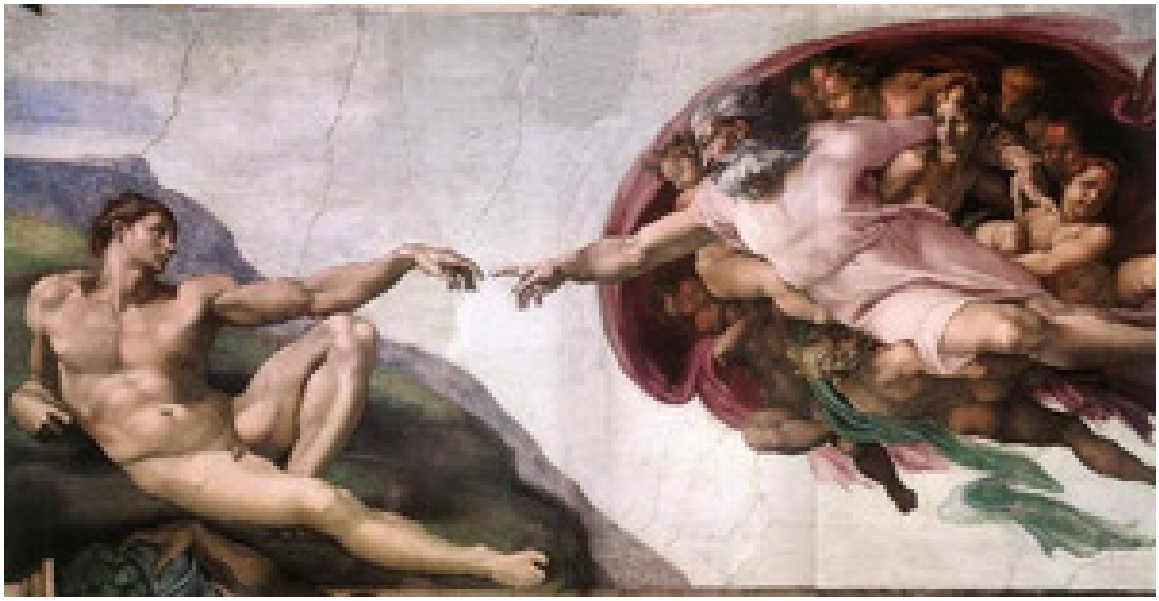
COSMOLOGY without HEADACHES
(Lecture Series)
(compiling, transcribing, researching, editing always in progress)

LECTURE **XXVII**: **19th Century Upheavals (2): Darwinism**

Darwin's Dilema: ***Did Adam have a Navel?***



ON THE ORIGIN OF SPECIES BY MEANS OF NATURAL SELECTION, OR THE PRESERVATION OF FAVOURED RACES IN THE STRUGGLE FOR LIFE (the full original title) has been seen both as "Satan's Bible" and as comparable to the Copernican Revolution. Either way it is a conspicuous prominence in the history of Western civilization and in the progress of science. Michael Ruse explains,

> In this single volume Darwin argued, with more authority and success than anyone before, that the fauna and flora of the Earth had not appeared full-blown, the instantaneous miraculous creation of an all-powerful God, but were rather the end result of a slow, natural, 'evolutionary' process. Moreover he proposed a major mechanism for this process: "natural selection," or to use a phrase which became popular later, the 'survival of the fittest'.
>
> [*Preface* to DARWINISM DEFENDED: *A Guide to the Evolution Controversies by* M. RUSE; Addison-Wesley, London (Avanced Book Program; Reading, Mass.), 1982; p.xiii]

(Note: the latter phrase in the foregoing quotation should be attributed not to Darwin but to Herbert Spencer, his contemporary and supporter.)

Ernst Mayr (a leading 20th century evolutionary biologist) says in his *Foreward* to Ruse's book "What is usually overlooked is that the Darwinian Revolution was not simply an overturning of certain biological theories, but rather an intellectual revolution of the first order, indeed the greatest ever" [Ibid.; p.xi]. Well, "the greatest ever" may be a bit over the top, since Darwin's 'revolution' was entirely within an already established and rapidly progressing materialist science, while the Copernican new cosmic system and the Galilean-Cartesian-Newtonian advances in 'natural philosophy' initiated a whole new

science. Certainly *Origin of Species* was shocking to many at the time of its publication. But just as we encountered some hesitation about calling Copernicus a revolutionary, it seems even more wrong to use that term in association with Darwin.

As we have previously seen [*esp.* Lecture XXIV], the French had taken the lead in the sciences since the Revolution and during the Age of Napoleon, mostly due to establishment of the *écoles centrale*. The study of medicine as a science and the rise of biology in the 19th century were the work of France, and proto-evolutionary concepts are found particularly in the work of Lamarck, already having advanced an evolutionary theory driven by 'acquired characteristics', and Georges Cuvier [1769-1832], who did much to uncover the almost undeniable progressiveness of the fossil record, despite his being strictly anti-evolution. Cuvier thought the obvious gaps found in that record were sufficient to pose a refutation of evolution. "And" says Ruse, curiously, "virtually everyone agreed with him". But wait, Professor Ruse: if everyone agreed with him there would have been no evolutionists at all.

