

A Most Eminent Victorian: Thomas Henry Huxley

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Résumé

Huxley coined the word agnostic to describe his own philosophical framework in part to distinguish himself from materialists, atheists, and positivists. In this paper I will elaborate on exactly what Huxley meant by agnosticism by discussing his views on the distinctions he drew between philosophy and science, science and theology, and between theology and religion. His claim that theology belonged to the realm of the intellect while religion belonged to the realm of feeling served as an important strategy in his defense of evolution.

Approaching Darwin's theory in the spirit of Goethe's *Thatige Skepsis* or active skepticism, he showed that most of the "scientific" objections to evolution were at their root religiously based. Huxley maintained that the question of "man's place in nature" should be approached independently of the question of origins, yet at the same time argued passionately and eloquently that even if humans shared a common a origin with the apes, this did not make humans any less special. Because evolution was so intertwined with the questions of belief, of morals and of ethics, and Huxley was the foremost defender of Darwin's ideas in the English-speaking world, he was at the center of the discussions as Victorians struggled with trying to reconcile the growing gulf between science and faith.

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The line between biology, morals, and magic is still not generally known and admitted.

C. D. Darlington

1Thomas Huxley wrote to his good friend Charles Darwin that he “was prepared to go to the stake if requested” to defend his theory of evolution (November 23, 1859. *Life and Letters of Thomas Henry Huxley (LLTHH)*, 1900, 1, 188). Dubbing himself Darwin’s bulldog, Huxley is primarily known as a popularizer of Darwin’s theory and also for his war with theology. However, Huxley was a first rate scientist in his own right, publishing hundreds of scientific monographs. As a developmental morphologist who also did extensive work in paleontology, he had with a research program addressing problems that are the very ones that evolutionary developmental biology or evo-devo are concerned with today. In addition, far more than Darwin, Huxley was interested in the philosophical, religious, ethical, social, and political problems of the day. He authored hundreds of essays and gave numerous talks to lay audiences that scanned all of these areas. His six working men’s lectures “On Our Knowledge of the Causes of the Phenomena of Organic Nature” caused Darwin to write in dismay to Huxley that “They are simply perfect . . . What is the good of my writing a thundering big book, when everything is in this green little book so despicable for its size? In the name of all that is good and bad I may as well shut shop altogether” (December 18, 1862, *LLTHH*, 1, 223). Because evolution was so intertwined with the questions of belief, morals and ethics, and Huxley was the foremost defender of Darwin’s ideas in the English-speaking world, he was at the center of the discussions as Victorians struggled to reconcile the growing gulf between science and faith.

Agnosticism and the Limits to Knowledge

2Huxley was a member of two famous London clubs: the Metaphysical Society and the X Club that brought together prominent members of the British intelligentsia. It provided the perfect forum for Huxley to present his views on a variety of topics. However, he felt he did not quite belong because most of his colleagues in the Metaphysical Society: “were *-ists* of one sort or another . . . I the man without a rag of a label to cover himself with, could not fail to have some of the uneasy feelings which must have beset the historical fox when leaving the trap in which his tail remained, he presents himself to his normally elongated companions. So I took thought and invented what I conceived to be the appropriate title of ‘agnostic’. It came into my head as suggestively anti-thetic to the ‘gnostic’ of Church history who professed to know so much about the very things of which I was ignorant; and I took the earliest opportunity of parading it at our Society, to show that I too had a tail like the other foxes” (*Science and the Christian Tradition* 1889, 239).

3Huxley's witty account of how he invented the word agnostic does not do justice to the seriousness of his thought in describing his own philosophical framework to delineate it from other kinds of isms including positivism, materialism, atheism and even empiricism.

4The word caught on and numerous agnostic societies sprung up that dealt with religious belief. Yet Huxley was not deeply involved with them and it was only at the end of his life that he wrote a series of essays that were specifically a defense of agnosticism, one of which discussed the question of evidence in relationship to miracles. He was working on a critique of Arthur Balfour's "Foundations of Belief" when he died in 1895. Huxley's lack of involvement might seem surprising, but not if one examines what he meant by it, particularly in the context of his life as a scientist.

5People often place agnosticism on a religious spectrum somewhere between the absolute certainty of Christian belief and the total denial of the existence of God by atheists (Lightman, 1987). However, this was not Huxley's original meaning. Rather, following Kant and elaborating on Hume, agnosticism represented an epistemological claim about the limits to knowledge. Huxley pointed out with much pleasure that in coming to his conception of agnosticism, he had been influenced by the High Church Anglican Henry Mansel's lectures entitled *The Limits of Religious Thought*. Mansel had argued that as a transcendental being, God's true nature was unknowable because He was beyond the limits of human cognition. For Huxley, God was not the only entity that was unknowable. Agnosticism did not only apply to religious beliefs, but also to the kinds of phenomena science could explain as well, thus providing the underlying framework for his scientific work. It was not that he was uninterested in theological and metaphysical questions, but fundamentally he was a scientist and he regarded science and philosophy as occupying distinct domains. As Jacob Gruber wrote, "For him a sharp line marked the border between the provinces of empirical and metaphysical knowledge; and if the latter intruded upon the former both were corrupted" (Gruber 1960, 21). On those questions that were not amenable to the scientific method, *i.e.* those that went beyond the cognizance of the five senses, he declared himself an agnostic.

