is likely testimony to the potential voting influence of minorities, including both African American and Hispanic voters in recent elections. As with the earlier passage of low-

⁴ In some cases, parents returning from their work may transport hazardous particles on their work clothes, and thus their employment is hazardous for their children.

income energy payment assistance after the energy crises of the 1970s (LIHEAP), the major influences on regimes have been *social equity* movements, rather than *environmental* movements [National Energy Assistance Directors' Association 2002].

8. COMPETING MACROSTRUCTURAL THEORIES: THE TREADMILL OF PRODUCTION VS ECOLOGICAL MODERNIZATION

Although there have been substantial social science contributions to analyzing environment-economic interfaces and their social consequences, the degree of theoretical richness is surprisingly small. Two of the more significant theoretical approaches are reviewed here, and some others are mentioned in passing.

1. The Treadmill of Production

Schnaiberg (1980) articulated that environmental problems emerged from what he termed a newly-emergent *treadmill of production*. At its core, this system was built around a strong drive to expand production and markets⁵. Within the treadmill's logic, capital served both to displace larger numbers of workers, and to require growing amounts of natural resources as feedstocks, to drive new machinery (energy, water), and as waste

⁵ Several reviewers of the first formulation of the treadmill noted its parallels to Marx's comments on the organic composition of capital. Recent reviewers have concurred. But this was a case of my induction from observed socio-economic and environmental degradation trends, and in no way a deduction from Marxist theory. Moreover, the treadmill outlines the system at the level of economic organizations, as well as the level of the national economy.

sites. As the treadmill expanded into the 1950s and beyond, it became strongly supported by the state, and by some unions within “the aristocracy of labor”, such as auto workers and steelworkers. But the growth of the treadmill created a dilemma for both the state and labor unions. The state had a growing burden of dealing with the social expenses of displaced workers, as well as with emerging ecological disruptions. And union membership declined with the displacement of workers in direct production roles (Harrison 1994, Bluestone & Harrison 1982).

As the treadmill logic came to dominate investment in the U.S. and some other industrial societies, the state came to support ever-larger private capital investments, and it protected private profits, in order to offer jobs for more workers, and to raise more taxes to cover rising social and environmental expenses. Hence the label of “treadmill” was associated with this theory: the political economy running faster (in terms of ecological withdrawals and additions) but staying in one place (in terms of social welfare gains achieved by this resource utilization). The central logic of the treadmill is that its economic organizations sought an unlimited expansion of markets and production. This was a mechanism to generate ever-larger profits for shareholders and managers. The corollary aspect of the treadmill of production is that such profitability shifted the benefits of production expansion away from most workers, as well as away from state social welfare programs. More of the benefits of private investors went to their **share-**

holders, rather than the **stake-holders** in local communities, living in local ecosystems.

Some additional components of the treadmill are briefly outlined below.

First, modern factories generally needed higher natural resource inputs. The modern factory was capital intense, and hence, more energy was needed to run the machinery. Likewise, the increase in production meant that more raw materials were needed as feed-stocks. This feature of this new production system helped explain why ever-greater levels of ecosystem withdrawals were required. Expansion in production required more inputs. This led to one set of environmental problems around natural resource *depletion*.

Second, modern factories used ever-growing levels of chemicals in the production processes. The modern factory essentially used new "efficient" energy- and chemical-intensive technologies to transform raw materials into products. Workers were increasingly engaged in managing energy and chemical flows, and directing them into the complex machinery which makes marketable products. This feature leads to a set of environmental problems around *pollution*, which disorganized local and regional ecosystems.

Two types of impacts of the treadmill emerged in this new system. As firms made more products using more efficient technologies, they also saw rising profits. These could be invested in still-more productive technologies. This suggested a kind of *ecological*

treadmill. Profits were invested in new technologies that would support still greater expansion of production. This expansion required ever-greater *withdrawals* from ecosystems (raw materials and energy) and hence generated more natural resource depletion. The expansion also led to greater *additions* to ecosystems (toxic chemical pollution and other forms of solid waste dumping). Thus,, ecosystems were *increasingly* becoming used as sources of raw materials and sinks for toxic wastes, and thereby *increasingly* degrading ecosystems, while enhancing profit levels.

