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EVOLUTION AS SCIENCE AND IDEOLOGY*

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Although the three words that form the title of this essay may seem obvious, a close look at each may be enlightening. The word 'ideology' is now little more than two hundred years old. The word 'science' originated at least two thousand years ago and stood for a deductive form of reasoning. With Newton's *Philosophiae naturalis principia mathematica* the word 'science' began to take on a special meaning. Eventually the word 'scientist' appeared to distinguish some reasoners from others. Although theologians, and even some philosophers, call their fields a science, nobody would take them for scientists. Scientists are those for whom exact measurement is the ultimate test of truth, regardless of whether they reason deductively or inductively. The heavy reliance on numbers differentiates science, that is exact science, from all humanities. But even within the branches of exact science, such as physics, astronomy, chemistry, and molecular biology, there is a difference between proofs and the hope that the evidences on hand answer all questions. This difference looms very large in most discourses on evolutionary biology.

As for the word 'evolution', it long antedates Darwin who aimed at giving a new account of the origin of any and all species. He did so in terms of two principal arguments. In one he appealed to the imagination by portraying the variations observable in nature, the geological succession of organic beings, their geographical distribution, and the data of morphology and embryology. Inserted in these themes, so many chapters in *The Origin of Species*, were chapters about the struggle for existence, about natural selection, and about the survival of the fittest. In those chapters Darwin repeat-

* Apart from minor stylistic changes the text of this essay is identical with the one put at the disposal of the participants at the Plenary Meeting. Additional are the references of which the first should seem substantive even by its length.

edly referred to the mechanism of evolution (his second principal argument), as the impact of the physical environment on the difference between parent and offspring.

This mechanism could in principle turn speculations about the vast variety of species in space and in time into a scientific subject because that impact could be evaluated quantitatively. Such evaluations were not attempted by Darwin, nor by most Darwinists. They readily overlook the fact that 'could be' is not equivalent to 'is' or 'having been done'. Overwhelmed as they were and still are by Darwin's appeal to imagination his admirers think that this difference between 'could be' and 'having been done' can be taken lightly. In addition they are motivated by ideological considerations that vary from crude materialism to misguided theism. The result is a huge imbalance between what is proved and what is assumed to have been proved. Therefore a close look at the third word 'ideology' in the title of this paper should seem useful.

The complexities implied in the word 'ideology' can be seen by a quick look at the article 'ideology' in *Wikipedia*. Just as complicated is a shorter article in the *Encyclopedia of Philosophy*. In neither is it noted that the world 'ideology', which first appeared during the early years of the French Revolution, reflected the hope that a heavenly city could be implemented on earth. Hope, which is a major factor in human life, is a distinct note in *The Origin of Species*, in spite of the fact that it is heavily built on a ruthless struggle among the various species. In promoting a ruthless class struggle Karl Marx found a confirmation for it in *The Origin*. As for democracy, it is propelled by the hope that one can implement a social system in which all have not only equal rights but also equal opportunities. Capitalism, at least in its moderate form, is the hope that all can be shareholders and hold safely unto their shares, a hope rudely shattered in our very days. Hope has been the defining feature of Christian faith, which, alone of all hopes, contains warnings about Utopias, possibly the most hollow of all dreams.

So much in a way of a broader background to this paper's principal aim which is to remind one of the enormous and enduring difference between what Darwinism as a science has so far demonstrated and what it promises as an ideology. I hope that a reminder of that difference will not result in my being taken for a minimizer of the scientific merit of Darwinism. I hold its mechanism to be the only, I repeat, the only prospect that any reasoned discourse about the vast variety of species can be turned into science. I have been a resolute opponent of creationists, of

champions of Intelligent Design, but also of Darwinian ideologues. One of these was Darwin himself as he tried to minimize the enormous shortcomings of his mechanism of evolution. Particularly telling were his efforts to talk around the absence of transitional forms. He also admitted that he found no observational evidence for the transformation of a single species into another.[1]

The imbalance between proofs and hope was very obvious already in Darwin's *Early Notebooks* which he filled between 1836 and 1844, following his four-year-long voyage aboard the *Beagle*. During that trip he lectured, with Bible in hand, Captain FitzRoy on the evil of cursing. But

