



Resemblance as Evidence of Ancestry

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The Connection between three ideas, *resemblance as evidence of ancestry*, was made long ago by Denis Diderot (1713–1784), a notable figure of the French enlightenment, the *siècle des lumières* (Lovejoy, 1904: 325). In 1753 he provided an example of what today is termed “transformational homology” (Patterson, 1982: 36): “If one considers the animal kingdom, and particularly the mammals, there is not one that lacks the functions and the parts, particularly internal ones, that are entirely similar to the others; so much so that it is easy to believe that there was a first prototype for all of them, for which nature merely elongated, shortened, transformed, multiplied, or obliterated certain organs. Imagine the fingers of the hand united, and the substance of the nails so abundant that it extends over the whole; then in place of the hand of a man, you have the foot of a horse.”

He concludes: “Regardless if this philosophic conjecture be considered true as does Doctor Baumann [Pierre-Louis Moreau de Maupertuis, 1698–1759], or false as does Buffon [Georges-Louis Leclerc, *Compte de...*, 1707–1788] one cannot refuse to embrace it as an hypothesis essential for progress in experimental science, in rational philosophy, and in the discovery and explanation of the phenomena displayed by living things” (1994: 565, *Thoughts on the interpretation of nature* no. 12, translated). And elsewhere he presciently comments: “exact classification of organisms will be achieved only through successive efforts of a large number of naturalists; it will be only painfully and very slowly achieved” (1994: 1261–1262, *Elements of Physiology* par. 7, translated).

The parts of organisms—the things that resemble—had been termed analogues by Aristotle (*Parts of Animals*, book 1, part 4, William Ogle translation): “Bird and Fish are more remote and only agree in having analogous organs; for what in the bird is feather, in the fish is scale. Such analogies can scarcely, however, serve universally as indications for the formation of groups, for almost all animals present analogies in their corresponding parts.” For Nordenskiöld (1935: 37) Aristotle was “the first evolutionist”: “Here we find enunciated for the first time a really complete theory of evolution.”

The *Theory of Analogues* was developed by Etienne Geoffroy Saint-Hilaire (1772–1844), who remarked that the German philosophical literature used *homologues* (1825: 341), apparently after Lorenz Oken (1779–1851). Oken occasionally used the adjective *homolog* (e.g., 1831: 77, 282, 306, 351 – items 415, 2050, 2267, 2723; translated as *homologous* in 1847: 87, 234, 362, 397, 420, 447, 449, 536 – items 432, 1199, 2046, 2306, 2495, 2712, 2729, 2730, 3268). Oken’s *adjectival* use is unremarked in recent commentary (Laublicher, 2000; Breidbach & Ghiselin, 2002; Hossfeld & Olsson, 2005).

Richard Owen (1804–1892) echoed Geoffroy’s allusion: the term *homologues* “appears to have been first applied in anatomy by the philosophical cultivators of that science in Germany” (1847: 173, 1848: 5). The English translation of Oken (1847) is said to have been “instigated by Owen” (Rupke, 2009: 122). For modern usage, Owen stabilized the terms as nouns: “Analogue—A part or organ in one animal which has the same function as another part or organ in a different animal. Homologue—The same organ in different animals under every variety of form and function” (1847: 175; 1848: 7). For Owen homology is a relation between homologues, not merely the homologues themselves; and the same for analogy and analogues. For him, the relation between homologues means that the homologues are represented in an archetype, the concept that does the relating (Williams, 2004: 196). For vertebrates, his archetype is an ideal (hypothetical) vertebra, or a series of vertebrae and their associated nerves and muscles (cf. Panchen, 1994). Hence the relation is that of “similar to” or “same as” an archetype. In the