The second form of treadmill was *social*. After each cycle of production, a growing share of profits was allocated to upgrading the technological efficiencies of the firm. Workers, similar to ecosystem elements, were growing the seeds of their own work-life disruption. By helping to generate profits in one cycle, workers would help set in motion a new level of investment in labor-saving technology. This could ultimately lead to their removal from the firm's production process (Harrison 1994, Longworth 1998).⁶ A graphic cartoon illustrating both forms of the treadmill is that of a logger, who is reporting to his boss that he has "felled the last tree". The boss responds, "You're fired".

⁶ Some workers gained opportunities in this process, becoming more skilled technological workers (Wellin 1998). Others gained other opportunities as their firms expanded, creating new job prospects more remote from direct production. Still other workers in smaller firms gained something, as the production system expanded, requiring new inputs from a diversity of supplier firms.

Moreover, as this treadmill of production expanded, it created new sources of revenue for governments. Some of this revenue was used to give displaced workers social and economic compensations for loss of livelihoods. Governments provided more services to workers and families, as they lost their jobs, through new "safety nets" of income supplementation. In addition, government agencies themselves expanded, absorbing some displaced workers and providing alternative employment opportunities (Ehrenreich 1990)

Because of these rising investments in capital-intensive technologies, many blue-collar workers found themselves displaced and/or downgraded in factories. The retained workers formed a new "aristocracy of labor". Such high-technology workers often supported the patterns of investment in their own firms. Displaced workers, in contrast, saw the need for still **more** investments in *new* plants, as did communities around the world. Industrial society communities faced increasing losses of employment and revenues as factories consolidated, modernized, and then later, moved abroad under new globalization freedoms (Barnet & Cavanagh 1994, Longworth 1998). Labor movements, local political constituencies, and local governments thus all supported this form of "corporate-centered development" (Logan & Swanstrom 1990). This new push eventuated in more rapidly-increasing demands on ecosystems, for each new job or additional tax payment.

Overall, the effect of these dynamics of the shareholder values is that the treadmill's corporate planners struggle to withhold funds from the nation-state. The exception is when these funds will further enhance corporate profitability in the short- to medium-term. Hence, states seek to reduce social welfare expenditures, while raising depreciation allowances and tax exemptions for private sector firms. Firms are less supportive of public education, except where programs will produce highly-skilled workers, whose support has been borne by the state (technical schools and colleges). Thus, the treadmill accelerates in two related ways. More capital is allocated to high-technology capital-intensive production (including business services). And, capital is diverted from the public sector and social expenses (including environmental protection), into support for expanded private investment and profits.

2. Ecological Modernization Theory

While the treadmill theory was developed in the U.S. before 1980 (Schnaiberg 1980), its major competing theory emerged over a decade later (Spaargaren & Mol 1992; Mol 1995, 1996; Spaargaren 1997; Mol & Sonnenfeld 2000). Its origins were in western European analyses, and with a somewhat different set of states and political-economic structures. *ecological modernization* theorists have postulated that there is a growing independence, or 'emancipation,' of the ecological sphere from the political and economic spheres in state and industry policy-making (Mol 1995; Spaargaren & Mol 1992). In

effect, old forms of social cleavages around political-economic allocations were less relevant in this new shared concern about environmental problems.

