

Images of Evolution

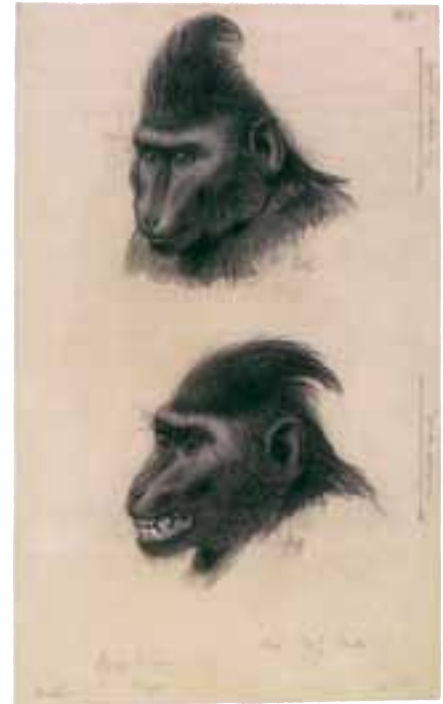
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DARWIN'S PICTURES: Views of Evolutionary Theory, 1837–1874. Julia Voss. Translated by Lori Lantz. x + 340 pp. Yale University Press, 2010. \$45.

Charles Darwin thought the graphic expression of his theory extremely important. In *On the Origin of Species*, he recognized the difficulty naturalists had “in describing, without the aid of a diagram, the various affinities which they perceive between the many living and extinct members of the same great natural class.” In spite of this awareness, he included just one diagram of species descent in the book, a very abstract one consisting of a series of bifurcating vertical lines labeled with letters and horizontal lines depicting indeterminate time intervals. Darwin’s abstemious usage might be contrasted with that of Ernst Haeckel, his German disciple and friend, whose two popular treatises on evolutionary theory—*Natural History of Creation* (*Natürliche Schöpfungsgeschichte*, 1868) and *The Evolution of Man* (*Anthropogenie, oder Entwicklungsgeschichte des Menschen*, 1874)—were crammed with

trees of descent and replete with illustrations of a huge variety of organisms at various stages of development. The number of pictures in Haeckel’s books grew relentlessly through the 12 editions of *Natural History of Creation* and the 6 editions of *The Evolution of Man*; these volumes were translated into most of the known—and many of the unknown—languages of the world. It is perhaps no wonder that more people by the turn of the century had learned of evolutionary theory through Haeckel’s depictions than even from Darwin’s own writings. Images have power.

Darwin lacked the artistic talent of Haeckel and deployed many fewer illustrations in his several books. Yet as Julia Voss shows in her quite original investigation, *Darwin’s Pictures*, in Darwin’s works visual representations were vital not only for readers’ comprehension but also for his working out



Soon after learning that a crested macaque (*Cynopithecus niger*) that chuckled when petted had arrived at the Regent’s Park Zoological Garden, Darwin hired artist Joseph Wolf to draw these portraits of the creature and used them to illustrate his 1872 book *Expression of the Emotions in Man and Animals*. From *Darwin’s Pictures*.

of central arguments. Voss focuses on four iconic moments in the development of his theory: his sketches of finches' beaks in the second edition (1845) of the *Journal of Researches into the Natural History and Geology of the Countries Visited During the Voyage of H.M.S. Beagle Round the World*; the diagram in the *Origin* (1859) and its forerunner in a notebook; a series of woodblock prints of the Argus pheasant's tail feathers in *The Descent of Man, and Selection in Relation to Sex* (1871); and a drawing of a laughing monkey in *The Expression of the Emotions in Man and Animals* (1872).

Voss, who trained as an art historian at the Humboldt University in Berlin, considers these images in the context of many others and renders acute judgments about their features. For instance, she shows how, in the *Journal of Researches*, which contains no explicit mention of his new proposal, Darwin yet arranged the profiles of four finches so that their beaks suggested a graduated development. She catches him pulling the veil back a bit further from his nascent theory when, referring to the depiction of the finches, he remarked in the text that "one might really fancy that . . . one species had been taken and modified for different ends."

Voss follows Darwin to the London Zoological Gardens, where he went to observe a laughing monkey—well, a sort of chuckling macaque—so that he could depict the animal antecedent of what might be thought a distinctively human capacity. In her treatment of *The Expression of the Emotions*, Voss spends some time describing Darwin's innovative use of photography. He employed the new medium to display the variety of emotions—anger, surprise, sadness, joy—in children, in actors, in the insane, and in one fellow whose expressions were produced by galvanic stimulation of facial muscles. With the aid of photographs and woodcuts, Darwin visually demonstrated the roots of



Ernst Haeckel included this "family tree of the mammals, including man" in his 1866 book *General Morphology of Organisms*. Humans are in the upper right corner beside the gorillas, at the same height as *Felina* (the cats) further to the left. From *Darwin's Pictures*.

human emotional expression in animal forebears. Unlike contemporary behavioral biologists, however, Darwin denied that the emotions served a communicative function. In rejecting this plausible assignment, he was overreacting to the claims of Charles Bell, an anatomist and natural theologian, who contended that the Creator had instilled the emotions in human beings as a common, natural language.

The most interesting parts of Voss's examination are devoted to Darwin's tree diagrams and to his study of the ornamental patterns displayed by the Argus pheasant. She briefly describes the diagrams of species systems formulated by several of Darwin's contemporaries and indicates how he might have constructed his own figures in their light. The most telling of these graphic schemes is Martin Barry's "tree of ani-

mal development" (1837), which Barry used to illustrate Karl Ernst von Baer's conception of the embryological relations of various animal groups. The strong resemblance between Barry's tree and the famous angular tree in Darwin's *Notebook B* (1837) has hardly been mentioned in the historical literature.

More significant, perhaps, is Voss's suggestion that in the very act of drawing Darwin revealed to himself three important aspects of species relations: (1) that evolution is genealogical in the way human family pedigrees are (as opposed to Lamarck's assumption of independent rooting of every lineage); (2) that the nodes of the splitting branches of Darwin's diagram could stand both for the common ancestor of several daughter species and for the morphology of the genus; and (3) that the gaps necessitated by the branching structure allowed application of the taxonomic categories of variety, species, genus, family and so on. Darwin modified the notebook diagram to yield that abstract illustration in the *Origin*. The manuscript of the *Origin* shows, however, that initially Darwin

had placed the ancestor groups at the top of the diagram with the branching species trailing toward the bottom—so that the image would have depicted a real descent. For the published version, though, he flipped the diagram so that the tree had its ancient progenitors rooted at the bottom, with species ramifying upward toward the contemporary period. In this orientation, the figure subtly implied a progressive advance of organisms, which Darwin's theory embraced from the beginning. Voss doesn't explicitly note the impact of this turnabout, but it's one of the many aspects of Darwin's theory construction clearly suggested by her rich descriptions.

The obvious comparison for Darwin's single tree image in the *Origin* is Haeckel's forest of trees in his technical and popular monographs. Here Voss falls prey to certain dogmatic presump-

