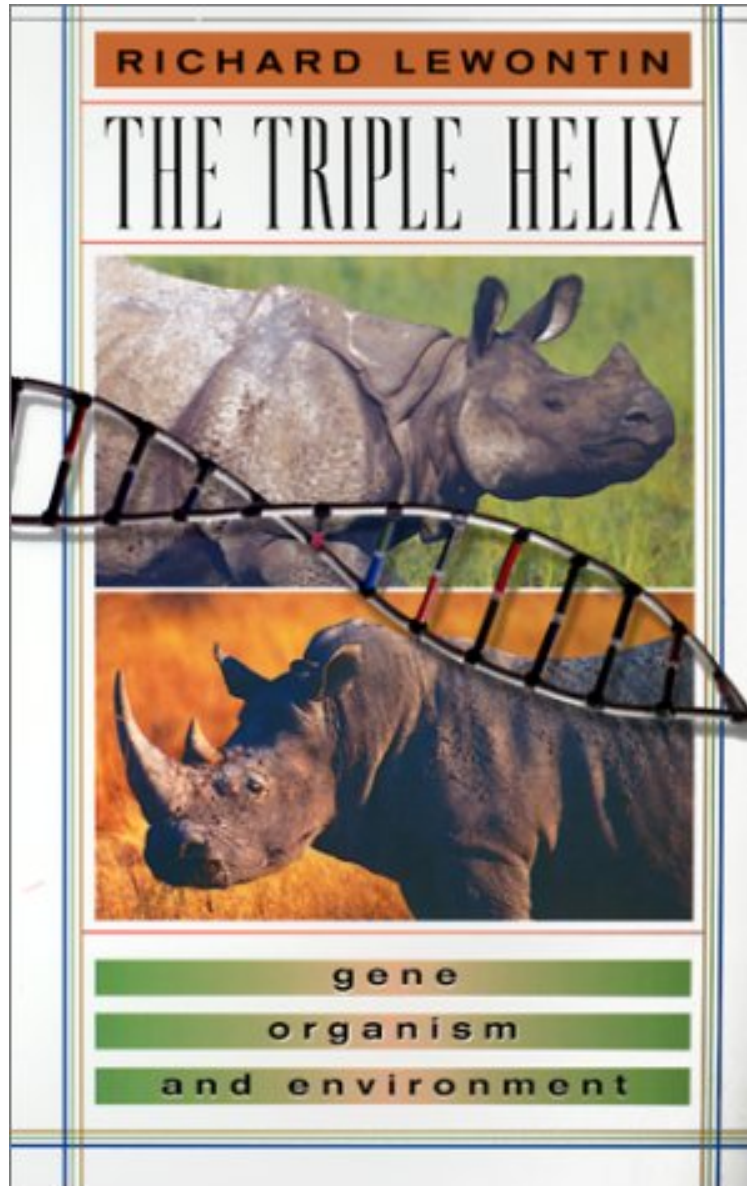


(Free download) The Triple Helix: Gene, Organism, and Environment

The Triple Helix: Gene, Organism, and Environment

Richard Lewontin

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Richard Lewontin : The Triple Helix: Gene, Organism, and Environment before purchasing it in order to gage whether or not it would be worth my time, and all praised The Triple Helix: Gene, Organism, and Environment:

37 of 37 people found the following review helpful. Four MovementsBy William A. CainRichard Lewontin's "The Triple Helix" is a delightful literary composition in four movements consisting of three lectures and an essay on contemporary trends in biology and genetics. While the three in the triple helix metaphor refers to the interactive

nature of a gene, an organism and an environment, it is also a reference to the notion that the human DNA (double helix) nucleotide-sequencing project is less than the be all and end all of genetics research. In the first movement (Gene and Organism), Lewontin reviews major discoveries in biology from Darwin to the Genome Project. In his critique the author carps the metaphors of biology, especially the once useful words and phrases like Decarte's metaphor of the world as a "machine", general use of the word "development" (unrolling or unfolding of something that is already there) to mean ontogeny and embryo genesis and the "Holy Grail", i.e., the Genome Project (the project that determined the nucleotide sequence of the entire human genome). Using elegant examples from contemporary biology, Lewontin dispenses with the ideas (1) that a cell is anything much like a machine and (2) that as a blueprint, DNA sequencing would be sufficient to define anatomy, development and function. In the second movement (Organism and Environment), the author clears up the meaning of "ecological niche". Accordingly, environment and organism are so closely related that, except in the laboratory, neither exists in the absence of the other. "Organisms not only determine what aspects of the outside world are relevant to them by peculiarities of their shape and metabolism, but they actively construct, in the literal sense of the word, a world around themselves." In movement three "Parts and Wholes, Causes and Effects"; the reader is treated to a glimpse into Lewontin's home life: "As I write this chapter I think at one moment of the sentence I am writing, but then I wonder which sonata my wife will practice next, and then I recall the work done by the plumber today and then I return my attention to the manuscript." Also included in movement three are (1) highly instructive lessons on values of fitness of nine genotypes in the Australian grasshopper (2) a discussion of variety among ceratopsian dinosaur horns and collars (3) a story about a Vermont man with a 150 year-old axe, and (4) the history of infectious disease in nineteenth century Europe. In the finale, Lewontin dispenses with holism, Gaia, catastrophe, chaos and complexity theories and adds: "Rather than searching for radically different ways of studying organisms or for new laws of nature that will be manifest in living beings, what biology needs to do to fulfill its program of understanding and manipulation is to take seriously what we already know to be true . . . the fact that biological systems occupy a different region of the space of physical relations than do simpler physico-chemical systems . . ." and "New experimental techniques are in part induced by the problems that are under investigation by a community of scientists with common interests, but once those technologies exist they have great power in determining the questions that are asked." The same is said of great men.

