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Richard Owen: Anti-Evolutionist or Champion of Theistic Evolution?

According to several recent sources, the nineteenth-century paleontologist Sir Richard Owen was an anti-evolutionist. However a careful reading of Owen's writings shows that he accepted the concept of biological evolution. More specifically, he advocated for theistic evolution: the view that biological evolution is part of God's plan and is a means by which God creates. Owen not only accepted biological evolution but identified certain fossil groups as ancestral to certain others and identified certain fossil species as evolutionary intermediates between precursor and successor taxa. He insisted that God had directed the course of evolution to produce organisms that would benefit humankind. He asserted that the opening chapters of Genesis are not meant to be taken literally and supported that assertion with data derived from scientific studies. The idea that Owen was opposed to the concept of biological evolution appears to be based on misunderstandings of his writings, including his use of the word "archetype."

Keywords: Richard Owen, Charles Darwin, Thomas Huxley, evolution, archetype, palaeontology, Genesis.

The eminent English palaeontologist Sir Richard Owen (1804–1892), famous for having given the world the term "dinosaur" when he coined the taxonomic name Dinosauria,[1] played a substantial role in the history of the relationship between science and Christian faith. Owen was a church-going Anglican and a committed Christian who encouraged others to maintain Christian faith and reverence for the Creator.[2] He did not take Genesis literally, but he took Scripture seriously,[3] and he openly and repeatedly attempted to steer his acquaintances and the general public away from misinterpretation of Scripture.[4] He viewed scientists as ministers of God whose charge was to glorify the Creator by discovering the truth and wonder of His creation, thereby generating awe before the Creator, and he dedicated his life

1 Owen, R. *Report on British Fossil Reptiles, Part II*, London: Richard & John E. Taylor (1842), p. 103.

2 Rupke, N., *Richard Owen. Biology without Darwin*, Chicago: University of Chicago Press (2009), p. 243.

3 Owen, R. *Instances of the Power of God as Manifested in His Animal Creation*, London: James Nisbet (1864).

4 Rupke, *Richard Owen*, pp. 243–253.

and work to the quest to live up to that standard.[5]

According to the concept of biological evolution, today's species arose from previous species by means of heritable changes that occurred over successive generations. Through the nineteenth century, there was a steady increase in acceptance of the concept of biological evolution. At the same time, there was a steady increase in the perception that such acceptance posed a threat to Christian belief, due to the apparent contradiction between biological evolution and the description of creation in the first chapter of Genesis.[6] There was therefore a very real danger that the general public would come to view science as an enemy of the Christian religion.[7] Owen's work was instrumental in keeping that danger at bay. His work illustrated that science and the acknowledgment of natural law need not necessarily lead to atheism but could instead lead one to recognise the handiwork of a divine Creator. By showing that homology and biological evolution could be explained in a theistic manner, and by more generally being a prominent scientist who openly endorsed Christian faith, Owen built a much-needed bridge between the world of science and the evolution-wary Christian establishment. Owen was well connected with that establishment, and the personal relationships that he cultivated were instrumental in the maintenance of a link between the institutions of science and the Christian aristocrats who were responsible for its funding.[8]

Unfortunately, Owen's role in the history of science and Christian belief is often misrepresented in recent literature. In the attempt to muster support for anti-evolution ideology, anti-evolution literature often lists famous scientists who opposed the concept of biological evolution. In that literature, Owen is called a "creationist,"[9] an

5 *Ibid*., pp. 243–253; cf. Owen, *Instances of the Power of God*, pp. 4–7, 32–33.

6 On the association of biological evolution with unbelief in the minds of nineteenth-century people, see Secord, J.C. *Victorian Sensation. The Extraordinary Publication, Reception, and Secret Authorship of* Vestiges of the Natural History of Creation, Chicago: University of Chicago Press (2000), pp. 37, 253–254, 274, 307, 329–330, 397. Indeed, exposure to the concept of biological evolution seems to have contributed to some individuals' loss of faith in that century (see Secord, *Victorian Sensation*, pp. 253–254). On the lack of real conflict between biological evolution and Genesis, see Senter, P.J. 'Apparent conflict between the Pentateuch and modern science: The early Church's solution, the solution's biblical origin, and ancient Christian approval of evidence-based reasoning', *Science and Christian Belief* (2022) 34, 7–28.

7 cf. Secord, *Victorian Sensation*, p. 202.

8 Rupke, *Richard Owen*, pp. 54–64.

9 Pittack, R. *Difficult Questions on Dinosaurs (Answered by a Creationist)*, Palmdale, California: Walden's Computer Services (2007), p. 12; Bergman, J. 'The left recurrent laryngeal nerve design in mammals is not poor design', *Journal of Creation* (2011) 25, no. 1, 63–68; Nelson, V. *Dire Dragons,* 2nd ed., Red Deer, AB: Untold Secrets of Planet Earth (2012), p. 14.

"anti-evolutionist,"[10] and "not an evolutionist."[11] Such misrepresentations of Owen are not limited to anti-evolution literature. Some pro-evolution authors label Owen a "creationist,"[12] an "anti-evolutionist,"[13] or "anti-evolutionary,"[14] or state that he "opposed evolution"[15] or "was opposed to evolutionary ideas" and "believed…that species were immutable"[16] (i.e. that species do not evolve).

Owen apparently disagreed with the concept of biological evolution toward the beginning of his career. He published a statement to that effect as late as 1842[17] and expressed reluctance to accept the concept in letters from 1848.[18] However, he changed his mind shortly thereafter and was publishing assertions in favor of biological evolution as early as 1849.[19] In his subsequent work, he endorsed

10 Clausen, V.E. 'Recent Debate over *Archaeopteryx*', *Origins* (1986) 13, no. 1, 48–55; Spetner, L.M. '"Not by Chance." Comments by the Author', *Creation Matters* (1999) 4, no. 5, 1–5; Clarey, T. *Dinosaurs. Marvels of God's Design*, Green Forest, AR: Master Books (2015), p. 17.

