

More on Verse 40a: What Did Darwinian Evolution Evolve From?

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Introduction

Throughout all but the opening clauses of Dan 11:29-39 the king of the North enjoys unchallenged superiority over his archrival the king of the South. In vs. 40a the king of the South attempts to gain back the ground he has lost. Finally, in vs. 40b-45 the king of the North reasserts himself with overwhelming force. These passages have been discussed in earlier papers.¹ Here I would like to comment further on vs. 40a.

In those passages (toward the end of the chapter) where the directional terms "North" and "South" have more than geographical significance, the significance "South" has is secularizing in nature. Thus, as I have argued elsewhere, the southern challenge of vs. 40a is the broadly based secularity that has prevailed in the areas of both science and politics since the Enlightenment at the end of the eighteenth century.²

The fulfillment of Dan 11:40a can be documented from any public library. The Enlightenment has been followed by two centuries of relative indifference to religion on the part of secular governments. Some see this as a problem.³ And yet when governments take an active interest in religion one of the few means at their disposal for expressing that interest is to suppress dissent. Religion should be allowed to remain solely in the domain of personal belief and this, I believe, is the point that the framers of the United States Constitution were trying to make by saying, "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; . . ."⁴ The intent of both the establishment clause and the free exercise clause of the First Amendment is that political leaders should leave religion to religious leaders and concentrate their own energies on governing the state.

Political secularity such as the hostile separation of church and state in the communist world would make an interesting study in its own right but it is not a topic that can be taken up here. In this paper I deal instead with scientific secularity and show why this has encouraged not only indifference toward religion but vocal opposition to it.

A Starting Point

There is an infinitely varied series of life forms on our planet and it is true that they can be arranged taxonomically so as to minimize their differences. The facts of taxonomic similarity could be transformed into a theory of biological change, in which the question is whether variation and change occurs within or across species. Assuming the latter, one could next introduce a directional element such that the existence of more specialized life forms, such as man, are derived from less specialized ones, such as lower primates and ultimately slimes and molds.⁵

I say this could be done, but doing it would not give us any special insight into evolution as Darwin taught it and could actually obscure one important fact about his theory, having to do with its origin. Approaching Darwinian evolution in the above manner makes it an extension of eighteenth century precedents based on Aristotelian taxonomy. And to a limited extent it is. But there is so much more to be said that saying only this much would be positively misleading. The roots of evolution go back further than the eighteenth century and more is involved in its emergence than the documentation of slow biological change.

Any proposed changes from lower to higher life forms must occur as the operation of some principle and in the case of Darwinian evolution the operative principle is chance. Allowing chance to shape destiny is incompatible with allowing a superior Intelligence to shape destiny. And so natural selection not only sets Darwin's system apart from other earlier evolutionary models but provides a firm theoretical basis for the hostility of modern science toward religion.

In this paper I seek to show that Darwin's views most closely resemble those of Epicurus, for whom a negative attitude toward religion was the starting point rather than an implication following from his model or an afterthought. It is in this context that we must ask where to place our emphasis when studying natural selection. I submit that it should be exactly reversed. Darwinian evolution is not just an irreligious form of science; it is a scientific form of irreligion.

Plato and Aristotle as Fathers of Modern Science

In this section I discuss Arthur C. Lovejoy's attempt to discover the origins of evolution in antiquity, arguing that his questions are right but his answers are wrong.

The William James Lectures delivered at Harvard University in 1933 by Arthur C. Lovejoy throw much light on the philosophic backgrounds of modern evolution as well as of medieval theology. It has commonly been pointed out that evolution began with Buffon or Lamarck, or even with Darwin. But Lovejoy goes farther back and shows the antiquity of the evolutionary concept. The "Great Chain of Being," as he calls it, was, "until not much more than a century ago, probably the most widely familiar conception of the general scheme of things, of the constitutive pattern of the universe; and as such it necessarily predetermined current ideas on many other matters." (85:vii)⁶

With hindsight informed by what we now know of evolution, this all sounds very recognizable. Of course Darwin's work was an elaboration of Aristotle's "Great Chain of Being," which has the added effect of placing Darwin in a long line of distinguished philosophers and scientists. How obvious! And yet, "So fundamentalist a believer in the Continuity Principle as Charles Bonnet . . . drew from it no notion of evolutionary transformation of one species into another."⁷

Eighteenth century thought was largely concerned with man's place and role in nature. In the field of biology Aristotle's idea of classification was the stimulus of developing systems of classification. The first great modern systematist, Cesalpino, accepted the concept of "natural species," which were fixed. Others rejected the idea. Buffon, in his *Histoire Naturelle*, attacked the systematists. Nature, he asserted, moved by gradations. It is possible to ascend by insensible degrees from simple to complex. There are many intermediates. This concept has been regarded by evolutionists as the beginning of their modern theory.⁸

The orthodox "evolution" of the eighteenth century was based on earlier taxonomic models going back to Aristotle. In these models, development was from the germ upward and growth was oriented toward a goal. Even Buffon acknowledged that the germ was created and that changes over time were confined within species. This much is not so very different from what Augustine had taught centuries before.⁹ "Nineteenth century evolution differed in that it envisioned the origin of one species from another."¹⁰

Thus, nineteenth century evolution is best seen in terms of its differences from rather than its similarities to the immediately pre-evolutionary eighteenth-century systems that developed within an Aristotelian framework. But if this is so, who are Darwin's predecessors? If Aristotle is not the ultimate wellspring of Darwin's thought, who is?

Hugh Kearney and the Multiple Schools Model

The thrust of Lovejoy's argument, as summarized by Clark, is that evolution is not so strikingly innovative or modern as it might appear. Understandably, he looked to the great philosophers of science in the past for insight into the foundations of Darwin's theory. This much is good and useful. But he looked only to the mainstream science of the Greek Academy as presided over by Aristotle and before him by Plato. Below I hope to show that this limitation was both unnecessary and counterproductive.