Thus, within each of the spheres, there are significant institutional transformations that are induced by objective changes in the physical environment, along with new managerial consciousness about these risks – the essence of *reflexive modernization* (Giddens 1991; Beck et al. 1992, Beck, Giddens & Lash 1995; Mol 1996). Here all parties -- industry, the state, environmentalists and the public -- are motivated and concerned to deal responsibly with global environmental risks. Firms employ new technologies to reduce the environmental impacts of their production. Central to *ecological modernization theory* is the argument that environmental considerations have emerged as **corporate** concerns, as well as state concerns. The domain of “environmental planning” is thus seen as somewhat independent of conventional political, economic, and social conflicts (Beck et al. 1992). However, Meyer (2002) notes that many economic organizations still resist most forms of environmental regulation, as evidenced in a number of the chapters in Hoffman & Ventresca (2002). In the decade since this theory emerged, then, it has been subjected to considerable social science criticism, focusing on important social and political stratification issues missing from the theory, and around some of the vagueness of its propositions. At times, it seemed to be grand theory (Mills 1959), rather than empirically-falsifiable theory.

But the theory nonetheless migrated to the United States, where some younger scholars have incorporated some of this new theorizing (e.g., Sonnenfeld 2000). One of the factors making this transition more feasible was that the leading ecological modernization theorists accepted some of the “neo-Marxist” (or structuralist) critiques (e.g., Pellow et al. 2000). They portrayed ecological modernization as more problematic and contingent, and far less linear (Mol & Spaargaren 2000; Sonnenfeld 2000). In fact, these theorists incorporated such changes much more extensively and quickly than did theorists of the treadmill of production. The latter has changed primarily to incorporate globalization factors, but has not accommodated other critiques (e.g., Schnaiberg & Gould 2000, 2001).. Unlike ecological consumption theory, however, the treadmill of production has not garnered many adherents (or sustained critiques), other than from a handful of younger scholars (e.g., Weinberg et al 2000, Gould et al 1996, Schnaiberg & Gould 2000).

The relatively high diffusion of the ecological modernization theory among western scholars may reflect several factors. First, the changing environmental politics in most western societies has become more a series of *accommodations* between states, environmental NGOs, and private sector leaders (Hoffman & Ventresca 2002). Ecological modernization theory, which is one form of neo-liberal political-economic models, fits this history better than does the treadmill. The thrust of the treadmill is, as Mol and Spaargaren argue (2000), *dematerialistic*. Treadmill theorists see the necessity

for change from energy/chemical intensive production into more labor-intensive production, to solve both social and environmental problems. This would entail substantial political and social ferment (Stretton 1976). It suggests an intensely conflictual future, building on existing class differences, along with racial, gender, and other societal cleavages. In contrast, the core argument of ecological modernization is that firms have their own interests in anticipating environmental problems arising from their activities, and will seek to find pragmatic solutions. It is more an “order” than a “conflict” model, in short.

Their future structure of production will be *hypermateralistic*, ecological modernists argue. That is, both chemical use and energy use will be reduced. New electronic and biological agents will be substituted in production, reducing both ecological withdrawals and additions (as suggested in nanotechnology, which creates biological ‘machines’). Such changes will only be in the technological sphere, or the *forces of production*.

In contrast, the treadmill theorists argue that in order to decelerate the treadmill, greater attention will need to be paid to the *relations of production*. More broadly, the ecological modernization theorists see the role of the state as enabling and facilitating this transformation of firms. Treadmill theorists see the state as engaging in an internal *struggle* between its interests in economic expansion, and the need to externally control

the forces and relations of production for ecological and social enhancement (Pellow et al. 2000; Schnaiberg *et al.*, 2002).

In ecological modernization theory, the allocation of corporate surplus is to be assigned to corporate leadership and stockholders – a triumph of markets over politics (Lindblom 1977). By contrast, treadmill theorists see a growing need for a redirection of corporate surplus, into new forms of economic organization that will decrease natural resource utilization and disposal into ecosystems, **and** increase labor utilization. Interestingly, one of the examples offered by ecological modernization theorists has been new forms of corporate recycling. Closed production systems will replace open production systems, which both waste potential resources and also result in pollution from waste products. Treadmill analysts (Weinberg et al 2000) have empirically examined post-consumer waste recycling, a related policy. They found a *bottom-line* approach was being taken by cities and their contractors, built around solely market considerations. There was minimal state intervention, and no shadow pricing, as used in other public services (Pellow et al 2000). If this is true in the *public* sector – which is more susceptible to the triumph of politics over markets – it seems reasonable to be cautious about the extent to which restructuring by industrial managers will generate the kinds of hypermaterialism that will benefit ecosystem protection.