Besides, in that very same volume by Ruse, we find these lines quoted from Charles's grandfather, the widely respected physician, philosopher, scientist, and poet, Erasmus Darwin [1731-1802]:

> Organic Life beneath the shoreless waves
> Was born and nursed in Ocean's pearly caves;
> First forms minute, unseen by spheric glass,
> Move on the mud, or pierce the watery mass;
> These, as successive generations bloom,
> New powers acquire, and larger limbs assume;
> Whence countless groups of vegetation spring,
> And breathing realms of fin, and feet, and wing.
>
> Thus the tall Oak, the giant of the wood,
> Which bears Britannia's thunders on the flood;
> The Whale, unmeasured monster of the main,
> The lordly Lion, monarch of the plain,
> The Eagle soaring in the realms of air,
> Whose eye undazzled drinks the solar glare,
> Imperious Man, who rules the bestial crowd,
> Of language, reason, and reflection proud,
> With brow erect who scorns this earthly sod,
> And styles himself the image of his God;
> Arose from rudiments of form and sense,
> An embryon point, or microscopic ens!

[Erasmus Darwin (1731-1802) *from his book* THE TEMPLE OF NATURE; *(posthumously)* London, 1803; *Quoted in* DARWINISM DEFENDED *by* Michael Ruse; Addison-Wesley, London, 1982; p.15]

Evolution versified—and before 1800. We know further, from the noisy sentiment against Lamarck, that there was plenty of antagonism regarding his transmutational ideas, especially regarding the possible relationship to the development of man—from Christian clergymen, from 'catastrophists', and even from 'uniformitarians' like **Charles Lyell** [1797-1875], and moral conservative scientists like **Richard Owen** [1804-1892], who abhorred the idea of the lineage from lower life forms through man, expecting such to

lead to atheism and moral depravity, and so held on to a kind of quasi-naturalistic continuous creation. So there were certainly outspoken supporters of evolution. There was a heated and publicized battle between Owen and French influenced **Robert Edmond Grant** [1793-1874], who was chiefly responsible for the importation to England of the spontaneous generation views of Lamarck and Geoffroy.

Adrian Desmond, in a meticulously researched book, informs us

> Among the artisan atheists (who were already distributing pirated copies of d'Holbach's *System of Nature*) Lamarckism was being used to legitimate a priest-free democratic republic. Socialists, such as the "red republican" William Thompson at London's Co-operative Society, began exploiting Lamarck's theory of the inheritance of acquired characteristics in 1826 to justify the education of women. (With improving character traits inherited from both sexes, women had to be educated for society to progress.) In other words, Lamarckism was taken up by groups that flatly rejected aristocratic authority. All of these agitators accepted the old *idéologue* notion of life as an inherent property of matter; all therefore believed that animals had developed and changed through the operation of natural laws. They were moreover fierce materialists, and it is telling that in Edinburgh an upsurge in materialistic thought occurred during the period (c. 1826-33) when the medical radicals—men such as Grant, the future Chartist Patrick Matthew [1790-1874—a Malthusian, who wanted heredity and welfare laws scrapped in a meritocracy of free competition], and the phrenologist Hewett Watson [1804-1881—freethinker]—first broached the idea of organic self-emergence. It should come as no surprise that these radicals attacking "Priestcraft" and espousing notions of self-determination and popular power welcomed a left-wing Larmarckian science or its equivalent. Knox provided the perfect political metaphor in his zoology lectures; it was, he said, "a self-created, self-creating world—ever alive, never decaying, never old."

[Desmond; THE POLITICS OF EVOLUTION: *Morphology, Medicine, & Reform in Radical London*; Univ. of Chicago, 1989 (paperback 1992); p.60]

We also know there were plenty of liberal Anglican clergy who already (pre-*Origin of Species*) were finding ways to adapt the Biblical view in reaction to the seemingly irresistible unfolding of the new paleontology and geology, which strongly suggested that the world was a lot more than a few thousand years old. In fact **T.H. Huxley** [1825-1895], a major Darwinian promoter, thought Lyell's book *The Principles of Geology* [pub.1830-33] "was the chief agent in smoothing the road for Darwin" (with whom Lyell, too, became a good friend and supporter). Lyell had estimated that mammals have existed for 300 million years—a term shocking even to those who were not Biblical fundamentalists but that seemed to give Darwin's ultimate evolutionary mechanism sufficient time in which to take effect.

That duration turned out to be a considerable over-estimate. Modern science has established that the age of mammals has lasted approximately 60 million, though their existence as a minor population is thought to extend another 140 million years. The point of all of the above being: the idea of evolution was certainly afoot in the 19th century, and had been since the French Revolution. Further, as Garraty & Gay [THE COLUMBIA HISTORY OF THE WORLD] point out, "by the middle of the 19th century it was quite possible, even for a pious man, to think about the natural world in a fashion uninhibited by the ancient Biblical cosmology…"

'Possible', perhaps, but not so easy. Darwin was himself taken aback by the ungodly implications of his theory. That was a significant influence on his withholding the concept of natural selection, even though he had pretty much settled on it by 1848. Inevitably he succumbed to the implications of his own hypothesis.

> …I had gradually come … to see that the Old Testament from its manifestly false history of the world and from its attributing to God the feelings of a revengeful tyrant, was no more to be trusted than the sacred books of the Hindoos, or the beliefs of any barbarian….
>
> By further reflecting that the clearest evidence would be requisite to make any sane man believe in the miracles by which Christianity is supported,—that the more we know of the fixed laws of nature the more incredible do such miracles become,—that the men at that time were ignorant and credulous to a degree almost incomprehensible to us,—that the Gospels cannot be proved to have been written simultaneously with the events,—that they differ in many important details, far too important as it seemed to me to be admitted as the usual in accuracies of eye-witnesses;—by such reflections as these, which I give not as having the least novelty or value, but as they influenced me, I gradually came to disbelieve in Christianity as a divine revelation.… This disbelief crept over me at a very slow rate, but was at last complete. The rate was so slow that I felt no distress, and have never since doubted even for a single second that my conclusion was correct.