Hugh Kearney, writing in a more general context, observes that science during and after the Renaissance has been practiced in any number of ways and has widely diverse origins. He singles out three main traditions or schools of thought for special emphasis. Each has its counterpart in antiquity.¹¹

In historical terms we may think of the magical tradition as being a reaction against the organic tradition, and the mechanical as a reaction against magic. But it must be said that within each tradition there were sub-groups and distinctive schools of thought. What we have done in effect is to construct three models or paradigms which explain many aspects of the course of the Scientific Revolution, but, as we will see, each tradition was related to some aspect of Greek thought, the organic tradition to Aristotle, the magical tradition to neo-Platonism and the mechanist tradition to the atomists and Archimedes.¹²

Aristotle and the organic
tradition

Aristotle saw the world in organic terms, on the analogy of growth leading to maturity, and for this reason his followers saw no conflict between gradual biological change and a God who directs such change toward a goal.¹³ For Darwin, on the other hand, there is no such goal direction. Mutation produces random change, with natural selection favoring those organisms better adapted for survival.

Aristotelian science, as expounded in countless text books of the sixteenth and seventeenth centuries, stressed the role of purposive development in the world. Change was a constant feature in nature but it was change controlled by the end in view (or final cause). In this emphasis we may see the impact of Aristotle's own biological researches, which he used as the key to other sciences. In Aristotelian science the dominant analogy was provided by natural growth, which, in Aristotelian

terms, was movement directed towards an end. Aristotelians saw this process repeated throughout nature, not merely in living things but in the movement of inanimate objects and in 'chemical' change.

This was not entirely an academic point. Aristotle looked upon his scientific approach as a conclusive answer to the mechanistic assertions of Democritus. Galen, five centuries later than Aristotle, had also attacked the mechanism of his contemporaries. Thus from the first the organic tradition was a series of entrenched theoretical positions, which were anti-mechanist in spirit. We can understand the renewed appeal which this made in the sixteenth century when Greek mechanistic doctrines enjoyed a new lease of life and threatened the basis of Christian belief in providence.¹⁴

Darwin shares Aristotle's emphasis on taxonomic gradations among living things. But beyond this any resemblance is superficial. For Darwin there is no goal toward which change moves, no goal direction toward it, and therefore no room to speak of God causing such goal direction to operate. Darwin himself was not an atheist and Aristotle was certainly not a Christian. But whereas Aristotle can be interpreted in a way that is both consistent and open to the direction of Providence, Darwin cannot be.

Plato and the magical tradition

Plato bears no closer relationship to Darwin than does Aristotle, but he did have a profound influence on certain branches of science. Below I give examples of his influence from both mathematics and astronomy.

The late fifteen century was marked as we have suggested earlier by a reaction against Aristotelian rationalism and its technicalities. The Hermetic Writings were only one among several treatises which were permeated with neo-Platonic influences. They included the Jewish Cabbala (literally - 'tradition'), which claimed to reveal the hidden secrets of the Old Testament by the use of ciphers. Among these 'secrets' was the neo-Platonic doctrine of the creation of the world by means of emanations from the Divine Being. In this atmosphere, the figure of Pythagoras took on a new significance, as the model of a mathematician who sought and found mystical combinations of numbers. Mathematics in this new view offered the key to a world of unchanging realities, close to, if not identical with, the Divine Mind. The pursuit of mathematics was not a secular activity. It was akin to religious contemplation. For Aristotelians, on the other hand, mathematics ranked low as an intellectual pursuit and had no religious connotation.¹⁵

As regards astronomy, it has always been true that the earth revolves around the sun. Ptolemy was not drawn to that conclusion, however, because he was an Aristotelian. Man was the highest of all the creatures, the pinnacle of life on earth. From this it followed--in Ptolemy's thinking--that the earth, in its capacity as man's home, should be the center of the universe. None of this had anything to do with the actual motion of the planets. It merely followed from a predisposition that Ptolemy brought to his work. He saw the universe in geocentric terms.

In the same way the Polish astronomer Copernicus (Mikolaj Kopernik, 1473-1543) was predisposed to see the universe in heliocentric terms. One reason for this is that he was a Platonist. He thought the sun illustrated Plato's philosophical concept of oneness.¹⁶

Neo-Platonism flourished during the later years of Cosimo de Medici and Lorenzo de Medici. It involved a turning away from involvement in the 'real world' either of politics or of art. The kind of

masterpiece which it fostered was Botticelli's Primavera with its aura of symbolic magic. This neo-Platonist tradition led towards a mystical reverence for numbers, not a wholesome respect for practical mathematical techniques. . . .

This was the background of Copernicus. Indeed Rheticus thought that Copernicus delayed publication of his work to preserve its secret for the favoured few, so that: 'the Pythagorean principle would be observed, that philosophy must be pursued in such a way that its inner secrets are reserved for learned men trained in mathematics'.

The neo-Platonic background of Copernicus also explains why his theories were almost universally rejected through the sixteenth century. Only the neo-Platonists accepted Copernicus without reserve.¹⁷

When neo-Platonists studied mathematics it became for them a form of religious contemplation and the numbers themselves became an expression of the divine. When they studied astronomy the sun was central because it illustrated the oneness of God.

Unlike Aristotle, Plato was not a naturalist. Darwin, on the other hand, was an excellent naturalist and as such was much too empirical in spirit to derive any of this thinking from Plato.¹⁸

Archimedes and the mechanistic tradition

Archimedes was best known by his contemporaries for the mechanical devices he was able to create. He himself always regarded such things as having secondary importance,¹⁹ but in fact his theory and his mechanics were inextricably linked.

In this book [The Method] Archimedes tells us how he discovered certain theorems in quadrature and cubature, namely by the use of mechanics, weighing elements of a figure against elements of another simpler figure the mensuration of which was already known. . . . "Certain things", he says, "first became clear to me by a mechanical method, although they had to be demonstrated by geometry afterwards because their investigation by the said method did not furnish an actual demonstration."²⁰

There have been many modern Archimedean. One was Galilei Galileo (1564-1642). Nor was Galileo unaware of the role this placed him in with respect to Aristotelians.