[1] Darwin made that admission in his letter, of March 8, 1861, to Alexander Goodman More who had earlier supplied him with various kinds of orchids. A part of Darwin's letter first was found by Maurice Vernet in the British Museum, who published its photograph as frontispiece to his *Evolution du monde vivant* (Paris: Plon, 1950), with a French translation. E. Gilson quoted it in his *D'Aristôte à Darwin et retour. Essai sur quelques constantes de biophilosophie* (Paris: J. Vrin, 1971), p. 160. The full text first appeared in volume 9 of *The Correspondence of Charles Darwin* (Cambridge; New York: Cambridge University Press, 1994), pp. 49-50. The part of Darwin's letter not relating to orchids runs as follows with the part given by Vernet being put in brackets. The full text shows Darwin's often faulty reasoning which included seizing eagerly on analogies from other branches of science, in this case, physics and the treatment there of the status of the ether. In view of Darwin's heavy reliance on Blyth's articles that appeared between 1835 and 1837, one can also doubt the sincerity of Darwin's statement that it was after many years of thinking that he attributed the role he did to natural selection: 'I am not in the least surprised at your demurring to accept my notions of species. It took me long years before I converted myself; th[r]ough daily thinking and observing on the subject. You ask why I should not draw a line and allow natural selection to do a little work and no more. I can give no direct answer to this. But I think you do not fully see how, as it seems to me, the subject may be directly approached. Take the case of Light, – existence of Ether, and the existence of its undulations are both absolutely hypothetical or conjectural; [but because this hypothesis explains and groups together a multitude of phenomena, it is now universally admitted as a true theory. So, as it seems to me, the descent of species with their modifications through natural selection groups together and fairly well explains many phenomena (as classification, morphology, rudimentary organs, embryology, partially Geogr. Distrib. and partially Geolog. succession), and *therefore* I believe in its truth]. These phenomena are otherwise inexplicable, and my many hostile Reviewers have hardly attempted to improve my explanations, therefore I believe Natural Selection will after many years prevail'. It surely prevailed but not on account of measurements and calculations. Darwin proved himself a poor reasoner in defending the role of natural selection. It did not gain in convincingness because its critics could not provide something better. Tellingly, within forty years the ether began to be discarded by physicists, because experiments aimed at detecting it proved to be futile.

already Darwin's *Early Notebooks* show him a rude derider of metaphysics as well as of the Bible.[2] He seemed to have thought that if the Bible was not trustworthy on one point, it had to be unreliable on all other points. The point was that the Bible allegedly taught the fixity of species as a revealed truth. Later Darwin said nothing less than that all his aim was to discredit the Bible on that particular point.

He certainly succeeded in that latter respect for which theologians and exegetes should forever be grateful to him. Unfortunately, he could not find a single theological writer to explain two points to him: One was that biblical revelation was not given to teach man about how the heavens go, or how anything goes under heaven, but how to go to heaven. The other was that if any statement of the Bible about the physical world was taken for a revealed truth, then consistency demanded that all such statements of the Bible be taken in the same sense.

The pitfalls of this opened widely already in chapter 1 of the Book of Genesis, in which the Hebrew word *min* (kind or species) occurs ten times. But long before that word gave headaches to the Bible's readers, they had more than enough problems there, among them the coming of daylight before the sun. As I set forth in my *Genesis 1 through the Ages*, no other chapter of the entire Bible has been so badly misinterpreted. It is a dismal story, the story of concordism. Written possibly by Nehemiah at least eight hundred years after Moses, the chapter is primarily about the importance of the sabbath rest insofar as God Almighty is set up there as a role model for observing it, after six days' work.

Even today Darwin would not learn this from exegetes who, in order to get around the physical world, present that chapter as a myth without explaining what the word 'myth' means. As for the effort to present biblical revelation in terms of evolution, I would merely recall that Newman avoided the word 'evolution' and used the word 'development'. He saw

[2] The text of the *Notebooks* covering the years 1837-1839 first saw print in 1974 as part of H. Gruber's *Darwin on Man: A Psychological Study of Scientific Creativity*, with P.H. Barrett as the transcriber and editor of the *Notebooks* (New York: E.P. Dutton). Barrett was the chief editor of all the *Notebooks* covering the years 1836-1844 (British Museum and Cornell University Press, 1987), a massive volume in large quarto of almost seven hundred pages. A sampling of Darwin's statements deplored in this essay was given in chapter 2 'The Glorified Ape' of my *Angels, Apes, and Men* (1983; entirely reset edition, Real View Books, 2006), to be soon published in French as *Anges déchus * Singes glorifiés * Hommes créatifs*, tr. J. Vauthier (Paris: de Guibert).

that already in his day the word 'evolution' stood for a process in which the relation of cause and effect was not taken seriously.

