

# The Shredding of a Caricature

## *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought*

Author: Robert J. Richards

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What do Charles Darwin and the dancer Isadora Duncan have in common? Apparently, they shared and deeply admired a mutual friend: the German biologist Ernst Haeckel. A towering figure in the intellectual and scientific circles of the late 19<sup>th</sup> and early 20<sup>th</sup> century, Haeckel's name has been relegated to the shadows of modern thought. In fact, when the name of Haeckel does not elicit a shrug, it almost always ignites the incantation of "ontogeny recapitulates phylogeny," often followed by a repudiation of the name and charges of fraud, anti-Darwinism, and—in the worst of cases—racism. So, what brought about this change in the standing of the man that Charles Darwin himself praised as being "one of the few who clearly understands natural selection" (p. 98)? In his lucidly written biography, *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought*, the historian Robert J. Richards grapples with this puzzling question.

The answer, as it turns out, makes for a truly engrossing and fascinating story about a man, the product of 19<sup>th</sup> century Romanticism, part artist, part scientist, who becomes by his own insight and conviction the epicenter of a powerful clash between science and religion. Even 100 years later, the repercussions of Haeckel's actions continue to be felt in today's scientific, popular, religious, and even political discourse. After reading this eloquently argued, vividly written, and richly illustrated biography (over 100 plates, illustrations, and photographs), it is not difficult to agree with Richards that this study makes it "more difficult to dismiss Haeckel's scientific accomplishments as anti-Darwinian and to denigrate his character as meretricious" (p. 13).

Unlike other scholarly works on Haeckel, Richards resolutely veers away from the oftentimes reflexive use of the arcane terminology with which some historians prefer to embroider their texts. Discussions about the so-called "contingency thesis" and sentences such as "the niggling semantic objections of a paleopositivist" aimed at addressing these matters are rare (p. 15) and disposed of summarily in the introduction

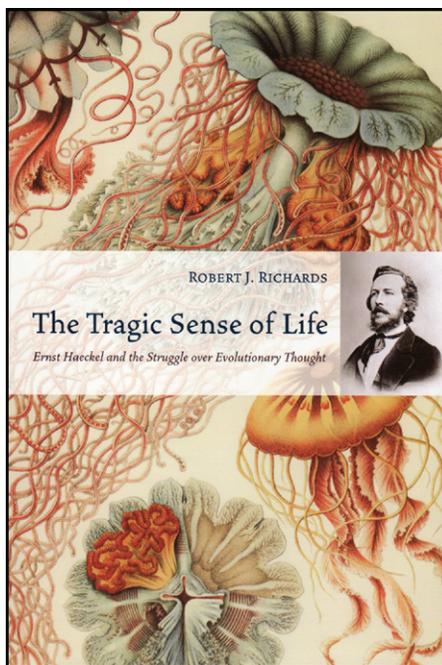
to this striking biography. In fact, a clue that we are up against a unique biographical work is hinted at by its title, which is a direct translation of the title of one of the works by the great Spanish writer Miguel de Unamuno y Jugo, "Del sentimiento trágico de la vida." Richards cites the following passage from Unamuno's work to provide the infrastructure upon which this biography is built: "In most of the histories of philosophy that I know, philosophic systems are presented to us as if growing out of one another spontaneously, and their authors, the philosophers, appear only as mere pretexts. The inner biography of the philosophers, of the men who philosophized, occupies a secondary place. And yet, it is precisely this inner biography that explains for us most things" (pp. 9–10). Therefore, Richards' biography of Haeckel has a distinguishing trait: it rigorously looks not only at the scientific and intellectual contributions of this scientist in the years following Darwin's postulation of the theory of evolution but also at the society and human experience that ultimately shaped the man behind such contributions. By choosing to use this lens to examine

Haeckel's life, Richards has written not just a biography but also an incisive historiographic study about both the rhetorical structure of scientific disputes and the propensity of many historians to make ethical judgments about historical figures.

