

# Darwinism's Tragic Genius

## Psychology and Reputation

By Nick Hopwood\*

**Robert J. Richards.** *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought.* xx + 512 pp., apps., figs., bibl., index. Chicago/London: University of Chicago Press, 2008. \$39 (cloth).

The German zoologist Ernst Haeckel (1834–1919) was by far the most influential systematizer and propagandist of Darwinism, but we have long lacked a substantial, scholarly biography, even in German. In its absence, the fragmentary and problematic Anglophone literature has allowed to gain wide currency the caricature that Haeckel was a deviant Darwinian, scientifically insignificant but a forerunner of Nazi race hygiene, a forger, and a fraud.<sup>1</sup> Most historians of German biology long ago made a fairer assessment, thanks especially to Paul Weindling's work.<sup>2</sup> But concerns linger, and Haeckel's public image is dominated by negative stereotypes, especially in the United States. Robert Richards's book attempts a major rehabilitation.

Richards amply documents originality, productivity, and significance in support of the claim that "Haeckel was, undeniably, a scientific and even artistic genius" (p. 439). He also insists that, far from being the fount of some illegitimate hybrid of German idealism and evolutionism, Haeckel was an "authentic" Darwinian (p. 100)—indeed, Charles Darwin's most important intellectual heir. Skeptics will doubtless reckon it easier to align

\* Department of History and Philosophy of Science, University of Cambridge, Free School Lane, Cambridge CB2 3RH, United Kingdom.

<sup>1</sup> Two influential critiques: Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League* (London: Macdonald; New York: American Elsevier, 1971); and Jonathan Wells, *Icons of Evolution: Science or Myth? Why Much of What We Teach about Evolution Is Wrong* (New York: Regnery, 2000), pp. 81–109, 285–293.

<sup>2</sup> Paul Weindling, "Ernst Haeckel, Darwinismus, and the Secularization of Nature," in *History, Humanity, and Evolution: Essays for John C. Greene*, ed. James R. Moore (Cambridge: Cambridge Univ. Press, 1989), pp. 311–327.

Haeckel with Darwin after Richards's last book reconstructed Darwin as a German Romantic, but this is a necessary corrective—provided we are not in general expected to measure the varieties of Darwinism with the rigid yardstick of authenticity.<sup>3</sup>

If Haeckel was a genius, he was a tragic one, and the biography's main theme is to explain this tragedy in terms of his "inner self" (p. 10). Richards movingly and convincingly portrays the shattering effect of the death of Haeckel's first wife, Anna Sethe, on his thirtieth birthday in 1864. Though he is always said to have sought consolation in a frenzy of work on his magnum opus, this has been just one of various tragedies that biographers have identified in and after his long life.<sup>4</sup> Richards now makes it pivotal, suggesting that though Haeckel had already publicly embraced Darwinism with a speech to the Gesellschaft Deutscher Naturforscher und Ärzte the previous year, his loss made him reckless and hardened his polemic. Haeckel, Richards argues, also became obsessed with the survival of the organic individual, especially Anna, the particular individual he found reincarnated in two beautiful jellyfish and in the young Frida von Uslar-Gleichen, with whom in old age he had an intense, doomed affair. The eternal feminine drove the Goethe-worshipper on. Richards even traces to this drive the monist philosophy through which Haeckel elided distinctions between matter and spirit, living and nonliving, and so held out, not the Christian illusion of personal endurance, but the promise of everlasting life as part of an ever-changing nature.

This bold thesis largely rings true, even if Richards slightly underestimates what was already there—for example, by taking at face value the enthusiastically polarizing rhetoric of the 1863 speech. But although, or indeed precisely because, Haeckel became so extraordinarily central to German Darwinism, he did not simply mold it in his image, as Richards sometimes implies (e.g., pp. 384–385). Andreas Daum has argued that Haeckel's more popular allies, notably Ernst Krause and Wilhelm Bölsche, softened his message to include an important moment of reconciliation between science and religion.<sup>5</sup> Future research should pay close attention to the mediations that enabled Haeckel to assume and maintain such a prominent role while his books were so variously used and his positions so contested.

<sup>3</sup> Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: Univ. Chicago Press, 2002). See also Sander Gliboff, *H. G. Bronn, Ernst Haeckel, and the Origins of German Darwinism: A Study in Translation and Transformation* (Cambridge, Mass.: MIT Press, 2008).

