



Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life (Life and Mind: Philosophical Issues in Biology and Psychology)

By Eva Jablonka, Marion J. Lamb

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This new edition of the widely read *Evolution in Four Dimensions* has been revised to reflect the spate of new discoveries in biology since the book was first published in 2005, offering corrections, an updated bibliography, and a substantial new chapter. Eva Jablonka and Marion Lamb's pioneering argument proposes that there is more to heredity than genes. They describe four "dimensions" in heredity -- four inheritance systems that play a role in evolution: genetic, epigenetic (or non-DNA cellular transmission of traits), behavioral, and symbolic (transmission through language and other forms of symbolic communication). These systems, they argue, can all provide variations on which natural selection can act.

Jablonka and Lamb present a richer, more complex view of evolution than that offered by the gene-based Modern Synthesis, arguing that induced and acquired changes also play a role. Their lucid and accessible text is accompanied by artist-physician Anna Zeligowski's lively drawings, which humorously and effectively illustrate the authors' points. Each chapter ends with a dialogue in which the authors refine their arguments against the vigorous skepticism of the fictional "I.M." (for Ipcha Mistabra -- Aramaic for "the opposite conjecture"). The extensive new chapter, presented engagingly as a dialogue with I.M., updates the information on each of the four dimensions -- with special attention to the epigenetic, where there has been an explosion of new research.

Praise for the first edition

"With courage and verve, and in a style accessible to general readers, Jablonka and Lamb lay out some of the exciting new pathways of Darwinian evolution that have been uncovered by contemporary research." -- Evelyn Fox Keller, MIT,

author of *Making Sense of Life: Explaining Biological Development with Models, Metaphors, and Machines*

"In their beautifully written and impressively argued new book, Jablonka and Lamb show that the evidence from more than fifty years of molecular, behavioral and linguistic studies forces us to reevaluate our inherited understanding of evolution." -- Oren Harman, *The New Republic*

"It is not only an enjoyable read, replete with ideas and facts of interest but it does the most valuable thing a book can do -- it makes you think and reexamine your premises and long-held conclusions." -- Adam Wilkins, *BioEssays*

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Editorial Review

Review

"An individual's personal experience can influence the characteristics of his or her offspring. Some of the ways in which this happens would have seemed heretical in the past. Eva Jablonka and Marion Lamb's stimulating new book successfully challenges some of the old orthodoxies. I recommend it warmly to anybody with a serious interest in developmental and evolutionary biology."--Sir Patrick Bateson, Department of Zoology, University of Cambridge, author of **Design for a Life: How Behavior and Personality Develop**

"Another valuable perspective to the discussion... I found it refreshing to read a science book that is a conscious attempt at good literature." *Nature*

"As this important book by Eva Jablonka and Marion J. Lamb shows, the twentieth-century 'neo-Darwins' told the evolutionary story in their own particular way, and some of the richness of evolution that their forebear had described fell into neglect." *The New Republic*

"There have been rumblings for some time to the effect that the neo-Darwinian synthesis of the early twentieth century is incomplete and due for a major revision.... Evolution in Four Dimensions is the most recent addition to this genre, and contributes yet another valuable perspective to the discussion." **Massimo Pigliucci** *Nature*

About the Author

Eva Jablonka is Professor at the Cohn Institute for the History and Philosophy of Science and Ideas at Tel Aviv University. Marion J. Lamb was Senior Lecturer at Birkbeck College, University of London, before her retirement. Jablonka and Lamb are also the authors of *Epigenetic Inheritance and Evolution*.

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