6Huxley did not coin the word "agnostic" until 1869; however, journal entries and correspondence indicate that he had been thinking along such lines since the 1840s. In 1860 he articulated the basic principles of his agnosticism to Charles Kingsley in a letter about the immortality of man:

I neither deny nor affirm the immortality of man. I see no reason for believing it, but, on the other hand, I have no means of disproving it. Pray understand that I have no *a priori* objections to the doctrine. . . . Give me such evidence as would justify me in believing anything else, and I will believe that. Why should I not? It is not half so wonderful as the conservation of force, or the indestructibility of matter. Whoso clearly appreciates all that is implied in the falling of a stone can have no difficulty about any doctrine simply on account of its marvellousness. (Sept. 23, 1860, *LLTHH*, 1, 234)

7Immortality was only one of many issues of great interest that had occupied human thought. However, he did not think it was fruitful to try and study problems that at the present stage of human knowledge were unsolvable. For Huxley, the existence of immortality was clearly such a problem. It could be argued, however, that for Huxley importance was synonymous with soluble. As Peter Medewar has written science is the “art of the soluble”. Intelligent men could speculate endlessly on the existence of immortality, but such speculation seemed a waste of time. Huxley did not believe this was an anti-religious stance. Rather,

Science seems to me to teach in the highest and strongest manner the great truth which is embodied in the Christian conception of entire surrender to the will of God. Sit down before fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abysses nature leads, or you shall learn nothing. I have only begun to learn content and peace of mind since I have resolved at all risks to do this. (235)

8For Huxley science was a better instructor of the spirit than the Bible, church, or theology.

9In delineating different kinds of knowledge Huxley maintained that metaphysics and theology occupied a province separate from science. He also drew a distinction between religion and theology. He was first exposed to this distinction in Carlyle’s *Sartor Resartus*, which was a crucial influence in his intellectual development. “*Sartor Resartus* led me to know that a deep sense of religion was compatible with the entire absence of theology” (237). Religion belonged to the realm of feeling while theology, like science, belonged to the realm of the intellect. “All the subjects of our thoughts . . . may be classified under one of two heads—as either within the province of the intellect, something that can be put into propositions and affirmed or denied; or as within the province of feeling . . . called the aesthetic side of our nature and which can neither be proved nor disproved, but only felt” (*Science and Education* 1898, 175).

10Therefore, theology could conflict with science, but Huxley claimed he had no quarrel with religion “rightly understood,” because it was not concerned with matters that could be subject to scientific investigation. Huxley thought the secularists were misguided in their demand for the abolition of religious teaching when they wanted only to free education from the Church and all it represented politically, socially, and intellectually. Religion occupied a separate domain from science, but theology made empirical claims about the nature of the world, just as science did. Therefore, theological claims must be subject to the same standards of proof as scientific ones. Although Huxley many times articulated his distinction between religion (as feeling) and theology (as dogma), it is also true that he was far more interested in “attacking the dogma, rather than in developing the feeling” (Barton 1983, 265). Science was at war with theology and there could be no compromise between the two. Huxley associated theology with the unquestioning following of authority. Belief in something because authority tells one it is true was a supreme virtue under the alias of “faith,” but was totally contrary to the practice of the scientific method. For Huxley “valid evidence and sound reasoning” must support theological claims. Theology would then become “scientific” only

when the Scriptures were treated as a collection of historical documents and analyzed using the research methods of philology, archaeology, and natural history. The convergence of scientific naturalism and historical criticism came to a head with the publication of *Essays and Reviews* in 1860. Written by a group of liberal Anglican clergy, they agreed with Huxley that reason and evidence from all possible sources should be used to interpret and understand the Bible. Mosaic cosmogony was not an authentic utterance of Divine knowledge, but a human one (Brooke 1991). For Huxley, science represented the triumph of the natural over the supernatural, of fact over superstition, of knowledge over ignorance and was primarily responsible for the progress in civilization.

