



## BOOKS: ENVIRONMENT

## A Broad Look at Future Worlds

Carl Folke

Human actions now have the capacity to shape tomorrow's world, for better or for worse, as never before in history. Where is humanity heading—what destinations can we plausibly reach within the next half century? Addressing this question is the overall objective of Allen Hammond's thought-provoking book, *Which World? Scenarios for the 21st Century*. The author does not fall into the traps of trying to predict the future or simply extrapolating partial data, errors so common in the debates about development and environment. Instead, he recognizes that the world is complex and nonlinear, and that uncertainty and surprise are more the rule than the exception—making the future inherently unpredictable.

*Which World?* is a product of the "2050 Project" on long-term sustainability, a joint venture of the Brookings Institution, the Santa Fe Institute, and the World Resources Institute. Hammond, a member of the Global Scenario Group supported by the Stockholm Environment Institute and formerly editor-in-chief of the annual *World Resources* reports, has synthesized insights and information from a diversity of sources on seven major regions of the world.

A key point of the book is that our destinies can change; social attitudes can shift dramatically and many negative trends can be reversed if societies so choose and can summon the will to act. Deciding which actions are critical requires that we know more about what the future may hold. To this end, Hammond portrays three different scenarios—carefully posed stories—for human society and explores their implications.

In the "Market World: A New Golden Age of Prosperity," individual initiatives, technological change, economic growth, and global integration are the engines of development. In this scenario, free market forces and expansion of the global market through free trade bring prosperity, stability, and social progress to a larger and larger share of humanity. But we have heard this story before, and we know it is only

partially true. Market prices seldom account for social realities or environmental necessities and are not good indicators of welfare or prosperity. Many believers in Adam Smith's invisible hand remain ignorant of the dependence of the global economy on the environmental resource base, and do not recognize that it is the content of growth—not economic growth as such—that matters (1).

Choosing the market world, with its partial truths, is to unwittingly play a too risky game and to promote a global monoculture of the mind that may throw humanity into the "Fortress World of Instability and Violence." This fundamentally pessimistic scenario holds that unconstrained markets will eventually destroy the environment and the social frameworks on which they depend. I leave it to the readers to imagine the consequences.

The solution, although not promoted as such in the book, lies in the "Transformed World: Changing the Human Endeavor." Here fundamental social and political change gives rise to enlightened policies and voluntary actions that direct and supplement market forces. A complex web of effective institutions (incorporating basic property rights, well-run legal systems, and uncorrupt bureaucracies) is in place. Cultural norms and values are modified, and humans are seen as a part of, not apart from, nature. Hammond argues that such fundamental social and political changes for a better world are already on the way, as attested by the greening of global corporations, altered governmental policies, the rise of citizens groups, and a new age of philanthropy.

In the book, four sets of critical trends—demographic, economic, and technological; environmental; security; social and political—are comprehensively analyzed region by region in the context of the three scenarios. Lacking is a more explicit treatment of how the trends may influence one another, by feedback among the scenarios and regions. For example, demographic and economic trends in one region might cause environmental change influencing security elsewhere. Furthermore, looking at trends is not sufficient. To shape the future, we also need to understand, respond to, and actively manage processes of change. Certainly, with increasingly interdependent hu-

man activities and a population that may exceed 9 billion in the year 2050, we must learn to live in a complex world that is even less predictable than the present one. It is thus critical that societies learn how to respond to feedback in the combined system of humans and nature (2).

Hammond's purpose in writing this book is to illustrate that it is possible for human societies to create more positive futures for themselves. *Which World?* is not about predicting the future. We cannot predict the future, but we can shape it. The distinction is very important and well stated throughout the book. But social choices are not independent of the environmental preconditions for human well-being. This important point is present in the book, but could have been made more clear. Nevertheless, Hammond offers an excellent contribution to the growing literature on the human predicament and the challenge of sustaining the Earth's legacy. The book will open the eyes of the ignorant, and fulfill its purpose of stimulating further thought and action.

### References

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### BOOKS: HISTORY OF SCIENCE

## Atomic Philosophies

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There is a long and respected tradition among scientists, and among chemists in particular, to devote some time in retirement to writing on the history and development of their field. Generally, as for most history of science (even that practiced by professional historians), such writings tend to fall into one of two types: those that stress innovation, progress, and revolution or those that emphasize continuity and recurrent themes across time and space.

Bernard Pullman's book tries to do both. *The Atom in the History of Human*

### The Atom in the History of Human Thought

by Bernard Pullman

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