11 Wells, J. *Icons of Evolution: Science or Myth? Why Much of What We Teach about Evolution Is Wrong*, Washington, DC: Regnery (2000), p. 61.

12 e.g. Ra, A. *Foundational Falsehoods of Creationism*, Durham, North Carolina: Pitchstone (2016); Prothero, D.R. *Evolution: What the Fossils Say and Why It Matters*, 2nd ed., New York: Columbia University Press (2017), p. 60; Flannery, M.A. *Nature's Prophet. Alfred Russell Wallace and His Evolution from Natural Selection to Natural Theology*, Tuscaloosa: University of Alabama Press (2018), p. 16; Gluckman, P. & M. Hanson, *Ingenious. The Unintended Consequences of Human Innovation*, Cambridge, Massachusetts: Harvard University Press (2019), Introduction n. 4.

13 e.g. Wellnhofer, P. *The Illustrated Encyclopedia of Pterosaurs*, New York: Crescent (1991), p. 35; Schlager, N. & J. Lauer, *Science and Its Times, Vol. 5: 1800–1899*, Detroit: Gale (2000), p. 116; Alexander, D.E. *Nature's Flyers. Birds, Insects, and the Biomechanics of Flight*, Baltimore: Johns Hopkins University Press (2004), p. 196; Debus, A.A. *Prehistoric Monsters. The Real and Imagined Creatures of the Past that We Love to Fear*, Jefferson, North Carolina: McFarland (2010), p. 97; Attenborough, D. in foreword of F. Burkhardt, S. Evans & A.M. Pearn, *Evolution. Selected Letters of Charles Darwin, 1860–1870*, Cambridge: Cambridge University Press (2008), p. x; Wallace, D.R. *Neptune's Ark. From Ichthyosaurs to Orcas*, Berkeley: University of California Press (2008), p. 110; Fitch, W.T. '"Deep homology" in the biology and evolution of language', in A.M. di Sciullo & C. Boeckx (eds.), *The Biolinguistic Enterprise. New Perspectives on the Evolution and Nature of the Human Language Faculty*, Oxford: Oxford University Press (2011), 135–166, p. 159; Kielan-Jaworowska, *In Pursuit of Early Mammals*, Bloomington: Indiana University Press (2013), p. 139; Wagner, J.A. *Voices of Victorian England. Contemporary Accounts of Daily Life*, Santa Barbara: Greenwood (2014), p. 74.

14 Spalding, D.A.E. *Dinosaur Hunters*, Rocklin, California: Prima (1993), pp. 54, 89.

15 Schmitt, C. 'Evolution and Victorian fiction', in B. Lightman & B. Zon (eds.), *Evolution and Victorian Culture*, Cambridge: Cambridge University Press (2014), 17–38, p. 34.

16 Kardong, K.V. *Vertebrates. Comparative Anatomy, Function, Evolution*, 8th ed., New York: McGraw Hill (2019), p. 12.

17 Owen, *Report on British Fossil Reptiles, Part II*, pp. 198–202.

18 MacLeod, R.M. 'Evolutionism and Richard Owen, 1830–1868: An episode in Darwin's century', *Isis* (1965) 56, 259–280.

19 Owen, R. *On the Nature of Limbs*. London: John Van Voorst (1849), p. 86. A seemingly anti-evolutionary statement by Owen from early in 1850 may be an example of the obfuscation of

the concept of biological evolution so fervently and often that it became a major focus of his writing. It is correct that Owen was a vocal opponent of Charles Darwin in the 1860s, but that is because he and Darwin disagreed about the mechanism of biological evolution, not the fact of it. Darwin's theory of natural selection allowed for a deistic mode of evolution in which God created the laws governing evolution, set it in motion, and then did not interfere with it. In contrast, Owen disagreed with the deistic worldview and held the opinion that biological evolution occurred by means of continuous divine assistance.[20]

To their credit, several recent scholars have accurately described Owen's acceptance of biological evolution.[21] However, his stance on biological evolution continues to be misrepresented so frequently that it would be worthwhile to review that stance and the circumstances that led to its frequent misrepresentation.

Possible Sources of Misunderstanding

Three factors may have contributed to the misunderstanding that Owen opposed the concept of biological evolution. One such factor is his unfortunate tendency to word things with such obscure language that it can be difficult for the reader to grasp his meaning. One modern scholar has described it as "Owen's convoluted, evasive style, which seemed intended to hide his meaning rather than clarify it."[22] During the 1840s and 1850s, Owen deliberately obfuscated his acceptance of biological evolution, so as not to alienate patrons and associates

his position that was his habit through the 1850s: "We have not a particle of evidence that any species of bird or beast that lived during the pliocene period has had its characters modified in any respect by the influence of time or of change of external circumstances"—Owen, R. 'On *Dinornis* (Part IV): Containing the restoration of the feet of that genus and of *Palapteryx*, with a description of the sternum in *Palapteryx* and *Apatornis*', *Transactions of the Zoological Society* (1850) 4, 1–20, p. 15.

20 Owen, R. *Palæontology,* 2nd ed., Edinborough: Adam and Charles Black (1861), pp. 450–451; Owen, R. *On the Anatomy of Vertebrates, Vol. 3*, London: Longmans, Green, and Co. (1868), pp. 796, 804–809.

21 Desmond, A., *Archetypes and Ancestors. Palaeontology in Victorian London, 1850–1875*, Chicago: University of Chicago Press (1982), p. 60–72, 218; Richards, E. 'A question of property rights: Richard Owen's evolutionism reassessed', *British Journal for the History of Science* (1987) 20, 129–171; Bowler, P.J. *Evolution. The History of an Idea*, rev. ed., Berkeley: University of California Press (1989), pp. 130–133, 197, 204, 224–225; Richards, E. 'A political anatomy of monsters, hopeful and otherwise. Teratology, transcendentalism, and evolutionary theorizing', *Isis* 85 (1994), 377–411; Ospovat, D. *The Development of Darwin's Theory. Natural History, Natural Theology, and Natural Selection, 1838–1859*, Cambridge: Cambridge University Press (1995), pp. 132–135; Secord, *Victorian Sensation*, p. 512; Camardi, G. 'Richard Owen, morphology and evolution', *Journal of the History of Biology* (2001) 34, 481–515; Bowler, P.J. *Darwin Deleted. Imagining a World without Darwin*, Chicago: University of Chicago Press (2013), pp. 85, 98, 108, 125; Rupke, *Richard Owen*.

