

TEXT SUPPLEMENT (Ch 5): The Scale of Being (Scala Naturae)

Lamarck's theory was a modification of an earlier nonevolutionary concept, that of a scale of being, also variously called *chain of being*, *échelle des êtres*, or *scala naturae*. Originally, this was a hierarchy of static, unchanging perfection, with people (or angels) on top, animals below people, and plants below animals. Theologians said that God had placed man above the animals and below the angels, and each species had its assigned place in this never-changing order. Among people, racist, sexist, and class-based ideologies put Europeans above other races, men above women, masters above slaves (as in Aristotle), and upper castes or classes above lower ones. People who were listed at lower levels were taught to accept their position as "natural" and unchangeable. The scale of being was thus an important social concept that was used to justify many types of social inequality.

As a theological concept, the scale of being was conceived as a continuum, celebrated in verse by Alexander Pope in his *Essay on Man*:

Vast chain of being, which from God began,
 Natures aetherial, human, angel, man,
 Beast, bird, fish, insect! what no eye can see,
 No glass [microscope] can reach! from Infinite to thee,
 From thee to Nothing!-- On superior pow'rs
 Were we to press, inferior might on ours:
 Or in the full creation leave a void,
 Where, one step broken, the great scale's
 destroy'd:
 From Nature's chain, whatever link you
 strike,
 Tenth or ten thousandth, breaks the chain
 alike.

Because the continuum was created by God, any challenge to the unbroken chain was a challenge to established religion and to the social order. In biology, the scale of being long served as a unifying theory describing nature and predicting that each newly discovered species would somehow fit into its assigned place in the continuum, filling a 'missing link' in the chain. In fact, the scale of being was the single most important unifying concept in biology from the time of Aristotle into the early part of the nineteenth century. It was a great stimulus to exploration and research by those seeking to fill in the missing links, and many discoveries of the 1600s and 1700s did seem to confirm the continuum because newly discovered species could be made to fit into it somewhere. Gaps were explained by saying that further discoveries would fill them in. The terms 'higher' and 'lower,' still occasionally heard in biological discussions, are really references to this preevolutionary concept.

Lamarck made the chain of being into a moving escalator which he called Nature's Parade (*La Marche de la Nature*). The lowest forms of life, such as bacteria, formed by spontaneous generation from lifeless matter, and each species would slowly change (i.e., evolve) into the next higher species on the scale, without ever leaving any gaps. Later scientists, especially Cuvier, challenged this concept, and Darwin's concept of branching descent put an end to it altogether.