The first four chapters, therefore, provide an engaging, fluid, and intellectually stimulating account of Haeckel's formative years. The influence of Goethe, Darwin, and the German naturalist Alexander von Humboldt on Haeckel are succinctly laid out, often by Haeckel himself, thanks to Richards' thoughtful use of Haeckel's extensive correspondence with his family, friends, and colleagues. We learn, for example, that Haeckel considered himself a "leptoderm" (thin-skinned) capable of experiencing "much more suffering and, also, much more intense joy than the run of men" (p. 19). However, this Romantic was not without humor, such as the time, when writing

to the love of his life Anne Stettin, he referred to himself as "the Doctor of little" (p. 53). Other correspondence is breathtaking, such as the October 8, 1873 letter Haeckel wrote to Darwin (p. 209) in which the German scientist hypothesizes that the ancient ancestor to all metazoans may have been a protozoan; included as part of the letter was a detailed drawing of a lineage tree describing this possible phylogenetic relationship.

Richards' exhaustive scholarship is evident throughout this brobdingnagian and revealing work of biography and history of science. One such example is provided by Richards' unearthing of a magnificent monograph by Haeckel (1869) on siphonophores (hydrozoans of the phylum Cnidaria) for which the scientist won a gold medal from the Utrecht Society for Arts and Sciences. In this manuscript, Haeckel describes experi-



ments in which he used fine needles under the microscope to divide embryos of the *Crystallodes* genus into pieces consisting of two, three, or four cells. What he reported was that these fragments underwent normal embryonic development with some frequency, “an unexpected, an even surprising to me, positive success,” Haeckel wrote (p. 186). Haeckel’s carefully drawn illustrations of the experimental results are reproduced on page 187 and likely provide the first reported evidence for the totipotency of embryonic blastomeres. Any serious student of embryology and developmental biology cannot help but be struck by this revelation, as Haeckel’s experiments precede by some 20 years the work of two of his “apostate students” (as Stephen Jay Gould called them): Wilhelm Roux and Hans Driesch. That neither of them cited this work by their mentor in their respective “unprecedented” and “groundbreaking” work on blastomere ablation/separation of amphibian (Roux) and echinoderm (Driesch) embryos is puzzling. Such omission concludes, wittingly or not, with perpetuating a misadjudication of credit that diminishes my opinion of the accuracy of the presently accepted historical record of embryology. Furthermore, considering that Roux eventually dismissed the existence of inheritance of acquired characters and that Driesch became a vitalist only serves to argue further that the discovery of the totipotency of the embryonic blastomere should fall squarely on the shoulders of Haeckel, who came about this finding by experimentally testing evolutionary ideas on the phylogenetic history of siphonophores.

Yet Haeckel was a “man of parts” (p. 7) and as such is not entirely without fault and contradictions either. His militant approach to evolution and the way in which he went about popularizing Darwin’s ideas are clearly to blame for the animosity and scorn many of his contemporaries (scientists and religious figures alike) felt for him. Richards has written three excellent chapters on the work Haeckel produced to pres-

ent evolution to the public (Chapter 7) and on the criticisms directed against this work by his colleagues (Chapter 8) and the religious establishment (Chapter 9). Haeckel’s contemporary, Wilhelm His, for example, vigorously criticized the embryo drawings in Haeckel’s “Natural History of Creation” supporting the view that animals develop through stages that reflect their evolutionary origins (the oft repeated phrase “ontogeny recapitulates phylogeny”). In fact, His accused Haeckel of fraud, of having doctored the images to suit a hypothesis, a charge that would follow Haeckel to the grave and that persists almost 100 years after Haeckel’s death. With the forensic care of the best tradition of historical work, Richards painstakingly dissects both Haeckel’s production of the “Natural History of Creation” (Chapter 7) and His’s charges of fraud (Chapter 8) to produce one of the most balanced and objective assessments of this contentious and enduring polemic of embryology.

Finally, Haeckel is almost singlehandedly responsible for “the warfare that broke out in the second half of the nineteenth century between evolutionary theorists and religiously minded thinkers, a warfare that continues unabated in the contemporary cultural struggle between advocates of intelligent design and those defending real biological science” (p. 491). Such explicit radicalism has also been put forward as evidence that Haeckel harbored racist ideas with the resulting consequence being a wholesale condemnation of his work to “the sulphurous regions of sinister thought” (p. 452) by recent historians of embryology and evolution. In light of Richards’ scholarship, this appraisal of Haeckel seems not only misplaced but also unjust. Indeed, the interpretation of history with a one-dimensional scale, in fact, has always impoverished human experience before it enriches it. Fortunately, this book will go a long way in recalibrating our understanding, even our appreciation, of Haeckel’s position in the history of embryology and of his contributions to modern biological research.

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