immune status of the host. When we discover how this is done, we can then use the regulation process to control specific cells that we do not want to grow—such as cancer cells.

Despommier’s writing is precise, clear, and up to date. His personal stories about parasitism and how he first started in the field are unparalleled. The only flaw that I see in the book is within the discussion of the distribution of the species of *Echinococcus*. As we move from a morphological perspective of a species in this genus of cestodes to a more molecular one, it is evident from current work that *Echinococcus multilocularis* has an exclusively Holarctic distribution; it occurs in canids as definitive hosts and in rodents (primarily Microtinae but many others, as well) as intermediates. (*Echinococcus granulosus* had been known in New Zealand, but control measures have eliminated this species there; *E. multilocularis* has never been reported from that country.) Recent work has also shown that *Echinococcus vogeli*, which occurs in South America, mostly using bush dogs (*Speothos venaticus*) and *Cuniculus paca* as intermediate hosts, is even more pathogenic than *E. multilocularis* is in humans.

I will use *People, Parasites, and Plowshares* as required reading for both my field parasitology and my general parasitology courses. I highly recommend this book to anyone interested in parasitology, and it will make an excellent addition to the library of the Manter Laboratory.

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doi:10.1093/biosci/biu004

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**MORE PHILOSOPHY MAKES BETTER SCIENCE**


The idea of a book devoted to the links between ecological science and philosophy, within the framework of present-day environmental concerns, was formed at an international workshop (“Between the philosophy of biology and the philosophy of ecology: Evolutionisms, ecologies, and ethics”) held in 2005 at the French National Museum of Natural History (MNHN) in Paris. Ten philosophers of science—from France, the United Kingdom, and the United States—contributed to the workshop, exchanging viewpoints and experiences in various environmental, ethical, and epistemological domains. This meeting resulted in _The Structural Links between Ecology, Evolution, and Ethics: The Virtuous Epistemic Circle_, a succinct book edited by Donato Bergandi, who also coordinated the workshop. Bergandi is a professor at the MNHN and is well known for his dissection of the concepts and methods now in use in systems ecology and for his stimulating debates about (a) holism and reductionism, (b) cybernetics, and (c) emergence.

The central figure of the book is that of Charles Darwin, whose research saturated evolutionary science—and changed the way mankind sees nature—before the appearance of ecology and nature conservation at the end of the nineteenth century. Darwin’s theories were largely propagated and, unfortunately, often distorted by his numerous followers—the Darwinian evangelists, as Michael Ruse humorously calls them in a chapter entitled “Evolution versus creation: A sibling rivalry?” Several Darwinian concepts are analyzed and criticized in the light of present-day knowledge: evolution (by Michael Ruse, in the above-mentioned chapter), chance (by Jean Gayon), time (by Jean-Marc Drouin), and adaptation (called adaptive management by Bryan G. Norton).

New concepts are also suggested throughout the book. For example, John Baird Callicott describes an “erotic ethic” of embracing human duty and our obligation to biotic communities. Environmental ethics is the subject of two contributions—Robin Attfield’s questioning chapter called “Reconciling individualist and deeper environmentalist theories?” and Catherine Larrère’s “Two philosophies of the environmental crisis.”

The book is strewn with many innovative ideas, sometimes presented in a provocative manner. For instance, as a slap in the face to hierarchy theory (a highly favored theory among the Darwinian evangelists), Callicott suggests, with strong arguments, that organisms should be called superorganisms, reversing the paradigm of ecosystems as superorganisms, erected by Frederic E. Clements (1905) to describe plant societies. Patrick Blandin, surfing on the contradictions between nature conservation (i.e., nothing must change) and evolution (i.e., everything is changing), states that the equilibrium paradigm must now be substituted by the cochange paradigm, which stems from the concept of EcoEvoEthics and is based on the evidence that we live in a permanently changing world.

The plea for the rights of animals by Tom Regan also deserves our attention. Aside from the psychological and biological reasons (e.g., their social
behavior, their intelligence, their abilities for abstraction, and their capability of language), he poses the problem on moral grounds: "Like us, [animals] are in the world, aware of the world, aware of what happens to them.... [They] share the rights we have mentioned, including the right to be treated with respect" (p. 121).

Far from being a boring treatise, *Structural Links* has great educational value. The panel of contributors representing a variety of schools of thought is presented to the reader as an opportunity to embrace a wide landscape of philosophical problems within the fields of environmental science and nature conservation. I highly recommend this book to evolutionary biologists, systems ecologists, and environmental stakeholders, with the hope that it will contribute to new avenues of research in ecosystem resilience.

**Reference cited**

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doi:10.1093/biosci/biu007

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**A PANORAMIC VIEW OF POLLOCK THROUGH A FISH-EYE LENS**


It is rare in resource management for a commercial fishery to follow a course from its discovery, through both a boom and a collapse, to its being rebuilt to the level of ecocertification in just a few decades, and it is also rare for a scientist to work an entire career in one fishery. These two anomalies coincide within a fishery that now harvests the largest volume on the sea and whose product typically exceeds a billion dollars annually, but, remarkably, this fishery is largely unknown to a public (and many professionals) interested in how we use our planet’s resources. In *Billion-Dollar Fish: The Untold Story of Alaska Pollock*, author Kevin M. Bailey tells the story.

Using nearly four decades of knowledge and experience, primarily with the National Oceanic and Atmospheric Administration as a fisheries observer, scientist, and adviser, Bailey has written a very personal account of the Alaska pollock as an industry, a food source, and a species. His ability to see multiple viewpoints comes from a career on commercial boats, aboard research vessels, with Alaskan communities, and in laboratories. He personally knows many of the key players in the industry, the research community, and even the political realm.

This personal perspective can be viewed as either the book’s great strength or its great weakness. In little more than 200 pages, Bailey tries to summarize the dynamics of a fleet and the personalities that characterized—if not dominated—an industry while also describing the dynamics of pollock populations and aspects of the North Pacific marine ecosystem. In doing so, he sheds light on the complex ways that industry figures, politicians, and scientists use their different stores of money, power, and knowledge to influence the decisions that affect pollock populations, the fisheries, and their management.

The wide scope of *Billion-Dollar Fish* means that every reader, regardless of his or her background, will learn new things from the book. Identifying, then encouraging, the intended target audience is a tricky matter, however. The book may be best suited for the non-specialist who wants to know how big, rich fisheries operate and how governments try to regulate them while balancing input from supposedly neutral science experts and partisan lobbyists from all sides. Unfortunately, it is this audience to whom I have trouble recommending the book.

It is the fisheries and environmental scientists themselves who should read this book. If they did, they would be pleased with the care that Bailey takes to stay within good practice (both journalistic and scientific) when reporting complex research results. Topics such as causes of recruitment variation and the role of pollock in its ecosystem are presented in a balanced fashion, and the uncertainties remaining in even well-studied ecological questions are stressed. These experts may not learn a lot that is new about fisheries science from this book beyond factual details about pollock—and some in the modeling community may even be slightly offended by the author’s perpetuation of the stereotype of scientists obsessed with their models at the expense of adequately accounting for ecological considerations. (In over 30 years of working for a fisheries ministry and hundreds of hours in stock assessment meetings, I have encountered only a handful of practitioners who fit that stereotype.) But this expert scientific community should still read the book to see how strong the influences of economics, policy, and personality can be on the dynamics of the fisheries on which they advise. *Billion-Dollar Fish* illustrates, clearly and often, that if scientists really want their advice to have an impact, there is much more to understand than just marine population ecology.

Advocates from any perspective (e.g., harvesters, environmentalists, community development agents) and