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CHAPTER 16

Science and Myth
The hidden connection[1]

Wolfgang Smith

It is fitting in a Memorial Lecture honoring Ananda Coomaraswamy to reflect upon the significance of Myth; for indeed, it was the Sri Lankan savant who opened our eyes to what may be termed the primacy of myth. In one of his several masterpieces—a slender book entitled *Hinduism and Buddhism*—Coomaraswamy begins by recounting the mythical basis of the respective traditions before turning to their doctrinal formulations. He gives us to understand that myth exceeds doctrine, somewhat as a cause exceeds an effect or the original an artistic reproduction. It is not the function of doctrine to take us *out* of the founding myth: to "explain it away." On the contrary, its function is to bring us *into* the myth; for indeed, the pearl of truth resides in myth as in a sanctuary. Authentic doctrine can take us to the threshold of that sanctuary; but like Moses before the Promised Land, it cannot enter there.[2]

Not all doctrine, however, is sacred, and it turns out that atheists and iconoclasts have myths of their own. Not only the wise, but fools also live ultimately by myth; it is only that the respective myths are by no means the same.

My first objective will be to exhibit the mythical basis of modern science. In particular, I shall discuss three major scientific myths (generally referred to as "paradigms"): the Newtonian, the Darwinian, and the Copernican. My second objective will be to contrast the myths of Science with the myths of Tradition. I will voice the conviction that

[1] The following is the text of the Third Ananda Coomaraswamy Memorial Lecture which was delivered in June 2001 and sponsored by the Sri Lanka Institute of Traditional Studies.

[2] Theologians may contest the primacy of myth in the case of the so-called monotheistic religions, on the grounds that in these traditions historical fact has replaced myth. Yet nothing prevents historical fact from being also a myth. The "primacy of myth" attains actually its highest reading in the founding fact of Christianity, when "the Word became flesh, and dwelt among us" (John 1: 14).

this discernment is of great moment, that indeed it vitally affects our destiny, here and hereafter.

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There was a time when science was thought to be simply the discovery of fact. It is simply a fact, one thought, that the Earth rotates around the sun, that force equals mass times acceleration, or that an electron and a positron interact to produce a photon. It was as if facts "grew upon trees" and needed only to be "plucked" by the scientist. In the course of the 20th century, however, it was found that this customary view is not tenable. It turns out that facts and theory cannot be ultimately separated, that "facts are theory-laden," as the postmodernists say. The old idea that first the scientist gathers facts, and then constructs theories to explain the facts, proves to be oversimplified. Behind every science there stands a paradigm—a "myth" one can say—which guides scientific inquiry and determines what is and what is not recognized as a fact. When Joseph Priestley, in 1774, heated red oxide of mercury and collected a gas known today as "oxygen," did he actually discover oxygen? So far as Priestley himself was concerned, he had found "dephlogisticated air"! To discover oxygen, something else is needed besides a vial of gas: an appropriate theory, namely, in terms of which that gas can be interpreted. Not until Lavoisier had constructed such a theory a few years later did oxygen (or the existence of oxygen, if you prefer) become an established scientific fact.

Just as, in the words of Wittgenstein, thought never gets "outside language," so too science never gets outside its own paradigm. It is true that paradigms are sometimes discarded and replaced; this happens, according to the historian and philosopher Thomas Kuhn, in the wake of crisis, when the presiding paradigm can no longer accommodate all the facts to which in a sense it has given rise. But though a science may indeed outgrow a particular paradigm, it never outgrows its dependence upon paradigms: the "mythical element" in science cannot be exorcised. And I might add that the moment science denies its "mythical" basis, it turns illusory.

The first of the three "presiding paradigms" I have singled out is the Newtonian, which defines the notion of a mechanical world or clockwork universe. What exists, supposedly, is "bare matter," the parts of which interact through forces of attraction or repulsion, so that the movement of the whole is determined by the disposition of the parts. The concept of "bare matter"—the Cartesian notion of *res*

extensa—is of course philosophically problematic, and hinges indeed upon the Cartesian postulate of bifurcation: the idea, namely, that all qualities (such as color) are subjective, and that therefore the external object is not in fact perceived. Descartes himself, it will be recalled, was disturbed by this putative discovery, and felt obliged to convince himself, by means of a rather tortuous argument, that even though the external world proves thus to be imperceptible, it nonetheless exists. You may also recall that 20th century philosophy has veered away from the Cartesian position, and that "bare matter" has been downgraded to the status of an abstraction; to take *res extensa* for the real, says Alfred North Whitehead, is to commit what he terms "the fallacy of misplaced concreteness." What presently concerns us, however, is not the philosophic validity of the Newtonian paradigm, but its scientific efficacy, which is quite another matter. History shows that even though the Newtonian worldview may be spurious—indeed a "myth" in the pejorative sense of this equivocal term—it has nonetheless functioned brilliantly as a scientific paradigm. It appears that error, too, has its use! Science in the modern sense would never have "gotten off the ground" without the benefit of a worldview which is drastically oversimplified.