Writing about the development of Christian doctrine or dogma, Newman, so keen on the dictates of logic, might say today that only the idea of a supergiant mutation could give an evolutionary slant to the relation of the Incarnation to the Old Testament. In the latter the attributing of a visible form to God, the invisible, was a grave crime. In the New the gist of salvation is that God became flesh and dwelt among men. Let it also be recalled that in biology the idea of giant mutation did not earn credit to its erstwhile proponent, the Marburg paleontologist O. Schindewolf, who, unlike most of his colleagues, took very seriously the enormous jumps between many species. Unfortunately, Schindewolf was active before the testimony of the Burgess Shale, originally spotted in the Canadian Rockies in 1909, was 'rediscovered' in 1962. In that Shale thousands of crustacean species appear suddenly, in defiance of the Darwinian mechanism of evolution, a very slowly working mechanism.

But back to Darwin who, seized as he was with the non-fixity of species, forged ahead with little concern about difficulties in his way. He was so much motivated by his ideology as to plagiarize three articles by a certain Edward Blyth, which appeared in *The Magazine of Natural History* in 1835, 1836, and 1837. In those articles Darwin spotted what in *The Origin* he later presented as the Darwinian mechanism of evolution. Tellingly, in the *Early Notebooks* Darwin said that the credit for a discovery should go not to the one who first proposed it but to the one who set it forth in great detail. Darwin tried to cover up his trail when in *The Origin* he made to Blyth five references, none of which related to the mechanism of evolution. Darwinians showed no outrage when Loren Eiseley, himself a Darwinian, exposed the whole story, first in a long article in 1959, and then in a book, posthumously published in 1979, which contains the full text of Blyth's three articles.[3]

The imbalance between proofs and hopeful vistas in *The Origin* are set forth in various books, one of them Gertrude Himmelfarb's *Darwin and the Darwinian Revolution* (1959).[4] I mention this because around 1980 I suggested to a perplexed student in Princeton to read that book. Her answer

[3] *Darwin and the Mysterious Mr X. New Light on the Evolutionists* (New York: Harcourt Brace Jovanovich Publishers, 1979).

[4] New York: W.W. Norton, 1959.

was that her professor of biology warned the class against reading it. One can easily imagine what Himmelfarb would have said if being told that since then the biology department in Princeton renamed itself Department of Evolutionary Biology. There apparently nothing is supposed to be known about the enormous difficulties of the Darwinian mechanism of evolution, or of the nature of the ideology which gives undue credit to it.

A principal of those difficulties was glaringly on hand as soon as that mechanism was subjected to probability calculus. The one who did this in 1867 was F. Jenkin, a Scottish engineer.[5] Darwin was shattered, but undaunted. Again, Darwin jotted the word *NO!* with an exclamation mark on the margin of his copy of a paper by Wallace who could not see how the large human brain could evolve among simians who had no need for such a brain. In order to prop up his mechanism Darwin was willing, in *The Descent of Man*, to adopt Lamarckism. Still the vast picture Darwin provided in *The Origin* overwhelmingly suggested and still does that all living forms had to be closely interconnected. The first edition of two thousand copies was sold out in three short hours and five other editions followed. Why? – one may ask. The motivations were scientific and ideological.

The principal scientific motivation was the urge to see scientifically verifiable interconnection among all parts, large and small, living and non-living, of nature. This motivation is also profoundly theological for anyone who takes seriously the Creator's rationality. The principal ideological motivation came from the fact that by the 1860s naturalism was the prevailing religion of the educated circles in the British Isles, while society at large wanted to retain some vague traces of the supernatural. This is why Darwin inserted in *The Origin*, from its second edition on, a reference to the Creator, for which he later felt ashamed.[6] But what he should have really regretted was that he forgot a precept he gave himself as he read Chambers' *Vestiges of the Natural History of Creation* sometime in the 1840s. The precept was that he should never use the words 'higher' and 'lower'.[7] He rightly guessed that if evolution was to be a science, it

[5] For details, see my *The Relevance of Physics* (Chicago: University of Chicago Press, 1966), pp. 307-08.

[6] See his letter of March 29, 1863, to J.D. Hooker, in F. Darwin, *The Life and Letters of Charles Darwin* (London: John Murray, 1887), vol. 2, p. 234.

