

Nature and economics: the tie that binds

Nature: An Economic History. By Geerat J. Vermeij, Princeton, NJ, Princeton University Press, 2004, 445 pp., \$52.50/cloth, \$22.95/paperback.

Nature is an original work in evolutionary biology. Vermeij cogently argues the thesis that life on earth follows the principles of economics; a competitive struggle for scarce resources. Thus the work is an important contribution to theoretical work in all life sciences. The author is a rigorous evolutionist who, even at this late date when we are celebrating the 200th year of Darwin's birth, must chide his fellow biologists for their failure to follow the evolutionary model.

The difficulty of his text may suggest why the others have chosen a path more often traveled. Vermeij eschews the usual expository argument that states the hypothesis with examples. Nor does he allow the juxtaposition of the human species against that of the rest of the natural world to comfort us with the notion that he is dealing in metaphor. Instead he builds on his impressive erudition, attested to by his fellow biologists. He cites a myriad of instances of such phenomena as production and consumption within and across various populations, including the human species, until he convinces by preponderance of evidence. The adaptation that resulted in intelligence in the human species, permitting development of out of body technology, Vermeij places in the Pliocene Era in Equatorial East Africa, because that timeframe and area provided the competitive environment for the selectional background in which exceptional intelligence would most likely have evolved. Similarly, at the beginning of the Cambrian period, the author notes the emergence of

another familiar aspect of the human race: consumer society. He describes a revolutionary transformation from a subsistence economy to a more complex economy productive enough to support ever increasing populations of larger, actively metabolizing consumers, which began to exercise strong evolutionary control on their food organisms.

At this point we begin to leave the Hobbesian subsistence world of primary production and enter a more organized world of production and consumption. Vermeij provides myriad examples from both the human and nonhuman natural world which illustrate various production functions, and is of particular interest to the economist. It establishes a dynamic relation between producers and consumers. The dominant groups exemplify power. Competitively dominant producers create structure; modify the environment to their own advantage, even in death. Dominant consumers regulate how economic units with which they interact make their livings. Although bottom up production is essential in the struggle for life, top down consumers contribute to escalating adaptation and thus support the thesis that economic activity is itself a positive contributor to the evolutionary process.

The author organizes his material in chapters that move tellingly through various characteristics of the relation of evolution to economics. It is a difficult text for the nonbiologist; nevertheless, it is accessible to the general reader. Even though the significance of such observations as increased phosphorus in the atmosphere is not immediately apparent to the untutored, it is explained by the text. The style is discursive rather than technical.

Observations and comment in the text, obviously addressed to the

intended audience of biologists, are supported by generous citations from the work of fellow biologists. Refreshingly, these studies are not always taken at face value but provoke Vermeij into differing interpretations of the results. It is within this context that exceptional insights into human economic activity are revealed. Application of a particular observation to human species, however, is not singled out but remains embedded in the exposition. These interpretations reward the diligent economist for persistence in reading what sometimes feels like a foreign language.

It is unfortunate that the author's summations in the last chapter lack the subtle complexity of the earlier comprehensive treatment. It is in this section that Vermeij intends to illustrate the uses for social policy in his tale of how natural communities have dealt with resource limitations. His abstractions, however, omit the geological time dimension that illuminates the detailed presentation. Additionally, nowhere do we find here an analysis of his earlier statement, "Most students of human history attribute the great economic advances of our species to human action and social circumstances....Factors over which people have little control – climate, volcanic eruptions, earthquakes floods and the like are either dismissed as unimportant or blamed for economic disruption." Nor do we find in it an explanation of the statement, "I am more inclined to the view that postglacial systems ecosystems in the Middle East and China, where agriculture first originated, became more productive as growing seasons lengthened, summer temperatures rose, and rainfall increased," indicating an emphasis on the conjuncture of a favorable moment in the environment to date human agriculture.

It is the intertwining of earth's his-

tory with opportunities for change in living species that provide the sweep of this work. The narrative teems with life and enables us to feel the throbbing universe of which we are part. The summation falls short of fulfilling the author's promise to show the economic control that affects and responds adaptively to conditions on

the longest and largest scale of time and space possible. It is only in the detailed presentation that the author transforms our perception of change as disturbances from equilibriums to that of adaptive response to an ongoing process. Vermeij has demonstrated in this work the importance of orthodox economists and biolo-

gists learning from each others' disciplines, even as Darwin once found in the writing of the British economist Malthus the concept of life as the struggle for survival.

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