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Review of Global Ecology: Environmental Change and Social Flexibility and Environment and Resource Policies for the World Economy

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BOOK REVIEWS: ENVIRONMENTAL CHANGE AND SOCIAL FLEXIBILITY & ENVIRONMENT AND RESOURCE POLICIES FOR THE WORLD ECONOMY

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Global ecology: environmental change and social flexibility by V Smil; Routledge, London, 1993, 240 pages, £40.00 cloth, £13.99 paper (US $59.95, $17.95) ISBN 0 415 09885 8, 0 415 09886 6
Environment and resource policies for the world economy by R N Cooper; The Brookings Institution, Washington, DC, 1994, 94 pages, $28.95, ISBN 0 8157 1546 3

These two very different books explore future paths for economic activity given the global environmental problems that we have created. In *Global Ecology* Vaclav Smil argues that, because "our economies are merely elaborate subsystems of the biosphere" (page 211), we need to reconcile them to fundamental biospheric limits. He urges attention to conditions threatening human existence: the declining availability of critical natural resources, the changing composition of the earth's atmosphere, and the loss of biodiversity. Smil presents many very detailed examples of the human threats to biospheric integrity and for each suggests a framework of strategies. Overall we need to restrain growth of consumption in the affluent countries and raise the quality of living in poor countries while minimizing environmental degradation. The author places the burden of responsibility for changing the environmentally destructive patterns of the international economy on the affluent nations.

In his detailed analysis of ecological degradation and obstacles to change, Smil points to the dilemma that all environmental professionals and decisionmakers face. How do we take action in the face of uncertainty? Despite several decades of environmental research, our understanding of the earth's great ecological systems is limited. Yet we still need to take action, to reform our behavior toward the earth in the face of growing evidence that we are damaging the earth's ecology. And we need to act soon.

Smil's treatment is excellent for stimulating consideration of the relationship between science and policy and the need to make decisions and design interventions based on incomplete knowledge. Smil's book presents detailed descriptions of the impact of economic activities on ecological integrity, offers suggestions for changes in policy and management, and identifies the institutional paradigms and arrangements that stand in our way. This combination is the primary strength of the book. I need mention a serious omission. Multinationals critically influence the exploitation and use of resources. Their motive is profit, not sustainable use of resources or preservation of global ecology. Even if nation-states and their citizens have the political will to offer substantial incentives to tempt these companies toward ecologically friendlier modes of operation, as Smil advocates, many will not be seduced. They will continue to exploit biological resources to extinction, decreasing the total biological diversity on the planet and increasing environmental degradation. The book gives no mention of this reality, which is particularly unfortunate considering the author's preference for 'market-based' solutions and decentralized approaches.

The second book, *Environment and Resource Policies for the World Economy* by Richard Cooper, is from a series of studies on "Integrating National Economies" commissioned by the Brookings Institution. Cooper explores the tension between the centuries-old system of national ownership of natural resources and present-day transnational and global environmental impacts of resource use. He examines a set of alternative international and national arrangements for using natural resources to the 'mutual advantage' of all countries. The author analyzes three cases—use of common heritage resources, economic activities with no transborder environmental externalities, and economic activities with transborder environmental externalities. National sovereignty dictates the frameworks likely for resolving resource-use conflicts, ranging from laissez faire, to international regimes limiting access and use, to national appropriation. The task for policymakers is to deduce which type of framework is most appropriate for each use scenario and its environmental effects.

Using the example of global climate change, Cooper illustrates the opportunities and difficulties in developing effective policies for the global commons that will meet the needs of rich and poor countries and present and future generations. Nations must decide whether to mitigate their economic actions that apparently exacerbate global warming or to adapt to some inevitable, although arguably uncertain, outcome. Cooper suggests that most countries, especially those whose economies are developing, will likely opt for adaptation because of the scientific uncertainty of future conditions and the preferences each country has for economic or environmental benefits and costs. The sovereign right of nations must be the legitimate basis for managing the global commons and each country will choose measures for mitigation or adaptation based on its own valuation of the present and future costs and benefits to its citizens. While objectionable uses or externalities at regional levels can be addressed transnationally by the parties directly affected, objectionable uses of the commons generally require consensus-based agreements among nations.

