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**Book Review: Robert J. Richards *The Tragic Sense of Life: Ernst Haeckel and the Struggle Over Evolutionary Thought* Chicago, IL: University of Chicago Press, 2008**

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starting in the 1870s. One of the most interesting characters mentioned in the book is Verplanck Colvin, an explorer and surveyor whose *Report of the Topographical Survey of the Wilderness of New York* (1873) led to the establishment of the Adirondack forest reserve, the largest park east of the Mississippi River. The Adirondack Park does not fit the mold of an American national park because it was established by the State of New York and permits private ownership inside the reserve's boundaries. Frankly, I had barely heard of Colvin before reading this book, but who among those of us interested in environmentalism has not studied John Muir and Yosemite Park? Rarely do accounts of the rise of American environmentalism consider the New York forest parks in depth, or focus on the New York-based Regional Planning Association of America, which had in the 1920s taken seriously the problem of what we now call "urban sprawl." Studies like this might eventually contribute to a reevaluation of the varieties of American environmentalist thinking and practice, and further work may reevaluate the history of American environmentalism and thereby deepen the range of available responses to contemporary environmental issues.

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Robert J. Richards

*The Tragic Sense of Life: Ernst Haeckel and the Struggle Over Evolutionary Thought*  
Chicago, IL: University of Chicago Press, 2008

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The 19th-century German biologist Ernst Haeckel was a controversial figure in his lifetime and remains so to this day. He is best remembered for coining the term *ecology* and as an early popularizer of Darwin's evolutionary theory, in Germany and throughout the world, with his books considerably outselling Darwin's own. Haeckel is also known for his biogenetic law or recapitulation theory, which contends that ontogeny recapitulates phylogeny, the now discredited notion that embryos of each species repeat the developmental stages their biological ancestors evolved through. He was also a forceful opponent of organized religion, advocating its replacement with a monistic worldview combining science, ethics, aesthetics, and a reverence for nature. Most contentiously, certain commentators have suggested that Haeckel's work incorporated nationalist and racialist elements that provided a foundation for the emergence of Nazi ideology, charges that Richards argues cannot be sustained.

To overcome the misconceptions that have accumulated over the years, Richards provides a portrait of Haeckel connecting his inner life and his scientific preoccupations. An abiding influence shaping Haeckel's interest in natural history and his overall worldview was the Romantic tradition, particularly the work of Goethe and Alexander von Humboldt. When in 1862 Haeckel was appointed professor of zoology at Jena, the birthplace of the Romantic movement, Richards suggests it was as though he had been made for the post. Richards has previously explored the connection between Romanticism and the environmental sciences in *The Romantic Conception of Life* (see Brook, 2004), a companion volume to the present work.

Another key event occurred in 1860 when Haeckel first read *The Origin of Species*, undergoing something comparable to a religious conversion accompanied by an unwavering missionary zeal

for promoting Darwin's work. Richards emphasizes that Haeckel was not a mere popularizer, for as a theoretical scientist and expert on marine invertebrates he intended to provide empirical proof of Darwin's theory. Regarding contemporary criticisms that he was not a proper Darwinist, Richards argues that Haeckel closely followed Darwin's theory. The two men regularly corresponded, and Haeckel visited Down House several times. Darwin recognized Haeckel's understanding of natural selection, adopted some of his critical suggestions, and acknowledged that his German supporter had anticipated him in applying evolutionary theory to human descent.

For Richards it was a private tragedy that was the third significant factor determining Haeckel's subsequent life and work. This was the sudden death of his first wife just over a year into their blissfully happy marriage. Haeckel was devastated and remained marked by this event for the rest of his life. The last vestiges of his religious faith were destroyed. Henceforth organized religion was perceived as a delusion, leaving Darwinian evolution as the only truth. Haeckel also found compensation in the love of nature, which provided the basis for his monistic philosophy. Following Spinoza and Goethe, he saw Nature as eternal, transcendent, and one with God. Haeckel was not entirely hostile to religion, admiring its ethical dimension, which he equated with altruism, a factor playing a significant role in natural selection.

The impact of his wife's death provides Richards with a major clue to understanding Haeckel's subsequent behaviour, portraying him as a passionately driven personality pursuing his convictions with reckless abandon, using his published works and public lectures to promote evolutionary theory and attack organized religion. This produced concerted opposition and social ostracism, not only from Protestants and Catholics but also from colleagues who felt he was too involved in public controversy and challenging the status quo. Evolutionary theory was far from accepted in the German scientific community, although Richards suggests that concerns over the stability of science and establishing disciplinary boundaries were also major causes of the scientific criticisms directed against Haeckel, along with envy and disdain for his success with popular audiences. A series of professional, methodological, and epistemological disputes followed, combined with personal attacks and accusations of misrepresentation and fraud, although Haeckel was completely exonerated when these charges were investigated. Richards attributes the personal antagonism generated in these disputes to Haeckel's outspoken and combative manner. Whilst he could generate loyalty, respect, and admiration amongst his students and colleagues, his more conventional peers found his passion, stridency, and extremism threatening or embarrassing. Somehow Haeckel provoked polarized responses of love or loathing, reactions that have persisted to the present day.

