



## Books by Ernst Mayr

by Gert Korthof, 10 Apr 2006 (updated 31 Dec 2012)



Ernst Mayr (1904 - 2005)

see also:

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Books by:

- ▶ [Charles Darwin](#)
- ▶ [Richard Dawkins](#)
- ▶ [Ernst Mayr](#)
- ▶ [John Maynard Smith](#)
- ▶ [Michael Ruse](#)

### \* **"What makes biology unique? Considerations on the autonomy of a scientific discipline"**

by **Ernst Mayr**. Cambridge University Press, 2004. 232 pages.

This book could be called *Towards a new philosophy of biology*, but Mayr already published a work with that title in 1988. In fact the book could be seen as an abridged and updated version of *Towards*. So, it is recommended for those who did not read his 1988 book. Ernst Mayr (with the respectable age of 100 years!) proposes new and improved reasons for why and how biology is different from the physical sciences. This question is traditionally discussed by philosophers and philosophers-of-biology. In developing a new philosophy of biology, Mayr comes to criticise current philosophies of biology. There is no philosophical jargon in this book. The book is very useful for philosophers, physicists, chemists, engineers and other non-biologists interested in biology, as well as biologists. According to Mayr the book contains 4 new chapters (reductionism, another look at the species problem, etc) and 8 chapters are considerably revised versions of previous publications (mostly in scientific journals). This is Mayr's latest and last book. Ernst Mayr died on February 3, 2005, at the age of 100.

Reviews: [Science](#), [Evolution](#).

### \* **"What Evolution Is"**

by **Ernst Mayr**. Basic Books, 2001. 318 pages.

An introduction with enough details and b&w illustrations to make it a convincing explanation of evolution. Is also a textbook not exclusively aimed at biology students, omitting a detailed account of molecular, Mendelian and population genetics. Focussing on the central questions that interested non-biologists could ask about the fact, evidence and mechanisms of evolution. Anti-reductionism: evolution deals with individuals and populations. Evolution is not "a change in gene frequencies".

Reviews: [Science](#), [Nature](#).

Please note: there is a [free pdf](#) of this book on the internet (Dec 2012).

### **"This is Biology. The Science of The Living World"**

by **Ernst Mayr**, Harvard University Press 8th printing 2001 (paperback) 323 pages. (first printing 1997)

I recommend this book for non-scientists and non-biologists. As a biologist I found interesting things in it. Mayr masterfully explains basic questions such as What is Life? What is Science? How does science differ from theology and philosophy? How does science explain the natural world? How does biology explain the living world? What is the difference between proximate and ultimate causes in biology? Basic biological questions: What? How? Why? are explained in an intelligent way.

See also my [G&nti review](#) for a short discussion about Mayr's definition of life.

### \* **"The Evolutionary Synthesis. Perspectives on the Unification of Biology"**

by **Ernst Mayr**, **William Provine** (editors), Harvard University Press 1998 paperback 487 pages.

This book is a paperback reprint with a new preface by Ernst Mayr. The original edition is 1980. The book contains the presentations of a conference held in 1974 with leading evolutionary biologists including some of the architects of the synthesis. The aim was to reconstruct what happened during the period of the synthesis and, interestingly from the point of view of the critics of evolution, what were the objections to Darwinism? Unexpectedly, Lamarckism, anti-Mendelism and anti-evolution have been the dominant type of science in France, and Lamarckism was present in Britain, Germany and the United States too. In general the pre-Synthesis period was a period of doubt, scepticism, and criticism about the all-sufficiency of mutation and natural selection.

Perspective article: "[The objects of selection](#)"

by **Ernst Mayr** in: Proc. Natl. Acad. Sci. USA Vol. 94, pp. 2091-2094, March 1997

"One of the most basic questions of evolutionary biology is what objects are being selected in the process of natural selection? An analysis of this literature has convinced me that some basic conceptual differences, as well as the opponents' failure to adhere to a rigorous definition of the terms, are the major causes of the confusion. Evidently a new approach that attempts a careful critique of the arguments of the opposing parties is needed. This is what I am attempting here."

### \* **"One Long Argument. Charles Darwin and the Genesis of Modern Evolutionary Thought."**

by **Ernst Mayr**, 1991. Harvard Univ. Press. Paperback, 195 pages.

