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The Evolution-Creation Controversy in Perspective

It is ironic that the centenary of Darwin's death should coincide with the granting of permission by certain American States for creationists to propagate their views in schools. The controversy surrounding this decision has barely affected the scientific community. This is both understandable and unfortunate. It is understandable because the views expressed are exclusively those of the most vociferous creationist group who believe that God created the world in six literal days some six thousand years ago and who maintain that all fossils were deposited in Noah's flood.[1] This by no means represents the views of all creationists, some of whom, though accepting a similar view on the authority of the Bible, have rejected this extreme position on scientific grounds.[2, 3] In fact the view owes more to the history of American fundamentalism than it does to genuine opposition to Darwinism.[4, 5] The failure to take creationists seriously is unfortunate because by so doing valid criticisms of evolutionary theory are overlooked and students can be misled into regarding evolution as unassailable.

Michael Ruse, who has been actively involved in the controversy, has written a spirited defence of neo-Darwinianism together with a trenchant attack of creationism.[6, 7] In so doing he has demonstrated the very misunderstandings and distortions of which he accuses his opponents. He maintains that creationism '. . . makes one mistake after another and pulls one deception after another . . . It is simply mistaken; it is corrosive.' On the other hand, 'Evolution is fact, *fact*, FACT!' and is 'one of the great intellectual achievements of all time.' Of course there are distortions in the creationist literature; some

1. Whitcombe J. C. and H. M. *The Genesis Flood* Grand Rapids: Baker, 1961.
2. Cansdale G., A Universal Flood: Some Practical Considerations *Faith and Thought*, 1972, *98*, 2–3.
3. Van de Fliert J. R., Fundamentalism and the Fundamentals of Geology *Faith and Thought*, 1969, *98*, 11–42.
4. Marsden G. M., Creation versus Evolution: no middle way *Nature*, 1983, *305*, 571.
5. Nelkin D. *Science Textbook Controversies and the Politics of Equal Time* Massachusetts: MIT, 1977.
6. Ruse M. *Darwinism Defended* Massachusetts: Addison-Wesley, 1982.
7. Kitcher P. *Abusing Science* Massachusetts: MIT, 1981.

perhaps deliberate but others unintentional. For instance Stephen Gould has often accused creationists of wilfully distorting his views on punctuated equilibrium, but this is hardly surprising when his colleagues contrast this view with the more orthodox theory and castigate the latter as a 'myth'.[8]

As examples of misrepresentation in creationist literature Ruse cites the failure to mention Darwin's finches ('*the* strongest point in the whole Darwinian story') and to see the significance of morphology. In the former case the creationist has no need to dispute the evidence because he does not deny natural selection, but rather maintains it is not sufficient to explain the origins and development of all living forms. In fact they argue that natural selection supports the creation model because God '. . . would institute a system which would not only assure its genetic integrity but would enable it to survive in nature . . . Otherwise, even very slight changes in the habitat, food supply etc. might cause its extinction'.[9]

Concerning morphology, Ruse writes, 'The arm and the hand of man, the wing of bird, the front-leg of horse all tell of evolution from the same organisms. What can the Creationist do in the face of such devastating proof?' I would suggest he could do one of three things. First, he could argue that God used a basic design in his creative activity. Secondly that the similarities are the result of convergent adaptations to particular environments. Thirdly he could argue that the inference Ruse draws is not the correct one and might appeal to the cladist for support. For example, Colin Patterson wrote '. . . the most important outcome of cladistics . . . has led some of us to realize that much of today's explanation of nature, in terms of neo-Darwinism, or the synthetic theory, may be empty rhetoric'.[10] Similarities have been misinterpreted in the past and creatures have been wrongly classified. Examples of this are the tree shrew and giant panda.[11]

Evolutionists, too, have been guilty of oversimplification and distortion, especially in three areas where the conflict has been most vigorously fought. One of these areas is palaeontology. The significance of the fossil record has been emphasized more by creationists than evolutionists with the former attempting to show its incompatibility with evolution.[12, 13] Certainly palaeontology broadly supports evolution

8. Eldredge N. and Tattersall I. *The Myths of Human Evolution* New York: Columbia University Press, 1982.

9. Morris, H. M. *Scientific Creationism* San Diego: Creation-Life, 1974.

10. Patterson C., Cladistics *Biologist*, 1980, *27*, p.239.

11. Martin R., Phylogenetic reconstruction versus classification: the case for clear demarcation *Biologist*, 1981, *28*, 127–132.

