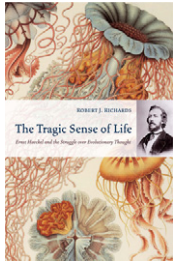


A scientific romantic

The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought, R.J. Richards. University of Chicago Press (2008). 551 pp., \$39, ISBN: 978 0 226 71214 7

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Robert J. Richards, professor of the history of science and medicine at the University of Chicago, concludes his excellent, well-illustrated, scholarly biography of the German biologist Ernst Haeckel, *The Tragic Sense of Life*, with the following thought: ‘The sustained hostile reaction to Haeckel over the years has stemmed, I believe, from his passionately driven personality and the reckless abandon

with which he pursued his Darwinian modernist convictions’. Ever since Darwin’s day, detractors of Haeckel – whether fellow biologists, historians of science or creationists – have levelled grave charges against him. Haeckel stands accused of not being a true Darwinian, of pushing a discredited theory (‘ontogeny recapitulates phylogeny’), of fraud in his artistically gifted drawings of animal embryos, of being a shameless populariser of evolution, of atheistic immorality as a convinced monist, and of purveying racial views acceptable to the Nazis after his death in 1919.

Richards is determined to rescue Haeckel from the more malign of these attacks, and at the same time to remind the academic world of how much serious science he achieved and why Darwin keenly admired him and remained friends with him until his death. At their first meeting in Down House in 1866, Darwin said warmly: ‘Your boldness sometimes makes me tremble, but as Huxley remarked, someone must be bold enough to make a beginning in drawing up tables of descent’. To the fifth edition of *The Origin of Species* published in 1869, Darwin added the following lines: ‘Professor Häckel, in his *Generelle Morphologie* and in several other works, has recently brought his great knowledge and abilities to bear on what he calls phylogeny, or the lines of descent of all organic beings.... He has thus boldly made a great beginning, and shows how classification will in future be treated’.

A paragraph in the biography’s introduction summarises Haeckel’s contributions to science (as opposed to his rip-roaring success as a writer on evolution and religion for the general public with books such as *The History of Creation* and *The Riddle of the Universe*, in their English versions). ‘Haeckel gave currency to the idea of the “missing link” between apes and man; and in the early 1890s, Eugène Dubois, inspired by Haeckel’s ideas, actually found its remains where the great evolutionists had predicted, in the Dutch East Indies’, writes Richards. ‘Haeckel formu-

lated the concept of ecology [in 1869]; identified thousands of new animal species; established an entire kingdom of creatures, the Protista; worked out the complicated reproductive cycles of many marine invertebrates; identified the cell nucleus as the carrier of hereditary material; described the process of gastrulation; and performed experiments and devised theories in embryology that set the stage for the groundbreaking research of his students [Wilhelm] Roux and [Hans] Driesch’. In addition, Haeckel’s so-called ‘biogenetic law’ (relating ontogeny and phylogeny) ‘dominated biological research for some fifty years, serving as a research tool that joined new areas into a common field for the application of evolutionary theory’.

The book substantiates all of these claims, often in heavily footnoted detail and with frequent superb illustrations by Haeckel taken from his prolific publications, while engaging with the fierce criticisms of 19th-century contemporaries such as Ludwig Rüttimeyer, Wilhelm His and Haeckel’s former teacher Rudolf Virchow, as well as 20th-century evolutionists like Stephen Jay Gould and Michael Richardson. One chapter is actually entitled ‘The rage of the critics’.

Richards’s careful discussion of allegations since the 1860s – which resurfaced in *Science* in 1997 – that Haeckel manipulated and doctored others’ drawings of embryos to support his biogenetic law, successfully acquits Haeckel of fraud and instead convicts him of poor judgement. As Haeckel himself eventually admitted, he should not have reproduced in his bestselling *Natürliche Schöpfungsgeschichte* (Natural History of Creation) three identical woodcuts to illustrate the embryos of the dog, chicken and turtle at the ‘sandal’ stage (when the embryo resembles the sole of a sandal), even though no embryologist was then in a position to distinguish these three embryos. As for whether Haeckel should have used photographs, rather than drawings, Richards observes that even today college textbooks of biology regularly accompany their numerous colour photographs with line illustrations to convey standard models and essential information.

