ECONOMICS AND ECOLOGY: THE NEED FOR COMPROMISE

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The most important problem facing our species in the current century is how to reconcile our insatiable drive for development with the limited resources of our planet. Attempts at resolution, which should involve collaboration between economists and ecologists, have often deteriorated into adolescent debates between "traditional ecologists" and "traditional economists."

The solution to THE problem of the 21st century requires interdisciplinary detente. The premise of my paper is that synthesis can be founded on the realization that economic theory predicts how this particular species responds to its resource environment, and ecological theory predicts how the system reacts. The two sides of the controversy are simply two aspects of the same integral feedback process.

It is shortsighted to consider ecology and economics as diametrically and irreconcilably opposed on issues of economics and environmental quality. It has long been understood that neoclassical economic theory does not incorporate all relevant human values.

The intimate relationship between economic activity and the ecosystem is particularly clear in the management of renewable resources (Hamilton 1948, Watt 1968). One of the best examples is provided by the fishery industry.

One impediment to integrating economics and ecology is the manner in which each field abstracts the human-environment system. The economic model isolates the intricate interactions of the market, abstracting the environment into a box labeled "resources" on the input side and a box labeled "effects" on the output side. The ecological model isolates, in its turn, the intricate interactions of the natural system and abstracts human activity into a box labeled "disturbances." As such, the environment becomes external to the economic activity.

The goal of integration is also impeded by the sweeping assumption that the role of ecologists is "valuation." The hypothesis sounds reasonable on the surface. Ecologists should find a way to place a monetary value on the environmental effects of economic activity. Values for these "externalities" can then be inserted into the economic model. However, the strategy is limited because the environment is still not a dynamic entity within the economic model. The feedback loop between the human species and its ecosystem is still not complete.

Neither economic nor ecological theory has been exceptionally successful in predicting large-scale events.We will need an integrated theory that uses each in the areas where it is best, but uses both and develops innovative approaches that lift the most serious limiting assumptions.

The ecologist endeavors to understand system dynamics by isolating the "natural" ecosystem, i.e., the system "undisturbed" by man. However, the desire to isolate can become counterproductive when humans become the dominant species in the ecosystem. The simple fact is that there is no longer any natural ecosystem unaffected by man. So, the fact that ecologists should concentrate on the study and preservation of the natural world is fallacy.

The key to synthesizing economic and ecological theory may be the simple observation that, as the scale of development increases, economic activity becomes connected to more and more of the environmental dynamics. Many phenomena can still be studied in isolation. There is still room for an isolated economic theory and for controlled ecological experiments. At some scale, however, connectivity increases to the extent that externalities must be internalized into the dynamics of the economic activity. There are already many papers in the literature that consider economic and ecological systems as a dynamic unit. The critical challenge for science, and our species, demands that we abolish intellectual barriers, crush limited paradigms, and take the broadest possible view of the problem.