12. Anderson J. K. and Coffin H. G. *Fossils in Focus* Grand Rapids: Zondervan, 1977.

13. Gish D. *Evolution: The Fossils Say No!* San Diego: Institute for Life Research, 1973.

by demonstrating that simple organisms came first, plants preceded animals and insect-pollinated plants appeared after the insects. Fossils fit into the same hierarchy as living species and evolutionary sequences can apparently be demonstrated. Indeed Ruse regards the pedigree of the horse as one of the best documented examples of evolutionary change and challenges creationists to dispute it. This, of course, they do by pointing out that to do so requires combining fossils recovered from different parts of the world and by concentrating on one feature.[14, 15] This, in turn, betrays a failure to understand that evolution does not proceed in a straight line but zigzags at variable rates in conjunction with environmental change. In this way the splayed toes of Eohippus can be correlated with the Tertiary swamps, and the later long teeth with the Miocene grasslands and the hoof with the hard ground of the Pliocene period.

More questionable support comes from transitional forms which are interpreted differently by each side. So *archaeopteryx* is either a primitive bird or a transitional form. In the same way the living *monotremes*, the platypus and echidna, are either the most primitive mammals or a good example of living transitional forms between reptiles and mammals.

It was Darwin who recognised the real difficulties when he wrote, '. . . though we find in our geological formations many links between the species which now exist and which formerly existed, we do not find infinitely numerous fine transitional forms closely joining them together;—the sudden manner in which several groups of species first appear . . .;—the almost entire absence, as at present known, of formations rich in fossils beneath the Cambrian strata—are all undoubtedly of the most serious nature.'[16] Over one hundred years later the situation has hardly changed.

There was a veritable explosion of life in the Cambrian period encompassing the major invertebrate groups whose origins still remain problematic. Fossils have been found in pre-cambrian rocks but these are almost exclusively of bacteria (stromatolites), algae and fungi. Various explanations for this absence of ancestors to Cambrian fossils have been suggested including the lack of oxygen, destruction by heat, the fact that all the organisms were soft-bodied and lived exclusively on the seahorse. Stephen Gould after rejecting the above explanations, explains the lack as '. . . nothing more than the log phase of this continuous process (the domination of algae until croppers

14. Anon *Evolution* Toronto: International Christian Crusade, 24–5, 1965.
15. Kerkut G. A. *Implications of Evolution* London: Pergamon, 145–9, 1960.
16. Darwin C. *On the Origin of Species by Means of Natural Selection* London: Murray, 1859.

arrived) . . . while post-Cambrian levelling represents the initial filling of ecological roles in the world's oceans (terrestrial life evolved later)'.[17] This merely explains why algae was the dominant life form in pre-Cambrian times and not, which is the point at issue, why the fossils of the 'croppers' represent more evolved forms than one would expect on the neo-Darwinian hypothesis.

Creationists consistently point to the paucity of evidence in the fossil record for determining evolutionary development. No agreement can be found for the ancestry of the earliest vertebrates, the jawless fish or the flowering plants and many creatures including frogs, turtles and bats have no precursors and have remained virtually unchanged since their first geological appearance. Darwin could plead ignorance in his day, but such an appeal is no longer possible. Not surprisingly, Corner's words are quoted with approval. He said, 'Much evidence can be adduced in favour of the theory of evolution—from biology, bio-geography and palaeontology, but I think that to the unprejudiced, the fossil record of plants is in favour of special creation.' Attempts to explain the gaps and sudden appearances by the theory of punctuated equilibrium (rapid evolution in isolated pockets of population after a long period of stasis), destruction by meteorites[18] or seeding from space[19] have met with little support.