11In his essay *Descartes' Discourse on Method* Huxley clarified his meaning of agnostic and also distinguished his views from those of the philosophical materialists. For Huxley, Descartes stood at the branch point between philosophy and science of the modern world. One branch led by way of Berkeley and Hume to Kant and idealism, while the other by way of De La Mettrie and Priestley led to modern physiology and materialism. Both pathways shared the stipulation to "Give unqualified assent to no propositions, but those the truth of which is so clear and distinct that they cannot be doubted" (*Method and Results* 1897, 169). Huxley's doubt, like Descartes', differed from the skeptics "who doubt only for doubting's sake, and pretend to be always undecided; on the contrary, my whole intention was to arrive at a certainty, and to dig away the drift and the sand until I reached the rock or the clay beneath" (Huxley quoting Descartes, *Method and Results*, 169). According to Huxley "each of the two branches [physics and metaphysics] were sound and healthy and has as much life and vigor as the other" (*Method and Results*, 191). He claimed that physics and metaphysics were not antagonistic, but admitted they could be reconciled only if each side acknowledged its own faults. The materialists must acknowledge that all our knowledge of Nature was only known to us by the facts of consciousness. The metaphysician had to admit that progress in the understanding of consciousness could only be made by the methods and formulae of science. However, in actuality physics made up the bulk of Huxley's tree of knowledge with metaphysics only a minor twig. Furthermore, in many of his writings the twig was diseased and it would be better to cut the twig off as it endangered the growth of the whole tree.

12Huxley was often called a materialist, which he firmly denied. However, it is easy to understand why people labeled him one. His idiosyncratic definition of materialism placed materialistic terminology on the branch of physics while materialist philosophy went on the twig of metaphysics. Materialist methodology had led to tremendous advances in physiology and psychology, but materialist philosophy involved "grave philosophical error" ("On the Physical Basis of Life," *Methods and Results*, 155). Drawing a rather subtle distinction between the two, he advocated using materialistic terminology to describe the world. "If a pound weight falling through a distance of a foot gives rise to a definite amount of heat, which may properly be said to be its equivalent; the same pound weight falling through a foot on a man's hand gives rise to a definite amount of feeling, which might with equal propriety, be said to be its equivalent" ("Discourse," *Method and Results*, 191). While criticizing the philosophical materialists, he agreed with them that, "the human body, like all living bodies,

is a machine, all the operations of which will, sooner or later, be explained on physical principles. I believe that we shall, sooner or later, arrive at a mechanical equivalent of consciousness, just as we have arrived at a mechanical equivalent of heat consciousness” (“Discourse,” *Method and Results*, 191). He did not deny the existence of the spiritual world, but like Hume, he maintained that at the present time we had no way of having any knowledge of it. For Huxley “matter and spirit are but names for the imaginary substrata of groups of natural phenomena” (“Physical Basis,” *Method and Results*, 160). Thus our experience of the material world is through the forms of the ideal world. Huxley believed that the fundamental doctrines of philosophical materialism, like those of spiritualism lay outside the “limits of philosophical inquiry.” Huxley applied his principle of agnosticism to the problem of necessity. One could claim that it is a law of Nature that an unsupported stone *will* fall to the ground. It was quite another to say it *must* fall to the ground. Empirical observation could not unequivocally prove such a claim (“Physical Basis,” *Method and Results*, 161).

13Huxley’s preference for the language of materialism is apparent in his 1868 lecture “On the Physical Basis of Life”. He appeared before an Edinburgh audience with a bottle of smelling salts, water, and various other common substances. He claimed that he had all the basic ingredients of protoplasm or what he translated as the “physical basis of life”. All organisms shared a unity of form, they shared a similar chemical composition, and although plants and animals appeared to be very different, no sharp dividing line existed between the simplest of these organisms. The difference between living and nonliving matter lay in the arrangement of the molecules. Even thoughts “are the expression of molecular changes in the matter of life which is the source of our other vital phenomena” (“Physical Basis,” *Method and Results*, 154). Materialist methodology underlies his critique of Descartes’ mind/body duality as well. For Descartes, matter was substance, which had extension, but did not think, while spirit was substance, which thinks, but had no extension. Huxley, however, found Descartes’ phraseology confusing, especially since Descartes claimed the soul was located in the pineal gland. Huxley interpreted this to mean that the soul was a mathematical point, having place (the pineal gland), but not extension. It also exerted force since it had free will to alter the course of the animal spirits that were nothing more than matter in motion. Therefore, the distinction between matter and spirit disappeared since matter in this analysis might be nothing more than centers of force (“Discourse,” *Method and Results*, 189). In addition, scientists no longer thought that the soul was lodged in the pineal gland. Rather, the gray matter of the cerebrum was the seat of consciousness. As Huxley correctly pointed out, this only made matters worse in trying to understand the nature of consciousness using Descartes’ spirit/matter distinction. The brain, being material had extension and if the soul was lodged in it, it must also have extension. Once again spirit was lost in matter. Huxley followed Hume rather than Descartes in making such a claim.

