Book Reviews

Options for Environmental Policy

The Economics of Environmental Policy. A. MYRICK FREEMAN, III, ROBERT H. HAVEMAN, and ALLEN V. KNEESE. Wiley, New York, 1973. xiv, 184 pp., illus. Cloth, $6.95; paper, $3.95.

Energy, Ecology, Economy. GERALD GARVEY. Norton, New York, 1972. 236 pp., illus. $8.95.

Economies and the Environment. MATTHEW EDEL. Prentice-Hall, Englewood Cliffs, N.J., 1973. x, 162 pp., illus. Cloth, $7.95; paper, $2.95. Foundations of Modern Economics Series.

Courses in environmental studies have, throughout their brief history, suffered from an unsophisticated approach to the politics and policy of the environment. Confronted with the labyrinthine, and frequently ecologically inattentive, federal regulatory structure, instructors have often thrust its complexities aside in favor of simpler images of social policy. Garrett Hardin's much-reprinted article "The Tragedy of the Commons" and Barry Commoner's *The Closing Circle* have done yeoman service, providing vivid policy analysis woven out of common sense and some biological metaphors. As useful as they were in sounding the alarm, these images leave much to be desired as social research.

The three books surveyed here urge the teaching of environmental policy a few steps further, and in so doing are likely to enhance the employability of environmental studies majors. In keeping with such respect for the "real world," all three volumes take economics as their central theme, in particular the problems of allocating scarce environmental resources. Despite some substantial differences of conceptual and political perspective, all three lay claim to relevance by illustrating their assertions with cases from recent social policy.

Freeman, Haveman, and Kneese have written extensively on environmental economics from the institutional base of Resources for the Future. Kneese has been a major contributor to the annual reports of the Council on Environmental Quality, themselves authoritative surveys of environmental policy in the federal government. Garvey, who teaches politics at Princeton, developed his book out of a study commissioned by the White House Office of Science and Technology. As one might expect with such pedigrees, these two works take as their focus "environmental fine tuning," to use Edel's phrase. That is, they expound the ways in which environmental policy can be expected to bring about real, if not ideal, protection and rehabilitation of our natural surroundings. "Policy," however, has rather a narrow scope for Garvey and Freeman *et al.* For them, environmental problems reflect failures of market allocation, and the cures are to be found in governmental revision of market prices for environmental goods. "The answer to bad economic practice is not 'no economics' but good economics—as exemplified by cost-internalization programs implemented through effluent fees," Garvey says (p. 206).

It goes without saying that, to many Friends of the Earth and their lawyer allies, the calibrated nudge of an effluent fee is far too subtle; better the cudgels of a lawsuit. Of this, more later.

Edel's eclectic text departs from both these points of view. He draws widely, if briefly, upon historical examples and cases of environmental care and carelessness in developing nations. From this broader perspective Edel ranks ecological disturbance with, but not ahead of, other grave challenges to social policy. The assessment is pessimistic: he is frankly "skeptical as to whether present economic institutions can solve our social and ecological problems, in part because they depend on incessant growth" (p. 135). This judgment points toward major institutional revision, perhaps even revolution. And it places Edel far closer to the radical school of political economy than any of the other authors, whose principal concern is that capitalist staple, property rights.

Despite the recent attention given property rights in relation to land use, there can be little doubt that the interpretation of environmental problems as external diseconomies lies closest to public policy. (Oddly, public *law* is still very much committed to government regulation—anathema to market-minded economists.) The skeleton of the analysis is plain. From economic theory, we adopt three axioms: (i) individual self-interest underlies human behavior; (ii) prices act as signals guiding this behavior; (iii) trade-offs—more elaborately, decisions derived from cost-benefit analyses—can be steered by suitable management of prices. This set of assumptions permits, in principle, the implementation of an optimal allocation of resources, within the famed—if ever unobserved—free market. From our recent environmental past, we add three conditions: (i) goods formerly free, including air, water, and some land, have become scarce; (ii) but the market has not properly assigned them prices, because they are in a crucial respect common property—namely, the costs of maintaining environmental quality are difficult to apportion, even when the benefits to be derived from despoiling the environment are quite divisible; thus (iii) intervention by government is required. What sort of intervention? When one considers the difficulty of enforcing most forms of regulation, all three texts argue, it becomes impressively clear that only so-called "shadow prices," by which individuals and firms pay to pollute, will work. This is the rationale for the effluent charge, as this kind of shadow price is called.

Garvey analyzes environmental externalities using an ecosystem model based on the work of ecological theorists Eugene and Howard Odum. In the model energy plays the role of the fundamental exchange commodity, loosely analogous to money in an economy. Garvey identifies three types of externality, each having its own "natural" remedy. First, there is depletive waste, the using up of nonrenewable resources. There is no solution here; spending this natural heritage deprives our descendants. But we can improve the efficiency of the technologies which burn these fossil and mineral fuels. Second, Garvey points to seral disturbance, the process of accelerated aging perhaps most familiar as lake eutrophication. The problem here lies not so much in absolute overload of the ecosystem as in maldistribution of industrial and agricultural wastes; a national or regional authority charged with waste disposal allocation is recommended. Finally, familiarly, there is local pollutive overload, for which the

proper course of internalization is the effluent charge.

