Book

A reappraisal of Ernst Haeckel

The American Creationists, those folk who believe that the earth was created in 6 days, 6000 years ago, have fought long and hard to get their beliefs included in the science curricula of state-funded schools in the USA. Thus far, they have met with little success. A recent tactic is to claim that Charles Darwin's theory of evolution through natural selection is morally pernicious and should not be fodder for young minds. "Darwin to Hitler" is the new mantra, and it is being pushed non-stop in the mega-churches of the nation. Making their case, the Creationists at once focus on Darwin's great German supporter, evolutionary morphologist Ernst Haeckel, and argue that he stood in the tradition of Darwin and it was he who fashioned evolutionary thinking into a foundation on which National Socialism could be erected. Nor are the Creationists without supporters in this accusation. Some prominent evolutionists have levelled much the same charge: that Haeckel was a racist, a lousy scientist, and a fraud to boot.

Haeckel has now, however, found his champion in historian Robert J Richards who sets out to change forever the general perception of this man, whom he regards as one of the greatest in the history of the life sciences. Haeckel was born in 1834 in Prussia. He trained as a medical doctor, but always the life of pure science beckoned and soon he was studying minute sea organisms, from the first producing detailed studies of morphology and taxonomy, using his talent as an artist to provide full and detailed illustrations.

Haeckel read Darwin's *On the Origin of Species* soon after it was translated into German in the early 1860s and became a fervent believer in the transmutation of forms, evolution. Then an event occurred, one that Richards reflects in his title, *The Tragic Sense of Life*. Haeckel's adored young wife died suddenly. This unexpected catastrophe almost literally drove the young scientist out of his mind and marked him for the rest of his life. Overwhelmed by the blind cruelty and injustice of existence, Haeckel took up his new-found evolutionism with the passion of a Saint Paul, combining it with a philosophy of monism—that matter and mind are one. God if He exists is evil and vindictive, hating the creation. Haeckel set out to show that there was good reason for the hatred.

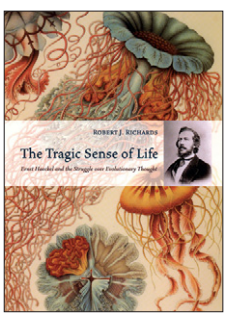
> **"What we can say is that, thanks to Richards's magnificent biography, Haeckel will never again be discounted."**

The result was *Generelle Morphologie der Organismen* (1866), a tome on the nature and evidence for evolution, spiced with so much invective against doubters and supposed opponents that Haeckel's English friend and champion, Thomas Henry Huxley, wanted it modified before it could be translated. No translation was needed, for Haeckel soon followed with a series of lectures, *Natürliche Schöpfungsgeschichte* (1868), published in English as *The History of Creation* (1876). The basis of Haeckel's evolutionism is well known: his "Biogenetic law" that ontogeny recapitulates phylogeny. Using this powerful tool of inquiry, Haeckel felt able to penetrate the secrets of the past, and the result was a plethora of trees of life, as the history of organisms was uncovered and made clear in subsequent articles and monographs, one after another. Haeckel himself recognised that there would be exceptions to the law, but overall it was now possible to build on Darwin—whose *Origin* had very little about the actual paths of history—and to spell out in detail the story that led ultimately to the apotheosis of evolutionary history, humankind itself.

Expectedly, people were attracted by Haeckel's writings. Students flocked to work with him, lay supporters idolised him. Towards the end of the century, the Dutch army doctor, Eugène Dubois, went to Java in search of the "missing link" between humans and apes, something that Haeckel's thinking had primed him to expect. Early in the 1890s, Dubois discovered the first unambiguous specimen of a proto human, which he called *Pithecanthropus erectus*, a specimen we now put directly in the human line as *Homo erectus*. Many other people, however, were repelled by Haeckel's thinking, especially conservative religious thinkers. There was also a major clash in the 1870s between Haeckel and the great biologist (and sometime teacher of Haeckel) Rudolf Virchow, over whether or not evolutionary ideas should be taught in state-school classrooms. Haeckel was in favour, whereas Virchow argued that evolution is too hypothetical and socially dangerous for student curricula.

Haeckel's contributions were further complicated by accusations of fraud, based on his misuse of diagrams in the *Natürliche Schöpfungsgeschichte*. Welcoming and inviting controversy, Haeckel kept up a frenetic programme of teaching, researching, and travelling. Haeckel was a man of great passion and Richards is similarly a biographer of passion. For him, Haeckel was a truly great man, unjustly vilified by history. How far is Richards successful in making his case? First, there can be little doubt after reading this biography that Haeckel was a very serious scientist indeed. No one can again claim that he was little more than a populariser, interested only in antireligious controversy. The solid quality of his morphological studies, focusing on marine invertebrates, was there for all to see and respect.

Second, Haeckel did draw upon himself much of the controversy. It is perhaps a moot point as to whether he should have mixed science and



The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought
Robert J Richards. Chicago: University of Chicago Press, 2008. Pp 512. US$39·00 (£20·50)
ISBN 9-780-22671-214-7.