The success of this dubious paradigm has been spectacular and unprecedented. From the publication of Newton's *Principia* in 1687 to the beginning of the 20th century, it was regarded, not simply as a paradigm, but indeed as the master key which in principle unlocks all the secrets of Nature, from the motion of the stars and planets to the functioning of her minutest parts. I will not recount the triumphs of Newtonian physics which seemingly justified this grand expectation; the list is long and singularly impressive. Suffice it to say that the Newtonian scheme had extended its sway beyond the bounds of mechanics, as commonly understood, to include electromagnetism, which, as it turns out, cannot be pictured in grossly mechanical terms. Yet even here, in this "aetherial" domain, the notion of a whole rigorously reducible to its infinitesimal parts has proved once again to be the key: the famous Maxwell field equations testify to this fact. What is more, even the revolutionary proposals of Albert Einstein, which did break with some of the basic Newtonian conceptions, have left the foundational paradigm intact: here too, in this sophisticated post-Newtonian physics, we are left with a physical universe which can in principle be described with perfect accuracy in terms of a system of differential equations. In a vastly extended sense, the Einsteinian universe is still *mechanical*. It is mechanical, in fact, precisely because it conforms to

what we have termed the Newtonian paradigm, which captures the very essence of mechanism.

However, the luck of the Newtonian paradigm began to run out with the advent of quantum mechanics, which strictly speaking is not a mechanics at all. The whole, it now turns out, is no longer reducible to its infinitesimal parts. At the same time, and indeed as a consequence of this irreducibility, the new so-called mechanics proves not to be deterministic: the rather odd and philosophically difficult notion of probability has now entered the picture in a fundamental and irreplaceable way. It is no wonder that Albert Einstein—the greatest and loftiest among the advocates of mechanism—was profoundly dismayed, and staunchly refused to accept quantum theory as the fundamental physics. Yet everything we know today does point to that conclusion. This is not to say that our present ideas about physics will prove to be the last word; but whatever the future may bring, it is safe to conclude that a return to mechanism is not in the cards.

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Let us turn now to the Darwinian paradigm, which proves to be in a sense the opposite of the Newtonian: for it happens that Darwin's idea has been an unmitigated failure from the start. Darwinist biology is perhaps the only major scientific theory which has subsisted in an unbroken state of crisis since its inception. I contend, in fact, that the Darwinian model has proved worthless as a biological paradigm, which is to say that Darwinism is not truly a scientific theory, but indeed an ideological postulate masquerading in scientific garb. These claims are of course surprising, given the longstanding recognition and highbrow commendations lavished upon this doctrine by the academic and media establishments; but let us take a look at the facts of the case.

Darwin claims that existing species are derived from one or more primitive ancestors through chains of descent extending over millions of years. Never mind, for the moment, by what means the stipulated transformation from primitive to differentiated organisms may have come about; whatever the means, it is clear that Darwin conceived of this evolution as a gradual process involving countless intermediary forms, many if not most of which should by right appear in the fossil record. Yet apart from a handful of highly doubtful specimens, intermediary types are nowhere to be found. This is now generally admitted even by scientists who believe in some kind of evolution.

Steven Jay Gould, for instance, one of the foremost authorities, has felt compelled to abandon orthodox Darwinism for precisely this reason. "Most species exhibit no directional change during their tenure on earth," he writes. "They appear in the fossil record looking pretty much the same as when they disappear; morphological change is usually limited and directionless."[3] One would think that this alone suffices to disqualify the transformist hypothesis; but to the disciples of the British naturalist, it merely implies that evolution must take place at such speed, and under such conditions, that the intermediary forms disappear without leaving a trace. As Phillip Johnson, the Berkeley law professor and author of *Darwin on Trial* has observed: "Darwinism apparently passed the fossil test, but only because it was not allowed to fail."

