

HISTORY OF SCIENCE

Making German Evolution: Translation and Tragedy

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In this year of Darwin anniversaries (the 200th year of his birth and the 150th anniversary of *On the Origin of Species*), *The Tragic Sense of Life* and *H. G. Bronn, Ernst Haeckel, and the Origins of German Darwinism* remind us that the history of evolutionary thought in the 19th century extended well beyond Darwin himself. Darwin did not launch his theory onto an unprepared public and scientific community, nor was the evolutionism that developed after 1859 a mere extension of his views—it was not even one thing. How, then, should we think about the history of evolution in the 19th century? What sorts of accounts best help us understand the reception of Darwin's theory, its relations to earlier ideas about nature, the directions that evolutionary investigation subsequently took, and the relations of all of these to the broader social, cultural, and religious concerns scientists shared with their contemporaries?

These questions become especially pointed when one considers German Darwinism, and especially Germany's best-known follower of Darwin, Ernst Haeckel. Most often remembered by biologists as the author of the biogenetic law ("ontogeny recapitulates phylogeny"), Haeckel has also been accused of promoting European fascism via his monistic philosophy and of presenting a eugenic, biologically determinist vision of humanity that led to Hitler's "final solution." Can one scientist be responsible for so much? Most historians would say no, arguing that it takes a community, rather than an individual, to make a movement; that single-cause explanations are insufficient to account for something as broad as fascism; and that an individual cannot be held responsible for the ways in which others (such as Hitler) took up his ideas and molded them to new agendas after his death. But that still leaves open the questions of how to write responsibly about what Haeckel actually believed and how we should situate him in the history of evolutionary thought.

The historians under consideration here have chosen two radically different strategies to understanding Haeckel's place within German evolutionism, and both have pro-

duced important books. Robert J. Richards, the director of the University of Chicago's Fishbein Center for the History of Science and Medicine and a much-published author on Darwin and German Romantic biology, has written a biography of Haeckel. Sander Gliboff, a professor in Indiana University's Department of History and Philosophy of Science, places Haeckel at the end of a study that examines the larger process through which Darwin's words were translated, and his ideas modified, in the context of German biology. Both illuminate the twists and turns that evolutionary thought took in Germany, but they do so in dramatically different ways.

Richards's book, though over twice as long as Gliboff's, is the more entertaining read of the two. In his characteristically rich and rolling prose, Richards weaves a compelling story of a life marked by tragedy and of an intense, larger-than-life figure whose passions drove his scientific research and philosophy. In Richards's rendering, the scientific Haeckel cannot be understood separately from the man's personality and private circumstances. His love of nature was surpassed only by his love for his first wife, Anna Sethe, who died in abdominal agony on his 30th birthday. Over the next year, he wrote his way through the despair that enveloped him, producing his foundational work, *Generelle Morphologie (I)*. Although he remarried, the union was not happy, and passionate love would elude him until his sixties, when he had a secret affair that ended tragically with the death of his lover. Science remained his salvation and refuge.

His professional life was also filled with drama, much of which centered on his philosophy of evolutionary monism—a science-centered faith that became one of the most successful alternatives to the Judeo-Christian religion among those searching for a secular spirituality. Haeckel could not turn down a fight: He battled the physician-statesman Rudolf Virchow over the role of evolution in the schools (Haeckel argued that it should replace religious education), sparred with religiously conservative scientists and with for-

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

by Robert J. Richards

University of Chicago
Press, Chicago, 2008.
579 pp. \$39, £27.
ISBN 9780226712147.

H. G. Bronn, Ernst Haeckel, and the Origins of German Darwinism

A Study in Translation
and Transformation

by Sander Gliboff

MIT Press, Cambridge, MA,
2008. 271 pp. \$35, £22.95.
ISBN 9780262072939.

mer students who challenged his ideas as they gained intellectual independence, and debated the pro-evolution (but anti-Haeckel) Jesuit priest and entomologist Erich Wassmann—the list could go on and on. These were not isolated episodes but rather moments in a lifelong campaign to advance his philosophy, which was accompanied by a bitter hostility to organized religion.