22 Rupke, *Richard Owen*, p. 101.

who were opposed to the concept.[23] After the publication of Darwin's *On the Origin of Species* in 1859, Owen jettisoned his reticence and openly endorsed the concept of biological evolution, apparently so as to be able to argue candidly against the Darwinian theory of natural selection and thereby promote his own theistic view of biological evolution. However, even after that change, Owen's writing style was still difficult to wade through. For example, consider the wording of Owen's assertion in his 1860 book *Palæontology* that divine assistance produced the evolutionary changes necessary to keep ancient organisms adapted as their external environment changed, while simultaneously directing those evolutionary changes toward a specific end:

By applying the laws of comparative anatomy to the relics of extinct races of animals contained in and characterizing the different strata of the earth's crust…we…demonstrate that the same pervading, active, and beneficent intelligence which manifests His power in our times, has also manifested His power in times long anterior to the record of our existence…But we likewise…are able to demonstrate that the different geological epochs were attended with corresponding changes of organic structure; and that in all these instances of change, the organs…were…exactly those best suited to the functions of the being. Hence we not only show intelligence evoking means adapted to the end; but, at successive times and periods, producing a change of mechanism adapted to a change in external conditions. Thus the highest generalizations in the science of organic bodies…lead to the unequivocal conviction of a great First Cause, which is certainly not mechanical.[24]

In the above quote, Owen was advocating a view that by the 1870s had come to be called theistic evolution[25]: the view that biological evolution occurs, that it has produced the variety of organisms that we see today and in the fossil record, and that it is part of God's plan and is a means by which God creates.[26] In a later work, he expressed that idea a bit better: "every species changes, in time…[and my theory] recognises a purpose in the defined and preordained course…by which… protozoa have risen to the higher forms of plants and animals."[27]

A second factor that may have led some authors to label him an anti-evolutionist

23 *Ibid*., p. 154–156, 180–181.

24 Owen, *Palæontology*, Edinburgh: Adam and Charles Black (1860), pp. 413–414; the quote is repeated almost verbatim in the 2nd ed. of *Palæontology*, pp. 450–451.

25 Fraser, W. *Blending Lights*, 2nd ed., London: James Nisbet (1874), p. 86; Dawson, J.W. 'Evolution and the apparition of animal forms', *Princeton Review* (1878) 54, 662–675, p. 663; Hall, A.W. *The Problem of Human Life*. New York: Schell (1877), pp. 13, 17, 20, 25.

26 Some current scholars studying Owen's writings have recognised his view as that of theistic evolution, e.g. Rupke, *Richard Owen*, pp. 44, 166–167; Numbers, R.L. *Galileo Goes to Jail and Other Myths about Science and Religion*, Cambridge, Massachusetts: Harvard University Press (2010), p. 140; Bowler, *Darwin Deleted*, p. 98.

27 Owen, *On the Anatomy of Vertebrates, Vol. 3*, pp. 808–809.

is that Owen argued against a theory that in the early nineteenth century was called "evolution" or "preformation": the idea (now known to be false) that an organism's post-embryonic body parts already exist in miniature form at the beginning of embryonic development (e.g. a tiny human body inside a human sperm cell) and would "evolve" during embryonic development by being uncovered and expanding in size.[28] Owen was opposed to that theory of organismal development,[29] but he was not opposed to the concept of evolution as the word would later be used: to denote the occurrence of heritable changes in organisms through the generations, including the origin of newer species from older ones. In Owen's day, that concept was called by various names: "development," "transmutation," "descent with modification," or "derivation."[30] It was not commonly called "evolution" or "evolutionism" until the late 1860s and afterward,[31] a trend that may have begun with Darwin's use of the word "evolved" on the last page of *Origin* in 1859.[32]

A third factor that may have contributed to the incorrect view of Owen as an opponent of the concept of evolution (in the current sense of the word) is misunderstanding of Owen's use of the word "archetype." Some authors interpret Owen's "archetype" as a metaphysical, Platonic ideal form that organisms and their organ systems are bound by some mystical law to express, and from which they cannot deviate, a conception that does not allow for biological evolution.[33] However, while

28 See review in Todd, R.B. *The Cyclopædia of Anatomy and Physiology, Vol. II*, London: Longman, Brown, Green, Longmans, & Roberts (1839), pp. 427–428.

29 Owen, *On the Anatomy of Vertebrates, Vol. 3*, pp. 809–813.

30 Development: e.g. Chambers, R. *Vestiges of the Natural History of Creation*, London: John Churchill (1844).
Transmutation: e.g. Lyell, C. *Principles of Geology*, London: John Murray (1847), pp. 541–559, 584, 673; Agassiz, L. *On the Principles of Classification*, Charleston: Walker & James (1850), pp. 4–14.
Descent with modification: e.g. Darwin, C. *On the Origin of Species by Means of Natural Selection*, London: John Murray (1859), pp. 331–343, 381, 389, 443–483.
Derivation: e.g. Owen, *Palæontology*, 2nd ed., p. 205; Owen, R. *Monograph on the Aye-aye*, London: Taylor & Francis (1863), pp. 63, 67; Owen, *On the Anatomy of Vertebrates*, Vol. 3, pp. 797, 825.
Note that Owen tended to use the term "transmutation" in reference to the theory of natural selection (e.g. Owen, R. 'Darwin on the origin of species', *Edinburgh Review* (1860) 111, no. 226, 487–532; Owen, *Palæontology*, 2nd ed., pp. 442) and to the Lamarckian theory of evolution (e.g. Owen, *Monograph on the Aye-aye*, p. 65), whereas he used the term "derivation" in reference to his own theory of theistic evolution (e.g. Owen, *Monograph on the Aye-aye*, p. 62–63, 67).