14Huxley claimed that it was of little moment whether matter was regarded as a form of thought, or thought was regarded as a form of matter. Each statement had a certain relative truth. But he preferred the terminology of materialism because it provided a method of

inquiry into the phenomena of nature including the nature of thought, by studying physical conditions that were accessible to us. He believed that the “spiritualist terminology is utterly barren and leads to nothing, but obscurity and confusion of ideas” (“Physical Basis,” *Method and Results*, 164). What did Huxley mean when he used the word terminology? He was not just referring to language, but rather to a method of inquiry. Many would claim that a method of inquiry was, in fact, a philosophy. Furthermore, by describing spiritualist terminology as “barren” and leading to a “confusion of ideas,” he certainly implied that spiritualistic metaphysics itself was barren. Materialism might not answer everything, but for Huxley, spiritualistic metaphysics answered nothing, even if it posed interesting questions. Speculative philosophy could only point out the limits of knowledge. Huxley truly may have been an agnostic on many important questions. However, if he believed that applying the scientific method to observable phenomena provided the only useful way of increasing knowledge, he should not have been surprised that he was accused of being a materialist.

15Hume called himself a skeptic, but Huxley claimed this did not do justice to the power and subtlety of Hume’s intellect. Many questions were not worth being skeptical about. Huxley claimed he was not being skeptical when he said he didn’t know the answer to the question what were the politics of the inhabitants of the moon. No one could possibly know the answer to such a question. Hume pointed out that many interesting problems might pique our curiosity, but he had demonstrated that they were essentially questions of lunar politics. As Huxley asked “Why trouble ourselves about matters of which however important they may be, we do know nothing, and can know nothing?” Moreover, Huxley dismissed certain inquiries, not only because they were a waste of time, but because he thought the investigation of nature served a higher purpose than merely satisfying our curiosity. In a world full of misery and ignorance, he believed every person had a duty to try to leave it “somewhat less miserable and somewhat less ignorant than it was before he entered it” (“Physical Basis,” *Method and Results*, 163).

16In another attempt to distinguish himself from the philosophical materialists Huxley attacked Auguste Comte. He thought that Comte knew nothing about physical science, claiming that Comte’s “classification of Sciences is bosh” (Huxley to Charles Kingsley, April 12, 1869, *LLTHH* 1, 323). Huxley had no use for someone who regarded phrenology as a great science and psychology a chimera, and who described Cuvier as “brilliant, but superficial” (“The Scientific Aspects of Positivism,” *Lay Sermons, Essays, and Reviews*, 135). Anything that was positive in the positivism of Comte could be found in the earlier writings of Hume. One might quibble over whether Huxley was a materialist or not, but his anticlericalism cannot be doubted. There could be “neither peace nor truce” between agnosticism and clericalism and this is perhaps the real reason he attacked Comte. Comte’s philosophy was permeated by the “papal spirit” and was “antagonistic to the very essence of science as anything in ultramontane Catholicism.” Huxley described Comte’s philosophy as “Catholicism *minus* Christianity” (“Physical Basis,” *Method and Results*, 156). In two sentences Huxley succeeded in offending Comtians and Catholics alike. However, Huxley had essentially condensed and paraphrased what Comte had said in the fifth volume of the

“Philosophie Positive.” “Comte’s ideal as stated by himself is Catholic organization without Catholic doctrine or in other words, Catholicism *minus* Christianity” (“Physical Basis,” *Methods and Results*, 156–158). Huxley did not rule out the possibility of genuine religious experience, but he objected to Catholicism and most organized religions because of the authority structure they relied on to foster belief. Theology asked one to believe statements about the nature of the world without any evidence or even worse, when the evidence clearly contradicted church teachings. As he wrote in “On the Reception of the *Origin of Species*,” he did not have any *a priori* objections to the creation account of Genesis as embodied in Milton’s “Paradise Lost.” He continued:

Far be it from me to say that it is untrue because it is impossible. I confine myself to what must be regarded as a modest and reasonable request for some particle of evidence that the existing species of animals and plants did originate in that way as a condition of my belief in a statement which appears to be highly improbable. (*Life and Letters of Charles Darwin (LLCD)* 1887, 1, 541)

17Huxley was interested in understanding the natural world and theology obscured that understanding while Darwinism went a long way in elucidating it.

18In his 1826 essay “Considérations sur le pouvoir spirituel,” Comte advocated the establishment of a “modern spiritual Power” which he hoped might have even greater influence over temporal affairs than the Catholic clergy at the height of their power. This spiritual power would have control over public opinion and education. In addition Comte maintained that it was absurd to doubt scientific principles that had been established by competent persons. But Huxley argued that it was precisely those people who had not been hesitant to doubt established beliefs who were responsible for the progress in society. “The great teaching of science—the great use of it as an instrument of mental discipline—is its constant inculcation of the maxim, that the sole ground on which any statement has a right to be believed is the impossibility of refuting it” (“Positivism,” *Lay Sermons, Essays, and Reviews*, 149). Thus, the discussion had come full circle, returning to Descartes’ guiding principle of doubt.