[*quoted in* Garraty & Gay, THE COLUMBIA HISTORY OF THE WORLD; Harper & Row, 1972; p.957; *Darwin quotes* (no citation) *seem to be from one of his notebooks*]

The claim that man had developed naturally from much more simple origins was certainly a challenge to revealed religion. Prior to publication of his natural selection thesis, however, without a viable scientific explanation as to just how evolution functioned, its spread was retarded by scripture and pulpit: the usual religious resistance to any theory that tends to limit or that might possibly even exclude the Creator. While Darwin was cautious in his removing of God from his theory of mankind's origin, Huxley saw it as necessary and rejoiced that "…the next generation may be less fettered by the gross and stupid superstitions of orthodoxy than mine has been. And I shall be well satisfied if I can succeed to however small an extent in bringing about that result." [*Ibid.*; *Huxley quote is from a letter* (no citation) *to an unidentified biologist.*]

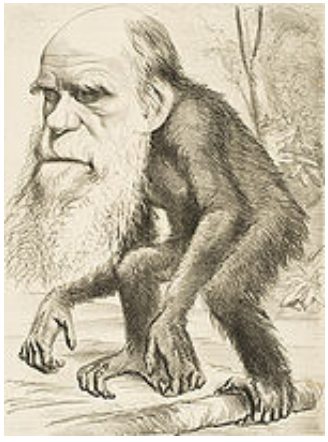
The evolutionary concept, generally, in various vague forms—as we have seen in our previous discussions—was certainly not new; not even strictly a modern idea. Aristotle explored it in some length in his '*Animal History*' and '*The Generation of Animals*'; Anaximander, who, we are told, thought life began in the sea, also seems to have believed all organisms except man were, originally, spontaneously generated from mud—thus they knew immediately how to get nourishment and survive and develop into adults, hence to procreate; whereas humans took so long to develop controlled movement and intelligence that, had they been so generated, the first generation would have become extinct before reaching adulthood. Also many primitive mythologies included stories of transmutations of animals to other sorts of animals and even animals into men, such that tribes could trace ancestries to ravens or eagles or wolves or bears, etc., such patriarchs usually considered more noble in nature than their human descendents. But there was not much that we would call science in those various historical guesses, not until the

controversy heated up in the second quarter of the 19th century. Even then, spontaneous generation had not yet been disproven by **Louis Pasteur** [1822-1895]. That idea, though lesser known today than the concept of 'acquired characteristics', was still featured in Lamarck's evolutionary view (and was not ruled out even by Darwin).

Thus, for Lamarck, species were altered in appearance and function over time and in response to environment and by *artificial* selection, as proven empirically by the breeding of domestic animals. Their offspring, however, though mutant monsters might rarely occur, did not change into other species. Domestic cats, for instance, are the same today as they were ten thousand years ago in ancient Egypt. Each species, then, had its own origin at some moment in the past, generated out of some combination of continent, climate, a particular slime mixture, perhaps an electrical jolt, and the unfathomable course of Nature—exposing Lamarck, naturally, to the charge of atheism, which in 'enlightened' Revolutionary France was of no great moment, but it did give pause to conservative Brits and to others still of the Biblical *Genesis* persuasion.

What won the day for Darwin was the concept of *natural* selection, and it is that which still conjures heated disputes between Darwinists and anti-evolutionists. But it's more complicated than that. There are still anti-Darwinists who are not at all anti-evolution, but who simply believe natural selection, though true enough and active in the world, is not the grand solution to the several difficulties haunting present evolutionary theory that Darwinians or neo-Darwinians believe it to be. Yes, there are still doubts due to persistent problems, despite the name-calling by science aficionados on internet discussion groups (as if insulting doubters might help in expunging doubt). These are strictly scientific problems having nothing to do with Biblical literalism.

Folks whose positions are irrationally assumed, of course, will never be swayed by reason. Screaming at the top of one's lungs at them or calling them MORONS in all-caps in response to their opposing blog comments is a waste of time. Save yourselves the frustration. Generally the arguments of Christian fundamentalists are more than anti-Darwin or anti-evolution: they are anti-materialist; always have been—or rather they are pro-revelation. After all, their mantra, voiced in a well known protestant hymn, is: "How do I know? The Bible tells me so". It's called faith, and it is not at all based on reason: reason, which, by the way, despite Darwin's negative conversion, cannot disprove faith. Since the faithful have nothing to say about evolution or about science, we will leave them, respectfully, to their Biblical reality and entertain some of the arguments against Darwin that do find rational weaknesses in his proposed explanation regarding the *Origin of Species* and the *Descent of Man*.



Some of the arguments he easily foresaw, admitting they presented problems; admitting there were weaknesses in his theory. If the problems of mechanism were not quite adequately solved, his presentation of the argument and his summation of pro-natural selection evidence were sufficiently persuasive to virtually eradicate scientific rebuttal to the overall concept of evolution. There was rabid emotional dissent, of course —still is. Recall especially the 'Scopes Monkey Trial' [1939] in Tennessee (which state's law against teaching evolution, though ignored in its institutes of higher learning for years since that trial, was not actually repealed until 1967).

"…[T]he time will before long come," Darwin prophesied in *The Descent of Man*, "when it will be thought wonderful, that naturalists, who were well acquainted with the comparative structure and development of man, and other mammals, should have believed that each was the work of a separate act of creation." And now, we see, in most states that the teaching of evolution is mandatory and 'creationism' is excluded by law.