<sup>4</sup> E.g., Wilhelm Ostwald, *Ernst Haeckel* (Leipzig: Unesma, 1914), p. 25 (Sethe's death); Adolf Heilborn, *Die Leartragödie Ernst Haeckels: Auf Grund von unveröffentlichten Briefen und Aufzeichnungen Haeckels, sowie der offiziellen Akten* (Hamburg: Hoffmann & Campe, 1920) (Haeckel's mistreatment by his successor); Richard Hertwig, "Haeckel, Ernst," in *Deutsches Biographisches Jahrbuch, 1928, Überleitungsband 2: 1917–1920*, pp. 397–412, on p. 404 (the conflict of passion and duty in Haeckel's love for the woman later revealed as Frida von Uslar-Gleichen); Sir J. Arthur Thomson, *The Great Biologists* (London: Methuen, 1932), p. 161 ("in spite of all—a tragic all—the old affection comes back"); Gerhard Heberer, *Ernst Haeckel und seine wissenschaftliche Bedeutung: Zum Gedächtnis der 100. Wiederkehr seines Geburtstages* (Tübingen: Heine, 1934), preface (the widespread opinion that Haeckel's work was scientifically superseded); Eberhard Dennert, *Hindurch zum Licht! Erinnerungen aus einem Leben der Arbeit und des Kampfes* (Stuttgart: Steinkopf, 1937), p. 180 (suggesting that Haeckel did not stick to his natural science, but strayed into natural philosophy); and Johannes Walther, *Im Banne Ernst Haeckels: Jena um die Jahrhundertwende*, ed. Gerhard Heberer (Göttingen: Musterschmidt, 1953), p. 113 (allegedly fraudulent drawings of embryos as "tragic for Haeckel's honor").

<sup>5</sup> Andreas Daum, "Das versöhnende Element in der neuen Weltanschauung: Entwicklungsoptimismus, Naturästhetik und Harmoniedenken im populärwissenschaftlichen Diskurs der Naturkunde um 1900," in *Vom Weltbildwandel zur Weltanschauungsanalyse: Krisenwahrnehmung und Krisenbewältigung um 1900*, ed. Volker Drehsen and Walter Sparr (Berlin: Akademie, 1996), pp. 203–215; and Daum, *Wissenschaftspopularisierung im 19. Jahrhundert: Bürgerliche Kultur, naturwissenschaftliche Bildung und die deutsche Öffentlichkeit, 1848–1914* (Munich: Oldenbourg, 1998), pp. 309–323. Using this standard work would also have enabled a more satisfactory discussion of the status of Haeckel's writing as popular science than the checklist of criteria in Ch. 7.

Richards's feisty case for the defense dismisses Haeckel's many enemies out of hand. Victor Hensen, for example, is made a zoologist (p. 300), when their dispute over methods of plankton research hinged on his identity as a physiologist. This may have made it hard to recognize the confrontation as primarily disciplinary and to accept that, by the quantitative physiological standards of his own school, Hensen comprehensively demolished Haeckel's critique—just as, symmetrically, Haeckel's supporters took him to have won.<sup>6</sup> Of all the foes, only the Jesuit ant researcher Erich Wasmann receives a sympathetic hearing, and his charges against Haeckel are also rather played down.

Richards indulges in some special pleading for Haeckel too, especially when, on the basis of some manipulations of siphonophore larvae published in 1869, he wants Haeckel credited with having "anticipated" the "developmental mechanics" of Wilhelm Roux and Hans Driesch and accuses historians of negligence for failing to recognize this fact (pp. 179, 189–195, 213). Yet not only did Roux refer to Haeckel's work—albeit to point to his generation's "wholly different interests" as explaining why such "discoveries of gold" lay "unnoticed and unvalued"; E. S. Russell's standard history of morphology picked this up. Even Richards's main target, the embryologist-historian Jane M. Oppenheimer, drew attention to the research, remarking archly that "it is no secret . . . though it is not commonly bruited about."<sup>7</sup> The real issue is how to interpret the relationship between Haeckel's experiments, which played a subsidiary role in one short book, and the systematic, subdiscipline-launching investigations of Roux and Driesch. The most helpful contribution is Frederick B. Churchill's argument, when distinguishing Roux from the French teratological tradition, that similar procedures need not imply the same problematic. Haeckel created "monstrosities" as additional forms to taxonomize and anatomize in order to establish phylogenies; he did not use experiment as the privileged means of forcing nature to answer a functional question. We should also remember that if we see Roux and Haeckel as opposed, it is above all because Haeckel so influentially presented them that way.<sup>8</sup>