Haeckel’s alleged influence on Nazism is also effectively dismissed by Richards, who discusses the indictment in Daniel Gasman’s 1971 *Scientific Origins of National Socialism* (a book which persuaded Gould) and other works. There is no evidence of anti-Semitism in Haeckel: indeed he placed the Jews on a par with the Germans at the top of one of his (rather absurd) stem-trees of the races in the human species, and was decidedly friendly with Magnus Hirschfeld, a Jewish physician who argued that

homosexuality was a natural form of love. 'Not the kind of company a proto-Nazi should keep', remarks Richards. While Haeckel undoubtedly accepted the idea of racial hierarchies, so did many other scientific contemporaries, including Darwin. With Hitler's rise to power in 1933, some effort was made to recruit Haeckel's work to the Nazi cause, but in 1937, this was officially quashed by a party functionary who stated that 'every internal party dispute that involves the particulars of research and the teachings of Haeckel must cease'. Darwin's natural selection may not have been as unacceptable as the traitorous Einstein's relativity; but it would never be embraced by Nazi doctrinaires.

None the less, Haeckel, with his lifelong immersion in German high culture, especially Goethe, was a myopic believer in the superiority of the German cause during the First World War – despite his veneration for Darwin. In October 1914, he signed the notorious 'Manifesto of the 93', alleging that Germany had been provoked to war, along with most leading German thinkers (though not Einstein). In 1915, he wrote patriotically that 'a single finely educated German fighter – who has fallen, so sadly now, in massive numbers – possesses a higher intellectual and moral worth than a hundred of the raw, natural men whom England and France, Russia and Italy have brought to the front'.

Biographically speaking, after a rather sparse account of Haeckel's childhood and upbringing as the son of a jurist who served as a privy counsellor at the Prussian court, Richards writes vividly about his university education at Würzburg and initial studies of the radiolaria in Sicily – the equivalent, for Haeckel, of Darwin's formative *Beagle* voyage (the journal of which the teenage Haeckel devoured after it appeared in German in 1844). It was while writing up his first monograph, the magnificent *Die Radiolarien*, published in 1862, that Haeckel read Darwin's *Origin* in German translation, and immediately threw in his lot with Darwin's theory. His publication of the radiolaria, besides persuading Darwin and Thomas Henry Huxley to take him seriously, established Haeckel as a professor at the University of Jena, where he remained for the rest of his life.

At the same time, he married his first cousin (as did Darwin), Anna Sethe. When she died after only 18 months of marriage, still in her twenties, Haeckel was devastated and lost his religious faith. Richards argues strongly that Anna's premature death precipitated the bitter and

polemical tone found in many of Haeckel's writings, both specialist and popular – so much so that even the pugnacious Huxley insisted on severely editing the invectives in the *Generelle Morphologie* before it appeared in English translation.

For the rest of his life Haeckel, ever the Romantic, poured his passions chiefly into vitriol towards his anti-Darwinian enemies and lyricism about nature. 'For Haeckel, love fled and hid her face among the sea creatures', writes Richards with affecting simplicity. He named one new species of medusa, *Mitrocoma annae* (Anna's headband), and another *Desmonema annasethe* (his beautiful painting of it fills the front jacket of the biography). Of the first creature, he wrote in his giant two-volume *System der Medusen* how he first spotted it in 1864 in a bay near Nice, 2 months after his wife's death, and described how he 'enjoyed several happy hours watching the play of her tentacles, which hang like blond hair-ornaments from the rim of the delicate umbrella-cap and which with the softest movement would roll up into thick short spirals. . . . I name this species, the princess of the Eucopiden, as a memorial to my unforgettable true wife, Anna Sethe'.

Unlike Darwin, Haeckel continued to travel widely until quite late in life. Besides scientific studies, he wrote travel journals and painted scenes of tropical life of striking appeal. The winter of 1881–1882 found him in Ceylon. After weeks with the sea creatures on the south coast, he decided to climb the island's most sacred mountain, Sri Pada, also known as Adam's Peak, which is revered by Buddhists, Hindus, Muslims, Christians and even Persians for its summit 'footprint' of either the Buddha or Siva or Adam or Saint Thomas or even Alexander the Great. The atheistic Haeckel chose to make the arduous ascent on the birthday of Darwin, February 12 – Darwin's last, as it turned out. At the top, Haeckel noted, 'Standing in awe before the Holy Sri Pada I made a short speech to my fellow travellers, pointing out the significance of the day'. Back at the bottom, he reported these events in a letter to his honoured friend in England. 'Thus my pilgrimage to Adam's Peak, too, ended with some holy remembrance', he noted. The entire experience seems somehow typical of this fiery scientific romantic.