31 e.g. Abbot, F.E. 'Philosophical biology', *North American Review* (1868) 121, 378–422; Huxley, T.H. 'Mr. Darwin's critics', *The Contemporary Review* (1871) 18, 443–476; Mivart, St. G. *On the Genesis of Species*, MacMillan: London (1871); Fraser, *Blending Lights*; Gill, W.I., *Evolution and Progress: An Exposition and Defence*, New York: The Authors' Publishing Company (1875); Dawson, 'Evolution and the apparition of animal forms'.

32 Darwin, *On the Origin of Species*, p. 490.

33 e.g. Ruse, M. *The Darwinian Revolution. Science Red in Tooth and Claw*, 2nd ed., Chicago: Chicago University Press (1999), pp. 119–124; Brasier, M. *Darwin's Lost World. The Hidden*

it is correct that Owen borrowed the word from Platonist vocabulary, he did not use it in the sense of a pattern from which an organism cannot deviate. Rather, when one reads his writings on the archetype in context, one sees that what Owen meant by the word is similar to what today's biologists mean when we speak of an ancestral body plan: a set of morphological features that is present in a taxonomic group as a result of their having inherited it from a common ancestor.[34] When he asserted that one body part or another is derived from an archetype, he was simply making a statement of homology.[35] In fact, he noted that during the course of biological evolution, an organism could become so dramatically different from its ancestors that it had—in his words—"deviated from" or "departed from" its ancestral archetype. His citation of numerous instances of such departure shows that he did not think that heritable change in organisms is confined within the boundary of an archetype but instead is able to move beyond it.[36] According to Owen, such changes of body plan are divinely directed.[37]

Nor did Owen originally use the word "archetype" in its Platonic sense, that of a Platonic idea. In Plato's scheme, an idea is the highest, most perfect reality of something (e.g. the ideal triangle is a perfect triangle, not the imperfect sketch of a triangle that a person might produce in the material world), which exists only in the mind of God, not in the material world. In contrast, Owen's archetype is the lowest, most basic pattern of an organism, which is expressed in the organism's material body and from which the organism's descendants later deviate through biological evolution. However, once it became apparent that his archetype concept was being misinterpreted as pantheistic and thus unpalatable to Christian patrons, he followed the advice of his allies in the Christian establishment to minimize the potential for pantheistic misinterpretation by adding the Platonic interpretation that the archetype existed in the mind of God before it was expressed in the material bodies of organisms, i.e. the archetype was the divine blueprint by which the Creator created.[38]

Owen was a pioneer in the concept of homology.[39] His use of the word "arche-

History of Animal Life. Oxford: Oxford University Press (2009), p. 24; Kardong, *op. cit*., p. 12.

34 Owen, R *On the Archetype and Homologies of the Vertebrate Skeleton*, London: Richard & John E. Taylor (1848), pp. 117, 147, 158, 175, 178; Owen, *On the Nature of Limbs*, pp. 64, 69, 83–84, 87; Owen, R. *On the Anatomy of Vertebrates, Vol. 1*, London: Longmans, Green & Co (1866), pp. 29, 144; Owen, R. *On the Anatomy of Vertebrates, Vol. 2*, London: Longmans, Green & Co. (1866), pp. 43, 302.

35 Owen, *On the Archetype and Homologies of the Vertebrate Skeleton*, p. 191; Owen, *On the Nature of Limbs*, pp. 64, 69, 112; Owen, *On the Anatomy of Vertebrates, Vol. 1*, pp. 43, 162; Owen, *On the Anatomy of Vertebrates, Vol. 2*, pp. 306, 585.

36 Owen, *On the Archetype and Homologies of the Vertebrate Skeleton*, pp. 178, 181; Owen, *On the Nature of Limbs*, pp. 90–91, 95–96, 98, 110.

37 Owen, *Palæontology,* 2nd ed., pp. 450–451; Owen, *On the Anatomy of Vertebrates, Vol. 3*, pp. 808–809.

38 Rupke, *Richard Owen*, pp. 125–134.

39 For example, it was Owen who came up with two of the most fundamental concepts that

type" was an innovative way to express a set of ideas that were cutting-edge and visionary at the time.[40] Today, his terminology has been superseded, which creates a language barrier between his writings and twenty-first century readers. One must therefore be cautious when reading his writings not to infer meanings that he did not intend. A cautious investigation of his writings on archetypes shows that he was therein expressing the concepts of body plans, homology, embryology, and biological evolution, without any transcendental or metaphysical trappings, save one: he considered the vertebrate archetype (the common body plan of vertebrates) to be evidence of design by a common (and divine) Designer.[41] In a dictionary entry, he described the archetype as "that ideal or fundamental pattern on which a natural group of animals or system of organs has been constructed, and to modifications of which the various forms of such animals and organs may be referred."[42] The first of those two phrases describes what today's biologists would call a "body plan," and the second indicates recognition of that plan as a basis of determinations of homology. In his 1848 book *On the Archetype and Homologies of the Vertebrate Skeleton*, he elaborated on those aspects of the archetype with a multitude of examples, making it clear that he considered the archetype of a group of animals to be the group's ancestral body plan, which revealed homologies between body parts among the organisms in the group.

In Owen's own day, his archetype concept was opposed by Thomas Huxley and others, on the basis that it introduced a supernatural concept into the study of nature.[43] At the time, Huxley and others of like mind were promoting what is now called methodological naturalism: inquiry into the workings of nature without recourse to supernatural explanations. Over the course of the nineteenth century, methodological naturalism became a standard component of the scientific process and remains so to this day. Unfortunately, the process by which that happened involved a protracted debate between Owen's and Huxley's schools of thought, in which Owen's ideas were vilified as supernaturalist.[44] The debate was notoriously

today's comparative anatomists use: serial homology and the distinction between homologous vs. analogous structures (Owen, *On the Archetype and Homologies of the Vertebrate Skeleton*, p. 7–8).