For situations where economic activities have no transborder environmental externalities, but may induce economic advantage because of different environmental standards, Cooper asks whether and under what circumstances one country should attempt to influence another country's environmental policies. For example, an affluent nation presses for improved environmental standards in a poorer country, not because economic activity causes pollution to flow across a mutual border or into the commons, but because the standard offends the 'environmental sensibilities' of citizens in the affluent nation or places it at an economic disadvantage. According to Cooper, each nation has the right to assess the relative benefits of economic activity and a clean environment according to their own preferences and estimates of the social costs of each. Without transborder externalities, international action is neither appropriate nor needed. Cooper cautions against the imposition of tariffs or other trade restrictions based on environmental values, which would contravene existing trade agreements, could lead to retaliatory action, and would harm the efforts of the developing countries to improve the standard of living of their citizens. Individual nations should therefore not be coerced into similar environmental standards, but be enticed to join multilateral agreements.

Cooper's treatment of this third scenario is troubling. His "impeccable economic line of reasoning" is accepted, but his characterization that objections to his proscriptions are "political" or "arise from misunderstanding" (page 34) is not. Pollution discharged to the environment in one country ultimately harms the biospheric integrity of the earth. Water pollution for example, even when not flowing from a discharge pipe into an international river, degrades surface water, and because of the hydrologic cycle, will likely cause harm to the citizens or flora and fauna of other sovereign states and over enough time and in enough quantity will damage global ecology. Recognition of the inherent integrity of the life-support systems of the globe is the source of the objection, not 'environmental paternalism', as Cooper suggests.

These two books offer several important lessons. Many environmental conditions we frame as 'global' are regional or transnational in their nature (although they will eventually affect total global environmental quality). Often these problems can be most effectively addressed at regional levels. For problems that are truly global in nature, both authors urge global-level solutions. They emphasize the divergence between developed and developing countries in the roles they play in producing pollution, their different future resource demands, and their ability to pay for environmental improvements. As a result, rich countries that want environmental practices and standards similar to their own need to offer incentives or pay higher prices.

Valuable lessons accrue from examining the divergence between the books as well. Smil begins with global ecology, and asks how human economy as one of its subsystems can operate within its limits. Cooper begins with international economy, and asks what environmental policy options can rationalize use of resources and ease resolution of disputes over resources and externalities. The authors differ in their policy recommendations given existing high levels of scientific uncertainty. Smil argues that uncertainty requires flexibility so that we can maintain future options in addressing ecological integrity. Cooper, in contrast, argues that we should do what is most cost-effective now, until more certain future benefits justify the opportunity costs of more costly present-day mitigation actions.

The authors' most fundamental difference is their attention to the biosphere. For Smil, the foundation of enduring human economic activity is biospheric integrity, the ultimate measure of the relative benefits and costs of policy options. Cooper, in stark contrast, gives no mention to the economic (as it reflects life-supporting) value of biospheric integrity. For Cooper, the global environment consists of a set of consumables and externalities. The failure to recognize ecosystem integrity as the basis of human economy or to include its measurement in economic analysis is a critical weakness in Cooper's treatment.

I recommend these books for planners, policy advisors, decisionmakers, and graduate students in environmental fields. *Global Ecology* integrates science, policy, and a philosophical analysis of our relationship to global ecology, making the book extremely informative and thought-provoking. Knowledge of basic ecology would help in reading Smil. *Environment and Resource Policies for the World Economy* offers a well-written and very accessible description of the economic realities shaping use of natural resources internationally. Cooper's book has the most benefit for readers familiar with international political economic theory.

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