

DARWIN, CHARLES 1809–1882

Charles Robert Darwin was born in Shrewsbury, Shropshire, England, on February 12, 1809, and died in Kent, England, on April 19, 1882. He was the grandson of the noted physician and naturalist Erasmus Darwin and the famous potter Josiah Wedgwood. Educated at the University of Edinburgh and Cambridge University, Darwin, upon graduation, was invited by his mentor John Henslow to become the naturalist on the survey voyage of Captain Robert Fitzroy's ship the *Beagle*. It was on this voyage that Darwin began to formulate what would become his greatest and most lasting biological theory. Darwin first hinted at ideas that later made up his theory of evolution by natural selection in *The Voyage of the Beagle* (2001; originally titled *Journal and Remarks*), published in 1839. Then building on the work of scholars such as Jean-Baptiste Lamarck, Charles Lyell, and Thomas Malthus, Darwin fully formulated his theory of evolution in *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, published in 1859. Though reluctant to publish what he knew would be a controversial theory, he was prompted to do so by a letter from Alfred Russel Wallace proposing much the same theory. His book *The Descent of Man, and Selection in Relation to Sex*, published in 1871, rounded out his main works on the theory of evolution.

DARWIN'S THEORY OF EVOLUTION

In the most basic terms, evolution is a reference to the cumulative process of change within a population over time. Natural selection is the specific mechanism that Darwin employed to explain this change. Genetic variations in living beings manifest themselves in morphological variations in those beings, though Darwin himself knew nothing about genes. Given limited resources and environmental variations, those individuals, within a species, possessing morphological variations that allow them best to adapt to this limited and variable environment will be the ones most likely to survive, reproduce, and pass those successful genetic and morphological traits on to their offspring. This ability to survive and reproduce is known as fitness.

Darwin's theory has been revolutionary, and like nearly every discipline within the academy, philosophy has been greatly influenced by it. One of the immediate and profound implications of Darwin's theory was the underlying metaphysical image of variability and change. In his 1910 essay "The Influence of Darwin on Philosophy," John Dewey spoke of the influence of Darwin in drawing philosophers away from the Aristotelian notion of nature (*phusis*), ruled by a kind of permanence or changelessness, and toward a more Heraclitean nature in flux. The influence of Darwin, Dewey wrote, "conquered the

phenomena of life for the principle of transition" (p. 8). Perhaps the other important ontological implication of Darwin's theory was the idea that entities in the world (including humans) are shaped over time by the world in which they are embedded. That is, things in the world are what they are because of the context in which they live and evolve over time, not in spite of that context.

THE DESCENT OF MAN

The last of Darwin's great works, *The Descent of Man*, has had a dual impact on environmental philosophy and ethics. First, Darwin's work served to challenge and blur the boundaries that humans had, until that time, always been assured existed between themselves and their non-human animal counterparts. Darwin argued that humans, like all living organisms, are subject to the biological process of natural selection. After demonstrating physical continuity between humans and nonhuman animals in chapter 1 of *Descent*, Darwin, in chapter 2, works through an exhaustive list of mental attributes—from lower-level instinct and desire to higher-level reason and abstraction—and likewise concludes "that there is no fundamental difference between man and the higher mammals in their mental faculties" (p. 35). This Darwinian challenge was important for early versions of non-human-centered ethics (most notably, animal ethics) because justifications for the ethical exclusion of nonhuman animals are usually premised on an alleged fundamental distinction between humans and nonhumans on the basis of some quality that humans are said to possess and all nonhumans are said to lack. In blurring the metaphysical boundaries assumed to exist between humans and nonhumans, Darwin paved the way for the expansion of the moral community that we began to see in the 1970s with the advent of animal ethics. A good contemporary example of Darwin's influence on the extension of ethics is the Great Ape Project. This project "demand[s] the extension of the community of equals to include all great apes: human beings, chimpanzees, gorillas, orang-utans," because humans are members of the biological family of great apes and the other members of this family are therefore "the species that are our closest relatives" (Cavalieri and Singer 1994, pp. 4, 1).