Thatige Skepsis and The Origin of Species

19Huxley maintained his doubt was not doubt just for doubting sake, “born of flippancy and ignorance.” In his famous *Times* review of *The Origin of Species*, Huxley claimed that although Darwin’s theory explained a great deal about the natural world, he preferred to adopt Goethe’s aphorism “*Thatige Skepsis*” or active doubt in evaluating it (*Darwiniana* 1859, 1880, 20). Indeed, he was skeptical of the two basic tenets of Darwin’s theory—natural selection and gradualism. Pre-*Origin*, Huxley did not believe in transmutation because the work of Karl Ernst von Baer, Georges Cuvier and his own investigations suggested that organisms could be grouped into discrete types and that no transitional organisms existed between them. With the publication of *On the Origin of Species* in 1859, Huxley recognized

that the unity of type he was observing was due to descent from a common ancestor. But Huxley argued that saltation or evolution by “jumps” better described the geological record with its abrupt appearance of most forms than the gradual change that Darwin advocated. On the eve of the publication of *The Origin* he cautioned Darwin, “You have loaded yourself with an unnecessary difficulty in adopting *Natura non facit saltum* so unreservedly” (Nature does not make jumps) (November 23, 1859, *LLTHH*, 1, 189). Saltation allowed Huxley to explain the gaps in the fossil record, accept evolution, and maintain a belief in the concept of type. He eventually converted to gradualism as more and more transitional organisms were found such as *Archaeopteryx*, the bird-like dinosaurs, and the fossil record of the horse lineage. However, he remained skeptical of natural selection his entire life (Lyons, 1999).

20Huxley had no doubt that natural selection occurred in the wild, but was not convinced that it had the power to do all things that Darwin had claimed. He was optimistic that physiological experiments eventually would provide definitive proof that natural selection had the power to create new species and not just well marked varieties. However, until artificial selection had actually demonstrated the creation of varieties, incapable of interbreeding with one another, Huxley claimed the logical foundation of the theory of natural selection remained incomplete. Huxley’s doubts about the efficacy of natural selection sharpened Darwin’s own thinking about the problem of hybrid sterility and resulted in Darwin performing a number of experiments that he might otherwise not have done. Although Darwin returned to his original position, that sterility was an incidental byproduct of differences in the reproductive organs of the parent species, not being selected for, Huxley’s skepticism contributed to a strengthening of this position (Lyons, 1999).

21In spite of Huxley’s doubts over various aspects of Darwin’s theory, they did not prevent him from immediately recognizing the potential of Darwin’s theory. Even before *The Origin* was published he wrote Charles Lyell, “I by no means suppose that the transmutation hypothesis is proven or anything like it. But I view it as a powerful instrument of research. Follow it out, and it will lead us somewhere; while the other notion is like all the modifications of ‘final causation,’ a barren virgin” (June 25, 1859, *LLTHH*, 1, 187). Huxley was both influenced by and influenced the discourse that surrounded evolutionary theory. His tremendous antagonism toward natural theology is often attributed to his belief in Darwinism. However, his enthusiasm for evolution was in part due to the absence of theology in Darwin’s theory. Darwin’s theory was a purely naturalistic explanation of the history of life, free from any argument of design or supernatural causation. Huxley proselytized the virtues of evolutionary theory wherever he went, using the theory to promote his larger political agenda of making science rather than the Church the source of moral authority and power in society.

Huxley and Human Evolution

22 In a famous encounter at the 1860 Oxford meeting of the British Association for the Advancement of Science, Bishop Samuel Wilberforce asked Huxley whether “it was on his grandfather’s or his grandmother’s side that the ape ancestry comes in”. Huxley replied:

... a man has no reason to be ashamed of having an ape for his grandfather. If there were an ancestor whom I should feel shame in recalling it would rather be a man of restless and versatile intellect—who, not content with an equivocal success in his own sphere of activity, plunges into scientific questions with which he has no real acquaintance, only to obscure them by an aimless rhetoric, and distract the attention of his hearers from the real point at issue by eloquent digressions and skilled appeals to religious prejudice. (1860, *LLTHH*, 1, 199)

1 No definitive record of this encounter exists. Leonard Huxley has reprinted most of the various acc (...).

23 Huxley’s reply created pandemonium. According to one account ladies fainted.¹

24 Huxley correctly perceived that the most threatening aspect of Darwin’s theory was its significance for human origins and this was where he initially devoted most of his energy. While scientists argued whether natural selection could account for species change, whether change was saltational or gradual, and a myriad of other aspects of the theory, this was not the fundamental quarrel with *The Origin*. Rather, opponents of Darwin’s theory attacked his book claiming it was materialistic, atheistic, and worse. In the spring of 1861 he decided to devote his weekly lectures to workingmen on the “The Relationship of Men to the Rest of the Animal Kingdom”. The lectures were quite popular and he quipped to his wife, “By next Friday evening they will all be convinced they are monkeys” (March 22, 1861, *LLTHH*, 1, 205). In the next two years he refined and added to his various lectures, preparing some more technical monographs. In 1863, eight years before Darwin published his *Descent of Man*, Huxley published *Man’s Place in Nature*. He argued eloquently and powerfully that humans were no exception to the theory of evolution.