Edel bypasses most of these ecological refinements, sketching briefly, and graphically, the different options available for paying externality costs. This is straightforward economic analysis, and it does not treat in much detail the considerable problems of measuring—in monetary terms—the marginal benefits derived from environmental protection.

Freeman *et al.* give the most careful account, using as an ecological backdrop the materials balance model devised by Robert Ayres and Kneese several years ago. The materials balance model is adapted from the input-output matrix of economics, and it is biologically a good deal more naive than the ecosystemics Garvey employs. But given the paucity of environmental data, the accuracy of any operational Ayres-Kneese model could hardly be disputed. More important, the materials balance approach permits an articulation of the emphasis laid upon general economic equilibrium by Freeman *et al.* That is, piecemeal policies which regulate only one form of pollution are eschewed, on the grounds that they may well create perverse situations. Thus, water pollution might be made much worse by a program concerned solely with air pollution control. Commoner's dictum that "everything is connected to everything else" is here given economic form. Within this wider framework, Freeman *et al.* can also show that effluent charges are the most promising solution.

In short, these analyses of environmental policy discover two classes of option: the radical restructuring of the social order suggested, as Edel points out, both in the name of an environmental "crisis" and in the name of social justice; or else effluent charges. Cursory inspection of American society reveals little major restructuring. And only one or two states have effluent charge schemes in operation; even these are rather timid by the standards of comprehensiveness put forth by Freeman *et al.* Has theory fallen short of reality?

The answer is both yes and no. As Freeman *et al.* note wryly, "the reason [effluent] charges have not been effectively tried in this country is that they would work" (p. 170). What the economic analysis omits, in other words, is politics. There are sizable political barriers to instituting the incremental changes which would improve the environment—and perhaps stave off a revolution. As Freeman *et al.* suggest, effluent charges would likely be charged most heavily against influential industrial polluters. The legislators who had voted to put them in would thus be at a disadvantage when it came time for campaign contributions.

Thus, while effluent-charge schemes, and similar methods for fine-tuning the marketplace, may work quite well to diminish pollution by individuals who are both self-interested and relatively powerless, these methods will not work in the Galbraithian industrial state. So it is that environmental lawyers litigate, and lawmakers cling, albeit desperately, to regulatory schemes that are politically viable though only randomly effective against polluters.

Is massive social restructuring, then, the only way? Perhaps not. For what is absent in the analyses presented in these books is a sense of how organizational design can be matched up to the technology of pollution control, on one side, and political resources, on the other. The President's proposal to reorganize the Atomic Energy Commission into separate research and regulatory bodies demonstrates that renovation of bureaucracies is not always contingent on violent overthrow. From the viewpoint of organizational sociology, one might say that the "vertical integration" which had linked the promotion and regulation of nuclear power proved to be politically untenable. Of course, there is no guarantee that the new dispensation will satisfy demands either for electricity or of environmentalists. But what has been brought tantalizingly into view is the possibility of political—that is, one might hope, legitimate—power for the redesign of institutions.

That power will, in the best of circumstances, be wielded hastily, if not illegitimately. More significantly, there are still few usable guides to the relationships connecting institutional design and institutional effectiveness. The argument that effluent charges are easier to administer than direct regulation of effluents seems correct. But it does not tell us how to rig even a sensible (let alone optimal) combination of economic and regulatory strategies when effluent charges are politically unobtainable.

These are matters for research, not teaching. They suggest that these three books, while meeting the needs and tastes of a variety of environmental studies classes, also need to be supplemented by institutional analyses, which remain scarce. In the meantime, any of them will serve as a cogent summary of the economic approach. Freeman *et al.* have the most thorough coverage, but the systematic survey of energy conversion and transport offered by Garvey and the radical perspective of Edel provide useful background.

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Sociophysiology

Illness, Immunity, and Social Interaction. The Dynamics of Biosocial Resonation. GORDON ERVIN MOSS. Wiley-Interscience, New York, 1973. xvi, 282 pp. $14.95.

One of the more persistent frustrations experienced by the student of health and disease stems from the nagging awareness that a vast array of forces affect bodily function and that he can study the influence of only a few of them at a time. In part, this limited approach is necessitated by the sheer complexity of the phenomenon under study; in part it is attributable to the diversity of disciplines involved in the subject and to the difficulty researchers from different disciplines often have in transcending methodological and conceptual barriers.

Nowhere is this difficulty more vividly illustrated than in the work of those attempting to study the influence of the social and psychological environment on human health. Sociologists have usually focused on the influence of the social situation, social psychologists on variations in perceptions of such situations, and physiologists on bodily reactions to these perceptions and the biologic consequences of such reactions. Rarely has an effort been made to study all these dimensions simultaneously in an integrated way. The purpose of Moss's book is to develop a theoretical model linking social participation, physiological processes, and susceptibility to disease into a unified framework.

A key concept in the development of this framework is "biosocial resonation," which is defined as "the continuing reciprocal influences of physiological processes and social behavior in social interaction." The term "biosocial" is intended to emphasize the interrelationship of biological and social pro-