BOOKS: ECONOMIC HISTORY

Geography as Destiny?

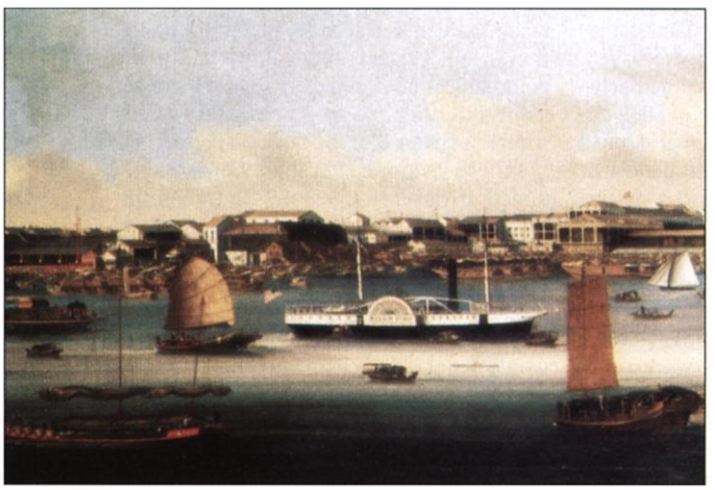
Graeme Lang

Why did some European societies industrialize and project their political and military power throughout the world, while China and India failed to do so? Some scholars find the causes of the "European miracle" in culture or capitalism, but Kenneth Pomeranz, a history professor at the University of California, Irvine, disagrees. He finds the answer mainly in Europe's armed exploitation of other resource-rich regions, particularly in the Americas.

Try this thought-experiment: imagine that Chinese explorers discovered North America 78 years before Columbus. Imagine that the great ships of Admiral Zheng He, five times larger than contemporary European vessels, had sailed east across the Pacific in 1414, instead of south and west to India and the coast of Africa—from where they returned bearing giraffes, among other exotica (*1*). Imagine that the Ming emperors had not later reined in their experienced sailors, dismantled their fleets, and retreated into their agricultural empire, but instead had supported the colonization of new lands. The world might have been a very different place. From Pomeranz's analysis, colonization of the New World by other empires could have made European industrialization much more difficult unless the Europeans could have found an alternative source for the great "ecological windfall" supplied by the Americas.

The Great Divergence
China, Europe, and the Making of the Modern World Economy
by Kenneth Pomeranz
Princeton University Press, Princeton, NJ, 2000. 392 pp. $39.95, £25.95. ISBN 0-691-00543-5.

Preindustrial Europe already differed in important ways from the societies of the Middle East and Asia. Pomeranz, however, claims that these differences were not sufficient to produce an industrial revolution. One of the main arguments in the book, which draws on the author's research on China, is that Europe did not differ much from parts of East Asia, such as the Lower Yangzi Delta, in the social and economic conditions thought to be important for Europe's later success. Until the late 18th century, there was little in European society to indicate that within a hundred years Europeans would be able to dominate much more populous societies in Asia.



Because of coal and trade. Detail from Sunqua's painting *Guangzhou Factories 1855–1856.*

As Pomeranz explains, the most important factor within Europe was the presence of convenient supplies of coal. Coal was important because it allowed England, which industrialized first, to get through ecological bottlenecks in fuel supplies for heating and, later, for industry. Fortunately for the British, their abundant coal was located near excellent water transportation that linked the mines to nearby concentrations of consumers. Unfortunately for the Chinese, their coal supplies were mostly in the northwest, much farther from the dense populations of the Yangzi Delta and remote from easy transportation routes to the cities. There was nothing special about British exploitation of coal. They, and other Europeans, were the beneficiaries of "geographical luck." But without the colonies, even coal would not have been sufficient for European industrialization.