Before we can examine the problems and protests, we need to remind ourselves about the meaning of natural selection and how Darwin conceived of it as the driving force behind the development of *new* species—not merely improvements in existing species like bigger, faster, stronger, smarter, or more or less appealing. Though *Origin of Species* was published in 1859, Darwin, as mentioned above, could have planted his natural selection landmine as early as 1844, but hesitated to take the risk of becoming the most maligned man of his era. What particularly sparked his new concept was reading, in 1838, *An Essay on the Principle of Population* [pub.1798] by **Thomas Malthus** [1766-1834], who argued in his opening chapter that population always expands till limited by adversity: famine, pestilence, war. Here is Malthus:

> …The principal subject of the present essay is to examine the effects of one great cause intimately united with the very nature of man; which, though it has been constantly and powerfully operating since the commencement of society, has been little noticed by the writers who have treated this subject….
>
> The cause to which I allude, is the constant tendency in all animated life to increase beyond the nourishment prepared for it.
>
> It is observed by Dr Franklin, that there is no bound to the prolific nature of plants or animals but what is made by their crowding and interfering with each other's means of subsistence. Were the face of the earth, he says, vacant of other plants, it might be gradually sowed and overspread with one kind only, as, for instance, with fennel: and were it empty of other inhabitants, it might in a few ages be replenished from one nation only, as for instance, with Englishmen.
>
> This is incontrovertibly true. Throughout the animal and vegetable kingdoms Nature has scattered the seeds of life abroad with the most profuse and liberal hand; but has been comparatively sparing in the room and the nourishment necessary to rear them. The germs of existence contained in this earth, if they could freely develop themselves, would fill millions of worlds in the course of a few thousand years. Necessity, that imperious, all-pervading law of nature, restrains them within the prescribed bounds. The race of plants and the race of animals shrink under this great restrictive law; and man cannot by any efforts of reason escape from it.


Thomas Robert Malthus

[*Excerpted* COSMOLOGY, ATOMIC THEORY, EVOLUTION: *Classic Readings in the History of Science*; Wm.C. & Margaret Dampier, ed.; Dover, NY, 2003 (*republication of* Harper Torchbook, 1959, *reprint of* CAMBRIDGE READINGS IN THE LITERATURE OF SCIENCE: *Being Extracts from the Writings of Men of Science to Illustrate the Development of Scientific Thought*; Cambridge U., 1924); p.230-231 (*Material credited to Dr. Franklin by author, source not cited.*)]

Here (for me) is an interesting discovery. It has long been known that Darwin came to his concept of natural selection arising out of conditions of adversity (without which there would be no selection of environmentally compatible traits) by way of Malthus's essay, the key to which is found in the above excerpt. It has also been widely known that Darwin was hesitant about his idea and shared the theory of natural selection only with close friends—possibly due to what were, in his mind, its glaring weaknesses; or due to the foreseeable wrangling over his obvious Biblical rebuke; or perhaps it was merely the desire to take his time in developing the proper and most impressive possible presentation for posterity—or all of the above. But one day in 1858 he was unceremoniously jerked into action by a letter from a younger but increasingly respected fellow biologist,


Wallace in Singapore

Alfred Russell Wallace [1823-1913].

Wallace (as I recall, somewhere in the East, Malaysia perhaps, possibly in some British government post) mentioned that he had just read the above referenced essay by Malthus, then proceeded to solicit his much respected older friend's comments concerning a brief description (even using much the same terminology) of the very idea Darwin had been sitting on for nearly 20 years.

Due credit to Malthus is rather stingy today. His name is seldom mentioned without some sign of derision even though it is clear that his arguments are at the very heart of natural selection, the operating principle of which is *environmental adversity*. This is likely due, at least in part, to an increasingly liberal political environment that rejects out of hand the conclusion of his argument, namely: charity in regard to the poor is useless, as the poor must, by laws of nature, always be with us and their number cannot be reduced except by greater calamity. As is the case with facing the rationality of eugenics, being politically incorrect it is simply not an argument we wish to entertain.

What is more surprising is that virtually *no* credit has been given (except by Malthus himself) to Benjamin Franklin for noticing the natural law of population growth and providing the very core of Malthus's argument. I.e., either Darwin or Wallace might just as easily have read Franklin directly instead of the Malthus essay (if they had happened by chance upon whatever publication contained that thesis) and have been brought to the same conclusion regarding natural selection. Of course all of this has little to do with the progress of science, since it was Darwin who saw the implication for evolution, who gathered and shaped the material, and who forwarded the conclusion that forced the general change in attitude and further promoted Western materialism and its purposeless view of the world. But Franklin's involvement—his apparent role in instigating the Malthusian idea—is still a delectable tidbit of history.

Presuming your familiarity with the concept of 'survival of the fittest', it may be sufficient to remark here that what we really have is extermination of the less fit. No matter how strong and fast and tough are the best, the worst will not suffer extinction unless the local environment presents an insurmountable challenge to their lives and/or reproductive functioning. Of course, as unearthed by Franklin/Malthus: reproduction is what ultimately *causes* sufficient adversity, through crowding, to trigger the process of natural selection.