That said, Richards is fundamentally right on the two most controversial topics in Haeckel research. Among the consequences of his recklessness were charges that he forged pictures of embryos to bolster the evidence for common descent. These dogged Haeckel during his lifetime and have been revived again in the last dozen years. I differ from Richards, not just in approach but also on several specific interpretations and facts. For example, I would not see the grids as simply "illustrations of the biogenetic law"—

<sup>6</sup> Rüdiger Porep, *Der Physiologe und Planktonforscher Victor Hensen (1835–1924): Sein Leben und sein Werk* (Neumünster: Wachholtz, 1970); Porep, "Methodenstreit in der Planktologie—Haeckel contra Hensen: Auseinandersetzung um die Anwendung quantitativer Methoden in der Meeresbiologie um 1890," *Medizinhistorisches Journal*, 1972, 7:72–83; and John Lussenhop, "Victor Hensen and the Development of Sampling Methods in Ecology," *Journal of the History of Biology*, 1974, 7:319–337.

<sup>7</sup> Wilhelm Roux, *Die Entwicklungsmechanik: Eine Ergänzung zu den Lehrbüchern der Entwicklungsgeschichte und Physiologie der Tiere; nach einem Vortrag, gehalten in der ersten allgemeinen Sitzung der Versammlung Deutscher Naturforscher und Ärzte zu Breslau am 19. September 1904* (Leipzig: Engelmann, 1905), pp. 53–54; E. S. Russell, *Form and Function: A Contribution to the History of Animal Morphology* (London: Murray, 1916), p. 317; and Jane M. Oppenheimer, *Essays in the History of Embryology and Biology* (Cambridge, Mass.: MIT Press, 1967), p. 6. This is not to accept Oppenheimer's psychopathologization of Haeckel; see *ibid.*, pp. 150–154.

<sup>8</sup> Frederick B. Churchill, "Chabry, Roux, and the Experimental Method in Nineteenth-Century Embryology," in *Foundations of Scientific Method: The Nineteenth Century*, ed. Ronald N. Giere and Richard S. Westfall (Bloomington: Indiana Univ. Press, 1973), pp. 161–205. See also Lynn K. Nyhart, *Biology Takes Form: Animal Morphology and the German Universities, 1800–1900* (Chicago: Univ. Chicago Press, 1995), pp. 278–305; and Nick Hopwood, "Embryology," in *The Cambridge History of Science*, Vol. 6: *The Modern Biological and Earth Sciences*, ed. Peter J. Bowler and John V. Pickstone (Cambridge: Cambridge Univ. Press, 2009), pp. 285–315.

Richards's caption, not Haeckel's—and this helps explain how they survived that law's rejection. I disagree with several aspects of Richards's summary of Wilhelm His's image-making practices for the *Anatomie menschlicher Embryonen* and think he brings them too close to those of Haeckel's *Natürliche Schöpfungsgeschichte* (pp. 303–311). I would also want evidence before accepting that embryos accessible to Haeckel in Malaya significantly informed the drawings on the additional comparative plates introduced into the *Anthropogenie* in 1903 (pp. 335, 409).<sup>9</sup> But these are subtle points, and Richards is correct to argue that even having embryos of different species printed from the same block, while a “moral failure,” was a fairly low-level one (p. 333). In line with the recent work of Uwe Hoßfeld and his colleagues, Richards also persuasively rebuts the widespread views that Haeckel was a rabid anti-Semite and proto-Nazi. Richards just slightly overestimates the Nazis' rejection of Haeckel (pp. 445–447); the efforts of those at his old university, Jena, to keep the cult going through World War II deserve more weight.<sup>10</sup>

The publisher presents *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought* as “the definitive account.” Among the spate of recent biographies it will certainly be the most widely read, and—for all their various strengths—deservedly so.<sup>11</sup> It is brave, given the risk of vilification from creationists and others, full of verve, and contains some wonderful turns of phrase. But it is not really trying to be definitive. As befits its subject, perhaps, this is not pedantic scholarship, but a shot from the hip. The coverage is guided by psychological interest and the need for rehabilitation; on Haeckel as institute director and teacher, for example, Georg Uschmann's history remains unsurpassed.<sup>12</sup> Richards uses most of the main printed sources, especially the rich published letters, while leaving most of the vast periodical literature and voluminous archive for others to exploit. That is understandable, but a book motivated by Haeckel's bad reputation could usefully have engaged more thoroughly with the biographical tradition.

