

*Ecologists and economists usually have different thoughts concerning environmental issues. Economists think that technological advancements can be counted on to solve environmental problems. Ecologists are less inclined to count on technology to cure or circumvent problems. But recently there has been increasing cooperation between ecologists and economists. Members of these two professions maintain that although they may have different backgrounds, there is no proof that they hold significantly different values. Both groups have failed to sufficiently consider the input of the other. Better communication between both is needed. There are often conceptual differences between population, resource, and environmental models due to the lack of understanding of each other's fields. Both ecologists and economists can productively work together. Ecologists can guide society in the direction it needs to go in order to avert environmental catastrophe, and economists can devise strategies that would influence that direction.*

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## **Ecologists and Economists Can Find Common Ground**

**Carl Folke**

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In recent years there has been an encouraging trend of increased interdisciplinary collaboration between ecologists and economists. But, as a general rule, the writings on environmental matters by ecologists and by economists are different in tenor and message. The economists on the whole appear to be more optimistic when regarding the condition of the human environment; in particular, the economists tend to believe that technological innovations can be relied upon to solve environmental problems, while ecologists are less inclined to trust technology to cure or bypass problems.

Do the different attitudes of ecologists and economists reflect different value systems, that is, do members of these professions hold different world views? In short, are ecologists nature lovers, while economists are materialists? And if so, is there self-selection of these types into the two professions? In a discussion in Askö, Sweden, prominent members of the two professions<sup>1</sup> concluded that although members of the two groups may on average come from different backgrounds, there is no evidence that they hold substantially different values. Ecologists have been known to enjoy

high consumption levels, while economists have been known to love nature walks. More likely, it was felt, the professional differences were generated elsewhere.

Neither discipline has sufficiently considered the inputs of the other discipline, according to the discussion participants. Models in each field are constructed for specific ends. Not all economic models need include environmental variables, any more than there need be an economic element in all ecological models. However, the economists felt that too many economic models ignore the environmental resource base of material production (e.g., deterioration of mangrove ecosystems into shrimp aquaculture) and the consequences of that production for critical environmental systems employed as sinks (e.g., the atmosphere as a sink for carbon dioxide emitted in the process of burning fossil fuels in rich countries).

Those models continue to postulate unlimited growth in population, unlimited growth of the physical economy by means of capital accumulation and substitution, improved organization, and technological progress. The nature of these models, the

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economists suggested, may well adversely affect their profession's perception of the natural world. They noted too that, as a profession, economists tend to overly stress the ability of markets to allocate resources efficiently. For example, in view of the lack of well-defined property rights in most environmental resources and sinks, failure to consider externalities (which exist when prices do not reflect true social costs) is pervasive. These externalities are not given the prominence they require and in textbooks are still regarded as aberrations.

Another long-standing weakness of the economist's modeling of the environment is that, on the whole, it ignores possible threshold effects, a central concern of ecologists. The economists explained that if threshold effects are significant, the price mechanisms on which economists rely cannot perform well.

The ecologists in turn feel that, when searching for solutions to environmental problems, members of their discipline all too often fail to take advantage of the knowledge of economists and other social scientists, in particular regarding the importance of markets for allocating environmental resources. Frequently ecologists do not bring critical scrutiny to bear on environmentalists who may support central command and control measures when a market mechanism may be more efficient, and vice versa. Ecologists often do not appreciate the underlying economic causes or other driving forces of environmental problems or the indirect effects of remedial measures proposed.

Better communication is needed between ecologists and environmentalists, as well as between ecologists and economists. The ecologists at the Askö meeting also felt that on issues such as the relationship between complexity and stability, they have not sufficiently informed environmentalists of the current state of their science. As a result, environmentalists may use as slogans some notions that are outdated. Ecologists have also tried to move quickly from an understanding of small-scale case studies to predictions about large-scale systems. They may therefore appear more certain than is justified about what they know about the behavior of large systems. In view of the limited ecological understanding, the ecologists at the meeting recommended a

precautionary approach to treatment of large systems out of a fear of the consequences of their possible collapse.

The ecologists and economists agreed that there are often substantial conceptual differences between their population, resource, and environmental models due to ignorance of each other's fields. It is bad science when economists build models that are oblivious of ecological knowledge (such as the limited substitution possibilities among resources), and bad science can lead to bad policy and faulty management. By the same token, if ecological models ignore the ways in which economic institutions operate, they too can have unsatisfactory consequences.

The ecologists expressed concern that most economists continue to view as an unalloyed good the growth of the gross national product in rich nations with high levels of wasteful consumption. They emphasized that it was necessary for the material economies of poor nations to grow but that this growth should be balanced by decreasing throughput in rich nations—something they claimed could be achieved with an improvement in the quality of life. They argued that increasing the scale of the global human enterprise (that is, the product of population size and per capita consumption) is a recipe for environmental disaster. Therefore, they are alarmed that economic analyses of the global economy often do not capture the critical relationship of the scale of the human economy to the scale of the ecosystems that support it.

The economists agreed that the gross national product is not an ideal measure of human welfare and that it is all too often misinterpreted in the press and by politicians. They noted, however, that economists have in recent years put considerable effort into devising improved measures. The economists shared the ecologists' concern on the importance of global-scale issues, because they agree that the world's natural capital is increasingly becoming scarce. The two groups also agreed on the need for a careful reconsideration of where and how economic growth and shrinkage should be pursued. An overall conclusion was that the ecologists know more than enough to alert a risk-adverse society to directions in which it should move in order to avoid serious environmental catastrophes and that economists' ex-

pertise would be critical in designing mechanisms that would encourage that movement.

<sup>1</sup>The group comprised ecologists R. Costanza, Maryland International Institute for Ecological Economics, P. R. Ehrlich, Stanford University; C. Folke, Beijer International Institute of Ecological Economics and Stockholm University; C. S. Holling, University of Florida; A.-M. Jansson and B.-O. Jansson, Stockholm University; and J. Roughgarden, Stanford

University; and economists P. Dasgupta, University of Cambridge, G. M. Heal, Columbia University; K.-G Mäler, Beijer International Institute of Ecological Economics and Stockholm School of Economics; C. Perrings, University of York, and D. A. Starrett, Stanford University. The meeting, sponsored by Beijer International Institute of Ecological Economics (which is part of the Royal Swedish Academy of Sciences), was held at the Askö Laboratory of the Stockholm Centre for Marine Research, Askö, Sweden, 5-7 September.

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