This book is in a sense a shorter version of his 1982 book. Ernst Mayr has unparalleled knowledge of Darwin, Darwinism and neo-Darwinism. He shows that Darwin had 5 theories, not just one (Chapter 4) and that Darwin challenged 7 traditional and well-entrenched philosophical dogmas (Chapter 5). Even today some of the best philosophers fail to understand what philosophical systems became under attack by Darwin's theories. And even some evolutionary biologists today make false statements about Darwin's theories of evolution. Historically, the rejection of creationism was the only belief that all Darwinians held in common.

See also [this review](#).

### \* **"Toward A New Philosophy of Biology. Observations of an Evolutionist"**

by **Ernst Mayr** 1988 Harvard University Press 564 pages

Chapters: Philosophy, Natural Selection, Adaptation, Darwin, Diversity, Species, Speciation, Macroevolution, Historical perspective.

### \* **"The Growth of Biological Thought"**

by **Ernst Mayr**, 1982. The Belknap Press of Harvard Univ. Press. 974 pages.

A conceptual and historical overview of Darwinism by one of the founders of neo-Darwinism. Very rich in content and complete. I learned a lot from this book. Extremely important is his identification of Darwin's Five Theories (page 505-510).

### \* **"Populations, Species, and Evolution"**

by **Ernst Mayr**, 1971 Harvard University Press, second printing, 453 pages

An Abridgment of *Animal Species and Evolution*.

### **"Cause and effect in biology"**

by **Ernst Mayr**, *Science* 134, 1501 (1961).

A classic paper on causation. It had a massive influence by shaping how most contemporary biologists understand causality and was a major contribution to the philosophy of science. In this article, Mayr distinguished proximate from ultimate causes.

See: Kevin N. Laland, Kim Sterelny, John Odling-Smee, William Hoppitt, Tobias Uller (2011) Cause and Effect in Biology Revisited: Is Mayr's Proximate-Ultimate Dichotomy Still Useful? *Science* 16 Dec 2011.

## Books about Ernst Mayr

Jürgen Haffer (2007) "**Ornithology, Evolution, and Philosophy: The Life and Science of Ernst Mayr 1904-2005**", 473 pp Springer.

Reviewed in [Nature](#) **449**, 659-660 (11 October 2007) by Jared Diamond:

"Jürgen Haffer's is the first book-length biography of Ernst Mayr. Although others will surely follow, Haffer's will remain unique, as it was virtually co-authored by Mayr as a hybrid between an authorized biography and an autobiography. After meeting Mayr at the age of 64, Haffer interviewed and corresponded with him, and completed a draft in time for Mayr to review it. Haffer is himself a distinguished ornithologist and evolutionary biologist, so he understands and can explain Mayr's achievements. Like his subject, he is German-born but fluent in English, so he was able to read the young Mayr's diaries and letters in German and to appreciate how Mayr's German background and his American citizenship contributed to his science and his life." ... "he decided after many months of preliminary study not to extend his book *Animal Species and Evolution* to discuss plants, or *The Growth of Biological Thought* to include physiology and embryology, because he recognized his lack of familiarity with these subjects."

[Review](#) in BioOne (2009).

### Further Reading

Trevor Price (2007) "**Speciation in Birds**", Roberts and Company, Greenwood Village, CO, 2007. 480 pp. Paper.

Review: [Science](#), 12 October 2007 Vol. 318. no. 5848, p. 198.

"Trevor Price is a brave man. In writing a book on speciation in birds, Price faces inevitable comparisons with larger-than-life evolutionary biologist Ernst Mayr, who was "first and foremost an ornithologist". Mayr's studies of bird species formed the basis for many of his ideas about speciation and provided the foundation for his influential monographs on animal speciation. Speciation in Birds also has the misfortune of appearing shortly after comprehensive and critically acclaimed treatments of speciation (J. A. Coyne, H. A. Orr, 'Speciation') and speciation theory (S. Gavrillets, 'Fitness Landscapes and the Origin of Species'). These are hard acts to follow. So, how does *Speciation in Birds* compare with these earlier volumes? In my view, it fares well. Price (an evolutionary biologist at the University of Chicago) has an advantage relative to Mayr in that most bird species and their geographic ranges have now been described."

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