The importance of the colonies for European societies is complex. Pomeranz argues that all "Old World core" regions in Europe and Asia were running up against the ecological constraints of limited land for agriculture and limited supplies of fuel and natural resources. Most core regions dealt with these problems by trading for scarce materials, by expanding into marginal areas, or by agricultural innovations and more intensive agriculture. Only Europe found a way around ecological bottlenecks by exploring outward to find land and raw materials, particularly in the Americas, which could subsidize economic and industrial transformations in the home country. In short, British coal deposits and raw materials from the New World (which, coincidentally, was partly depopulated of native peoples by European germs) gave Europe the crucial advantages over Asia. The "great divergence" between Europe and Asia emerged only when these two factors were incorporated into an increasingly expansionist system of European economic growth toward the end of the 18th century.

The problem with trying to simplify the explanation down to the two factors of coal and New World colonies is that Europe's multistate system was the key to its outward expansion. Their political situation drove the Europeans into armed, competitive maritime exploration and trade. That competition, in turn, was one of the reasons why Europe, but not China, discovered the New World. Indeed, European ships appeared in the Far East not long after Columbus arrived in the Americas. Pomeranz acknowledges, as others have argued (*2*), that this multistate system was a key condition for Europe's success.

After the 17th century, the increasing institutionalization of science in scores of European universities and in a growing number of scientific societies, as well as the growing interaction between science and industry, contributed to the uniqueness of preindustrial Europe. As with exploration, the evolution of science owed much to the European multistate system, which favored the development of science much more than the imperial systems that controlled most of the rest of the world. But for Pomeranz, neither science nor a multistate system was enough to generate an industrial revolution.

The strength of *The Great Divergence* is that it links ecological and geographical variables to the economic histories of both

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Europe and Asia. Like other recent uses of biological and ecological factors to understand the evolution and fates of human societies (*3*), Pomeranz has rooted his argument in variables that need much more attention. His most striking argument is that European industrialization was contingent and by no means inevitable. In the histories of human societies (as in the course of biological evolution), chance and geographical accident may play a much larger role than we once thought.

References

1. L. Levathes, *When China Ruled the Seas: The Treasure Fleet of the Dragon Throne, 1405–1433* (Simon and Schuster, New York, 1994).
2. E. L. Jones, *The European Miracle: Environments, Economies, and Geopolitics in the History of Europe and Asia.* (Cambridge Univ. Press, Cambridge, ed. 2, 1987).
3. J. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (Norton, New York, 1997).

CD-ROM: CONSERVATION BIOLOGY

Preserving Diversity the U.S. Way

Hugh Possingham

"What discount rate do you use in making financial decisions?" "Do the mosquitos that spread malaria, or the protozoans that cause malaria, deserve the same protection as disease-resistant strains of rice or endangered peregrine falcons?" These are just two of the thought-provoking questions that E. O. Wilson will ask you if you explore Dan Perlman's CD-ROM *Conserving Earth's Biodiversity*.

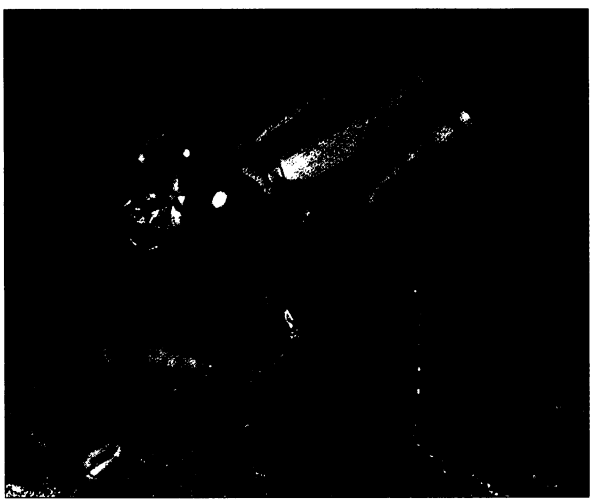
The first question reminds us all that conservation biologists need a basic understanding of social and economic issues. The second question is great for stimulating minds; I have used a version of it for many years in lectures to groups that range from primary school children to bird clubs. Unfortunately, that same question also provoked me to get annoyed, once again, by the parochial attitude of U.S. conservation biologists. Peregrine falcons are distributed across the globe, are not endangered now, and have never been endangered in Australia. Like many U.S. books in fields related to ecology, this CD focuses on case studies from the United States and other places where U.S. researchers have done much of their work, such as Costa Rica. Although illustrating concepts with examples from one part of the world is no great crime, the CD is also conceptually parochial. Too frequently it ignores fundamental advances made outside North America, for example in reserve design theory.