40 Panchen, A.L. 'Richard Owen and the Concept of Homology', in B.K. Hall (ed.), *Homology. The Hierarchical Basis of Comparative Biology*, San Diego: Academic (1994), pp. 22–62.

41 Owen, *On the Nature of Limbs*, pp. 85–86.

42 Owen, R. 'Archetype', in W.T. Brande & G.W. Cox (eds.), *A Dictionary of Science, Literature, and Art, Vol. 1*, London: Longmans, Green & Co. (1865), p. 146.

43 Desmond, *Huxley*, pp. 187, 187–188, 218, 244, 273, 275. Huxley's camp also objected (correctly), on embryological grounds, to Owen's insistence that the vertebrate skull is a modified series of four vertebrae and that its parts are serially homologous with those of postcranial vertebrae. Owen considered this an important application of his archetype concept to the vertebrates, but his archetype concept did not depend on it. Huxley's camp would have had less ammunition against Owen's archetype concept if Owen had focused on postcranial homologies and had conceded that his homologizing of the skull with vertebrae was erroneous.

44 Desmond, *Huxley*, pp. 187, 218, 244, 273.

venomous,[45] largely because it was about more than scientific accuracy. Each side sought to discredit the other, not just to steer science away from error, but to steer the favor of political and financial authorities away from the opposing camp and toward its own. At stake was funding, and with it control of the institutions of science: museums and access to their collections.[46]

The debate cast Owen in similar light to other opponents of Huxley's pro-evolution camp, which seems to have contributed to subsequent misunderstanding of Owen's ideas as anti-evolutionist. Even Darwin incorrectly wrote in *On the Origin of Species* that Owen "maintained the immutability of species."[47] Darwin later realized and lamented his mistake, noting that he had been misled by Owen's own obscure wording.[48] Darwin's incorrect characterization of Owen as an opponent of evolution in so popular a book probably contributed to Owen's incorrect reputation as an anti-evolutionist.

Owen considered the common design of organisms to be evidence of a common Designer.[49] He further asserted that even when the function of an organ is unknown, that organ serves a useful purpose in that it provides evidence of the divine Designer by demonstrating common design.[50] Ironically, today's creationist authors have adopted Owen's idea of common design as evidence for a common Designer and now use that notion to oppose the concept of biological evolution.[51] Owen himself would have disagreed with such usage of the idea. Far from using it to oppose the concept of biological evolution, Owen used in support of theistic evolution.

Owen on Biological Evolution

The event that spurred Owen to become open about his acceptance of

45 Desmond, *Huxley*; Rupke, *Richard Owen*, pp. 188–208.

46 Rupke, *Richard Owen*, 37–43.

47 Darwin, *On the Origin of Species*, p. 310.

48 Darwin, C. *The Origin of Species by Means of Natural Selection*, 6th ed., London: John Murray (1872), p. xviii.

49 "the evidence of unity of plan testifies to the oneness of the Creator"—Owen, R. *The Principal Forms of the Skeleton and of the Teeth*, Philadelphia: Blanchard & Lea (1854), p. 228.

50 "Those structures, moreover, which are at present incomprehensible as adaptations to a special end, are made comprehensible on a higher principle…such organ does not exist in vain if its truer comprehension, in relation to the Divine idea, or prime Exemplar, lead rational beings to a better conception of their own origin and Creator"—Owen, *The Principal Forms of the Skeleton and of the Teeth*, p. 228.

51 e.g. DeYoung, D.B. *Dinosaurs and Creation*. Grand Rapids: Baker (2000), p. 103; White, A.J.M. 'Hasn't Evolution Been Proven True?' In K. Ham (ed.), *The New Answers Book 1*, Green Forest, AR: Master Books (2006), pp. 283–298; Burgess, S. 'What about Design Arguments Like "Irreducible Complexity"?' In K. Ham (ed.), *The New Answers Book 4*, Green Forest, AR: Master Books (2013), pp. 355–366; Gilmer, J.E. *The Bible is Right! About Dinosaurs and Evolution!* Bloomington: AuthorHouse (2013), pp. 126–529.

biological evolution was Darwin's mistaken listing of Owen as one who "maintained the immutability of species" in *Origin*. That misrepresentation vexed Owen, and the only way to correct it was to publicly acknowledge his acceptance of biological evolution. Owen did so in a review of Darwin's book for the *Edinburgh Review* in 1860, which he wrote anonymously, referring to himself in the third person. Therein, Owen insisted that the characterization of himself in Darwin's book as an advocate of the immutability of species was incorrect.[52] Owen pointed out that his own work had shown that extinct animals were often anatomically more generalized than their more specialized extant relatives, that this is consistent with biological evolution,[53] and that he had previously advocated for the concept of biological evolution.[54] He also made the point that one can object to the theory of natural selection while simultaneously accepting biological evolution. While making that point, he voiced some of the reasoning behind his own objection to natural selection by noting that there were other theories as to the mechanism of biological evolution[55] and that the theory of natural selection as yet had no support from empirical evidence[56] (which is no longer the case in the twenty-first century, now that an abundance of empirical evidence for natural selection has been published[57]).

Despite the cautious anonymity in his review of *Origin*, Owen soon openly advocated the concept of biological evolution in publications that bore his name, e.g. in the second edition of his book *Palæontology* (1862) and in *Monograph on the Aye-aye* (1863). He also openly advocated it in public lectures. According to a letter from Darwin to Asa Gray on July 23, 1862, Owen "has been lecturing on birds; and admits that all are descended from one, and advances as his own idea that the oceanic wingless birds have lost their wings by gradual disuse."[58]

In the second edition of *Palæontology*, Owen cited the fossil record as evidence of biological evolution and specified which fossil animals he thought were ancestral to which others. Owen described evolutionary trends in fishes through geologic time,[59] identified the Paleozoic amphibian *Archegosaurus* as "a transitional form… of an air-breather from a water-breather,"[60] and listed a series of fossils that dem-

52 Owen, 'Darwin on the origin of species', p. 501.

53 *Ibid*, pp. 507–508.