25 People were fascinated with the similarity of apes to humans. Do apes think? Are they moral beings? Do they have societies? Facts and mythology had intermingled and the exact relationship of humans to other primates had long been a subject of intense debate among taxonomists as well as capturing the imagination of the public. Were present day human races derived from distinct species or just varieties of one species? In spite of this great interest in “man’s place in nature” most people were deeply opposed to anything that broke down the barrier between humans and the rest of the animal world as this undermined the basic tenets of Christianity. Huxley’s approach to the problem was twofold. First, he maintained that the question of “man’s place in nature” should be approached independently of the question of origins. Such a position removed the question of human ancestry from theological concerns. Second, he demonstrated unequivocally the close relationship between apes and humans. He believed this would be the most powerful support for Darwin’s theory, because Darwin provided a clear logical explanation for the existence of those relationships.

However, Huxley recognized that many people would be appalled at the idea of an ape as an ancestor and he argued passionately and articulately that a pithecooid ancestry in no way degraded humankind.

26Huxley claimed that it didn't matter whether man's origin was distinct from all other animals or whether he was the result of modification from another mammal. Human dignity, according to Huxley, was not inherited, but rather "to be won by each of us so far as he consciously seeks good and avoids evil, and puts the faculties with which he is endowed to its fittest use" (*Scientific Manuscripts of Thomas Henry Huxley (SMTHH)*, 2 1861, 472). All aspects of human nature, both "brutishness" and "princely dignity" would have to be accounted for independently of the question of human origins. If he could convince his readers that the highly charged issues concerning man's morals and ethics, questions of good and evil, were not relevant to the question of human origins, the problem of classification could be investigated objectively and dispassionately. Thus, Huxley did not directly address the problem of whether humans were descended from an ape-like ancestor. Instead, he asked how closely related were apes and humans, approaching the question just as a taxonomist would investigate how closely related were the cat and the dog.

27The question should be strictly a scientific one that could be resolved by the facts of comparative anatomy and physiology, "independently of all theoretical views". Darwin's theory, special creation, or any other theory need not even be mentioned in the investigation of the "facts" of anatomy and physiology. Huxley believed the facts were well known. All the evidence from comparative embryology and comparative anatomy showed that the differences between humans and the higher apes were no greater than those between the higher and lower apes (Higher apes referred to gorillas, orangutans, and chimpanzees while lower apes referred to monkeys). If Darwin's hypothesis explained the common ancestry of the apes, then it followed that it also explained the shared origin of apes and humans.

28Not only was there a similarity in anatomical structures, but also it was apparent that animals shared certain mental attributes with humans. Huxley appealed to the Victorians' love of their pets to demonstrate the unity of humans with the animal world.

The dog, the cat . . . return love for our love and hatred for our hatred. They are capable of shame and sorrow; and . . . no one who has watched their ways can doubt that they possess that power of rational cerebrations which evolves reasonable acts from the premises furnished by the senses.

(*SMTHH*, 2, 1861, 473)

29Thus, Huxley claimed a psychological as well as physical unity existed between man and beast.

30Another kind of evidence that argued for the common ancestry between apes and humans were fossils. The first Neanderthal fossils were discovered shortly after the publication of *The Origin*. Huxley recognized that the Neanderthals were not significantly different from modern humans and correctly anticipated that the findings of paleontology would push the

origin of humans back to a far earlier epoch than anyone had previously imagined. If humankind was that ancient, clearly this was evidence against the creation hypothesis. The Darwinian hypothesis was the only hypothesis that could make sense of these ancient human fossils.

31But Huxley knew beliefs run deep and that many people would still be horrified by the inevitable conclusions to be drawn from his analysis. Many would argue “the belief in the unity of origin of man and brutes involves the brutalization and degradation of the former.” But Huxley asked if that was really so and claimed that man’s dignity did not depend on his physical characteristics or his origins.

It is not I who seek to base Man’s dignity upon his great toe or insinuate that we are lost if an Ape has a hippocampus minor. . . . On the contrary, I have done my best to sweep away this vanity . . . Is it, indeed, true, that the Poet, or the Philosopher, or the Artist whose genius is the glory of his age, is degraded from his high estate by the undoubted historical probability, not to say certainty, that he is the direct descendant of some naked and bestial savage. . . . Is mother-love vile because a hen shows it, or fidelity base because dogs possess it? (*Man’s Place in Nature* 1863, 152–154)

32Just because we share admirable traits with the lower animals does not make them less admirable. Furthermore, Huxley argued that man’s lowly ancestry was “the best evidence of the splendour of his capacities.” Only humans were capable of intelligible and rational speech that made possible the development of culture and civilization. Even if humans came *from* the brutes, they were not *of* them.

