

ERNST HAECKEL: THE LEGACY OF A LIE

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In the mid-1800s, the German anatomist, Ernst Haeckel, became famous for advocating what he referred to as his great “biogenetic law.” This “law” stated that “ontogeny recapitulates phylogeny.” Or, put in simpler terms, Dr. Haeckel was suggesting that as one examined the developing embryo of a human, it repeated every stage in its long evolutionary ancestry. It started out in a one-celled stage, just as its ancient amoeba-like ancestor. It developed gill slits, just like its ancient fish ancestor. And it even had a tail, just as its ancient ape-like ancestor once possessed. In other words, ontogeny (the development of a single individual) recapitulated (repeated) phylogeny (the development of the entire group). Looking at the growth of a human embryo was like watching a silent, moving picture of a person’s evolutionary ancestry!

Although books on evolution began refuting Haeckel’s “biogenetic law” in the 1920s, his drawings of embryos with gill slits, and his refrain, “ontogeny recapitulates phylogeny,” became part of evolutionary folklore. Biology textbooks perpetuated this fable well into the second half of the twentieth century. Modern editions rarely present the latest evolutionary ideas on embryology, and remain content to rest their case on century-old woodcuts and misnamed “gill slits.” Such imagery continues to persist in the popular media, too. When *USA Today* published an article on genetic similarities as proof for evolution, the author’s analogy and sole illustration invoked the icons of comparative embryology (see Friend, 1993).

Haeckel’s ideas not only were persistent, but pernicious. He used his position as a professor of zoology at the University of Jena to convert German science to Darwinism. Haeckel’s efforts outstripped even the zeal of Thomas H. Huxley of England, who referred to himself as “Darwin’s bulldog.” Like Huxley, however, Haeckel took Darwin’s theory beyond the confines of biological origins into politics, religion, and other social concerns. Under the guise of evolutionary science, Haeckel and Huxley hoped to rescue humanity from what was, in their opinion, the destructive ignorance of religious delusion.

Haeckel’s embryonic recapitulation inspired a host of popular, but false, conceptions. Perhaps the most powerful offshoot was a rationalization for scientific racism. If it could be shown that the white races are more evolved (read “advanced”) than the dark races, then slavery and colonialism were permissible, even necessary. While Darwin’s work

suggested such conclusions, or at least provided the language for making such claims, Haeckel’s ideas could be grasped by ready observation. If the human embryo retraces its animal ancestry, culminating in a fully human child, then the child retraces its human ancestry, culminating in the supreme adult form.

To many scientists of the nineteenth and early twentieth centuries, the candidate for that most evolved state was obvious: the northern European white male—a category they just happened to occupy. In contrast, the dusky inhabitants of Africa and Asia were simple, more child-like, and hence, less deserving of equal treatment and self-rule. As Stephen Jay Gould of Harvard has commented: “If the conquest of distant lands upset some Christian beliefs, science could always relieve a bothered conscience by pointing out that primitive people, like white children, were incapable of self-government in a modern world” (1977, p. 218). The evolutionary racists amassed a wealth of data, based on convenient physical and behavioral criteria, to “prove” their point. They applied the same contorted reasoning and conclusions to women and anybody who, by their standards, exhibited child-like characteristics.

Haeckel himself was an unabashed racist. He urged the German people to seek racial purity by purging the unfit among them, and to increase the superiority of the “Nordic race” by violent competition (i.e., war) with other nations. A few decades later, these ideas found fertile soil in Adolf Hitler’s mind, and were expressed openly in his famous book, *Mein Kampf* (the English translation of which is “My Struggle”—taken from Haeckel’s translation of Darwin’s phrase, “the struggle for existence”).

The myth of recapitulation also provided the basis for Freudian psychoanalysis. Freud developed the idea that neurotic adults were stuck in an earlier stage of their evolutionary history. Furthermore, he believed that contemporary “primitive” cultures provided a fitting analogy for the distant past of “advanced” Europeans. In the opening paragraphs of *Totem and Taboo*, Freud wrote:

Primitive man is known to us by the stages of development through which he has passed.... We can thus judge the so-called savage and semi-savage races; their psychic life assumes a peculiar interest for us, for we can recognize in their psychic life a well-preserved, early stage of our own development (1938, p. 807).

He went on to argue that taboos against incest arose from incidents in Stone Age societies in which sons murdered their fathers so that they could mate with their mothers. Hence, Freud hoped to understand dysfunctional behavior in the light of our supposed primitive past. One of the many problems with this idea is that it simply wasn't true: nonindustrial cultures do not have a high incidence of patricide and a lack of incest taboos, and anthropologists have not found evidence for Freud's ideas in ancient cultures (see Milner, 1990, pp. 176-178; Bower, 1991).

Finally, to show how Haeckel's views have been used in the 1990s, we can turn to one of the great popularizers of evolution, Carl Sagan. In a *Parade Magazine* article, Sagan (and co-author Ann Druyan, his wife) used the following terms to describe the developmental stages of the pre-born human: "a kind of parasite," "a little like a segmented worm," "something like the gill arches of a fish or amphibian," "the reptilian face," "somewhat pig-like," "resembles that of a primate" and, ultimately, "recognizably human." Although they never mentioned Haeckel by name, the point being made by Sagan and Druyan was clear: abortion in the first few months of pregnancy is acceptable because the embryo or fetus is a lower form of life during this period (see Jackson, 1990; Ham, 1992).

Such abuses of embryonic recapitulation do not, by themselves, disprove Haeckel's theory. However, the theory was literally too good to be true for many groups who needed a crutch for their own false theories. Haeckel was determined to give Darwinism a proof its critics could not assail and so, at the very outset, his motives hardly epitomized calm, objective science. By exaggerating the appearance of similarity, and tying it to a radical philosophical view, Haeckel sanctioned the ensuing abuses. It seems his legacy, and a need for response on our part, will continue well into the twenty-first century.

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