The accounts of experiments published by Galileo tended to be polemical in character, for his aim was to destroy the Aristotelian tradition in physics and astronomy. This outlook greatly influenced the mechanist tradition during the course of the century. The mechanists concentrated upon experiments which exposed the weaknesses of the organic tradition and the zeal in overthrowing orthodoxy gave the writings a certain missionary fervour. It is only fair to say that by the nineteenth century, mechanism had itself acquired some of the intolerant characteristics of an orthodoxy.

The need to destroy the basis of Aristotelian physics also explains the mechanists' interest amounting almost to obsession with experiments designed to demonstrate the possibility of a vacuum. The vacuum was as much of a battleground between the organic and mechanist traditions as the behaviour of projectiles. For Aristotelians, belief in a vacuum was the criterion of a philosophy which derived final causes in the universe and was bound up with the atomism of Democritus and Epicurus. To admit the possibility of a vacuum meant admitting that atomism was a valid hypothesis. Thus the Aristotelians would go to any lengths to deny or disprove the point. (In this they were at one with the Galenists, since Galen in his writings made

a particular point of attacking the Epicureans for their belief that the human body, and its organs, was the product of chance not design.)²¹

Other modern Archimedean include such notable figures as Isaac Newton (1642-1727),²² Leonhard Euler (1707-83),²³ Carl Friedrich Gauss (1777-1855),²⁴ and Albert Einstein (1879-1955). Darwin was none of these.²⁵

Discussion

During the Renaissance the organic tradition provided a well-established framework for doing science, the magical tradition was a later reaction against the organic, and the mechanistic was a reaction against the magical. But the organic tradition had itself originally been a reaction against mechanism. And so, with the resurgence of mechanism during the Enlightenment of the eighteenth century the debate begun so long ago by Aristotle has come full circle. Almost all science today is done within what Kearney would call the mechanistic tradition.

Thus, it is by moving as far away as possible from Aristotle (who was also a naturalist) that we prepare ourselves to understand Darwin. The man who gave us evolution across species has almost nothing in common with the one who developed the taxonomic system with which it is commonly associated, emphasizing minimal gradations within species.

Darwin's work does not closely resemble anything that Plato or his followers would recognize either. So who is left? There is nothing Archimedean about natural selection. Or does Darwin have any links to the distant past at all? Is he the one exception to Solomon's rule that, "there is nothing new under the sun" (Eccl 1:9)? Below I argue that he is not.

How Shall We Classify Darwin?

One philosopher from antiquity whose work Darwin's does very closely resemble is Lucretius--a follower of Epicurus, both of whom must be studied together. Diskin Clay does this in a recent book entitled, *Lucretius and Epicurus*.²⁶ Below I discuss first Lucretius in relation to Darwin and then Epicurus in relation to Darwin.

Lucretius in relation to Darwin

Titus Lucretius Carus was born soon after 100 B.C. just as Sulla and Marius were leading Rome into a period civil war that would not end until Octavius defeated Antony at Actium in 31 B.C. Lucretius' great poem *De rerum natura* ("On the Nature of the Universe") was published in about 55 B.C. before the rivalry between Caesar and Pompey had reached its climax. The political setting in which the poet lived cannot fail to have influenced his thinking. His whole life was lived under the shadow of suspicion, fear, and civil war.

Philosophically Lucretius was an Epicurean, whereas most Romans were Stoics. "Under the Roman Empire there were many avowed Epicureans; but they were interested in the Master's tolerant and easy-going morality rather than its scientific and philosophic foundations."²⁷ Lucretius was not merely drawn to the easy lifestyle commonly associated with

this school. He was an Epicurean by deep conviction. And as such he was an avowed enemy of religion.

When man's life lay for all to see foully grovelling upon the ground, crushed beneath the weight of Superstition, which displayed her head from the regions of heaven, lowering over mortals with horrible aspect, a man of Greece was the first that dared to uplift mortal eyes against her, the first to make stand against her; for neither fables of the gods could quell him, nor thunderbolts, nor heaven with menacing roar, but all the more they goaded the eager courage of his soul, so that he should desire, first of all men, to shatter the confining bars of nature's gates. Therefore the lively power of his mind prevailed, and forth he marched far beyond the flaming walls of the world, as he traversed the immeasurable universe in thought and imagination; whence victorious he returns bearing his prize, the knowledge what can come into being, what can not, in a word, how each thing has its powers limited and its deep-set boundary mark. Therefore Superstition is now in her turn cast down and trampled underfoot, whilst we by the victory are exalted high as heaven.²⁸

Lucretius is an earlier Darwin.²⁹ *De rerum natura* is an earlier edition, as it were, of *The Origin of Species*. By this I do not mean that Lucretius formulated the theory of natural selection before Darwin. It would be unnecessary to make such a claim. Both authors draw on similar principles and the comparison is between the principles themselves rather than the details of their application. Providence has no place in Darwin's version of natural history. That is what makes natural selection natural rather than artificial. The operation of nature's laws is entirely self-contained. And that is Lucretius' model exactly. Consider the following selected quotations from *De rerum natura*.

This terror of mind therefore and this gloom must be dispelled, not by the sun's rays or the bright shafts of day, but by the aspect and law of nature. The first principle of our study we will derive from this, that no thing is ever by divine power produced from nothing. For assuredly a dread holds all mortals thus in bond, because they behold many things happening in heaven and earth whose causes they can by no means see, and they think them to be done by divine power. For which reasons, when we shall perceive that nothing can be created from nothing, then we shall at once more correctly understand from that principle what we are seeking, both the source from which each thing can be made and the manner in which everything is done without the working of gods. (1.146-58)

But next in order I will describe in what ways that assemblage of matter established earth and sky and the ocean deeps, and the courses of sun and moon. For certainly it was no design of the first-beginnings that led them to place themselves each in its own order with keen intelligence, nor assuredly did they make any bargain what motions each should produce; but because many first-beginnings of things in many ways, struck with blows and carried along by their own weight from infinite time up to the present, have been accustomed to move and to meet in all manner of ways, and to try all combinations, whatsoever they could produce by coming together, for this reason it comes to pass that being spread abroad through a vast time, by attempting every sort of combination and motion, at length those come together which, being suddenly brought together, often become the beginnings of great things, of earth and sea and sky and the generation of living creatures. (5.416-31)