This is not entirely true. There is another sort of 'selection' under reproductive control that has two triggers—both having to do with sex, so that reproduction itself is influenced, but by a different means—by the *will*. Thus we *can* attribute a purposeful influence to evolution through *sexual* selection, and it happens in two ways:

1. In some species, *males compete* for the prize of reproducing themselves by contest. This rarely results in eradication of the loser, but effectively prevents the loser's off-spring by means of the hoarding of females by the champion. Not only are his traits of strength and speed passed along to the offspring, but such as aggression, courage, and will-power are sustained. The genetic stock, if not actually improved by such jousting, is as least maintained in vigor.
2. In other species *females choose* their mates, in which case she either tests the male by resisting and/or escaping from him (until he conquers her either by force or sheer persistence), or she makes what seems to be a purely aesthetic selection based on his color or abundance of plumage or adeptness in dance steps, making something of an art form of evolution by the extinction of the least interesting. We might, to distinguish it from the environmental sort, call this 'artificial selection'. Such females are truly Nature's visual artists.

So we find, despite nature's strong tendency toward redundancy, that species are quite plastic—proved so by domestic animals, particularly our pets. This obvious trait is the underlying motivation behind the rise of a now much discredited but nonetheless undeniable functional concept called eugenics: 'imposed selection', a truth long known through the breeding of livestock and pets; an idea that, with evolutionary theory, led almost immediately to what is called 'social Darwinism'; also intermittently in disrepute. Actually Comte de Gobineau [1816-1882] anticipated the social Darwinists in declaring the Nordics as the 'master race'. His essay *The Inequality of the Human Races*, written while Darwin was still hatching his theory, enjoyed some popularity in Germany. The idea was later pushed by many others including Richard Wagner, in his anti-Semitic writing and in his music-dramas promoting German Nationalism, and by Houston Stewart Chamberlain (later a Wagner in-law) whose racist concepts, along with Spencer's evolution-of-everything philosophy, directly influenced Hitler and his NAZIs.

Far from being endemic to Germany (though it will be the awful model until something worse and more deeply disturbing than the Holocaust is perpetrated), both the ancient and modern worlds are riddled with such ideas. The Greeks thought barbarians were only man-*like*, as they were incapable of politics and philosophy. In Industrial Age England it was suggested that the British were "destined to rule the inferior races of the world for the benefit of both parties". People in the United States heard that "God has not been preparing the English-speaking and Teutonic peoples for a thousand years for nothing but vain and idle self-admiration….He has made us adept in government that we may administer government among savages and senile people" [*quoted in (not by)* Richard Hofstadter, SOCIAL DARWINISM IN AMERICAN THOUGHT; Beacon Press, Boston, 1955]; and they were advised of "the inadvisability of spreading education among Mexicans, a race biologically fitted solely to be servants." Witness also the Hindu caste system in India. From the attempts to construct a master race by the likes of Hitler or slave breeding in the American ante-bellum South to the blending-of-diversity concepts as ancient as Alexander the Great and as current as 'New Age' Gaeans and globalists, eugenics (under one name or another) will endure ideologically, for if human nature is genetically

malleable (which most liberal Westerners sincerely believe), is not utopia achievable through controlled breeding?—especially if we can find and eliminate the war gene. [*Quotations in this paragraph were found in* MANKIND EVOLVING: *The Evolution of the Human Species by* Theodosius Dobzhansky; *"Preface"*; Yale Univ., 1966.]

We shall see where that might lead socially and politically in our next discussion. Here we will merely comment that by removing local environmental challenges through science, invention, and organization of production/distribution (economics) humans tend to downplay 'natural' selection in favor of the 'artificial' type, especially augmented in our era by increasingly effective means of contraception, the recent institution of what amounts to industrial abortion, and the latest in computerized matchmaking services.

Here is a thought to chew on: If the interest of Nature (if it can have any interest) is served by producing mutations that are then selected under the stress of changing environmental conditions, and if Nature cannot predict those conditions so as to prepare a 'fit' organism in advance, why are mutations rare? Why does Nature or God not load the dice in the interest of producing change? Instead, nature tends to be redundant rather than diverse in its biological mechanics. If diversity were truly a kind of strength, as we have been told for the last couple of centuries in immigrant fueled America, natural selection ought to have acted over millions of years to increase it. By now the world should resemble the bar scene in *Star Wars*. We tend to laud our diversity, but still everyone laughs at that scene, implying we are not so diverse as we have been led to believe, with about 99% of our DNA code shared with chimpanzees.

Is Evolution Pre-planned; Directed; Progressive, or Is It Accidental; Probable; Random?

Here is the great bone of contention over Darwinism today—which we now should begin calling *neo*-Darwinism. While Darwin indeed separated his theory of species development from the direct influence of a world-creator, he did not deny God. Nor did he mean to imply that evolution was simply random. He did not speculate on the origin of life itself. He took his bearings on the origin of species from already existing primitive and simple archetypes. There were varying opinions as to how many there were, but most widely accepted perhaps were the four: Articulata; Radiata; Molusca; and Vertebrata (I believe that those were the categories established by Cuvier). Darwin expected they would, somehow, someday, be found to have a common ancestry—*the* archetype of all life. But he did not pretend to know its form, its source, or how the four 'sub-archetypes' might have 'evolved' from it.

It is interesting to notice that, of the two men most commonly associated with the concept of evolution, Lamarck never used that term at all in his published work. He in fact saw it negatively, as meaning 'degradation'; a decline. And Darwin, in his *Origin of Species*, used a derivation of it only once, in the very summation of the work:

> Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been and are being *evolved*.