54 *Ibid*. p. 532.

55 *Ibid*, pp. 501–503.

56 *Ibid*, p. 503.

57 e.g. see the plethora of documented examples of natural selection listed in footnotes 30, 32, 53, 54, and 89–95 of Senter, P.J. 'The evolution of creation science, part 3: Natural selection and convergent evolution', *Perspectives on Science and Christian Faith* (2017) 69, 159–184.

58 Hull, D.L. *Darwin and His Critics. The Reception of Darwin's Theory of Evolution by the Scientific Community*, Chicago: University of Chicago Press (1973), p. 174.

59 Owen, *Palæontology*, 2nd ed., pp. 175–176.

60 *Ibid*., p. 205.

onstrated the origin of land vertebrates from fishes.[61] Noting that the reptile groups that appeared early in the fossil record were more generic than the more specialized reptile groups such as the dinosaurs and the Mesozoic marine reptiles, which appeared later in the fossil record, he argued that the former groups were ancestral to the latter.[62] He identified several Cenozoic fossil mammal species as transitional forms between earlier, more generic fossil mammals and later, more specialized mammal groups.[63] He concluded the book by reaffirming his stance against others' theories of the origin of species and his endorsement of theistic evolution.[64]

In *Monograph on the Aye-aye*, a description of a species of lemur, Owen asserted that the data from homology that he had presented in his previous books supported the concept of "the derivation of one species from a previous species, of a new from an old species."[65] By way of example, he stated that "the Aye-aye has been derived, in common with other existing *Lemuridae*, from some pre-existent animal of a more generalized Lemurine type…"[66] In the same publication, he not only used the word "evolved" but also endorsed the concept of theistic evolution by positing that organisms had evolved according to a divine plan:

> The succession of species by continuously operating law is not necessarily a "blind operation." Such law...intimates...a preconceived progress. Organisms may be evolved in orderly succession stage after stage, towards a foreseen goal; and the broad features of the course may still show the unmistakeable impress of divine volition.[67]

Owen later cited the horse as an example of biological evolution that was directed toward a predestined goal by divine volition. After noting that the horse and donkey had acquired the traits that made them useful to humankind around the time that humankind came into existence,[68] Owen asserted that it was no coincidence: God had caused the palaeotheres (cat- and dog-sized fossil mammals with four to five digits on each limb) to evolve into horses for the benefit of humankind:

> Of all the quadrupedal servants of Man none have provided of more value to him, in peace or war, than the horse...In all the modifications of the old

61 *Ibid*., pp. 217–218.

62 *Ibid*., p. 322.

63 *Ibid*., pp. 365, 368, 376, 397–398 (see similar text on pp. 330, 333, and 343–344 of the first edition of Owen's *Palæontology*, although the text on pp. 397–398 of the 2nd edition is novel and has no equivalent in the first edition).

64 *Ibid*., pp. 441–451.

65 Owen, R. *Monograph on the Aye-aye*, London: Taylor & Francis (1863), p. 66.

66 *Ibid*., p. 67.

67 *Ibid.*, p. 62.

68 Owen, *On the Anatomy of Vertebrates, Vol. 3*, pp. 795–796.

palæotherian type to this end, the horse has acquired nobler proportions and higher faculties…As such, I believe the Horse to have been predestined and prepared for Man…[and to be] evidence of the "Divinity that shapes our ends."[69]

In another quote, Owen hinted at similar divine direction of the evolution of fishes for the sake of humankind:

…the variety of the forms of fishes…represents…the results of mutation, depending upon the progressive assumption of a more special type…One other conclusion may be drawn from a retrospect of the mutations in the forms of fishes at different epochs of the earth's history,—viz., that those species, such as the nutritious cod, the savoury herring, the rich-flavoured salmon, and the succulent turbot, have greatly predominated at the period immediately preceding and accompanying the advent of man; and that they have superseded species which…were much less fitted to afford mankind a sapid and wholesome food.[70]

Owen on the Descent of the Human Species

Owen's opinion as to the descent of the human species is difficult to decipher. His writings provide clues as to that opinion, but they do not enable the reader to confidently deduce what that opinion was. An early statement of his on the subject makes it seem as if he thought that humans, like today's other vertebrates, had evolved over vast stretches of time from ancient fishes: "Nature…has advanced with slow and stately steps…from the first embodiment of the Vertebrate idea under its old Ichthyic vestment [fancy words for "the ancestral fish"] until it became arrayed in the glorious garb of the Human form."[71] That statement is compatible with the concept that the human body evolved from those of ancient fishes. However, a careful reading reveals that it is also compatible with the idea that although non-human vertebrates (including fishes) and humans possess the same body plan, the non-human vertebrate species were created by means of biological evolution through geologic time, whereas the human species was specially created by God at the end of that vast stretch of geologic time. Such an interpretation is in keeping with Owen's statements on fish and horse evolution, reviewed above, in which he implies that such species underwent biological evolution through geologic time so as to gradually craft them into creatures with morphology that is optimal for the service of humankind.

The idea that the human species was a special creation is consistent with Owen's public statement, at a lecture delivered by Thomas Huxley in 1860, that anyone who was concerned about his relationship to his Creator could not accept that humans

69 *Ibid*., p. 796.

70 Owen, *Palæontology*, 2nd ed., p. 176; similar text occurs in the first edition of *Palæontology*, p. 150–152.

71 Owen, *On the Nature of Limbs*, p. 86.

had evolved from apes.[72] A passage from one of Owen's letters has been cited as evidence that he did not object to the idea that humans were derived from apes.[73] However, the context of that passage in the letter reveals that Owen considered ape anatomy incompatible with the idea that apes had given rise to the human species.[74]

Owen argued vehemently against a close relationship between humans and gorillas.[75] Many of his contemporaries were convinced that human anatomy was sufficiently similar to that of the Quadrumana (the nineteenth-century term for non-human primates such as lemurs, monkeys, and apes) to support the hypothesis that humans had evolved from the Quadrumana and to classify humans within the Primates.[76] In contrast, Owen created a classification of the Mammalia in which the human species was separate from primates and other mammals. In a paper that was published in 1857, Owen classified mammals into four groups, with humans in one group (as its sole member species) and the Quadrumana in another.[77] Although he didn't explicitly call the three non-human mammalian groups evolutionary lineages, he revealed his evolutionary view in that paper by acknowledging that the fossil record of mammals shows a progressive succession of species through time, with diversification of species within lineages.[78] In that paper, Owen portrayed the anatomy of humans as sufficiently unique to indicate that humans represent a distinct mammalian group, one with no other extant representatives.