Therefore when these bodies [sun and moon] were withdrawn, suddenly the earth sank down where now the blue expanse of the sea extends so wide, and drowned its hollows with the salt flood. And day by day, the more the tide of ether and the sun's rays compressed the earth into compactness

with frequent blows from all sides upon its outermost confines, so that thus beaten it was packed together and came together upon its own centre, . . . The plains settled down, the lofty mountains increased their height; for the rocks could not sink, nor could all parts subside equally to the same degree. (5.480-94)

And the race of men at that time was much hardier on the land, as was fitting inasmuch as the hard earth had made it: it was built up within with bones larger and more solid, fitted with strong sinews throughout the flesh, . . . Through many lustres of the sun rolling through the sky they passed their lives after the wide-wandering fashion of wild beasts. . . . They could not look to the common good, they did not know how to govern their intercourse by custom and law. Whatever prize fortune gave to each, that he carried off, every man taught to live and be strong for himself at his own will. . . . And by the aid of their wonderful powers of hand and foot, they would hunt the woodland tribes of beasts with volleys of stones and ponderous clubs, overpowering many, shunning but a few in hidingplaces. (5.925-27, 958-61, 966-69)

Then also neighbours began to join friendship amongst themselves in their eagerness to do no hurt and suffer no violence, and asked protection for their children and womankind, signifying by voice and gesture with stammering tongue that it was right for all to pity the weak. (5.1019-23)

The above list of quotations could be extended indefinitely. *De rerum natura* is quite lengthy (six books in the original) and the same current of thought runs throughout. The translator of the Penguin edition is quite right in saying, "There is no ancient writer who speaks more directly to the modern reader."³⁰

Epicurus in relation to Darwin

The life of Epicurus (341-271 B.C.) presents a number of contradictions. He was always polemical, "the scornful vilifier of his philosophical contemporaries,"³¹ and yet outside the realm of ideas a kindly man. His philosophy allowed later generations to make hedonism into a virtue and yet his own habits were moderate and restrained.

These things we may brush aside but one fact about Epicurus' personal life has deep importance in the present context. This was the sour experience with religion that he had as a child.

Epicurus' mother was a religious quack, who eked out a living by hawking charms and spells, and her young son was called upon to accompany her. . . .

The experiences of youth and maturity left their mark, and Epicurus dedicated himself to dismantling this dangerous facade of religious superstition, not merely by attacking it with the weapons of science, history and sarcasm, but also by attempting to construct in its place a thoroughly naturalistic view of the world and its workings, an edifice sans metaphysics and sans mysteries, but resting instead on a common-sense view of phenomenological reality.³²

Epicurus' goal was not to sweep aside all restraint but rather to lay a basis for morality that was entirely derivable from within the individual himself rather than one externally imposed by the gods of his day. Thus, he held "that the clarity of our sensations is the sole criterion of truth, and that the affective states that follow upon each of them are the sole criteria of good: if

the state is pleasurable, the experience is good; if it is painful, the experience is bad."³³ The world of Epicurus was entirely self-contained. This is the essence of his philosophy.

The twelve principles elaborated and presented so winsomely in poetic form by Lucretius were of course originally formulated by Epicurus. The following list of Epicurean axioms or principles (*stoicheia*) is drawn from appendix 1 of Clay's book, *Lucretius and Epicurus*, noted above.³⁴

1. Nothing comes into being out of nothing.
2. Nothing is reduced to nothing.
3. The universe always was as it is now and will always be.
4. The universe is made up of bodies and void.
5. Bodies are distinguishable into atoms and their compounds.
6. The universe, or All, is infinite.
7. Atoms are infinite in their number, and space extends without limit.
8. The variety of atomic shapes cannot be defined but atoms of similar configuration are infinite in number.
9. Atomic motion is constant and of two kinds.
10. Atoms should be thought to share none of the properties of sensible things except shape, weight, mass, and the properties necessarily associated with shape.
11. The blessed and imperishable has no troubles itself nor does it offer trouble to others.
12. Death is nothing to us.

The third principle follows from the first. If matter has no ultimate beginning, it must always have existed. This is the continuity principle.³⁵ Geologically not much is happening on our planet now or at any given time. Assuming the current rate of inactivity, immense amounts of time are required to account for what we see in the past.

It is not my purpose to show that Darwin had identically the same agenda as Epicurus. But it is my purpose to show that the presuppositions which support their views were substantially the same and that similar results followed from them in both cases. "Nothing comes into being out of nothing" (principle 1). When Darwin asserts that species must always be derived from other species (i.e., that species cannot have derived from a creative act of God), he is restating the first principle of Epicurus for a modern readership. "The universe always was as it is now and will always be" (principle 3). When Lyell asserts that the present is the key to the past, he is restating the third principle of Epicurus. When Spencer asserts the survival of the fittest he may well be saying something original, although readers of Lucretius would find it more difficult to say so than those who are unacquainted with his work.

Even the outdated atomism of Epicurus--borrowed from Democritus although Epicurus denounced him--is instructive in the present context, because it shows that the main point of contact between Epicureanism and traditional philosophy lay in the area of secular rationalism. These are Darwin's affinities as well.

In antiquity, Epicurus had no renown as a logician, and it is now fashionable to repeat the venerable opinion that he had a "profound distrust for logic and abstract rules of thought." It must seem strange, then, that his logic provided the approach to his physiology and his philosophy as a whole . . . and that the *stoicheiomata* [basic principles] of his physics should reflect a clear concern for a clear demonstration of their validity.³⁶

Despite all his efforts to achieve clarity of exposition,³⁷ Epicurus was known more for the ethical implications of his model than for the logical foundations on which it was built. In the end the physiology of Epicurus proved to be little more than a forum for discussing his social philosophy.³⁸

Discussion

It is important to understand these things because they take us back to first principles. It is clear that an anti-religious bias was the great underlying wellspring of Epicurus' philosophy. For him this was the starting point from which all else followed. It is not the case that physical observation overwhelmed Epicurus with such weighty evidence that he was led by that means to reject religion. For him the rejection of religion came first and found expression in philosophical language at a later time.