Darwin's great idea, it will be recalled, is that Nature produces small random mutations, which are then passed on to the genetic line in accordance with the phrase "survival of the fittest." It has been pointed out that this famous phrase, which supposedly provides the key to the riddle of evolution, is in fact a tautology, much as if to say "the rich have plenty of money." This is what the philosopher Karl Popper meant when he charged that Darwin's theory is "unfalsifiable," and therefore void of scientific content. Falsifiable or not, however, Darwin's doctrine does stake a claim. So far from being true by definition, it constitutes in fact one of the most astronomically improbable conjectures ever conceived by the mind of man. Take the case of an eye, for example: Darwin is telling us that this structure of almost unimaginable complexity was formed through a series of minute accidental mutations. Leaving aside the circumstance that a rudimentary eye which cannot yet see is of no use whatever in the struggle for survival, calculations carried out by the mathematician D. S. Ulam show that the number of mutations required to produce a structure of this kind is of a magnitude such that, even within a time frame measuring billions of years, the likelihood of that occurrence is vanishingly small. But this too does not seem to pose a problem for the committed Darwinist; as Ernest Mayr has said by way of response: "Somehow or other by adjusting these figures we will come out all right. We are comforted by the fact that evolution has occurred."[4] And this is indeed the crucial point: for the dyed-in-the-wool Darwinist, evolution as Darwin conceived of it is itself the most indubitable fact.

[3] Quoted by Phillip Johnson in *Darwin On Trial* (Downers Grove, Illinois: Intervarsity Press, 1993), p. 50.

[4] Ibid., p. 38.

It has been claimed that recent advances in molecular biology have at last supplied hard evidence in support of evolution. It is true that these findings permit us to quantify the molecular distance, so to speak, between genomes, and thus between species. Moreover, given the fact that mutations occur at a more or less constant rate, it is possible to estimate the time required to effect a given genetic alteration, as measured by the aforesaid distance. If two species, therefore, have descended from a common ancestor, one can now estimate how long ago the stipulated separation must have occurred. On this basis one speaks nowadays of a so-called molecular clock, which is supposed to measure the rate at which evolution takes place. However, in the euphoria generated by this discovery, one forgets that not even a "molecular clock" can measure the rate of evolution, unless evolution has indeed occurred. But this hypothesis remains today as unconfirmed as it has been from the start. Meanwhile it turns out that the findings of molecular biology are not in fact propitious to the evolutionist cause. The very precision with which molecular structures and processes can now be understood spells trouble for the Darwinist. This is what the molecular biologist Michael Behe has demonstrated so forcefully in *Darwin's Black Box,* a book which has decisively affected the debate over evolution.

To cite at least one example of amazing facts adduced by Behe, I will mention the so-called bacterial flagellum,[5] a kind of paddle used to propel the bacterium through water, driven by a molecular rotary engine, which is powered by an acid. The structure is exceedingly complex, and involves about two hundred and forty different kinds of proteins, which need all to be in place if the engine is to function and the flagellum is to do its job. We have here an example, on a molecular scale, of what Behe terms irreducible complexity. "By *irreducibly complex*," he explains, "I mean a single system composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease function."[6] The notion proves to be crucial: it is not in fact possible to account for the genesis of irreducibly complex structures in Darwinist terms. This can now be demonstrated by means of design theory, a mathematical discipline which allows us to conclude that no process compounded of "chance" and "necessity" can give rise to irreducible complexity, or to something still more general termed

[5] *Darwin's Black Box* (New York: The Free Press, 1996), pp. 70-73.

[6] Ibid., p. 39.

complex specified information.[7] The new mathematical theory, in conjunction with the sharp data of molecular biology, provides at last a rigorous refutation of Darwin's hypothesis. Of course, whether even this will convince the die-hard Darwinist remains to be seen.

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Our third paradigm pertains to contemporary cosmology. It happens that field equations plus astronomical data do not suffice to determine the global structure of the physical universe: an infinite number of "possible worlds" remain. One therefore requires an additional hypothesis. Following Einstein's lead, scientists have generally opted for a condition of spatial uniformity in the distribution of matter; one defines an average density of matter, which is then assumed to be constant throughout space. On a sufficiently large scale, the cosmos is thought to resemble a gas in which the individual molecules can be replaced by a constant density of so many grams per cubic centimeter. It was Hermann Bondi who first referred to this assumption as the Copernican principle, and not without reason; for even though Copernicus himself knew nothing about a supposedly constant density of stellar matter, the principle in question constitutes the ultimate repudiation of geocentrism, and thus consummates what has been termed the Copernican revolution. Henceforth space in the large is assumed to be void of structure or design, and subject only to local fluctuations from an average density, much like the molecular fluctuations in a gas, which remain imperceptible on a macroscopic scale. I would like however to impress upon you that this is not a positive finding or a proven fact, but an assumption which underlies the way most contemporary scientists look at the universe.