Although his classification scheme is not an explicit statement that humans—uniquely among animals—had originated by special creation, it is

72 Desmond, *Huxley*, p. 271.

73 Rupke, *Richard Owen*, p. 143–144.

74 Owen, Rev. R. *The Life of Richard Owen by His Grandson*, London: John Murray (1894), p. 251. In the passage in question, Owen says that "the resemblance of the chimpanzee's skull in its prominent supraorbital arch and some other characters to the Melanian form of cranium, interested me so much whilst investigating the physiological possibility of the development of the Hottentot from the chimpanzee, without, I believe, the slightest prejudice against such a relationship; but many particulars of both black and red orangs are decisive against such a hypothesis in the present state of physiological knowledge." In other words, Owen claimed to have investigated without prejudice the possibility that apes had given rise to humans, and during that investigation, data from ape anatomy had led him to reject that hypothesis. Others had noted that a bony ridge above the eye sockets in certain human populations bore a superficial resemblance to that of certain apes, but in Owen's view, the similarity was too superficial to bridge the anatomical gulf between ape and human. Unlike some of his racist contemporaries, Owen viewed all human populations as so similar to each other and so dissimilar from apes that all humans must belong to a single species, with no race more apelike than any other and with different human races equally able to achieve intellectual distinction (see Rupke, *Richard Owen*, p. 188, 212–213).

75 Owen, R. *Memoir on the Gorilla*. London: Taylor and Francis (1865).

76 Desmond, *Huxley*, 240, 276, 295–297; Bowler, *Darwin Deleted*, p. 104.

77 Owen, R. 'On the Characters, Principles of Division and Primary Groups of the Class Mammalia', *Journal of the Proceedings of the Linnean Society. Zoology* (1857) 2, 1–37.

78 *Ibid*., p. 34.

consistent with that view. The classification scheme was published in 1857, during the period in which Owen was still obfuscating his acceptance of biological evolution, in deference to patrons who were wary of the concept.[79] It is possible that the classification scheme was less a true reflection of Owen's opinion than it was a reflection of his desire to please evolution-wary Christian patrons.[80] However, it is worth considering that Owen did indeed consider the human species—uniquely among animals—to have arisen by special creation instead of by biological evolution. At the very least, he took pains to make it appear that such was his opinion, without explicitly stating so. For example, he famously argued against a close relationship between humans and apes in a series of lectures and publications that constituted an unabashed fight between himself and Thomas Huxley's camp in the early years of the 1860s.[81] Although the counterarguments of Huxley's camp were more convincing to most of Owen's contemporaries and their successors, Owen stuck to his arguments and did not concede defeat.

Nevertheless, in a book on the gorilla, Owen acknowledged that his position could be proved wrong if future fossil finds were to include anatomical intermediates between apes and humans, in which case it was possible that humans had evolved from ancient primates:

Whether…strata of such high antiquity as the miocene may reveal to us "forms in any degree intermediate between the Chimpanzee and Man" awaits an answer from discoveries yet to be made; and the anticipation that the fossil world "may hereafter supply new osteological links between Man and the highest known Quadrumana" must be kept in abeyance until that world has furnished us with the proofs that a species did formerly exist which came as near to Man as does the Orang, the Chimpanzee, or the Gorilla.[82]

That statement by Owen appears to have been a jab at the idea that humans had originated by biological evolution, reminding readers that at the time, no fossil intermediates between apes and humans had been found. However, the wording of the jab also acknowledges the possibility that later fossil discoveries might reveal such intermediates and might thereby demonstrate the descent of the human body from the bodies of ancient primates. Indeed, later fossil discoveries revealed such intermediates and demonstrated such descent.[83]

79 Rupke, *Richard Owen*, pp. 154–156.

80 e.g. see Rupke, *Richard Owen*, pp. 190–191, 235.

81 Desmond, *Huxley*; Rupke, *Richard Owen*.

82 Owen, *Memoir on the Gorilla*, p. 32, with two quotations from Sir Charles Lyell.

83 Keesey, T.M. 'Three Histories of the Human Body', in J. Kane, E. Willoughby & T.M. Keesey (eds.), *God's Word or Human Reason? An Inside Perspective on Creationism*, Portland: Inkwater (2016), pp. 189–264.

Owen vs. a Literal Genesis

Whether Owen thought the human species was a special creation or not, he did not endorse acceptance of the biblical book of Genesis as an accurate record of events. His correspondence shows that he regarded it as a source of instruction in living a righteous life,[84] not a narration of ancient history. In an 1850 article, Owen noted that the narration of the curse upon the serpent to lose its legs after the creation and Fall of man in the third chapter of Genesis cannot be accurate, because the fossil record shows that snakes were already legless long before humankind appeared.[85] He further added that any attempt to expound the third chapter of Genesis "as a simple narration of facts" is an attempt fraught with "futility,"[86] and that one should instead expound it by focusing on "its symbolical signification."[87] In his 1864 book *Instances of the Power of God as Manifested in His Animal Creation*, based on a lecture of his from the previous year, he again discussed the third chapter of Genesis. Therein, he repeated his warning against taking the text literally and criticized "the futility of such attempts to expound the symbolic text as if it were a statement of matter of fact."[88]