Ecological modernization theory is more compatible with neo-liberal economic policies, which have increasingly been forced into both industrial and less-developed societies (Schnaiberg & Gould 2000: introduction). More powers of the nation-state have been transferred to multinational organizations such as the World Bank and the World Trade Organization, which extol “free trade” and neo-liberal government policies (e.g., Pezzy 1989). These are designed to enhance the exchange values of private sector investors, at the cost of reducing environmental and social expenses (Longworth 1998, 1999), by decreasing state social expenditures and supporting foreign capital ventures.

An early analysis of environmental protection policies by Hugh Stretton (1976) noted that problems could be variably addressed, with quite different social-distributive outcomes. He argued that by not paying specific attention to the distributive issue, such policies created conditions in which either “*the rich rob the poor*” (i.e., increasingly negative income distribution), or “*business as usual*” is maintained (i.e., current stratification levels are sustained). In the U.S. at least, it would appear that in the U.S. “the rich rob the poor” model has dominated policies of the last twenty-five years (Phillips 1989, 1993). Most of this negative redistribution was not directly related to environmental policies⁷. Yet the environmental policies have also increased environmental injustice and

⁷ Many of these critiques parallel those offered a precursor of ecological modernization, the model of “appropriate technology” (or intermediate technology) proposed by Schumacher (1973). In 1934 (1967), Lewis Mumford noted that new technological forces in industrial societies were essential *neotechnical* means, which sustained

environmental racism (Bullard 1990, 1993, 1994, Pellow 1996, 1998a,b, 2001). Benefits of production expansion have been distributed upwards in the stratification system. Environmental and social costs have increasingly been distributed downwards (Brown & Mikkelsen 1997).

3. Reflections on the Two Theories

With their recent synthesis of critics' responses to early ecological modernization theory (Mol & Spaargaren 2000), there seems to be new grounds for a more complex integration of the two theories. Ecological modernization theorists measure the *changes* in corporate responsiveness to past ecological destruction. Given firms' historical economic synthesis, they see any production reforms representing "**fully**" a new path to change (Schnaiberg & Gould 2000: ch. X) In contrast, treadmill theorists, with extensive management of scarcity as a *goal* see the firms as complying "**only**" to the minimum that they can negotiate.

paleotechnic ends. He was differentiating between the forces of production and the social relations of production, in terms of both social and environmental outcomes of these changes. After Schumacher's proposals, a spate of similar environmental critiques followed (e.g., Schnaiberg 1982, 1983a,b; Lele 1991; Weinberg et al. 1996; Willers 1994). Other analyses indicated that changes in technology (e.g., Wellin 1998) and in philanthropy (e.g., Silver 1998) similarly failed to address continuing inequalities in the workplace and the community.

Recycling policy in the U.S. (Weinberg et al 2000, etc.) illustrates this difference in evaluation approaches. Environmental movement organizations helped place recycling on the urban agenda, as well as the national one, addressing a variety of environmental protections, including closure of highly-polluting urban incinerators (Pellow 2002). However, detailed recycling plans increasingly came to reflect the exchange-value interests of both waste hauling firms, and manufacturers using recyclable feed-stocks (Lowi). Use-value interests did not totally disappear under these political economic pressures, but forms and prices of recyclables increasingly were mediated by the new “recycling industry” (Lounsbury et al, forthcoming). Compared to the pre-recycling period (before 1985), *some* ecological gains were indeed made by cities. But they were far less significant than the ecological *objectives* of environmental activists and analysts, and the *promises* of municipal leaders.