[*Quoted in* THE MEANING OF EVOLUTION: *The Morphological Construction and Ideological Reconstruction of Darwin's Theory by* Robert J. Richards; Univ. of Chicago Press, 1992; ch.6, p.168; note 1 (*Italic emphasis is mine.*)]

Certain bio-scientists of the 20th century, having lived through logical positivism and the genetic explosion centered about the discovery of DNA and cell cloning, have considered the concept of evolutionary progress to be generally misunderstood and in need of revision. 'Progress', after all, suggests imposition of values: a judgment of early forms of life as inferior or primitive and assumes the later, usually more complicated forms to be 'higher' or 'better', perhaps closer to some goal or end of a progressive process, which would imply an underlying purpose. More recently, thinkers like Ernst Mayr and Stephen Jay Gould have felt the need to re-interpret Darwin: to revise—well, 'adjust'—his meaning; to fumigate the past, as it were; to cleanse and relieve the old biology guru of any 19th century mustiness; to make a *neo*-Darwinist of Darwin himself.

Mayr argues that Darwinism simply denies progress in evolution and that "Darwin, fully aware of the unpredictable and opportunistic aspects of evolution merely denied the existence of a law-like progression from 'less perfect to more perfect'" [GROWTH OF BIOLOGICAL THOUGHT; Harvard, Cambridge, Mass., 1982; p.531]. According to Gould, Darwin thought "improved meant only 'better designed for an immediate, local environment'" because natural selection "proposes no perfecting principles, no guarantee for general improvement" [EVER SINCE DARWIN; Norton, NY, 1977; p.45]

To find its place in the modern materialist tool box, natural selection has to be neutralized. It cannot be seen as a means to Nature's goal or as any sort of progress. It must be understood as a value-free principle causing actions of sheer, meaningless probability, leading not to higher or better species but merely to *new* sorts of creatures (sometimes even 'lower' in form or complexity, as with certain barnacles) by continual re-attuning to an ever changing environment. 'Survival of the fittest' is a term that has come lately to be seen as an attempt to evade evaluation ('fittest' defined as only situational and temporary—until the fit eventually become the unfit); so that a meticulous scientist can avoid saying 'progress toward the best', which suggests that Nature might be seeking the 'good' or the 'higher' or the 'goal of the Designer'. Spencer, indeed, saw Nature striving in her worldly "laboratory to complete in the evolution of the organic realm her highest idea: Man" [*citation lost*]. While modernizers are certainly free to state their own theories, they ought not transmogrify historical figures and ideas to suit their new perspective. As Robert J. Richards points out in THE MEANING OF EVOLUTION, while "Darwin was not a creationist", he did say

> The inhabitants of each successive period in the world's history have beaten their predecessors in the race for life, and are, in so far, higher in the scale of nature; and this may account for that vague yet ill defined sentiment, felt by many paleontologists, that organization on the whole had progressed. If it should hereafter be proved that ancient animals resemble to a certain extent the embryos of more recent animals of the same class, the fact will be intelligible.

[*Quoted in* THE MEANING OF EVOLUTION:
The Morphological Construction and Ideological Reconstruction of Darwiln's Theory
by Robert J. Richards;
Univ. of Chicago (paperback), 1993; p.158
from Charles Darwin: *ORIGIN OF SPECIES*, p.345]

Doesn't that last sentence smack of *recapitualtion*, calling on Baer's Law in embryology (the younger are the embryos of different organisms, the more they will resemble one another, therefore they all must once have been related to some now extinct adult form)? Which leads to something like Ernst Heinrich Haekel's [1834-1919] 'biogenetic law': *ontogeny recapitulates phylogeny* (the embryo of a modern organism, as it develops, passes through all the earlier forms that have, over the eons, transmutated into its immanent adult form)? And hasn't that been long debunked, owing its formulation to a twist (or complete misunderstanding) of old Swammerdam's explanation of the adult form of the organism as being contained, complete, within the larval form—a close relative of the Russian nesting dolls idea called *emboitement* or preformationism?

"Even after he had formulated the law of natural selection", Richards tells us, "Darwin continued to pivot his theory of evolution around the principle of recapitulation, as this loosely flowing passage in [Darwin's 'Notebook E'] December 1838 suggests:"

> Seeing that [man] [[all vertebrates]] can be traced to a germ, endowed with the vital principle . . . & knowing from analogy, that all these very animals are descended from some one single stock,—one is led to suspect that the birth of the species & individuals in their present forms, are closely related—by birth the successive modifications of structure being added to the germ, at a time, (as even in childhood) when the organization is pliable, such modifications, becomes as much fixed, as if added to old individuals, during thousands of centuries, each of us, then [is as old, as the oldest animal], have passed through as many changes, as has any species.
>
> [*from Darwin in* 'Notebook E'; MS pp.83-84,
> P.Barrett, P.Gautrey, S.Herbert, D.Kohn, & S.Smith, eds.; Cornell Univ., 1987; p.418
> *as quoted in* Richards, THE MEANING OF EVOLUTION; p.97]

It seems this embryological addition was needed as a means of closing the gaps in the fossil record. According to Lyell, the fossil record did not (and still does not) support the idea of steady evolutionary progression (which is the principle cause of Stephen Jay Gould's and Niles Eldridge's modern day concept of 'punctuated equilibrium'—ironically, a compact version of geological *catastrophism* [as opposed to 'phyletic gradualism' derived from what evidence there is in the fossil record of smooth and continuous change—a derivative of Lyell's *uniformitarianism*]). That is why Lyell was an anti-evolutionist until convinced by Darwin's natural selection theory—and, presumably, he also bought into the embryology concept: If we don't have the fossils to prove the missing links, we have at least their 'formic' echoes in the stages of embryonic development.

