
by Charles Darwin, annotated by James T Costa

reviewed by Allen D MacNeill

In November 1859, the London publishing house of John Murray brought out the first edition of what would become the most famous and important work of science of the 19th century: Charles Darwin's On the Origin of Species. The first edition of 1250 copies sold out in one afternoon (first edition copies today fetch over a hundred thousand dollars on the rare book market) and was eventually reprinted over the next fifteen years in five increasingly popular editions. The success of the Origin catapulted Darwin from a relatively unknown specialist in the taxonomy of barnacles to the most famous naturalist of the 19th century and became the most widely read (and most controversial) science text of all time.

Many historians of biology credit the Origin with founding the modern science of biology. Hence, it is very curious that the first edition of the Origin lacks what most scholars expect to find in such influential and widely respected works. Unlike most other books of its kind—including Darwin's other famous books, The Voyage of the Beagle (first published in 1839) and The Descent of Man (first published in 1871)—the Origin has virtually none of the usual “machinery” of a scholarly work. Although Darwin cites the findings and opinions of hundreds of naturalists worldwide in the Origin, he does not provide any footnotes or written citations to their published works. The first edition of the Origin also does not include a bibliography or any listing of published references. And despite focusing on the most visual of the natural sciences, the Origin contains only one illustration, a hand-drawn diagram of the branching pattern of descent that Darwin proposed for his theory of descent with modification (his term for what we now refer to as “evolution”).

The reason for this surprising lack of documentation is well known: Darwin had been scooped on his theory of natural selection by a fellow English naturalist, Alfred Russel Wallace. In April 1858, Wallace sent Darwin a letter that included a brief essay “On the tendency for varieties to depart indefinitely from the original type,” in which Wallace anticipated virtually all of the major concepts of Darwin’s theory of evolution by natural selection. Darwin had been working on his theory for over two decades, and had been writing the book that would eventually be published as the Origin for at least five years when he received Wallace’s letter. Anxious to preserve his priority as the discoverer of natural selection and urged on to do so by his friends and fellow naturalists, Darwin rushed what he considered to be an “abstract” of his ideas into print in November 1859. This “brief abstract,” published without footnotes, illustrations, or bibliography, was the first edition of the Origin of Species by Means of Natural Selection.
The first edition of the *Origin* was a masterwork and is still published in its original form, *sans* footnotes, illustrations, and bibliography. Reading it, one can still get a taste of the overwhelming scholarship with which Darwin supported what he called his “long argument” for descent with modification. However, to really appreciate how much of the science of natural history Darwin wove into his argument, one really needs to know what Darwin’s sources were and how they were related to each other.

Presenting these sources and showing how Darwin marshaled them in his defense of his theory is the heart of James Costa’s brilliant annotation of Darwin’s classic, *The Annotated Origin,* published by Belknap Press of Harvard University Press. Brought out in celebration of the 150th anniversary of the publication of the first edition of the *Origin,* Costa’s annotated version more than compensates for the “missing” material in Darwin’s original. The introduction to *The Annotated Origin* alone is worth the price of the book. In it, Costa presents a lightning biography of Darwin and a nuanced exploration of the reasons for his rush to publish in 1859. It also contains a reader’s guide to the *Origin,* a book that is often difficult for modern readers who are unaccustomed to the density of Victorian prose. Costa then analyzes and annotates virtually every page of the *Origin,* including the title page, for which he provides a brief history of Darwin’s illustrious publisher, John Murray, and his decision to print only 1250 copies of what would eventually become his best-selling and most famous publication.

Costa’s annotations run the gamut from personal anecdotes to hard-science references. He weaves together Darwin’s own telegraphic notes in his unpublished notebooks, his correspondence, his other published works, and his autobiography, providing the reader with a wealth of information and insight. Tracking down each line of evidence becomes a kind of “exploration” in itself. One can follow threads of evidence that elucidate Darwin’s views about nature, science, his fellow naturalists, and even such “taboo” subjects (at least in the Victorian era) as sex and the intimate details of family life.

Costa’s annotations also provide a detailed framework for Darwin’s argument, showing how the various explanations and examples are marshaled in such a way as to support Darwin’s underlying argument for “descent with modification by means of natural selection.” As just one example, consider Costa’s annotations to the section of pigeon breeding in the first chapter of the *Origin* (“Variation under domestication”). Naïve readers of this chapter are sometimes puzzled by Darwin’s emphasis on pigeon breeding and its relationship to his theory. But, as Costa points out, “[p]igeons provided a microcosm of Darwin’s model of selection, as well as valuable data on development, correlation of traits, and reversion” (p 20). Like so many of his Victorian contemporaries, Darwin raised pigeons; he conducted dozens of breeding experiments at his country estate at Down House in Kent to test his theories. Darwin pointed out that all of the various breeds of pigeons could be shown to have descended from the wild rock pigeon (*Columba livia*) by a process that we now refer to as artificial selection. Darwin constructed an argument by analogy that natural selection followed the same rules as artificial selection. And since so many of his contemporaries (and potential readers) were also pigeon fanciers, he could be reasonably confident that they would be able to follow his argument without extensive explanation or citations of obscure references to the scientific literature.
Reading the first edition of Darwin's *Origin of Species* is a revelation. One catches the threads of Darwin's argument and follows his reasoning through to his startling (and sometimes troubling) conclusions. James Costa's masterful annotation of the *Origin* does much more. It supplies the scholarly apparatus that the first edition lacked and provides a coherent and comprehensive background for Darwin's arguments, as well as many fascinating insights into Darwin's personality, thought processes, and research methods. No other scientist has been as exhaustively analyzed as Darwin, and no other published work of science has been as widely criticized or praised as the *Origin of Species*. Reading James Costa's *Annotated Origin* provides an even deeper appreciation for Darwin's achievement and its impact on science and society. I recommend it with the highest possible praise.

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