What shall we say about Darwin in this regard? I do not wish to imply that Darwin was personally motivated by an anti-religious bias. There are some indications he was not. The delay in the publication of his theory is one indication of this. Darwin toured the world on the H.M.S. Beagle in 1837 and wrote out the first short draft of his thoughts concerning that trip in 1842. But it was seventeen more years before he wrote and published *The Origin of Species*.

But his cautious, and almost diffident, temperament held him back from publishing his conclusions (whose acceptance, he fully realized, would mean a revolution in scientific and general thought) until he could support them with adequate facts.³⁹

Darwin was naturally cautious anyway, but one reason why he delayed publication for so long might well have been precisely that he realized what the broader social and religious implications of his model would be and that he shrank from them.⁴⁰ But when it appeared that someone else (Alfred Russell Wallace) might get credit for being the first to write on natural selection, which he also knew would be remembered as a great scientific achievement, he was willing to unleash the implications of his model in order to secure his place in history.

By contrast, Epicurus was often strident and we may assume that his polemic against religion was the main point he wished to convey.⁴¹ Darwin was an entirely different person. He approached the matter of irreligion from an opposite point of view, but when his book was published the results were all the same.

The Philosophers and the Church

Plato and Aristotle were equally at home in medieval theology and Renaissance science. Throughout its history the church, in its theology, has extended an open welcome to both men. Indeed, their influence on medieval theology was profound.

Archimedes' work, by contrast, had no religious implications at all. It was entirely neutral to religion. Epicurus had a deep aversion to religious ideas of any kind, which showed through both in his own work and that of his followers--most notably Lucretius. And yet, for centuries his ideas had no special negative influence in the church either. The gods he had railed against were pagan. It was not until the nineteenth century that the full impact of those ideas would be felt. And then they were felt with a vengeance. See table below.

Table
Fields in Which Selected Philosophers
Had a Special Influence

Philosopher	Theology	Science	Social Philosophy
Plato	X	X	X
Aristotle	X	X	
Archimedes		X	
Epicurus			X

Darwin presents himself as one who is driven to his conclusions by a merciless array of intractable facts. He himself might not have been motivated by a markedly irreligious bias, as we know Epicurus was, but the fact that such a bias was widespread does account in part for the enthusiasm with which his ideas were received, once he summoned the courage to publish them.

. . . when Darwin propounded his theory of evolution, it was as if the water that had been piling up behind a dam burst out with uncontrollable force. Darwin's ideas were not original with him, but he couched them in such language that men were convinced that he had found the secret they were seeking.⁴²

At one time the fact that humankind exists at all and has sufficient intelligence to raise the questions considered in Darwin's book was considered evidence that his theory could not be right, i.e., that we were called into existence by some supernatural means. The earth teems with life. Reasoning from the effect back to its cause, it follows that there must be a source of life--a life Giver. Despite the title of his book one might argue that Darwin has given us a way to account for life on earth apart from its origins. He has given us a method for studying the effect without positing a cause.⁴³

Many people wanted to do just that and to all these Darwin's theory seemed a marvelous advance. Here at last was a way to do science without reference to God--to study the creature without being constantly reminded of the Creator. And there are many facts that evolution appears to explain. But Darwin's followers have not given all the evidence equal attention, nor is only one hypothesis available in the areas they do like to discuss. I take up this matter in a separate paper.⁴⁴

Conclusion

Darwin did not share a similar scientific and economic environment with Lucretius or with Epicurus. What he did share with both men was a willingness to argue from an entirely secular point of view. And like Epicurus, Darwin's impact on social philosophy has been as great as his influence on science.

By 1900 William Graham Sumner was able to assert that there is no natural law; there are no natural rights, and there is nothing which is a priori. "The only natural right is the right to struggle for survival." Now this comes into conflict with democratic beliefs, because if the only law of life is the struggle for survival, then the humanitarian ethics of democracy are an unwarranted handicap in that struggle.⁴⁵

Here we have one extreme. At the opposite end of the same spectrum we find platitudes such as the following one from Julian Huxley's introduction to *The Origin of Species*:

A century after Darwin's modest statement that light will be thrown on the origin of man, we can truly say that, as a result of Darwin's work in general and of *The Origin of Species* in particular, light has been thrown on his destiny.⁴⁶

To whatever extent we truly *can* say that natural selection throws light on mankind's destiny, i.e., to whatever extent Huxley's statement is not just an eloquent peroration, in that same degree Darwin's work is perversely religious in nature. For two ideas to be opposites they must have much in common. Ideas that have little in common are mutually irrelevant; they cannot be said to oppose each other. In this connection notice an observation by the theologian Harvey Cox that "secularism is an ideology which brings a new closed world view and which functions very much like a new religion."⁴⁷

Darwin's book, which gives an appearance of quintessential secularity, can be seen instead as a secular (*non credo*). Questions of origin and of destiny belong to religion rather than biology. "By faith we understand that the universe was formed at God's command, so that what is seen was not made out of what was visible" (Heb 11:3). Science, on the other hand, properly deals with things that can be observed--and about which deductive predictions can be made.⁴⁸ In dealing with origins Darwin has overreached himself. In this his theory is out of its depth and those who espouse it should forthrightly acknowledge the fact.

Note: All Scripture quotations in this paper, except when noted otherwise, are from the Holy Bible, New International Version. Copyright (c) 1973, 1978, 1984 International Bible Society.

¹See Hardy, "Historical Overview of Dan 11:29-35," *Historicism*, No. 18/Apr 89, p. 2-58; "Some Comments on Dan 11:36-39," *Historicism* No. 19/Jul 89, pp. 2-47; "Toward a Typological Interpretation of Dan 11:40-45," *Historicism* No. 22/Apr 90, pp. 2-97.

²See idem, "'North' and 'South' in Dan 11: A Prolegomenon to the Final Verses," *Historicism* No. 21/Jan 90, pp. 49-51.

³Like many problems this one has an up side and a down side. See idem, "More on Verse 40b: Does Babylon Rise or Fall During the Time of the End?" in this issue of *Historicism*.