0 of 0 people found the following review helpful. Wonderful book, wonderful seller By Beryllium legume Fascinating book filled with intriguing ideas - it arrived on time and in what seems to be brand new condition, I am very pleased with this purchase and the seller. 0 of 0 people found the following review helpful. "Food" for thought... By Richard Kravchuk Lewontin does a good job of supporting the argument that species mutation occur based on genetic as well as environmental factors. Environmental factors, viz. food, air, water, etc, may contain oxidants that influence the genetic processes of an organism over the course of its life. An interesting read.

One of our most brilliant evolutionary biologists, Richard Lewontin has also been a leading critic of those scientists and non-scientists alike who would misuse the science to which he has contributed so much. In *The Triple Helix*, Lewontin the scientist and Lewontin the critic come together to provide a concise, accessible account of what his work has taught him about biology and about its relevance to human affairs. In the process, he exposes some of the common and troubling misconceptions that misdirect and stall our understanding of biology and evolution. The central message of this book is that we will never fully understand living things if we continue to think of genes, organisms, and environments as separate entities, each with its distinct role to play in the history and operation of organic processes. Here Lewontin shows that an organism is a unique consequence of both genes and environment, of both internal and external features. Rejecting the notion that genes determine the organism, which then adapts to the environment, he explains that organisms, influenced in their development by their circumstances, in turn create, modify, and choose the environment in which they live. *The Triple Helix* is vintage Lewontin: brilliant, eloquent, passionate, and deeply critical. But it is neither a manifesto for a radical new methodology nor a brief for a new theory. It is instead a primer on the complexity of biological processes, a reminder to all of us that living things are never as simple as they may seem.

.com There is the Richard Lewontin nonbiologists know, the author of acerbic, thoughtful, witty, unhesitatingly leftist books such as *Not in Our Genes* and the essays from *The New York of Books* collected in *It Ain't Necessarily So*. This is the other Lewontin, the hardcore scientist, one of the most insightful evolutionary biologists going. *The Triple Helix* is a manifesto for the life sciences: "The time has come when further progress in our understanding of nature requires that we reconsider the relationship between the outside and the inside, between organism and environment." Lewontin is not arguing for what he calls "obscurationist holism," but for a more complex interaction between gene, organism, and environment, in which they construct each other: It is the biology, indeed the genes, of an organism that determines its effective environment, by establishing the way in which external physical signals become incorporated into its reactions.... Whatever the autonomous processes of the outer world may be, they cannot be perceived by the organism. Its life is determined by the shadows on the wall, passed through a transforming medium of its own

creation. Lewontin argues for a life science that faces up to reality, that tackles the problems of studying subtle processes in complex systems where three-dimensional shape is crucial. The journal *Nature* "cannot recommend [the book] too highly for the many commentators and headline writers who think that DNA is the blueprint for the organism"--or for their readers. --Mary Ellen Curtin From *Publishers Weekly* The central message in this slim and eloquent book is that life is complex. Eschewing simple answers, Lewontin (*It Ain't Necessarily So*, reviewed below, etc.), professor of biology at Harvard, demonstrates how all organisms, including humans, are the product of intricate interactions between their genes and the environment in which they live. Neither genes nor environment are static, however, and their interplay dramatically changes both. Lewontin, long a social critic commenting on the ways biological information is misused, continues his articulate attack on genetic determinism, arguing against the simplistic belief that genes are largely responsible for behavioral characteristics. But the reductionists who believe that the ultimate understanding of human nature will come from molecular biology aren't the only ones he finds fault with here. Environmental determinists, Lewontin asserts, are equally incorrect and narrow in their focus. Looking only at the big picture works no better than reductionism: "Obscurantist holism is both fruitless and wrong as a description of the world." An integrative approach is what is needed, but, Lewontin laments, our technical ability to manipulate DNA has seduced scientists to such an extent that the very questions they are asking are being shaped by technology rather than by intellectual curiosity. Our fascination with DNA has "changed and pauperized, temporarily it is to be hoped, an entire field of study." Although the issues Lewontin addresses are huge, he writes about them in a manner fully accessible to the nonspecialist. 19 line illustrations. (May) Copyright 2000 Reed Business Information, Inc. From *Library Journal* Lewontin, an eminent Harvard biologist, is known both for his own contributions and his criticisms of other scientists' theories. This slim volume contains four essays. The first two essays critique theories asserting that genes or environment primarily determine the adult organism. The third discusses the problems of studying individual parts of an organism in isolation and of assuming that every effect has a "cause." In the final essay, Lewontin offers suggestions for further research. The emphasis throughout is on the extreme complexity of living organisms and the dangers of oversimplifying biological processes. One feels that Lewontin, a political leftist, is especially critical of sociobiology because he fears that emphasizing the role of genetics in human behavior and abilities will continue to be used to justify oppression of "inferior" groups. This is a valid fear, but it should not be used to deny the real benefits of the study of behavioral genetics. Whatever the reader's views, these essays are well worth reading for their brilliant, if sometimes partisan, criticisms. Lewontin's style is remarkably clear considering the complex nature of some of his arguments. Recommended for academic and large public libraries. --Marit MacArthur, *Auraria Lib.*, Denver Copyright 2000 Reed Business Information, Inc.