Sonnenfeld’s (2000) analysis of pulp and paper operations in Indonesia serves as an interesting integration of the theories. Indonesian mills adopted new technologies that dramatically reduced the use of chlorine in production. They were **able** to respond because Sweden and other western societies had produced efficient technologies, and made them available to other producers. They were **willing** to respond in this way because of substantial political and social mobilization by stakeholders in the areas near proposed plants, who feared losing their extractive roles through projected increases in the discharge of chlorine into nearby bodies of water. These stakeholders had some

political sway in the Indonesian state (cf Goldman), which sought alternative solutions. Thus, Indonesian producers had both “motives and means” to make such changes.

Sonnenfeld also notes that the resulting forces of production were *not* hypermaterialistic. New plants threatened to denude huge areas of Indonesia, in order to ‘feed’ these new “efficient” pulp and paper manufacturing facilities. Sonnenfeld (2000) treats this case as a success story for ecological modernization’s predictions, in terms of pollution reduction. But treadmill theorists also view this as a validation of the treadmill’s predictions. The expansionary ecological impact of the treadmill was accelerated by the new technology, not diminished. While per unit chlorine *pollution* was reduced, increased volumes of units were needed to sustain the new technology, and these accelerated forest *depletion* (Weinberg et al 1996, Schnaiberg et al. 2002)

This suggests that one reconciliation of the two theories may be a reformulated dialectical approach. Absent other interventions, the treadmill predicts “business as usual” (Stretton 1976), with continued depletion and pollution. But the results of treadmill action also generate various forms of social and political protest, which can impede production plans. When these sociopolitical resistances are high and predictable, firms feel it prudent to make revisions in production in order to placate these stakeholders and their state representatives, as a form of social costs of producing (Coase 1961). If these revisions

also enhance profitability, then they are even *more* likely to be adopted quickly, and diffused over more firms and states.

This represents a complex relationship between markets and politics. It is neither a direct internalization of the negative environmental externalities of production, nor a dismissal of environmental problems. The dialectical approach also applies to those raising environmental protection challenges in the state and to firms. Ehrenreich (1998) noted that middle-class professionals often supported liberal social policies, since their employment was precisely in these areas of political intervention in markets. These self-interests are part of the complex dynamics of environmental resistance movements. Even within the private sector, there are segmented responses to production expansion and production control. A large environmental protection industry has emerged (Lounsbury et al, forthcoming), generating both new capital products and new professional services⁸. These interests range from engineers to lawyers. For example,

⁸ It has been argued that investment in environmental protection technologies can create both jobs and profits. This may be the case, but there still remains substantial economic organizational resistance to such technologies, in part because of the redistribution of jobs and profits entailed in the application of “greener” technologies. Pollution abatement firms experience profits from environmental enforcement, but producing firms are faced with more costs. What are the political outcomes of this situation? Consider a simple example. Assume that there are 5 firms with \$100M environmental protection revenue: they will support further regulation. In contrast, assume 20 firms with \$5M environmental protection costs, plus additional labor costs: they will be anti-regulatory. The latter likely have far more employees, and more consumers, than the former. Their economic power and social visibility enable them to mobilize political contributions and public relations against environmental protection.

the EPA employs far more lawyers than ecological analysts. Even when these lawyers leave public service to provide consulting to the private sector, they are often dependent on the existence of strong regulations to enhance their career potential. Yet if these regulations are too stringent and too well enforced, the negotiating ability of private environmental lawyers may be diminished, and their careers truncated.

In like manner, other groupings of workers also have a dialectical relationship to the forces of production. Where employment is diverse and plentiful (Gould 1991), citizens may oppose corporate policies that diminish ecosystem integrity. However, in company towns, such resistance is unlikely to be emergent or sustained (cf. Brown & Mikkelsen 1997). We might speculate that business cycles produce similar variability of NGO responses to corporate threats to the environment. Where employment and wages are stable or growing, resistance to these threats is likely to be enhanced.

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