Another matter glossed over too cursorily in popular evolutionary literature is the origin of life. Most textbooks infer that the primal organism was very simple and the original atmosphere of the earth was a reducing one, but both of these are now virtually abandoned.[20–23] The lack of a reducing atmosphere presents no real threat to the theory of spontaneous generation but the complexity of life does. Controlled experiments have shown that the building blocks of life could be formed by electric discharge or ultra-violet radiation bombardment. The yields were small and were often too unstable to allow further reactions. The optimistic view of Fox that amino-acids could have been polymerised on the rims of volcanoes has been

17. Gould S. *Ever Since Darwin* New York: Norton, 1977.

18. McLaren D., Impacts that changed the course of time *New Scientist*, 1983, *100*, 580f.

19. Hoyle F. and Wickramasinghe N. C. *Evolution from Space* London: Dent, 1981.

20. Brooks J. and Shaw G. *Origin and Development of Living Systems* New York: Academic Press, 1973.

21. Byrt J., The Role of the Bible and of Science in Understanding Creation *Faith and Thought* 1976, *110*, 160f.

22. Gribbin J., Carbon dioxide, ammonia—and life *New Scientist*, 1982, *91*, 413f.

23. Peet J. H. J., Chemical Evolution—Some Difficulties *Faith and Thought*, 1982, *109*, 128f.

challenged by no less an authority than the pioneer researcher, Stanley Miller.

In spite of Ruse's claim that Miller and Urey 'succeeding beyond all expectation', it has been shown that the experimenters used a cold trap which could not have existed on the primitive earth and the scenario envisaged was an unreal one. I have always thought that these experiments support the view that it was necessary for an intelligence (God?) to act upon the primordial matter to create life simply because the human experimenter was an indispensable part of the experimental situation.

As a final example of controversy I would like to discuss the subject of human origins, which has provoked more contention than any other aspect of evolution. Creationists have tended to capitalise on mistakes of the past like the Piltdown forgery and the prehistoric man reconstructed from a peccary's tooth, but more recently an attempt had been made to objectively evaluate modern evidence.[24] Unfortunately mistakes, like these of the past are still being repeated in the present. Both Dubois and the discoverers of 'Pekin Man' deliberately suppressed evidence that did not agree with their evaluation. Today intentional suppression is not common, but allowing one's expectations to colour one's interpretation of the evidence certainly is. Louis Leakey, for example, had definite views about human origins and, as his wife recalls 'When he saw the teeth (of "Nutcracker Man" *Zinjanthropus boisei*) he was disappointed since he had hoped the skull would be *Homo* and not *Australopithecus*.[25] John Reader comments, 'More fundamentally, the dating controversy surrounding (*Zinjanthropus*) shows that modern palaeoanthropologists are no less likely to cling to erroneous data that supports their preconceptions than were earlier investigators. Dubois and the "Missing Link", Leakey and the "Oldest Man", both dismissed objective assessment in favour of the notions they wanted to believe'.[26]

Ruse classifies hominid fossils into three groups: *Australopithecus* ('a mixture of ape and man') *Homo Erectus* ('a direct human ancestor') and *Homo Habilis* ('the first known intermediate between *Australopithecus africanus* and *Homo erectus*). Such a classification is generally acceptable, although it is now recognised that too much importance given to small differences in the past has led to an unnecessary proliferation of genera and species. David Pilbeam consequently

24. Bowden M. *Ape-man: Fact or Fallacy* Bromley: Sovereign Publications, 1981.
25. Leakey M. D. *Olduvai Gorge: My Search for Early Man* Cambridge: Cambridge University Press, 1979.
26. Reader J. *Missing Links* London: Collins, 1981.

denies a special status to *Homo Habilis* and renames it *Australopithecus Habilis*.[27]

It is the *Australopithecine* fossils that have received most attention. They are generally put into two groups called 'robust' and gracile', but there is no agreement as to the relationship between the two. For some they are sexual or racial variants, but for others they belong to separate genera. Even the status of *Australopithecus* is not assured. Thirty years ago Straus and Zuckermann argued on the basis of dental comparison with living apes that the fossils were more ape-like than human, but today as a result of the discovery of the Laetoli footprints and the examination of the brain endocast pattern of one Hadar specimen[28] many are convinced that they are closer to man than to the apes. However, these interpretations have been challenged. Tuttle, writing about the footprints, maintains that, 'If the prints were undated or if they had been given younger dates most experts would probably accept them as having been made by *Homo*'. He believes they are virtually indistinguishable from prints made by modern Malaysian pygmies and South American Indians. Similarly many would argue that the boundaries of the brain areas in fossils hominids cannot be detected in the way Holloway claims and, even where they can, the interpretation of the brain pattern is far from simple.

