

and ecological problems today, now that the oppressor is gone. Khazanov, however, implicitly acknowledges that this certainly is not the case.

As one moves through the book toward the sharp edge of the analysis it becomes increasingly fascinating to read. The two best chapters are the ones on Yakutia and the Meskhetian Turks. These case studies are based on very thorough research, which is presented in great detail without ever becoming tedious. The empirical evidence is analysed with sophistication and clearly shows the fruitfulness of the author's theoretical approach.

The two subchapters on Yakutia, on political nationalism and cultural nationalism, complement each other nicely. Once again, however, I felt that Khazanov somewhat underplays the economic factor. As the rich deposits of gold and diamonds in Yakutia certainly are important factors explaining why local Russians also tend to support the campaign for Yakutian sovereignty, a third subchapter on economic nationalism in Yakutia would not have been out of place.

To sum up: Khazanov has written a very good and authoritative book, at times even outstanding. The few critical remarks made above do not detract from this conclusion.

Global Accord: Environmental Challenges and International Responses, Nazli Choucri, editor. 1995. Cambridge, MA: MIT Press. xxiv, 562 pp.

Reviewed by Aaron T. Wolf, Department of Geography, University of Alabama

The major hurdle in addressing issues of global change is that they stretch the limits both of scientific forecasting and of institutional capacity to handle uncertainty. Results from global forecasting models have immense uncertainties, whereas institutional planning horizons are generally only as distant as the next election. As the time scale of study increases, scientific uncertainty drops, but so does the ability of institutions to address the problems.

Stepping squarely into the breach of this frictional intersection between science and policy is *Global Accord: Environmental Challenges and International Responses*, edited by MIT professor Nazli Choucri. This collection of 15 chapters makes explicit each of the sets of relations that make global change such a difficult topic to address--relationships between science and policy, nature and humanity, growth and preservation, more-developed and less-developed nations, and even between present and future generations.

In fact, the entire book is about relationships: most of its sections are even titled in pairs ("Actors and Processes," "Economics and Law," "Institutions and Systems"). Its fundamental premise is that whereas in the past some leeway has existed for many of these relationships to be skewed one way or the other, *all* of these actors and their interests (including those of nature) are now so intertwined that, in the words of Maurice Strong in his foreword, "effective international responses can be achieved only on the basis of cooperation among nations, and effective cooperation must be based on common interests."

Choucri, in her introductory chapter on theoretical, empirical, and policy perspectives, gives more detail:

A major purpose of this book is to develop an integrated conceptual framework linking natural and social systems within which basic (and dynamic) social and natural "actors," behaviors, and interactive processes can be identified and analyzed from some optimal range of disciplinary perspectives. An underlying premise is that the effective management of global environmental change requires coordinated action among sovereign states in the international system and the cooperation of all other relevant actors--at all levels.

To this end, she identifies three conceptual challenges posed by global environmental change, all related to these sets of relationships: the linkage challenge, the policy challenge, and the institutional challenge.

The organization of the book might almost be thought of as a global model which, rather than addressing the science of climate change, addresses the relationships affected instead. Like a model, the conceptual framework is first presented (in Part I--"Conceptual and Empirical Dimensions of Environmental Change"), with chapters by Nazli Choucri, Thomas Homer-Dixon, Choucri with Robert North, and Hayward Alker and Peter Haas. In subsequent chapters, again as in a model, the "real world" of interacting people and their paradigms and institutions are broken down and simplified for assessment. Part II, "Actors and Responses," includes contributions from Francisco Sagasti and Michael Colby, Choucri again, Eugene Skolnikoff, and Garry Brewer. Part III, "Economics and Law," includes Edith Brown Weiss, and two chapters by Jerome Rothenberg. Part IV, "International Institutional Responses," includes contributions from Peter Haas and Jan Sundgren, Oran Young and David Victor, Abram Chayes and Eugene Skolnikoff.

Finally, the simplified pieces of reality are put back together and their relationships assessed for implications for the future. Part V, "Imperatives for the 21st Century," is a synthesis of policy issues and empirical interactions by Choucri and North.