In the same book, Owen noted that when the Bible was written, the Earth was thought to be flat and to be the centre of the universe. Further noting that subsequent discoveries had demonstrated that the Earth is round and revolves around the sun, Owen made the point that the Bible should not be used as an encyclopaedic source of information on the natural world. Rather, scientific investigation should be used as the source of such information.[89] Elaborating on that point, he noted that scientific investigation had recently shown that the Earth is vast ages older than the mere six thousand years that the biblical timeline yields.[90] Elaborating further, he noted that scientific discovery had revealed numerous other instances in which the biblical description of nature is inaccurate and must therefore not be taken literally. In contrast to the biblical portrayal of death as the result of the Fall of man, the fossil record shows that death had been part of life since long before the human species arose.[91] In contrast to the biblical narration of each kind of organism having been independently created, the fossil record reveals that species have arisen one from the other through biological evolution in a succession that shows directional progress.[92] In contrast to the biblical description of all species as having dispersed from

84 Rupke, *Richard Owen*, pp. 250–251.

85 Owen, R. 'On British Eocene serpents and the serpent of the Bible', *The Edinburgh New Philosophical Journal* (1850) 49, 239–242, p. 240, pp. 239–240.

86 *Ibid*., p. 240.

87 *Ibid*., p. 241.

88 Owen, *Instances of the Power of God*, p. 19.

89 *Ibid*., pp. 22–26.

90 *Ibid*., pp. 26–27.

91 *Ibid*., pp. 27, 32–33.

92 *Ibid*., p. 27.

the landing point of the ark after the Genesis Flood, the biogeographical distribution of species indicates that their dispersal across the globe was from no such central point.[93] According to Owen, the Bible should not be used as a science textbook. Instead, it is a guidebook for spiritual life,[94] and when it seems to convey information on the natural world that contradicts what we see in the world around us, its meaning is symbolic, not literal.[95]

In an expanded version of *Instances*, also published in 1864, Owen added 15 more pages of elaboration on the incompatibility of a literal Genesis with the findings of science. He argued that it is untenable that rainbows first appeared after the Flood, as described in Genesis 9, because if that were literally accurate, then light and its properties as we now know them could not have existed before the Flood.[96] Further, he elaborated on the incompatibility of the current biogeographical distribution of animals with their having dispersed from Noah's ark at Ararat. For example, Australia has numerous taxa that are found there and nowhere else, which indicates that their point of origin is Australia, not Ararat in western Asia. Likewise, the New World has numerous taxa that are found there and nowhere else, indicating that their point of origin is in the New World, not western Asia.[97] He further noted that the fossil records of Australia and the New World support the conclusion that each region's endemic fauna arose there, not in western Asia.[98]

In an 1872 article, Owen similarly argued against the historicity of the narratives in Genesis in which the first humans have lifespans of hundreds of years. According to Owen, no physiologist would agree that such long lifespans are possible for humans.[99] He noted that in mammals, the maximum lifespan roughly correlates with the length of time it takes for the teeth to wear down. He further noted that in the most ancient known human skeletons—some of which were as ancient as Ice Age mammoths—there is no indication that the teeth took longer to wear down than they do in modern humans, nor is there any indication of longevity beyond the normal modern human lifespan.[100] He further noted that the chronology of ancient Egyptian kings stretched beyond the date that the biblical timeline gives as the date of the world's creation, thus providing further evidence that the narratives of Genesis should not be taken literally.[101]

93 *Ibid*., p. 30.

94 *Ibid*., pp. 4–5, 32–35.

95 *Ibid*., pp. 19, 32–35.

96 Owen, R. *Instances of the Power of God as Manifested in His Animal Creation* [expanded version], London: Longman, Green, Longman, Roberts, and Green (1864), pp. 35–37.

97 *Ibid*., pp. 38–46.

98 *Ibid*, pp. 46–49.

99 Owen, R. 'On Longevity', *Fraser's Magazine*, n. ser. (1872) 5, 218–233, p. 218.

100 *Ibid*., pp. 222–224.

101 *Ibid*., p. 223.

In 1864, a group of scientists put together a document titled the "Scientists' Declaration," which alleged that "researches into scientific truth are perverted by some in our own times into occasion for casting doubt upon the Truth and Authenticity of the Holy Scriptures." Owen was among those who refused to sign it. In his written response to it, he asserted that it ran the risk of "bearing false witness against fellow-labourers" by bringing against them an "unfounded" charge.[102] That episode underscores the vehemence of Owen's stance that the narratives in Genesis and elsewhere in the Bible that appear to contradict the findings of science were meant to be understood in a symbolic manner, rather than as a literal and accurate record of ancient events.

Conclusion

Owen's own words repeatedly confirm that he endorsed the concept of biological evolution. Current literature is therefore in error when it proclaims Owen a "creationist" and an "anti-evolutionist." To be fair, some recent authors, both within the anti-evolution camp[103] and within the pro-evolution camp,[104] acknowledge that Owen endorsed the concept of biological evolution and was not a creationist. But a large enough amount of both pro- and anti-evolution literature expresses the opposite view of Owen that the misconception is worth addressing, and it is worthwhile to show again—having previously been shown by Owen himself—that he was not a creationist. Rather, he was an advocate of the concept of biological evolution, one who championed theistic evolution.

In a period in which scholars were beginning to view science and Christian belief as antagonistic toward each other, Owen passionately advocated for the position that the two are compatible, complementary, and foundationally connected. It is incongruous that modern scholarship has painted his passionate advocacy of that compatibility and connectedness in hues so opposite to its message. Owen was not an opponent of biological evolution but was instead a very vocal advocate of theistic evolution.

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102 Rupke, *Richard Owen*, pp 245–246.

103 Taylor, I. 'The Ultimate Hoax: Archaeopteryx lithographica', In R.E. Walsh (ed.), *Proceedings of the Second International Conference on Creationism, Vol. 2*, Pittsburgh: Creation Science Fellowship (1990), 279–288; Howe, G.F. 'A Reply: Horse Toes and Creation Science', *Creation Research Society Quarterly* (1993) 30, 126–127; Wood, T.C. 'The Current Status of Baraminology', *Creation Research Society Quarterly* (2006) 43, 149–158.

104 See footnote 21.