⁴Article 1, Bill of Rights, United States Constitution, quoted in Clinton Rossiter, ed., *The Federalist Papers: Alexander Hamilton, James Madison, John Jay* (New York: Mentor, 1961), p. 542.

⁵See Manfred Eigen et al., "The Origin of Genetic Information," *Scientific American*, April 1981, pp. 88-118.

⁶Harold W. Clark, *The Battle Over Genesis* (Washington, DC: Review and Herald, 1977), p. 59. (Emphasis in original.)

⁷Ibid., p. 59-60.

⁸Ibid., p. 60.

⁹See Augustine, *The City of God*, 12.13-18.

¹⁰Ibid., p. 61.

¹¹In philosophy Plato's influence is everywhere. Concerning Arius, "Professor Stead observes correctly that one would be mobilizing pure abstractions were one to pretend to decide between Plato and Aristotle as masters of Arius' thought. At the time of Arius, 'the choice lay between Platonists who accepted and Platonists who denounced the contribution of Aristotle or of the Stoics; between the tradition of Aristotle and that of Atticus'" (Charles Kannengiesser,

"Holy Scripture and Hellenistic Hermeneutics in Alexandrian Christology: The Arian Crisis," Protocol of the Forty-First Colloquy: 6 December 1981, Irene Lawrence, ed. [Berkeley: Graduate Theological Union, 1982], p. 21). Below I quote from the Editor's Introduction to *The Portable Plato* (New York: Viking, 1948), trans. Benjamin Jowett, ed. Scott Buchanan: "Some, noting the argument, recorded in the *Protagoras*, to show that pleasure is the good, set up the Cyrenaic School of philosophy which later combined with the atomism of Democritus to make the doctrine of Epicureanism. Others noted the opposing doctrine that the good is virtue, and virtue is knowledge, and became Cynics and later Stoics" (p. 3). "Such are Plotinus, Aristotle, Augustine, Dante, the builders of the Church, and the founders of the Italian city republics. These were followers of Plato, to be sure, but they were not Platonists. They found insights, not doctrines, in Plato" (p. 4). My point here is that they all studied him.

Plato also studied his predecessors. His work is like a lense which brings together the best of pre-Socratic thought and projects it forward for later generations. "The popularly known doctrines of Plato, the theory of ideas, the myths of transmigration, reminiscence, and the immortality of the soul, Platonic love, and the philosopher-king, were not original discoveries of his. They were current ideas, or dug up from the past. His moral doctrines, his theological speculations, his atoms, and his mathematical physics and astronomy, these were current controversies" (pp. 23-24). "Plato himself says he has no doctrine" (p. 22). He taught with a question mark rather than a period. And for this reason there is no end to the later ideas we can read back into his writings: "Plato the Anglo-Catholic, the mathematical physicist, the totalitarian, the rationalistic atheist; these are the impostures of the last generation of Plato readers, all of them plausible, all of them deeply misleading, . . ." (p. 5).

¹²Hugh Kearney, *Science and Change: 1500-1700* (New York: McGraw-Hill, 1971), p. 25.

¹³"The organic tradition in science rested upon a threefold base of Aristotle, Galen and Ptolemy--and of these the greatest was Aristotle. Aristotle's biological treatises, Galen's medical observations and Ptolemy's great astronomical corpus, the *Almagest*, provided a mass of empirical data which was unrivalled over a thousand years after it had been produced. The sheer bulk of this work gave confidence to scientists within the organic tradition and made it possible for them to dismiss objections as marginal. If we look at the Aristotelians through Galileo's eyes we see a group of simple-minded theorists. In their own estimation, which was not without justification, they were the empiricists" (ibid., p. 26).

¹⁴Ibid., p. 27.

¹⁵Ibid., p. 40.

¹⁶As regards Copernicus, "His achievement was an extraordinarily imaginative detailed working out of original assumptions, performed by a mathematician of very high competence. In short it was not simply a poetic vision, though it was that; it was also a piece of technical mathematics" (Kearney, *Science and Change*, p. 96). As regards the concept of unity, consider that Arius (who lived in the fourth century after Christ) was heavily influenced by Plato, as interpreted by Plotinus. For Plotinus God was "the One" or "pure unity" (Kannengiesser, *Hellenistic Hermeneutics*, p. 37). "In any case we perceive fundamental affinities between Plotinus and Arius: the same moving exaltation of the triadic Principle, the One, transposed by Arius into the biblical figure of the Father; the same Triadic schema inspired by the classical problem of the passage from the one to the multiple" (ibid.). The problems Arius wrestled with were those posed by Greek philosophers, not Hebrew prophets. Thus, it is said that Pythagoras once remarked, "'What is God? Unity!'" (B. L. van der Waerden, *Science Awakening*, Arnold Dresden, trans. [Princeton: Scholar's Bookshelf, 1975] 1:158). In retrospect it is not hard to understand the impact that Arius' preoccupation with the philosophical concept of unity had on his Christology. See Hardy, "Dan 11:29-35," pp. 13-15.

¹⁷Kearney, *Science and Change*, pp. 100-1.

¹⁸Let me say just a word about Darwin's objectivity. Tom Bethell, in a 1978 article published in *Harper's* magazine ("Burning Darwin to Save Marx"), points out that Darwin's theory of how things are supposed to work in nature had remarkable similarities to how things actually did work economically in mid-nineteenth century England. Laissez faire genetics had its counterpart in laissez faire capitalism. The great naturalist was doing more than merely pattering about "on nature walks observing the flora and fauna around his country house near London, occasionally pausing to classify beetles, weigh this sample or measure that, until at last the great day arrived when he had collected enough facts and so was able to perceive the great synthesis--the general law toward which all these observations pointed" (ibid., p. 37). He was doing that but at the same time was also reading Dugald Stewart's *On the Life and Writing of Adam Smith* and the novels of Harriet Martineau, which wove the ideas of Smith, Malthus, and Ricardo into her plots of simple fictional romances. This confluence of ideas was not lost on Karl Marx, who wrote to Engels in 1862: "It is remarkable how Darwin recognizes among the beasts and plants his English society with its division of labor, competition, opening up of new markets, "invention," and the Malthusian "struggle for existence"" (ibid.).