Before we get to the problem most recently in the biological news—having to do with the level of genetic non-randomness necessary for natural selection to work—there are a couple of older difficulties that have never been sufficiently explained to my mind. There is the complexity level necessary for certain adaptations to be advantageous rather than neutral—or even disadvantageous. With the mind, or the hand, a slow and partial fraction-of-a-step development seems reasonable enough, as each step closer to completion might have been advantageous. Despite that, as we will see below, the number and synchrony of genetic mutations that would be necessary to accomplish the task ought to take much more time than is available in the history of animal existence—or even the age of the Universe. But it is not theoretically impossible; it's just at a you-

could-bet-your-life level of improbability. "The goal of theory, however," biologists Jerry Coyne and Allen Orr explain, "is to determine not just whether a phenomenon is theoretically possible, but whether it is *biologically reasonable*—that is, whether it occurs with significant frequency under conditions that are likely to occur in nature." [*from their book* SPECIATION; Sinauer Associates, Sunderland, Mass., 2004; p.136—*as quoted in* THE EDGE OF EVOLUTION: *THE SEARCH FOR THE LIMITS OF DARWINISM by* Michael J. Behe; Free Press, (Simon & Schuster) NY, 2007; p.103]

Take other cases, however, such as the wing. Longer fore-appendages might or might not be advantageous to certain vertebrates as arms while they are developing into wings. But as mutations go, what advantage could there be in growing a few feathers where hair or bare skin had previously been sufficient—and continued to be for that much more numerous part of the population who were *not* sprouting feathers? And, even later in the step-by-mutational-step process of development, what good would quarter-wings or half-wings be? Why would a being with such useless mutations be naturally selected for reproduction rather than laughed out of existence by his non-mutant peers? Still more such 'progressive' mutations would be necessary to complete the transformation to the point where flight would be possible. Keep in mind, the theory about flightless birds is not that their wings were arrested in development, but that they atrophied from disuse, when either the bird, through other mutations, became too heavy for flight and learned to survive on the ground or adapted to an aqueous environment, like penguins, where residual wings are used as swim-fins. So where are the remains of the semi-birds or the fossils of the almost-pterodactyls with partial wing development, and why would they have been selected by nature in the competition to reproduce *before they were functional*? On the other hand, why has Nature's tasteless joke on flightless birds not been reversed. Why have flightless birds (e.g., the ostrich) been seemingly permanently arrested in their development such that arms and hands or claws have not regenerated themselves to replace their now useless wings.

Or, speaking of birds, take the woodpecker who is designed like a jackhammer to take head and neck punishment at approximately 1,000 times the force of gravity, and to do so repeatedly and rapidly—forces that would so rattle the brain and mechanism of any normal bird such as to immediately kill or render it incapable of recovery. Did his equipment develop slowly by means of the many necessary random mutations? If so, where is the record of birds with the partial but insufficient skeletal and muscular adaptations, which would have resulted in their incapacity as woodpeckers and their quick extinction rather than selection for reproduction and further progress. The question then is: Is the evolutionary success of a new species, like the woodpecker, accomplished by means of accidental mutation and really just genetic serendipity?—and the failure of such as ostriches to develop arms just ill luck? This is what empowers the theory of 'intelligent design' (if it can be called a theory—it's really more of a fall-back from the inexplicability of 'progress' via random mutations).

The idea behind materialistic science (the only kind, says physics) is to lay a supportive foundation of physical laws leading to an understanding of the mechanics of the inanimate natural world, thus to discover the number of various elements, their causal relationships, and how the most basic things (now even sub-atomic things) operate in generating or configuring the more complex macro-assemblies. In short, the theme of science is reductionism. That reductionist intent may be subject to change at the philosophical fringe—as apparently all meanings ultimately are—but even now, in the

era of quantum mechanics, wherein our sense of logic has been rendered practically useless, the great majority of scientists believe that the ultimate goal of science is to reduce the basics of all the branches to the principles supporting the trunk: to find or prove that those underlying principles contain or imply all the more special ones. That everything and all knowledge rests upon physics. This was the idea behind the attempt to apply the scientific method (or some not-always-so-reasonable facsimile) to the study of every identifiable discipline, including sociology and psychology and even history and the arts. In carrying out this reduction, all knowledge, it is expected, will come to be understood as experiential; all facets of the world will be seen as reflecting, in whatever distorted manner, their materialistic base.

In reaction: 'Isn't it time—past time—ask the advocates of cosmic intelligent design, to face the irresolvable difficulties glaring out of Darwin's theory?—admit that natural selection is not all it's cracked up to be? "For the first time in history," Lehigh University's Michael J. Behe announces, "with all we have learned in the past 100 years Darwin's theory can be rigorously evaluated. The results are shocking. Although it can explain marginal changes in evolutionary history, random mutation and natural selection explain very little of the basic machinery of life." [THE EDGE OF EVOLUTION: *The Search for the Limits of Darwinism*; Free Press NY, 2007; (*dust jacket, front fold*)]

"Could such an apparently impotent and mindless force" asks Michael Denton (author of NATURE'S DESTINY), "really have built the sophisticated molecular devices found throughout nature?" Clearly not, thinks Behe. No more likely than that some inconceivably gigantic but finite number of monkeys and typewriters could formulate even the opening lines of Shakespeare's *Henry the Sixth*. Instead, the longed for improvements in science that Darwin hoped would lend credence to his theory (molecular biology, the electron microscope, the discovery of DNA and the previously unimaginable complexity at the sub-cellular level) have instead raised the *un*likelihood of evolution by natural selection based on random mutation to astronomical levels of improbability.