Conserving Earth's Biodiversity, with E.O. Wilson
by Edward O. Wilson and Dan L. Perlman

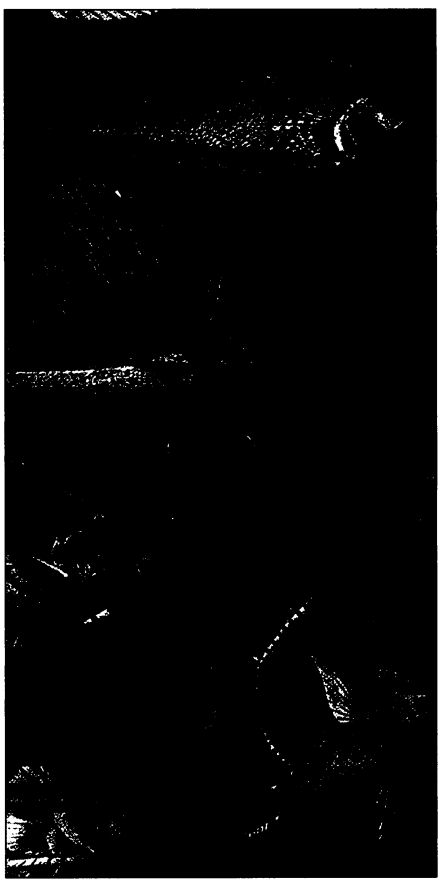
Island Press, Washington, DC, 2000. CD-ROM with User's Guide. $39.95. ISBN 1-55963-773-0. CD-ROM with User's Guide and Instructor's Manual. $39.95. ISBN 1-55963-774-9.

With my pet prejudices out of the way, the obvious question remains: What does a CD called *Conserving Earth's Biodiversity* do that a book will not? The lively impact of E. O. Wilson's taped questions, which get you thinking and provoke responses, is one indication that CDs can provide a viable and exciting advance on printed media. (One wonders when *Science* will be available with interactive graphics.) Navigation through the CD is as transparent as reading a book, yet more flexible. From every page, there is a range of options for further exploration, which will be enjoyed by high school students and lower-level undergraduates. The CD also enables the viewer to explore ideas and facts linked in a "Web-like" fashion. For every topic discussed on the CD, links to related Web sites are provided through the Island Press Web site, thus they can be updated continuously. (The links can be independently accessed through www.islandpress.org/ceb/intro_1/index.ssi.) Although the CD's slideshows, animations, and interactive maps are only small advances on what a book can do, the provision of a small number of interactive models and quizzes adds enormous educational value. How could you enable a student to explore the consequences of demographic stochasticity in a book? Wilson and Perlman have produced a first exciting step. Their approach offers plenty of room to deliver more methods of interactive learning: better models with tutorial exercises, more puzzles and quizzes, learning games, tools for overlaying spatial data, and other online activities.

Conserving Earth's Biodiversity is an impressively engineered product with very few errors. The academic rigor behind the CD is highlighted by an incisive statement about interpreting map data that accompanies the presentation of global biodiversity patterns: "No data set is perfect, and you, as a consumer of data, should have a healthy skepticism about the information that others present." As soon as I get that unsolicited tenured job offer from an Ivy League school, I'll buy copies for all my undergraduate classes.



Costa Rican dancer. An *Argia* damselfly photographed in the tropical cloud forest at Monteverde.



Teeming waters. With some 22,000 described species, fish form the most diverse class of vertebrates.

CREDIT: (LEFT) D. PERLMAN/NATUREUPCLOSE; (RIGHT) FROM J. G. WOOD, *THE ILLUSTRATED NATURAL HISTORY, V. 3: REPTILES, FISHES, MOLLUSCS, ETC.* (ROUTLEDGE, NEW YORK, 1863)

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