Differences in anatomical structure have been the principal reasons for classifying fossil hominids into different groups. Creationists have pointed out that other factors, such as diet and disease, can account for many of the differences.[29] A diet of raw meat can cause the development of longer canines and J. T. Robinson believes the dental variations in the two types of *Australopithecines* can be accounted for by differences of diet. Disease has long been claimed as the reason for various peculiarities in Neaderthal Man. More recently, after re-examining the fossils, it has been concluded that their demise was probably hastened by rickets.[30,31]

Molecular studies seem to indicate that man is closely related to the chimpanzee, which has led Gribbin and Cherfas to claim that, '. . . the chimp is descended from man, that the common ancestor of the two was much more man-like than ape-like'.[32] This means that there

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27. Pilbeam *The Ascent of Man* p.135, New York: Macmillan, 1972.
28. Holloway R. L., Cerebral brain endocast pattern of *Australopithecus afarensis hominid, Nature*, 1983, *303*, 420f.
29. Custance A. C. *Genesis and Early Man* Grand Rapids: Zondervan, 1975.
30. Ivanhoe F., Was Vischow right about Neaderthal? *Nature*, 1970, *277*, 577–9.
31. Wright D. J. M., Syphilis and Neaderthal Man *Nature*, 1971, 229, 409.
32. Gribbin J. and Cherfas J., Descent of Man—or Ascent of Ape? *New Scientist*, 1982, *91*, 592f.

are at least three possible ways of relating man to the apes. The older view, only occasionally mentioned[33] that apes are the direct descendants, the more common view that they are distant cousins and the recent view that the ape is descended from man. No wonder the layman is confused! As always, one apparent solution raises other problems. Thus, 'Precise immunological and biochemical comparison, representing efforts to refine views of phylogenetic relationship of pongids and humans have been inconclusive at best . . . since results thus far are inconsistent with geochronological and chronometric estimates of the ages of hominid and pongid fossils.'[34]

The usual creationist response would be to see God at work where science fails to give an explanation. Such a 'God of the gaps' response is mistaken because it inevitably leads to a retreat as the gaps close. The evolutionist, on the other hand, could accept the difficulties and still maintain that his theory fits the data best. He would argue that any creationist theory must be rejected because it imports a meta-physical explanation that can be neither verified nor falsifed. Also it is more complicated and should be rejected on the basis of Occam's razor.

It is true that God's existence cannot be proved scientifically, although belief in God can and has been explored by biologists.[35] Nevertheless rational reasons can be given for belief in God's existence.[36,37] Similarly, whatever may be the response of the average believer, theologians have long maintained that God's existence is falsifiable, at least in principle.[38]

Evolution has noticeably failed to demonstrate any real direction or purpose[39] and the attraction of creationism for many has been its demonstration of purpose in the universe and that organisms show evidence of having been designed with a particular end in view. Older apologists, following Paley, pointed out that it is not only living creatures but the inorganic environment that appears designed. The earth is the correct distance from the sun, is shielded from intense radiation and is on an axis that secures the maximum variation of temperature. It has the right mass to retain an atmosphere and an

33. Washburn S. L., The Evolution of Man *Scientific American*, 1978, *239*, 134.
34. Buettner-Janusch J. *Hominidae*. The New Encyclopaedia Britannica 15th Edition. Chicago: Chicago University Press Vol. 8, p.1026, 1982.
35. Hardy A. *The Biology of God* London: Jonathan Cape, 1975.
36. Swinburne R. *The Existence of God* Oxford: Clarendon Press, 1979.
37. Luhman R. S., The Concept of God: Some Philosophical Considerations *The Evangelical Quarterly*, 1982, *54*, 88f.
38. Luhman R. S., God-Talk in the Academic Common Room *Faith and Thought*, 1980, *107*, 34–46.
39. Simpson G. G. *The Meaning of Evolution* Oxford: Oxford University Press, 1979.

abundance of water, which is rare elsewhere in the universe and has peculiar but necessarily properties for the maintenance of life.[40] Of course this argument can be stood on its head and it could be maintained that life exists on the earth and nowhere else simply because the conditions were right.