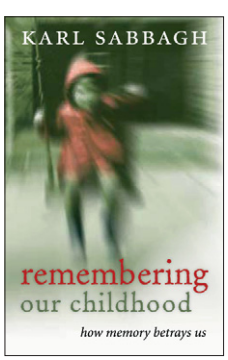
antireligion in quite the way he did, although he was certainly not alone in doing this. Huxley may have wanted Haeckel to moderate his language, but scientists like Huxley were then working flat out to establish a place for serious professional science and they knew that their opponents too often were people of the cloth who wanted nothing of the secular, post-Enlightenment forces that science represented. There was a battle to be fought and Haeckel had the guts to fight it. Relatedly, however, Haeckel was at times reckless to beyond the point of foolishness. Moreover, the critics of his diagrams did have a good point: his illustrations of the similarities of early embryos were an artifact of the use of the same diagram to represent dog, chicken, and turtle. Although Haeckel removed these in later editions of his works, the damage was done.

Third, the charges of being a proto-Nazi are wrong to the point of being ludicrous. Haeckel, like almost everyone else in the 19th century (including Darwin), stands indicted of racism as judged by today's standards. Like many others from this period, one can find eugenical sentiments in Haeckel's writings. Also, there were some Nazis who liked Haeckel. Anyone who believes in natural selection, and Haeckel did, believes in the struggle for existence. But *Lebensraum* is not to be found in his works. And generally the Nazis had little time for Haeckel, his science, and especially his philosophy. Monism was picked out as in direct violation of the Nazi *Volkish* commitments.

Fourth, was Haeckel as much in the Darwinian tradition as Richards claims? That he was a Darwinian is beyond doubt. That Darwin appreciated Haeckel's work is also beyond doubt. The *Descent of Man* is openly generous in praise of Haeckel's writings. Nevertheless, I sense that Haeckel is more truly a child of German Romanticism—of Goethe in particular—than of the empiricist forces driving Darwin. I find the defining heuristic of Haeckel's work in the Romantics' obsession with underlying patterns or archetypes, *Baupläne*, rather than in the British obsession with organic adaptations. For Darwin, ultimately, what needed explaining was the exquisite design of the hand and the eye, the focus of the natural theologians like Archdeacon Paley. For Haeckel, ultimately, what needed explaining were the isomorphisms—what came to be known as homologies—between organisms of different species or even greater groups. I see overlap with Darwin. I do not see the identity that Richards finds.

Fifth and finally, was Haeckel a Good Thing? Many in the 20th century argued that he was not. The biogenetic law was derided as the Platonic Form of how not to do science. Supposedly, it led to nothing but confusion and false pictures of the past. Today, with the rise of evolutionary development, our assessment is perhaps more measured. Taken universally, the biogenetic law is not a good thing. Taken as a rough heuristic, that often turns out to be true, it is not such a bad guide. What we can say is that, thanks to Richards's magnificent biography, Haeckel will never again be discounted.

Michael Ruse
mruse@fsu.edu



Remembering Our Childhood: How Memory Betrays Us
Karl Sabbagh. Oxford University Press, 2009. Pp 240. £16·99.
ISBN 0-199-21840-4.

In brief

Book Making memories

Albert Einstein described his earliest memory from before the age of 4 years. His father showed him a magnetic compass, and the "determined" behaviour of its needle intrigued him. "I can still remember—or at least I believe I can remember—that this experience made a deep and lasting impression upon me. Something deeply hidden had to be behind things."

His appealing recollection fits the thesis of *Remembering Our Childhood*, Karl Sabbagh's lively investigation of the science of early memory and its medical, social, and legal implications. Memories, he maintains, do not resemble images on a videotape, as widely believed, or seal impressions in mental wax, as Socrates believed; instead they are constructed, indeed created, during recall out of cues that elicit the memory and fragments of experience originally stored in the brain. No doubt little Einstein really was fascinated by his first compass, but the adult scientist may have constructed the "deep impression" out of later experiences, helped perhaps by family retelling. As Charles Darwin remarked of his earliest memory before that age of 4 years, "from hearing the thing so often repeated, one obtains so vivid an image, that it cannot be separated from memory".

Sabbagh introduces the reader to a collection of early memories gathered from friends and acquaintances, which he then examines in the light of scientific studies, and concludes that we do not remember our first 2 years. Indeed, most of us recall nothing before our fourth birthdays. The reason for this early childhood amnesia is presumably either that the nervous system of the brain is still developing, or that language is yet to develop. If correct, this deals a blow to those who believe in recovering repressed memories from infancy. It comes as no disappointment to Sabbagh, and he offers a detailed demolition of the claims of the "recovered memory" movement. For Sabbagh "*all* memory, whatever age it is laid down or recalled, is unreliable".

Andrew Robinson
ar471@cam.ac.uk