

Forum

# The Economist Has No Clothes

Unscientific assumptions in economic theory are undermining efforts to solve environmental problems

BY ROBERT NADEAU



The 19th-century creators of neoclassical economics—the theory that now serves as the basis for coordinating activities in the global market system—are credited with transforming their field into a scientific discipline. But what is not widely known is that these now legendary economists—

William Stanley Jevons, Léon Walras, Maria Edgeworth and Vilfredo Pareto—developed their theories by adapting equations from 19th-century physics that eventually became obsolete. Unfortunately, it is clear that neoclassical economics has also become outdated. The theory is based on unscientific assumptions that are hindering the implementation of viable economic solutions for global warming and other menacing environmental problems.

The physical theory that the creators of neoclassical economics used as a template was conceived in response to the inability of Newtonian physics to account for the phenomena of heat, light and electricity. In 1847 German physicist Hermann von Helmholtz formulated the conservation of energy principle and postulated the existence of a field of conserved energy that fills all space and unifies these phenomena. Later in the century James Maxwell, Ludwig Boltzmann and other physicists devised better explanations for electromagnetism and thermodynamics, but in the meantime, the economists had borrowed and altered Helmholtz's equations.

The strategy the economists used was as simple as it was absurd—they substituted economic variables for physical ones. Utility (a measure of economic well-being) took the place of energy; the sum of utility and expenditure replaced potential and kinetic energy. A number of well-known mathematicians and physicists told the economists that there was absolutely no basis for making these substitutions. But the economists ignored such criticisms and proceeded to claim that they had transformed their field of study into a rigorously mathematical scientific discipline.

Strangely enough, the origins of neoclassical economics in mid-19th century physics were forgotten. Subsequent generations of mainstream economists accepted the claim that this theory is scientific. These curious developments explain why the mathematical theories used by mainstream economists are predicated on the following unscientific assumptions:

- The market system is a closed circular flow between production and consumption, with no inlets or outlets.
- Natural resources exist in a domain that is separate and distinct from a closed market system, and the economic value of these resources can be determined only by the dynamics that operate within this system.
- The costs of damage to the external natural environment by economic activities must be treated as costs that lie outside the closed market system or as costs that cannot be included in the pricing mechanisms that operate within the system.
- The external resources of nature are largely inexhaustible, and those that are not can be replaced by other resources or by technologies that minimize the use of the exhaustible resources or that rely on other resources.
- There are no biophysical limits to the growth of market systems.

If the environmental crisis did not exist, the fact that neoclassical economic theory provides a coherent basis for managing economic activities in market systems could be viewed as sufficient justification for its widespread applications. But because the crisis does exist, this theory can no longer be regarded as useful even in pragmatic or utilitarian terms because it fails to meet what must now be viewed as a fundamental requirement of any economic theory—the extent to which this theory allows economic activities to be coordinated in environmentally responsible ways on a worldwide scale. Because neoclassical economics does not even acknowledge the costs of environmental problems and the limits to economic growth, it constitutes one of the greatest barriers to combating climate change and other threats to the planet. It is imperative that economists devise new theories that will take all the realities of our global system into account. ■



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