Modern science remains wary of Haeckel's legacy. Most charges that he was not a proper Darwinist centre on unfounded suggestions of Lamarckian tendencies within his work and on the status of his biogenetic law. The scientific consensus seems to be that the relationship between ontogeny and phylogeny is not as simple as Haeckel saw it. Whilst he recognized that there were exceptions, the current view is that those exceptions tend to be the rule. As a general theorist Haeckel was a prolific coiner of terms including *ecology*, which he conceived of in 1866 as "the science of the mutual relationship of organisms to one another." Subsequently, he realized that plants and animals must be studied in terms of their environment, laying the foundation of the discipline we know today. However, Richards reminds us that Haeckel will also be remembered for his scientific monographs meticulously describing and classifying marine invertebrates, including many previously unknown species, and as an accomplished artist who contributed intricate and beautiful illustrations of his discoveries.

It is the supposed political implications of Haeckel's work that have generated the most controversy and contributed to the contemporary decline in his reputation. From the 1970s a number of authors began to claim that his work was a major influence on the ideology of National Socialism and the development of its eugenic policies, by implication making Haeckel responsible for the Final Solution. Certain scientists, who should have known better, endorsed

these charges, though they might have reconsidered had they known that some of those making such claims wished to undermine the science of evolution and similarly implicate Darwin to promote a Creationist agenda.

Richards provides ample evidence to refute this interpretation of Haeckel's ideas. It emerges that Haeckel was a progressive liberal, who whilst supportive of German unification opposed Bismark's brutal means of achieving it. As to eugenic ideas Haeckel wrote approvingly of the Spartan practice of exposing sick children but advocated no policies to promote such actions in modern societies. He did theorize on the evolution of different racial groups, placing Europeans at the top of a stem tree diagram, although the Jews and Japanese were also highly placed, and he greatly admired the virtues of indigenous peoples encountered on his travels. His scheme was not based on racial characteristics but on the hypothesis that language followed evolutionary patterns. Haeckel praised Jewish thought and its contribution to German culture, and it is clear that he was not personally anti-Semitic but had an open and tolerant attitude. He also opposed militarism. Organizations he co-founded, the Monist League and the League for International Peace, promoted pacifism, although during the First World War he patriotically supported the German war effort. Whilst some Nazi biologists attempted to incorporate Haeckel's ideas this was before an edict proscribing the use of his work in scientific research. Richards could have gone further here as the Nazi Propaganda Ministry specifically included Haeckel's work on its list of expunged books, defining Darwinism as a false science. Richards mounts a sustained critique of those who distort history by providing a mono-causal analysis tracking back from the future to the past, asserting that such assessments are tendentious or dogmatically driven. He concludes that there is no moral connection between Haeckel and the Nazis, stating that he can only be understood within the context in which he conceived his ideas.

The chronological structure of this book works at a biographical level, but it might have been better to deal with some of the major themes, such as the political interpretation of Haeckel's work and his scientific legacy, in continuous discussions rather than at different points in the text. Also, more information could have been provided concerning the wider social contexts shaping Haeckel's inner life and the events in which he was involved. For example, it would have been of interest to know how typical Haeckel's worldview was compared with other German scientists of the time, whilst more could have been included on the social and political dimensions of the debates over evolution polarizing German society in this period.

Richards obviously greatly admires Haeckel, even acknowledging him as an unrecognized genius. This strong identification inclines Richards to allow Haeckel the benefit of the doubt when evaluating evidence, but given the misrepresentations that have amassed over time, one can sympathize with his interpretation. Richards's scholarly study provides a significant contribution to the understanding of Haeckel's work, especially in terms of how it was shaped by the legacy of Romanticism and by personal tragedy. He also goes some way towards explaining the extreme reactions to Haeckel's work in his own time and in our own. Even readers with some familiarity with Haeckel's work and the resulting debates will discover information enabling them to make better sense of the man behind the ideas. Through his return to original source material Richards has provided a more complete and rounded interpretation of Haeckel's life and work than was previously available, which succeeds in portraying him as a sympathetic figure. This fascinating book can be recommended to anyone interested in the history of the biological sciences or in how ideas from this field have been incorporated into social and political discourses.

## Reference

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