33Huxley had no doubt we shared a common ancestor with the apes, but following his general strategy of keeping scientific questions separate from philosophical and ethical ones, he did not write on evolutionary ethics for many years. However, the relationship of ethical and evolutionary theory to the history of philosophy was something that deeply interested him. In his 1892 Romanes Lecture Huxley maintained that he did not think the doctrine of evolution could give us an ethics to live by. Even if one accepts that evolution has produced creatures such as ourselves with a moral sense, it does not follow that we can look to evolution to define the content of what we call moral.

The propounders of what is called the “ethics of evolution,” when the “evolution of ethics” would usually better express the object of their speculations, adduce a number of more or less interesting facts and more or less sound arguments in favor of the origin of the moral sentiments, . . . by a process of evolution. . . . But as the immoral sentiments have no less been evolved, there is so far, as much natural sanction for the one as the other. The thief and the murderer follow nature just as much as the philanthropist. Cosmic evolution may teach us how the good and the evil tendencies of man may have come about; but, in itself, it is incompetent to furnish any better reason why what we call good is preferable to what we call evil than we had before. (*Evolution and Ethics*, 1893, 47)

34This seemingly devastating critique of evolutionary ethics, however, must be situated in its historical context to fully understand why Huxley wrote what he did. Examining Huxley's entire corpus of work demonstrates that his view of nature was not as harsh as it appears (Lyons, 2006). Huxley was optimistic about the insights that evolution could provide for human society. In the 1860s, he believed that the key to successfully playing the game of life was learning the rules of the game and those rules were the laws of nature. The game of life was infinitely more difficult and complicated than chess, and the other player was hidden from us, although her play was always "fair, just, and patient". To learn the rules one must turn to the teacher who was Nature herself. If people directed their affections and wills "into an earnest and loving desire to move in harmony with [Nature's] laws", this would lead to a just and fair society ("Liberal Education," *Science and Education* 1868, 82–83).

35By the time of the Romanes lecture, Huxley's views had changed considerably. Herbert Spencer had articulated the advantages of applying evolutionary theory to social behavior, espousing an ethic that became known as Social Darwinism. Spencer coined the phrase "survival of the fittest" that Darwin later adopted to describe the ongoing struggle for existence that resulted in natural selection. Spencer and his followers argued that one's moral obligations should be to promote this struggle for existence in the social realm. Thus, he was against any sort of safety net such as the poor laws, for they only contributed to the survival of the least fit. Such policies might lessen the inequalities, but it also rewarded and promoted the survival of the unfit, which would lead to the deterioration of society. This was a social program, an ethic that grounded its validity in Darwin's theory.

36However, many people including Huxley could not abide an ethic that was counter to all common decency and that claimed the State had no obligation to the less fortunate members of society. Huxley responded to the harsh extreme individualism of Spencer, claiming that:

Laws and moral precepts are directed to the end of curbing the cosmic process and reminding the individual of his duty to the community. . . . Let us understand, once and for all that the ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it. (*Evolution and Ethics*, 49)

37Huxley, like many later critics such as G. E. Moore, attacked evolutionary ethics on the grounds of committing the naturalistic fallacy. Just because nature *is* a certain way does not mean nature *ought* to be that way. However, Huxley's critique actually goes far deeper than this.

38Implicit in the various versions of evolutionary ethics was the idea that nature was progressive. Huxley denied this. In earlier writings, he had argued that one of the great strengths of Darwin's theory was that in addition to explaining how organisms change and progress, it also explained how many organisms do not progress, and some even become simpler ("On the Persistent Types of Animal Life", *SMTHH*, 2 1859, 91). Thus, we cannot assume that applying the principles of evolution to the social realm would result in the progress and improvement of society. Huxley realized that "fittest" had a connotation of

“best”, but as he correctly pointed out, if the environment suddenly became much cooler, the survival of the fittest would most likely bring about in the plant world a population of more and more stunted and humbler organisms. In such an environment, the lichen and diatoms might be the most fit. Furthermore, the strict definition of Darwinian fitness is reproductive success. In spite of a vast literature that has accumulated in both science and philosophy since Huxley wrote *Evolution and Ethics*, he provided us with one of the clearest articulations of the problem of evolutionary ethics (Lyons, 2006).

39 Darwin’s theory had far ranging implications and Huxley wrote on virtually all of them from the origin of life to the origin of ethics. He continued to emphasize the “facts” that evolution explained. He also recognized that great theoretical power of *The Origin*. In his final workingmen’s lecture he maintained that “as the embodiment of an hypothesis, it is destined to be the guide of biological and psychological speculation for the next three or four generations” (“Phenomena of Organic Nature” 1863, *Darwiniana*, 475) and twenty-one years later he reported that there was “no field of biological inquiry in which the influence of ‘*The Origin of Species* is not traceable” (“Coming of Age,” 1880, *Darwiniana*, 228). Yet underlying much of his scientific work and even more his popular writing was his desire to keep theological questions distinct from scientific ones, which also served as a powerful rhetorical strategy to convince people of his position. He thought that theological objections were at the root of most criticisms of Darwin’s ideas no matter how sophisticated the arguments appeared to be scientifically.