Second, Darwin's portrayal of the biological world profoundly influenced natural scientists with ethical interests, such as Aldo Leopold. In his environmental classic *A Sand County Almanac* (1949), Leopold suggested that there are ethical implications that follow from Darwin's more metaphysical message that "men are only fellow voyagers with other creatures in the odyssey of evolution." An internalization of Darwinism, according to Leopold, implies "a sense of kinship with other creatures," from which follows "a wish to live and let live"

(p. 109). More abstractly, it might be argued that a Darwinian vision ought to inspire in us certain virtuous attitudes toward nature: wonder, humility, respect, and caring being chief among them.

In chapter 3 of *The Descent of Man*, Darwin develops a purely biological account of the origin, existence, and nature of ethics. Inspired by the theory of moral sentiments put forward by the philosophers David Hume and Adam Smith, Darwin suggests that ethical sentiments are traits like other traits we possess—traits that facilitate survival. For animals such as humans, whose fitness is positively affected by being members of cohesive societies, ethics are necessary for social cohesiveness, and hence facilitate survival: “No tribe could hold together if murder, robbery, treachery, etc. were common; consequently such crimes within the limits of the same tribe are ‘branded with everlasting infamy’” (Darwin 1981 [1871], p. 93). Hence, certain “limitations on freedom of action in the struggle for existence,” as Leopold ecologically defines ethics (1949, p. 202), increase fitness by increasing social cohesion. Darwin even suggested that this ability to extend ethical consideration to other individuals is not unique to humans: “Any animal whatever, endowed with well-marked social instincts, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well developed, or nearly as well developed, as in man” (1981 [1871], pp. 71–72). Darwin also realized that the focus of these moral sentiments can extend beyond the human community:

As man advances in civilization, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him. This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races. . . . *Sympathy beyond the confines of man, that is humanity to the lower animals, seems to be one of the latest moral acquisitions.* (1981 [1871], pp. 100–101; emphasis added)

DARWIN AND THE BIOTIC COMMUNITY

Darwin ultimately demonstrates that there exists a correlative relationship between our sense of ethical inclusiveness and our sense of community. As our sense of community becomes more (or less) inclusive, our sense of ethics changes in kind. Hence, if humans could somehow come to see themselves as members of an integrated biotic community, inclusive of the nonhuman world, then a land ethic—an ethic that “enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land” (Leopold 1949, p. 204)—would follow. If Leopold is correct—if “the problem we face is

the extension of the social conscience from people to the land,” and if “no important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections, and convictions” (1949, pp. 209–210)—then a main focus of our efforts to solve environmental problems ought to be facilitating biotic community. Darwin, then, explains the mechanism that allows us to extend ethical consideration to the land (to nature, to the environment). As Leopold famously put it, we can measure the extent to which an action, policy, or program is good or bad, right or wrong, on the basis of its environmental impact; we can say, “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise” (1949, pp. 224–225). While many environmental philosophers see Leopold as an inspiration for their positions, J. Baird Callicott (1989, 1999) is the philosopher advancing an environmental ethic most directly in line with Darwin’s and Leopold’s ideas about ethical evolution and expansion.

As summarized in Pickett and Ostfeld’s essay “The Shifting Paradigm in Ecology” (1995), more recent work in theoretical ecology challenges the image of natural units (e.g., biotic communities) thought to be implied by early thinkers such as Darwin and Leopold. This work seeks to move away from static and uniform images of biotic communities and the like, and toward more indefinite and dynamic biological collectives. Since images of nature and natural units are inevitably reflected in ecologically rooted environmental philosophies and ethics, this shift has prompted environmental ethicists to make their theories dynamically correspond to changing images of biological groupings (see Callicott 1999 for an example).

SEE ALSO *Animal Ethics*; Callicott, J. Baird; *Ecology: II. Community Ecology*; *Ecology: III. Ecosystems*; *Environmental Philosophy: V. Contemporary Philosophy*; *Evolution*; *Land Ethic*; Leopold, Aldo.

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