[7] See *More Letters of Charles Darwin*, ed. F. Darwin and A.C. Seward (New York: D. Appleton, 1903), vol. 1, p. 114.

should not contain valuational considerations. As far as science goes, a dinosaur is not lower than a dog, nor is an ape higher than a mouse.

By the time Darwin died, Darwinian evolution was dying in spite of the rediscovery of Mendel's work on peas. A very informative presentation of this is the monograph, *The Eclipse of Darwinism* (1983), which covers the last decades of the nineteenth and the first decades of the twentieth century.[8] A major trouble with this book is that its author seems to take that the revival of the Darwinian theory in full swing by the centenary celebration of the publication of *The Origin* went on without a notable dissent concerning the explanatory power of the Darwinian mechanism as if it had been fully vindicated by Julian Huxley's synthetic theory of evolution.

In fact some leading biologists voiced a sharp dissent. Ernest Chain, who won the Nobel Prize for his work on penicillin, had in mind also that theory, when he wrote: 'Evolution by chance is a [mere] hypothesis based on no evidence and [is] irreconcilable with facts'. He added: 'Evolutionary theories are a gross oversimplification of an immensely complex and intricate mass of facts, and it amazes me that they are swallowed so uncritically and readily and for such a long time by so many scientists without a murmur of protest'.[9]

Slightly less devastating are the words of James Grey, professor of zoology at Cambridge: 'No amount of argument, or clever epigram, can disguise the inherent improbability of orthodox [evolutionary] theory; but most biologists feel it is better to think in terms of improbable events than not to think at all'.[10] Professor Grey was right in pointing out that whatever the defects of the Darwinian mechanism of evolution, it remains the only mechanism with a genuine scientific promise. The promise is that the mechanism can be measured, expressed in numbers with which a true scientific theory should end. Vitalism has repeatedly failed because the so-called vital force could not be measured. Lamarckism failed because it contradicts measurements. No one can measure the drive toward the noosphere and the Omega point as championed by Teilhard de Chardin. He surely increased the already enormous imbalance between what is proven and what some hope to prove.

[8] Baltimore: The Johns Hopkins University Press, 1983.

[9] Chain did so in his address, *Responsibility and the Scientist in Modern Western Society* (London: Council of Christians and Jews, 1970). p. 14.

[10] *Nature* 173 (1954), p. 227.

'Numbers decide', so stated Max Planck as he accepted, in 1920, the Nobel Prize for his discovery of the quantum of energy in which he first did not believe for ideological reasons. Einstein said that if his theory of general relativity was proven wrong by measurements on a single point, the whole theory should be discarded.[11] Niels Bohr did not see that he destroyed his ideology of complementarity and correspondence when toward the end of his life he remarked: 'There is no quantum world. There is only an abstract quantum physical description'.[12]

It took half a century after Jenkin before statistical theory was used on behalf of the claim that favorable mutations may prevail on unfavorable ones. I mean the publication in 1930 of *The Genetical Theory of Natural Selection*, by R.A. Fisher, for which he was knighted.[13] This circumstance merely increased the imbalance between what is proved and what is hoped to be proved. In that book it is not shown that the mechanism worked in a single case. Moreover, the mathematics in that work is not predictive, except in the vague sense that changes would come, which anthropomorphically one would then label as favorable. But again caution is needed about the use of the word 'favorable'. It may be burdened with the same illogicality which has been shown to vitiate the phrase, 'survival of the fittest'. (The fittest survive and those who survive are the fittest). The idea of progress suffers of a similar circularity.

Difficulties of the Darwinian mechanism of evolution do not disappear by the claim that Darwinism rose from the level of hypothesis to the level of theory to neither of which does the literature give a definite meaning. Nor do genetics and chromosomal mapping remove those difficulties. That human chromosomes differ but slightly from those of higher apes only increases the problem of why humans, and they alone, think, speak, and have science as well, all supergigantic differences in respect to apes. I am rather wary to emphasize this but only a month ago I participated in an international conference on what makes man a human being. There one academic from London spoke of the spirituality of apes. Against such thinking there is no arguing. One can only fall

[11] In a conversation he held, during the winter of 1952-53, with Manfred Clynes. See M. Michelmore, *Einstein. Profile of the Man* (New York: Dodd, 1962), p. 7.

[12] *Niels Bohr. A Centenary Volume*, ed. A.P. French and P.J. Kennedy (Cambridge, MA: Harvard University Press), p. 305.