Darwinism and Huxley’s Worldview

40 By 1871 the quality of the critiques of Darwinism had improved significantly. Nevertheless, even those who supported evolution often distorted Darwin’s view in order to reconcile it with a belief that God still played a role in shaping the history of life on earth. George Mivart accepted evolution, but believed that it was constrained along certain lines by the creator. He also maintained that evolution was compatible with the teachings of the Church. He had received much of his scientific training with Huxley for whom he had profound respect. Mivart was no scientifically ignorant religious fundamentalist, but rather a colleague and friend who was a product of Huxley’s own teaching. Thus, Mivart’s later views were a profound disappointment to Huxley. Mivart raised a series of scientific objections as to why natural selection could not account for the origin of species. Yet Huxley for the most part chose to ignore these objections in his review of Mivart’s *Genesis of Species*. He appeared to be more interested in promulgating his anti-Catholicism than defending Darwinism. Some of the objections that Mivart had raised were also ones that Huxley had, such as the importance of saltations. Huxley had never hesitated to point out his criticisms of Darwin’s theory, but he still supported it. This two-pronged strategy had been very powerful and so why did he change his tactics?

41First, Huxley thought that he along with others had addressed the various scientific objections in other places. Second, Huxley again wanted to argue that theology had no place in science and maintained that most objections to Darwin's theory were theologically based. Mivart had been Darwin's most persistent critic, and if Huxley could demonstrate that even Mivart's objections ultimately were rooted in theological belief, this would be powerful support to Huxley's assertion about the basis of the criticisms. Huxley's critique of Mivart was exactly in the spirit of Mivart's attack on Darwin.

42Huxley was maintaining not just that the theory of evolution provided a better description of the organic world than teachings of the church, but rather that science and theology were fundamentally incompatible. "The contradiction between Catholic verity and scientific verity is complete and absolute, quite independently of the truth or falsehood of the doctrine of evolution" ("Mr Darwin's Critics" 1871, *Darwiniana* 1880, 138). For those who believe in evolution, the teachings of the Church are utterly false, but for those who believe that Catholic doctrine is correct then evolution must be false. There was no middle ground for Huxley. The conflicts surrounding Darwinism were complex and cannot be reduced to an analysis that just describes science at war with theology (Lindberg and Numbers 1986). Huxley was guilty at times of oversimplifying the relationship between the two. Many people accepted evolution and still kept their faith. However, he correctly recognized that the battle for the acceptance of evolution had to be fought on theological grounds not only in the public arena, but also within the scientific community.

43While I previously wrote that Huxley's agnosticism provided the framework for his scientific views, it could be equally said that his experience as a scientist provided the framework for his agnosticism. It was only through empirical techniques guided by an underlying skepticism that we would improve our understanding of the natural world. As he stated time and again, this was his goal in life—to better understand the natural world. Such views meant that Huxley was often accused of being an atheist. However, as the author of his obituary notice in the *Times* wrote "Nothing could be more unjust to a man of so absolutely skeptical a mind as Huxley than to charge him with anything so rashly positive as Atheism" (Huxley Manuscripts 81: 1: 3, Dawson, 1947). Agnostic is truly the best word to describe him, but Huxley did not view agnosticism as a philosophy or creed. "In the sense of a philosophical system [it] is senseless: its import lies in being a confession of ignorance" (Huxley Manuscripts 30: 152–153). Huxley believed there were limits to what was knowable, but at the same time he was a tireless advocate of the importance of gathering and evaluating evidence for holding any belief. This applied equally to believing in miracles and Darwin's theory of evolution. Comparing the two he found evidence for the former lacking and considerable evidence for the latter. Victorians embraced the many new advances in science and technology, but at the same time they worried that some findings were leading to a materialistic world devoid of spiritual meaning. Huxley was a critical voice in these discussions as Victorians strived to make sense of a rapidly changing society.

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Notes

¹ No definitive record of this encounter exists. Leonard Huxley has reprinted most of the various accounts including Huxley's own version of the event. While they differ in details, they are substantially in agreement (*LLTHH*, 1, 193–204).

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Auteur

Sherrie Lyons

Empire State College, USA

Sherrie Lyons teaches at Empire State College SUNY New York. She has a BA in genetics from Berkeley, a MS in Biology from Cal State University Los Angeles, and a Ph.D. in the history of science from the University of Chicago. She currently teaches courses on evolution, biology, and nutrition at Empire State College, New York. She is the author of *Evolution: The Basics* (Routledge Press 2011), *Species, Serpents, Spirits and Skulls: Science at the Margins*

in the Victorian Age, (SUNY Press 2009), *Thomas Henry Huxley: The Evolution of a Scientist* (Prometheus Books, 1999), and numerous articles on the history of evolution and related topics.

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