Richards does not neglect Haeckel's science proper, treating us to fascinating and original discussions of his pathbreaking systematic and phylogenetic work on radiolaria and other marine organisms, the importance of linguistic analysis to his phylogenetic trees of the

species of humans, and his remarkable experimental work with siphonophores. These constitute important contributions to our understanding of the technical development of evolutionary biology.

The big picture here, however, is an argument about the power of personality—at least one personality—to shape the course of science. In Richards's presentation, German evolutionism was profoundly shaped by both Haeckel's charisma and his combativeness. Perhaps the late-19th-century opposition of evolutionary science to Christianity would not have been so fiery, he suggests, had Haeckel not continually fanned its flames. And although Richards absolves Haeckel of personal responsibility for fascism and Nazism, in part by situating him firmly in his time and place, he does show how the scientist's ardent temperament led him to the occasional intemperate statement that could be taken up by extreme thinkers. One cannot leave this book without a deep appreciation for Haeckel as a tragic figure and for the force of personality in shaping the direction science may take.

Gliboff's account is of a completely different order. His is not a story of personalities or private lives (although he mentions salient details), but of German academics seeking to live up to the highest (if changing) ideals of Wissenschaft and of the ways in which Darwin's theory was translated into this environment. He thus situates Haeckel at the end of a revised intellectual history of 19th-century German evolutionism. Central to his account is the idea of translation, which he uses both synchronically, especially in treat-

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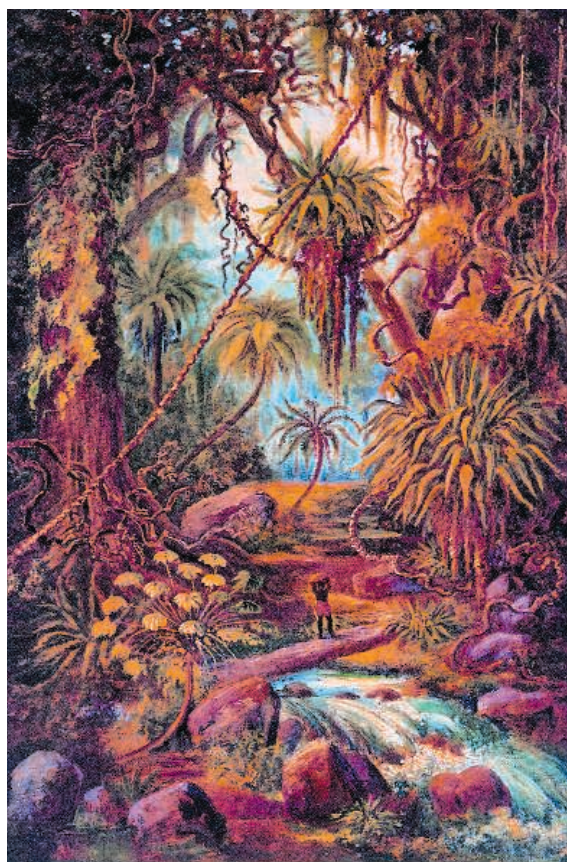
ing the translation of *Origin of Species* into German, and (more intriguingly) diachronically, as scientists reworked older words such as “perfection” and “type” to lend them new meanings. Gliboff’s own clear, crisp prose is key to the success of this analysis, as he deftly leads his reader through dense philosophical and terminological thickets with nary a thorn scratch. This is some of the best close reading I have seen. It also represents a profound challenge to our standard picture of 19th-century German biology.

The old story, crudely put, is that Haeckel’s version of evolution was a Darwinism in name only, best understood as an update on early-19th-century idealistic morphologists such as Carl F. Kielmeyers and J. F. Meckel that retained their teleology, their typological emphasis on form, and their linear recapitulationism. This story, emphasizing the long persistence of a German transcendental approach to nature, has been deeply entrenched in the history of biology.