Richards concludes with a brief attempt to explain through Haeckel's twentieth-century reception why the genius came to be so maligned. But a few historians of biology did not seal his fate. He suffered, much more generally, from disciplinary and political changes around him, as well as those oft-recounted actions that gave his enemies rich resources while sometimes making it difficult for friends to come to his defense. We sorely need a

<sup>9</sup> E.g., though tuatara, kiwi, and echidna embryos might have been available in Buitenzorg (now Bogor), the first two species were normally restricted to New Zealand and the last to Australia and New Guinea. The gibbon's range fits best, but would Haeckel really have written blandly of “fishes, amphibians, reptiles, mammals” and not trumpeted material it would have cost someone much effort to collect? For a different approach to the drawings of Haeckel and His see Nick Hopwood, “‘Giving Body’ to Embryos: Modeling, Mechanism, and the Microtome in Late Nineteenth-Century Anatomy,” *Isis*, 1999, 90:462–496; Hopwood, “Producing Development: The Anatomy of Human Embryos and the Norms of Wilhelm His,” *Bulletin of the History of Medicine*, 2000, 74:29–79; and Hopwood, “Pictures of Evolution and Charges of Fraud: Ernst Haeckel's Embryological Illustrations,” *Isis*, 2006, 97:260–301.

<sup>10</sup> Uwe Hoßfeld, *Geschichte der biologischen Anthropologie in Deutschland: Von den Anfängen bis in die Nachkriegszeit* (Stuttgart: Steiner, 2005), pp. 241–263, 280–339; Hoßfeld, “Nationalsozialistische Wissenschaftsinstrumentalisierung: Die Rolle von Karl Astel und Lothar Stengel von Rutkowski bei der Genese des Buches ‘Ernst Haeckels Bluts- und Geistes-Erbe’ (1936),” in *Der Brief als wissenschaftshistorische Quelle*, ed. Erika Krauß (Berlin: Verlag für Wissenschaft und Bildung, 2005), pp. 171–194; and Stefan Wogawa, Hoßfeld, and Olaf Breidbach, “‘Sie ist eine Rassenfrage’: Ernst Haeckel und der Antisemitismus,” in *Anthropologie nach Haeckel*, ed. Dirk Preuß, Hoßfeld, and Breidbach (Stuttgart: Steiner, 2006), pp. 220–241.

<sup>11</sup> Mario A. Di Gregorio, *From Here to Eternity: Ernst Haeckel and Scientific Faith* (Göttingen: Vandenhoeck & Ruprecht, 2005); Bernhard Kleeberg, *Theophysis: Ernst Haeckels Philosophie des Naturganzen* (Cologne: Böhlau, 2005); and Olaf Breidbach, *Visions of Nature: The Art and Science of Ernst Haeckel* (Munich: Prestel, 2006).

<sup>12</sup> Georg Uschmann, *Geschichte der Zoologie und der zoologischen Anstalten in Jena 1779–1919* (Jena: Fischer, 1959).

more inclusive survey, beginning with the many short biographies published from the 1870s, especially on his birthdays and on his death, and emphasizing the most influential. The sympathetic but also remarkably critical obituaries by his favorite student, Richard Hertwig, are particularly telling.<sup>13</sup> So though it is helpful to hear famous biologists speak out in Haeckel's support, he was controversial almost from the start, and especially from around 1900 one could assemble an impressive roster of critics too. Hertwig represents the large group who tempered respect for Haeckel's achievements with criticism of his methods. He nevertheless stood with Haeckel and insisted that we take great men whole.

Haeckel's fellow monist Wilhelm Ostwald presented him as the type of the Romantic genius, with Darwin his classical counterpart.<sup>14</sup> The classically inclined specialist should admire Richards's panache. He has produced a compelling psychological portrait of one of the most fascinating and significant figures in the history of science. Above all, the biography invites deeper investigation into the social mechanisms of Haeckel's triumphs and tribulations, especially the responses that made him the essentially contested figure he will surely remain.

<sup>13</sup> Richard Hertwig, "Haeckels Verdienste um die Zoologie," *Naturwissenschaften*, 1919, 7:951–958; and Hertwig, "Haeckel, Ernst" (cit. n. 4).

<sup>14</sup> Ostwald, *Ernst Haeckel* (cit. n. 4), pp. 28–29. See also Wilhelm Ostwald, *Grosse Männer* (Leipzig: Akademische Verlagsgesellschaft, 1909), pp. 371–388.