

Transformations of Lamarckism

From Subtle Fluids to Molecular Biology
edited by Snait B. Gissis and Eva Jablonka
with illustrations by Anna Zeligowski

In 1809—the year of Charles Darwin's birth—Jean-Baptiste Lamarck published *Philosophie zoologique*, the first comprehensive and systematic theory of biological evolution. The Lamarckian approach emphasizes the generation of developmental variations; Darwinism stresses selection. Lamarck's ideas were eventually eclipsed by Darwinian concepts, especially after the emergence of the Modern Synthesis in the twentieth century. The different approaches—which can be seen as complementary rather than mutually exclusive—have important implications for the kinds of questions biologists ask and for the type of research they conduct. Lamarckism has been evolving—or, in Lamarckian terminology, transforming—since *Philosophie zoologique's* description of biological processes mediated by “subtle fluids.” Essays in this book focus on new developments in biology that make Lamarck's ideas relevant not only to modern empirical and theoretical research but also to problems in the philosophy of biology.

Contributors discuss the historical transformations of Lamarckism from the 1820s to the 1940s, and the different understandings of Lamarck and Lamarckism; the Modern Synthesis and its emphasis on Mendelian genetics; theoretical and experimental research on such Lamarckian topics as plasticity, soft (epigenetic) inheritance, and individuality; and the importance of a developmental approach to evolution in the philosophy of biology. The book shows the advantages of a Lamarckian perspective on evolution: indeed, the development-oriented approach it presents is becoming central to current evolutionary studies—as can be seen in the burgeoning field of Evo-Devo. *Transformations of Lamarckism* makes a unique contribution to this research.

Snait Gissis and Eva Jablonka are on the faculty of the Cohn Institute for the History and Philosophy of Science and Ideas at Tel Aviv University. Jablonka is the coauthor of *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life* (MIT Press, 2005).

Vienna Series in Theoretical Biology

“Assembled in this valuable and timely collection is a cornucopia of offerings on the theme of developmental variation in evolution. An international panel of contributors illuminates the rich history and philosophy of what the editors call Lamarckian problematics, and shows how a developmental perspective informs much of today's cutting-edge research. Throughout, Gissis and Jablonka integrate the many papers with impressively comprehensive interventions.”
—Susan Oyama, Professor Emeritus, John Jay College and The Graduate Center, City University of New York

“The reemergence of Lamarckian themes is one of the most striking developments in modern biology. This book unites the work of historians and scientists to throw light on the legacy of Lamarck's theory, its eclipse in the twentieth century, and its triumphant return to center stage in the twenty-first. It marks a transformation of biology itself but also of how we write the history of evolutionism.”
—Peter Bowler, Queen's University Belfast

“Ever since Darwin and the neo-Darwinians came to dominate the interpretation of evolutionary theory and its history, Lamarck has been ignored, misrepresented, and stereotyped. The same was about to happen in the year of Darwin's bicentennial, but thanks to Snait Gissis and Eva Jablonka, Lamarck has finally received the serious attention his work deserves. The editors have assembled a group of world-class scholars—historians, philosophers, and evolutionary developmental biologists—to produce a far more accurate, comprehensive, and exciting portrait of Lamarck as one of the most sophisticated, knowledgeable, and influential naturalists of his day. The series of essays in this volume are an interdisciplinary tour de force.”
—Garland Allen, Department of Biology, Washington University in St. Louis

“This book is long overdue. Lamarck and Lamarckian ideas were not only ignored but actively ridiculed during the second half of the twentieth century. As the subtitle of this book indicates, some of the most cogent reasons for reassessing those ideas come from within the citadel of molecular biology itself. A great strength of the book is that it does not seek to reintroduce Lamarckian ideas as they were originally formulated; rather, the Lamarckian perspective is used to assess where the Modern Synthesis needs extending or even replacing. For any serious student of evolutionary biology, this work will be a bible for many years to come.”
—Denis Noble, FRS, Oxford University, author of *The Music of Life*

Cover images: (front) detail of *The Web of Life*, (spine) *Giraffes* by Anna Zeligowski

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