The book is strong when examining the pieces of society's struggle with the issue of global change. Two possible futures--one for the optimist, and one for the pessimist--are nicely laid out by Thomas Homer-Dixon. Choucri and North include a particularly useful chapter describing issues of growth, development, and sustainability. And chapters on international environmental law, by Weiss and by Haas and Sundgren, leave one startled at how poorly equipped we are at the international level to address legal issues of environmental change or, worse, to enforce compliance with any of the lukewarm codes that have emerged recently.

Even stronger are examinations of the seemingly disparate links between pieces of the whole of societal response. Skolnikoff's thoughtful chapter on science and technology as sources of change includes their relationships within industry, governments, and the social effects of change. In a wonderful interplay, Rothenberg points to weaknesses in classical economics discounting for time, which, surprisingly, is an apt introduction to Weiss' chapter describing the roots of intergenerational justice in international law. Weiss's piece, in turn--and even more surprisingly -- leads directly back to another chapter by Rothenberg on alternatives to time discounting. This type of playful interaction between many of the chapters, along with many the overlapping references and cross-cutting collaborations among contributors (e.g., chapters by Choucri; Choucri and North; Alker and Haas; Choucri; Skolnikoff; Rothenberg; Rothenberg; Haas and Sundgren; Victor, Chayes, and Skolnikoff; and Choucri and North), leads one to suspect that the

contributors had quite a bit of fun putting this volume together. One is struck by the impression of an exchange that is less like a conference of experts, and more like the neighborhood pub where the experts have decided to carry on their intense discussions once the meetings are ended. Eavesdropping on these discussions, quite a bit of useful information is available.

My only quibble (and it really is only a quibble), is that all of the contributors buy without question the premise that the only rational response to global change is global cooperation. Certainly this is true in an ideal world, and when one has the luxury to prevent future change. But I am not yet convinced that, with the exception of scale, the situation is entirely without precedent --any navigation treaty of the eighteenth century had the same immediacy and requirements for international cooperation--or that any other than lukewarm (politically, not climatologically) coordination is feasible, given the nature of global politics. (This review is being written on the eve of the Kyoto Summit on global climate change, which gives every indication of being a disappointment.) People have *always* lived beyond the local carrying capacity (witness Los Angeles, the Sahara rim, and deltaic Bangladesh)--the rich survive and the poor don't. Recent attempts at global cooperation do not provide much hope that the immediate future will be any different.

Despite this unexamined premise, the volume is a thoughtful, well-(and playfully) organized reference that will be of value for anyone interested in the painful, critical dialog between the science of global environmental change and the institutions entrusted with a response.

Jane Rissler and Margaret Mellon. *The Ecological Risks of Engineered Crops*. Cambridge, MA: The MIT Press. 1996. xii + 168 pp.

Reviewed by E. Paul Durrenberger, Department of Anthropology, Pennsylvania State University

New genetic engineering technologies allow the implantation of genetic material into plants, presenting the possibility of twin problems. The engineered plants may be better able to persist, invade new habitats, and become weeds. Secondly, pollen may transfer new genetic material to related plants, changing and perhaps eradicating certain useful species. Both processes threaten the diversity of plant forms that are useful for breeding agricultural crops by conventional means.

"Weeds," plants in places they are not wanted, may be created by either process. If they are hearty, they could cause cascading effects and modify whole ecosystems. In a hypothetical discussion, the authors point out the dangers of a plant with insecticidal qualities that could unselectively harm insects beyond the target group, affect soil microorganisms and earthworms, with unanticipated negative consequences. Rissler and Mellon discuss various examples of unpredicted side effects of plants like kudzu that have become weeds. There is a detailed and technical discussion on the topic of "weediness," and the authors eschew any simple list of traits that may be used to define a simple characteristic of weediness.

They suggest that current controls on the production, marketing, and use of transgenic plants are insufficient to prevent such ecological catastrophes. They propose an alternative scheme, one that rests on a process of assessment of new candidates in terms of