¹⁹"Although these discoveries had brought him the fame of superhuman sagacity, he did not want to leave behind any writing on these subjects; he considered the construction of instruments, and, in general, every skill which is exercised for its practical uses, as lowbrow and ignoble, and he only gave his efforts to matters which, in their beauty and their excellence, remain entirely outside the realm of necessity" (Plutarch, quoted in van der Waerden, *Science Awakening*, 1:209).

²⁰Ibid., p. 212.

²¹Kearney, *Science and Change*, pp. 70-71.

²²Newton, however, spent a considerable amount of time dabbling in alchemy, which is normally associated with the magical tradition. See *Encyclopaedia Britannica*, 1964 ed., s.v. Newton, Isaac.

²³"A mere annotated index of Euler's works would fill a book far bigger than the one you are now reading [202 pages]; for Euler published a total of 886 books a mathematical memoirs, and his output averaged 800 printed pages a year. On the 200th anniversary of his birthday in 1907, it was decided to publish his collected works in his native country, Switzerland; by 1964, 59 volumes were published, and the entire series is expected to run to 75 volumes of about 600 pages each. . . . The Academy [of Sciences in St. Petersburg] had established a scientific journal, the *Commentarii Academiae Scientiarum Imperialis Petropolitanae*, and almost from the very beginning Euler contributed to this as well as to other journals. Not only did the editors of the Petersburg Commentaries have no shortage of material as long as Euler was alive, but it took them *43 years after his death* to print the backlog of mathematical papers Euler had submitted to this journal" (Peter Beckmann, *History of _ (Pi)* [New York: Dorset, 1971], pp. 147, 150). (Emphasis in original.)

²⁴"Gauss's principal work was done in the realm of Mathematics, this being the foundation of his researches in geodesy, physics and astronomy. The mark of his accomplishment is the combination achieved in his works of his creative ideas, the finished form of their presentation and the way in which he carried through, often into ultimate detail, the numerical calculation of the applications. His genius found expression equally in the creation of abstract mathematical theories and in the solution of actual scientific problems. Gauss published his work only when he was convinced of its significance and maturity. Many of his valuable perceptions therefore first saw the light of day only when his estate was examined after his death, others being found in his correspondence. So for example, he kept strictly secret his very advanced work in the realm of non-Euclidian geometry; he had already mastered additions to theories that were established anew only later and by other workers, e.g. the theory of elliptical functions and that of modular functions. there are close connections between his work in the realms of pure and applied mathematics, the theoretical results often originating from

practical problems; separate discussion of them would therefore fail to convey Gauss' intellectual genius" (K. Runcorn, gen. ed., *International Dictionary of Geophysics* [London: Pergamon Press, 1967], s.v. Gauss, Carl Friedrich).

²⁵Actually Darwin has been compared to both Einstein and Newton. "Albert Einstein took eleven years of unremitting concentration to produce the general theory of relativity; long afterward, he wrote, 'In the light of knowledge attained, the happy achievement seems almost a matter of course, and any intelligent student can grasp it without too much trouble. But the years of anxious searching in the dark, with their intense longing, their alternations of confidence and exhaustion, and the final emergence into the light--only those who have experienced it can understand it.' Einstein confronting Einstein's problems: the achievement, to be sure, is matched only by Newton's and perhaps Darwin's--but the experience is not rare (Horace Freeland Judson, *The Search for Solutions*, abridged ed. [Baltimore: Johns Hopkins University Press, 1987], p. 6). "For these reasons, Wallace himself rightly styled Darwin 'the Newton of Natural History,' or, as we should now say, of Biology. Each introduced the ideas of unity, order, and universally applicable principle into an enormous realm of experience" (Sir Julian Huxley, in his Introduction to Charles Darwin, *The Origin of Species* [New York: Mentor, 1958], p. x).

²⁶Ithaca: Cornell University Press, 1983.

²⁷R. E. Latham, trans., *Lucretius: On the Nature of the Universe*, (Harmondsworth: Penguin, 1951), p. 9.

²⁸W. H. D. Rouse and Martin Ferguson Smith, trans., *Lucretius: De rerum natura*, rev. ed., Loeb Classical Library (Cambridge: Harvard University Press, 1982), 1.62-79.

²⁹"The antitheses between Lucretius' brilliant poetry and its dark argument, between its sweep and appealing surface and its grim underlying *ratio*, are bound up in the very ambiguities of nature. So Darwin could speak of nature in fundamentally Lucretian terms: "We behold the face of nature bring with gladness, we often see super-abundance of food; we do not see, or we forget, that the birds which are idly singing round us mostly live on insects or seeds, and are thus constantly destroying life"; *The Illustrated Origin of Species*, ed. Richard Leakey (London 1979) 66" (Clay, *Lucretius and Epicurus*, p. 314).

³⁰Latham, *Lucretius*, p. 8.

³¹F. E. Peters, *The Harvest of Hellenism: A History of the Near East from Alexander the Great to the Triumph of Christianity* (New York: Simon and Schuster, 1970), p. 120. "Epicurus took pains to insist on his own originality. He rejected in strong language the parentage not only of Nausiphanes but also of Democritus, of Leucippus, and indeed of the whole of the philosophical tradition that had come before him. The harsh words seem to betray some kind of personal pique, but there is other evidence that this disassociation from the philosophical past was somewhat more pragmatic than personal and was directed rather at the burgeoning scholasticism of philosophy" (ibid., p. 121).

³²Ibid., p. 122.

³³Ibid., p. 123.

³⁴See Clay, *Lucretius and Epicurus*, pp. 267-76 passim.

³⁵"In a slick manifesto called *Cosmos*, Carl Sagan artfully packaged his own creed: 'The Cosmos is all there is, or was, or ever will be'" (Charles Colson, with Ellen Santilli Vaughn, *Kingdoms in Conflict* [Grand Rapids: Zondervan, 1987], p. 215).*

³⁶Clay, *Lucretius and Epicurus*, p. 66. "A Stoic claimed that the Epicureans never stirred the 'learned dust' of geometry; but that claim goes too far. A comparison of Epicurus' *stoicheiosis* ["elementary principles," see Gal 4:3, 9; Col 2:8,20; Heb 5:12] with the *Elements* of Euclid will not make Epicurus a physiologist among geometers; but his concern for the rigorous and systematic ordering of the elementary propositions of his physics does make him a geometer among physiologists" (ibid., p. 65).