The argument from design has received apparent support from an unexpected source—cosmology. R. H. Dicke, following Dirac, noted curious numerical relationships between unrelated dimensionless numbers of the magnitude $10,^{40}$ namely the gravitational coupling constant, the age of the universe in atomic units and the number of massive particles in the visible universe. Such 'coincidences' point to a co-operation between widely different branches of physics and indicate a basic principle at work. The constraint is the existence of the human observer and hence the term 'anthropic principle' is used to explain it. This takes the argument back to the creation of the universe itself. The existence of galaxies is a necessary precondition of life and this in turn depends on the existence of a particular type of star, itself dependent on the gravitational coupling constant and the expansion rate of the universe, which is dependent on the mass of the neutrino and so on *ad infinitum*. Although the anthropic principle does not necessarily prove the universe was designed, alternative explanations such as the many-worlds theory are less convincing.[41–43]

The design argument as applied to living organisms has been countered by an appeal to natural selection. Stephen Gould argues that pre-adaptation meets the objection that a half-formed organ would be useless. By pre-adaptation he means that every stage of development is useful in its own right and is not developed with a particular end in view but was adapted for other purposes. Thus, certain fish fins had a strong central axis, which was admirably suited to become a terrestrial leg.[17] It is difficult to apply pre-adaptation to all apparent examples of design and Gould has recently admitted that 'a plausible story is not necessarily true'.[44]

More problematic for the creationist is the existence of apparent pointlessness and suffering in the animal world. Years ago Haldane wrote, 'Blake expressed some doubt whether God had made the tiger. But the tiger is in many ways an admirable animal. We have to ask whether God made the tapeworm. And it is questionable whether

40. Clark R. E. D. *Universe: Plan or Accident* Exeter: Paternoster, 1961.
41. Gale G., The Anthropic Principle *Scientific American*, 1981, *245*, 114f.
42. Davies P. C. W. *The Accidental Universe* Cambridge: Cambridge University Press, 1982.
43. Davies P. C. W. *God and the New Physics* London: Dent, 1983.
44. Gould S. *The Panda's Thumb* New York: Norton, 1980.

an affirmative answer fits in either with what we know about the process of evolution or what many of us believe about the moral perfection of God.[45] This question is part of the traditional problem of suffering and evil and if a solution to this is forthcoming, as I believe it is, then this question too can be answered.[46,47]

The purpose of this paper is not primarily to find a solution to the evolution-creation controversy, but rather to map out some of the problems and the misunderstandings. We owe it to our students to be as objective as possible and to give them sufficient data to come to a considered opinion.

If a tentative solution is to be offered it is, I believe, in terms of so-called theistic evolution. This claims that an intelligent designer is ultimately responsible for everything in the universe and that processes like natural selection are used to achieve this end. This view was held by Darwin's contemporaries, Richard Owen, Charles Lyell and Alfred Wallace. Darwin himself espoused the view in his essays of 1842 and 1844 and it is reflected in the closing words of *Origin of Species*; 'There is a grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one.'

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45. Haldane J. B. S. *The Causes of Evolution* London: Longmans, Green, 1932.
46. Hick J. *Evil and the God of Love* London: Collins, 1968.
47. Luhman R. S., Belief in God and the Problem of Suffering *Evangelical Quarterly*, 1985, *57*, 327f.

For a Christian assessment and critique of creationism see A. Hayward, *Creation and Evolution* (SPCK, 1985) and D. A. Young, *Christianity and the Age of the Earth* (Zondervan, 1982).