Gliboff challenges this history right from the beginning. The ascription of simple linear recapitulationism to the views of Romantic embryologists, he notes, owes much to a caricature developed by Karl Ernst von Baer in a polemical context, then adopted uncritically by influential historians such as E. S. Russell and Stephen Jay Gould. Gliboff’s fresh reading of the original sources interprets Kielmeyers and Meckel as far less rigidly typological in their orientation and much more attentive to nature’s variability than has been seen before. Both for these early-19th-century naturalists and for their intellectual heirs, Gliboff argues, the critical issue was to understand nature’s manifold variety while seeking out underlying strict natural laws to account for it.

This provides a new starting point for analyzing Darwin’s first translator, the prominent paleontologist H. G. Bronn—a figure little attended to in the standard story but the lynchpin of Gliboff’s. Intriguingly and plausibly, Gliboff argues that Bronn’s use of terms like “*vervollkommnet*” (perfect) as translations for Darwin’s “improved” or “favored” were not about dragging Darwin backward into a German teleological view of nature (as has been claimed by those who have paid attention to Bronn at all). Instead, Gliboff asserts, Bronn’s

translations involved an attempt to recast existing German terms in a newer, more up-to-date mode that encompassed selection yet tamed Darwin’s emphasis on unpredictability to meet the more rigorous requirements of a German academic scientist’s understanding of a “law” of organic nature. Simultaneously, Bronn sought to translate Darwin’s ideas about selection into a language without an exact equivalent for the term, and for an academic audience lacking the gentlemanly traditions of breeding pigeons and dogs so central to Darwin’s exposition. The selection metaphor was further fraught with an anthropomorphism foreign to Germans, who were not brought up on British natural-theological assumptions about a personified God who had created a perfectly adapted nature. Bronn’s translation, though it altered key ideas to make Darwin comprehensible to a German academic audience, was not a conservative throwback. It represented the dynamic engagement of a leading paleontologist who had also long been working on many of the questions Darwin claimed as his own—a critical yet generous equal, who saw himself as moving science forward through the modifications he made to Darwin’s flawed theory. Bronn’s death in 1862 afforded him little chance to steer the conversation further.



A painter, too. Haeckel’s oil landscape of highlands in Java, from *Wanderbilder* (1905).

And so, finally, we come to Haeckel. Gliboff’s key insight here is that Haeckel originally read Bronn’s translation of Darwin, not Darwin in the original. Gliboff shows Haeckel as both echoing and responding to Bronn’s concerns, rather than either reflecting directly on Darwin’s original writing or reaching directly back to the Romantic embryologists. (Although Gliboff acknowledges the centrality of monism to Haeckel’s thought, he focuses on the working evolutionary theorist, not the popular ideologue.) Like Bronn himself, Haeckel made further amendments both terminological and intellectual, and Gliboff rereads Haeckel’s research program as one not dominated by a typological and linear-recapitulationist mindset but rather as continuing to wrestle with the need to account for variability and unpredictable change in terms of mechanistic laws of nature—among which Haeckel included, at the top of his list, natural selection. Haeckel’s Darwinism thus shows continuity with early-19th-century concerns, mediated through Bronn. But those concerns were always more flexible than has been acknowledged, and their articulation changed over time. Of course Haeckel’s Darwinism was not Darwin’s own, but it was not an aberration or a distortion of some true theory, any more than any other post-Darwinian additions or adjustments were. It was science moving on.

Gliboff’s overall picture of scientific advance, in contrast to Richards’s emphasis on charisma and passion, is one of scientists building and innovating incrementally, working with what their predecessors have handed them and sculpting it into something new yet understandable to those around them. His sensitive reading allows us to see post-1859 German evolutionists as rational actors rather than irrationally stuck in some early-19th-century moment with unmodern commitments. By challenging the very foundations of the standard narrative of German morphology, this careful, compelling account does at least as much as Richards’s to undermine the association of 19th-century German Darwinism with a dangerously exceptional view of nature. But the two books offer very different reads. Is scientific progress a matter of personal anguish and triumph, or of intellectual chugging along? Our concept of it should be capacious enough to include both.

References and Notes

1. E. Haeckel, *Generelle Morphologie der Organismen* (Georg Reimer, Berlin, 1866).
2. The reviewer previously served as a press reader for both books at the manuscript stage.

10.1126/science.1169621