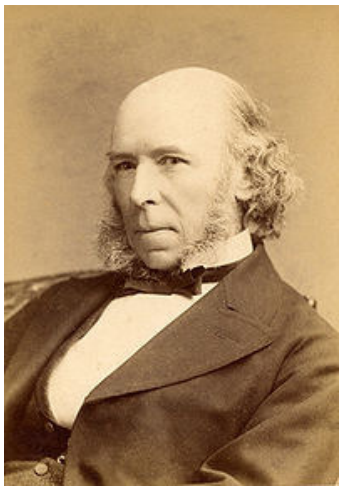
How long will the science establishment allow Behe and his growing following to be heard?— or to make a living as one of them: an academic? Why don't the students at Lehigh boycott his classes—or protest, like they do when David Horowitz comes to their campus, or Col. Oliver North, or Rush Limbaugh, or maybe Sarah Palin (Does she even visit colleges)? Students at other schools should be handcuffing themselves to chimps when Dr. Behe comes to do a guest lecture, so they won't be subjected to what Dr.Philip Skell (Evan Pugh Professor of Chemistry, at Penn State and member of the National Academy of Sciences) says are his "very balanced, careful, and devastating" remarks. Perhaps in this case it will be the faculty who protests.

Some strict materialists, unable to accept a 'will of the world', a somehow conscious world design, a rational goal of an irrational nature, have invented a new term: 'indeterminate teleology' as a working force in the world. This says nothing more than that nature has no predetermined goal, but there is an unknown end toward which the world unknowingly tends. Reduced further: 'We cannot know where we are going until we get there' or, more fundamentally, it is certain only that there was, unexplainably, a beginning of a mysterious process (only outlines of which we can trace rationally and scientifically) and an end when that process has been exhausted. One wants to say of a process that its end is its fulfillment rather than exhaustion or death or extinction, but to say that is to presume a goal other than termination, which materialism cannot presume.

Are materialists—reduced as they are to some measure of probability as the only basis of science—not forced to say, then, that natural selection is the result of sheer good fortune? Isn't that the real meaning of 'indeterminate teleology'? If the trend of living things is based on the genetic process, must there not be a gene for good fortune? In a system that depends on good luck: a roulette-wheel universe, which is what physics proclaims is the case (and which quantum mechanics seems to bear out), winners would be selected over losers until randomness in guessing (we would call it 'predicting' or 'prophecy') would become skewed more and more toward what we, today, would identify as paranormal ability: ESP. But, as is consciousness according to materialist psychologists, it would be an illusion. Good guessing would present the appearance of actual foresight, even to the guesser, just as nature appears programmed rather than random; just as the laws of physics seem to be causal and *a priori* rather than the result of a cosmic 'natural selection' based on the good fortune to have worked in concert with one another (at least for a while) to support or present the world of our experience.

Even before Darwin published his natural selection method, Spencer

Herbert Spencer [1820-1903]



was pushing the idea of general evolution. Influenced by Lamarck's biological theories of transmutation and Leyell's paleontology and geological uniformitarianism, Spencer was already expressing support in the early 1850s for the idea of progressive change over eons, calling it the 'developmental hypothesis'. Because the enormous scope encompassed by his evolutionary concept was not supported with anything resembling proof, Spencer, though once highly influential as philosophical summarizer and popularizer, has been pretty much forgotten scientifically—which may be why we see his 'developmental hypothesis' reappearing in modern guise as 'indeterminate teleology', its history apparently unknown to its presumptuous modern 'inventors'. It was with the introduction of Darwin's theory that Spencer, a thoroughgoing generalist, turned to applying evolution across the board—not only to life but to matter and to ideas. His idol, incidentally, was Benjamin Franklin, so he may well have been aware of Franklin's pre-Malthusian population concepts. In any case, he was definitely acquainted with the Malthus essay and even wrote his own such article, 'The Theory of Population', in which he coined the term 'survival of the fittest'—so close did he come to having us referring to the modern concept of evolution as Spencerism. His universal evolutionary concept, surviving partially today as impetus for our present big bang cosmogony and the notion of stellar and galactic and even 'black hole' processes, had its most powerful impact on his own age and on the early 20th century by virtue of his implications for the evolution by natural selection of societies (albeit in part non-biological) toward some end—perhaps a final global society or a winning race or a dominant nation—a confusing and multi-faceted, hotly debated concept that became known as 'social Darwinism'.

The concept of progress through history had, by the 1850s, made considerable inroads to the Western milieu. 'Every day and in every way things were getting better and better.' So it was perhaps inevitable that the progressive social theorists would adopt the evolutionary model. But the pathways led in every direction. It enlivened the open

competition arguments ascribed to such as Adam Smith [WEALTH OF NATIONS] as well as the military preparedness urgings, so a nation might remain among the stronger and it carried implications for racism and the early 20th century bouts with eugenics, peaking with the fascists and especially Hitler [[SEE GARRITY & GAY p.960 for more]]

The social Darwinism phenomenon and the expansion of social science and philosophy during this period of Western history and its impact, for good or ill on our understanding of the world, will be included in our next topic, when we will focus primarily on the influence of Karl Marx.

HANDOUT: *A reading from* Michael Behe: ch.5: "What Darwinism Can't Do"
from THE EDGE OF EVOLUTION: *The Search for the Limits of Darwinism*;
Free Press (Simon & Schuster), NY, 2007; pp.84-102.

AND *complete the readings*:
"From Liberalism to Democracy" (pp.871-883) &
"The Rise of Socialism" (pp.884-893)
in THE COLUMBIA HISTORY OF THE WORLD; Garraty & Gay, ed.; Harper & Roe, NY, 1972.
(already handed out at end of Lecture XXV)