³⁷Epicurus' Greek was compact and highly technical. And yet "Epicurus went to great pains to make his thought memorable" (ibid., p. 77). "To make his meteorology accessible to

Pythocles, Epicurus attempted to present his thought in an orderly manner" (ibid., p. 61). His *stoicheia* or basic principles "continued to be remembered in Rome more than two centuries later. Lucretius translated four of them (including Texts XI and XII), and Cicero could ask of the Epicureans who were his contemporaries a question whose answer he knew: 'Who among you has not learned Epicurus' *Kyriai doxai* by heart?" (ibid., p. 778). This desire for making his subject matter memorable might be one reason why Lucretius wrote his *De rerum natura* in poetry. Doing so is a natural extension of attitudes he had found in Epicurus' own writings and this in turn is perhaps the greatest evidence of Lucretius' dependence on Epicurus.

³⁸Epicurus derived his physical theory from Democritus (c. 460-c. 370), who had adopted and elaborated the atomic theory invented by Leucippus. However, he made some important alterations to Democritus' theory, and differed from him in making physics subservient to ethics" ³⁹Julian Huxley, from the Introduction to the Mentor edition, p. ix.

⁴⁰In view of these facts Darwin would also have needed time to convince himself of the model's validity. A trace of earlier doubt can be seen in the third clause of the following statement: "My judgment may not be trustworthy, but after reading with care Mr. Mivart's book, and comparing each section with what I have said on the same head, I never before felt so strongly convinced of the general truth of the conclusions here arrived at, subject, of course, in so intricate a subject, to much partial error" (Darwin, *Origin of Species*, p. 200). "I never before felt so strongly convinced." Before reading Mr. Mivart's book was he always partially unconvinced? Jay Gould, in *Ever Since Darwin*, argues "that Darwin delayed publishing his theory as long as he did because it needed a materialist climate of opinion to be accepted, and that climate was only just beginning to come over the horizon in the 1850s" (Bethell, *Burning Darwin*, p. 38. I do not think he held back because of what others might think (see n. 42 below), but because of reservations that he himself had.

⁴¹It is now fashionable to defend Epicurus from the libel of having had any irreligious bias. "Epicurus has often been called an atheist and an enemy of religion. In fact, he was a firm believer in the existence of the gods, and was opposed not to all religion, but only to what he regarded as false religion" (Rouse and Smith, *Lucretius*, p. xxxvii). I do not claim that Epicurus was an atheist, but it is a separate question whether he was an enemy of religion. That he clearly was.

⁴²Ibid., p. 62. "The publication of *The Origin of the Species* [sic] is generally taken as a turning point in British intellectual life, but I don't think you find such turning points unless the society is ready to turn. In Britain in the late nineteenth century, major changes took place in people's perceptions of the nature of reality. Darwin's book serves as a very useful touchstone for understanding these changes, though I don't think the changes should be specifically attached to the book. The change which Pater talks about is not so much between ancient philosophy and the modern outlook: it's a description of the way a whole group of people in Pater's generation reacted against what they perceived to be an authoritarian interpretation of the nature of knowledge, which had been promulgated in the generation before them" (Philip J. Davis and Reuben Hersh, *Descartes' Dream: The World According to Mathematics* [Boston: Houghton Mifflin Company, 1986], pp. 204-5).

⁴³One is reminded of a remark made by Otto von Bismarck at the expense of the National Liberals in his government: "'They always want to wash the fur without making it wet and so always turn in shame from any naked idea'" (A. J. P. Taylor, *Bismarck: The Man and the Statesman*, Vintage Books [New York: Random House, 1955], p. 156).

⁴⁴See Hardy, "Fossil Record," in this issue of *Historicism*.

⁴⁵Davis and Hersh, *Descartes' Dream*, pp. 213-14.

⁴⁶Darwin, *Origin of Species*, p. xv.

⁴⁷William E. Hordern, *A Layman's Guide to Protestant Theology*, rev. ed. (New York: Macmillan, 1968), p. 235. The idea of human perfectability was one corollary of Lucretius' thought: "I cannot even find names for the multiplicity of atomic shapes that give rise to this

variety of types. But I am clear that there is one relevant fact I can affirm: the lingering traces of inborn temperament that cannot be eliminated by philosophy are so slight that there is nothing to prevent men from leading a life worthy of the gods" (Lucretius, *On the Nature of the Universe*, pp. 106-7).

The religion of Christ, on the other hand, is not in direct competition with ethical systems of this sort. It revolves around a Person, who knows our feelings from personal experience--One whom we cannot reject without wounding. Certainly there is an ethical dimension to Christianity, but it is by no means the only one. We cannot create a theory that removes Christ from our lives and then fill the void with ethics. It does not fill that way.

⁴⁸"Charles Darwin took the step that built chance into the foundations of modern biology" (Judson, *Search for Solutions*, p. 84). How is chance predictable? The term "chance" refers precisely to that which is not predictable. This is an interesting problem, not only from the standpoint of realizing that it renders Darwin's theory untestable and therefore meaningless on one level (because it can have only retrospective or *a posteriori* significance), but also from the standpoint of what it tells us about Darwin's relationship to the philosophers of antiquity. Ptolemy (following Aristotle) differs from Copernicus (following Plato) by positing a different center for the solar system. Using this fact as the basis for a metaphor, for Darwin there can be no center. "Materialism asserts that everything in the universe can be reduced to material objects and their interactions. Evolutionism, that everything evolves and hence that people have no special position in the universe" (Davis and Hersh, *Descartes' Dream*, p. 203). Aristotle led people to see the world (i.e., the cosmos) in geocentric terms; Plato led them to see the world in heliocentric terms; Darwin leads us to see the world in acentric terms. These are fundamental differences.