[13] A second revised edition appeared in 1958 (New York: Dover).

back on Saint Augustine's favorite phrase: 'Greatly love the intellect'. The lopsided imbalance between Darwinian proofs and Darwinian hopes calls for the exercise of that love.

Almost two thousand years ago Galen warned the atomists that if consistent they would destroy the mind. Darwin failed to see this when in the *Early Notebooks* he singled out the human mind as the citadel which his theory should conquer. The mind remains unconquerable because all reasoned attacks on it assume what they try to reduce to mere matter and motion, or nowadays to energy levels registered in the brain. Good theology knew the uniqueness of the mind from the moment when the phrase was jotted in chapter 1 of the Book of Genesis that God made man in his own image. As for the death of a God, who is infinitely more than the God of deists, it is still to be demonstrated by some rabid Darwinists, or by some cosmologists who boast of their being atheists. At any rate, to claim, as this has become quite fashionable, that where there is water, or was water, or may be water, there was also, or is, or will be, human intelligence or even an intelligence far superior to man's, is a wild dream but not science, although Darwin would not be sure. He liberally mixed careful observation of facts with loose reasoning. He did not see the difference between deduction and induction. His idol in philosophy was Herbert Spencer, surely a confused reasoner if ever there was one. But Spencer was a great stylist, and all too often this is what counts. This was also the case with Fr. Teilhard who heavily relied on the rhetoric of Bergson, who tried to do the opposite, namely, to discredit Darwinism.

Finally there is, toward the end of *The Origin,* Darwin's marveling at the immense number of forms produced by evolution. He should have pointed out that all those forms were transient and most of them left no trace whatsoever. The theory states nothing about the erstwhile form of those trillions or perhaps quadrillions of forms of which only a relatively few proved to be somewhat stable. Of course, Darwin lived almost a hundred years before the era of fundamental particles of which it was aptly noted that none of them was fundamental or really permanent. The latest chapters in elementary particle theory show a trend toward particle evolution whose starting point nowadays is a complex mixture of abstract dimensions. The question then arises how from abstract forms there could arise concrete forms, let alone trillions of such forms, including all their ephemeral, transitional kind. A similar question was raised about absolute randomness insofar as it is a contradiction in terms. Even more existential is the question about purpose which has no place in Darwin-

ian theory,[14] although Darwinists try to bring it back through the back door to buttress their ideology. In doing so they deserve Whitehead's biting criticism: 'Scientists animated by the purpose of proving that they are purposeless, constitute an interesting subject of study'.[15]

Forms from shapelessness, purpose from aimlessness, conjure up a greyness in which nothing is distinguishable. The specter of that greyness prompted Chesterton to call attention to what really irked common man about Darwin's theory. It was not the question of whether man descended from apes on his father's side or on his mother's side. Ordinary man, Chesterton wrote, could not tolerate that Darwinian ideology made man descend into the murky realms of the 'grey gradations of twilight'.[16] The twilight was both moral and intellectual. On the moral side it gave licence to everything. Aldous Huxley confessed that he and his literary comrades embraced Darwinism because they found in it a *carte blanche* for sexual libertinism.[17] Darwinian ideology was heavily used to justify ruthless economic competition, and even most destructive wars. Lately, it was presented as one principal reason to teach Darwinism in schools, on the ground that it gives man a sense of dignity and optimism.

Darwinian evolution should be taught as a science, with all its merits and defects, but this is the balance which Darwinian ideologues, whether they know the subject or not, are loath to consider. They will state, as did Professor Morrison of MIT, that termites, if given enough time, would come up with a telescope.[18] To accept such a prospect demands from man that he surrender his right to rigor, clarity, and consistency, and above all ignore his duty to show unconditional respect for facts.

[14] Evolutionary theories in the light of the broader theme of purpose are discussed in my Farmington Institute Lectures (Oxford), *The Purpose of It All* (Scottish Academic Press, 1990). Second entirely reset edition (Port Huron, MI: Real View Books, 2005). Italian translation, *Lo scopo di tutto* (Milano: Ares, 1994).

[15] A.N. Whitehead, *The Function of Reason* (Princeton: Princeton University Press, 1929), p. 12.

[16] *The Everlasting Man* (1925; Garden City, N.Y.: Doubleday, 1955), p. 13.

[17] A. Huxley, *Ends and Means: An Inquiry into the Nature of Ideals and into the Methods Employed for their Realization* (London: Chatto and Windus, 1937), p. 273.

[18] In his address broadcast by BBC television and radio. For its text see *The Listener*, August 23, 1979, pp. 234-38.