It was Einstein who initiated this train of thought by postulating an average density of matter which is constant, not only in space, but also in time. He discovered, however, that his field equations admit no such solution unless one adds an additional term involving the so-called cosmological constant. To prevent his static universe from collapsing under the influence of gravity, Einstein did add the term in question. Before long, however, a Russian mathematician named Alex-

[7] The mathematics of design theory has been expounded in William A. Dembski's, *The Design Inference* (Cambridge University Press, 1998). For its implications regarding Darwinism, see Dembski's, *Intelligent Design* (Downers Grove, Illinois: Intervarsity Press, 1999).

ander Friedmann had shown that solutions to Einstein's field equations can be obtained without this ad hoc constant, simply by letting the stipulated density of matter vary with time. What Friedmann had obtained was an expanding universe, a cosmos of the big bang variety. Soon thereafter, Edwin Hubble, an American astronomer, arrived at substantially the same conclusion on the basis of astronomical findings, and eventually Einstein himself acceded to the notion of a time-dependent universe. Discarding the cosmological constant—"the biggest mistake of my life" he called it—Einstein now joined his colleagues in accepting the scenario of a universe which is said to have expanded out of an initial singularity some fifteen billion years ago.

It was not long, however, before big bang cosmology encountered difficulties, which have since led to a number of modifications in an ongoing effort to accommodate the data of astronomy. But even so the fit between theory and observation leaves much to be desired. As Halton Arp, a noted scientist now at the Max Planck Institute of Astrophysics, pointed out in 1991 with reference to those who claim otherwise: "they overlook observational facts that have been piling up for 25 years and that have now become overwhelming." For example, astronomers claim to have spotted galaxies separated by close to a billion light-years; given the low relative velocities observed between galaxies, it would take about 200 billion years to arrive at such a separation from an initially uniform state: a good ten times longer than the estimated age of the universe. Or to cite another difficulty: There seems not to be nearly enough matter in the universe to generate gravitational fields strong enough to account for the formation and persistence of galaxies. Such incongruities, however, are generally taken in stride by the experts. As Thomas Kuhn points out, the primary concern of "normal science" is to preserve the paradigm, to protect it, so to speak, against hostile data. What does one do, for instance, if there is not enough matter in the universe to account for galaxies? One strategy is to introduce something called dark matter, which supposedly does not interact with electromagnetic fields and is consequently invisible. Its only measurable property is gravitation, and its only discernible effect is to bring the gravitational field up to levels demanded by the big bang scenario. Never mind that not a single particle of dark matter has ever been detected: for advocates of big bang theory, it seems, the existence of galaxies is proof enough. According to some authorities, about 99% of all matter in the universe is dark. And if that were not sufficient, one needs apparently to postulate two kinds of dark matter: so-called "hot" and "cold," with very different

properties. Some scientists have proposed a mix of 1/3 hot and 2/3 cold dark matter as the required blend.

Apart from dark matter—both hot and cold—there are other parameters that can be enlisted in the defense of the reigning paradigm. The cosmological constant, for example, turns out to be of use after all, and has consequently been pressed into service once again. It has been claimed that the resurrected constant accounts for about 80% of the estimated energy density. It appears that the constant first introduced to explain why Einstein's universe did not collapse serves now to explicate why galaxies don't fly apart.

Yet despite an abundance of theoretical options for coping with troublesome data, it appears that big bang cosmology is approaching a state of crisis. A growing number of scientists agree with Halton Arp that adverse observational facts have been piling up, and that a point has been reached beyond which defense of the paradigm is no longer compatible with sound scientific practice. It remains to be seen whether the Copernican paradigm will weather the storm.

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The tenacity and fervor with which the presiding paradigms of science are defended even in the face of plainly hostile data suggest that here too an element of ideology may be at play. Science is not in reality the purely rational enterprise it pretends to be; it is after all the work, not of computers, but of men. There is reason to believe that the paradigms of science are more than cold, sober conjectures, postulated as pure hypotheses. It appears that the top paradigms are weightier than that, which partly justifies calling them "myths." But as I said at the start, not all myths are alike—no more than the men who embrace them. I contend in fact that the stature and dignity of a person depend largely upon the myth he has made his own; in a way we become what we believe. And I would add: no more telling reason has ever been proposed for treading cautiously.

Strictly speaking, we have debased the term "myth" by applying it to the paradigms of science. We have picked up on the pejorative sense which came into vogue during the aftermath of what historians call the Enlightenment, when men thought that science had at last delivered us from the childish dreams of a primitive age. In this optic, myth is perceived simply as the antithesis of fact: at best a pleasurable or consoling fiction. One might go so far as to admit that such fictions may be indispensable: that our life would be intolerably drab and void

of hope without some kind of mythical embellishment; but when it comes to the question of truth, it is to Science that we must look. Such was the prevailing view of myth during the age of modernism; but that age, as one knows, is now nearing its end, both philosophically and culturally. The new outlook, generally termed postmodernist, breaks with the old: the deconstructionist zeal, which in days gone by was directed mainly against established religious, cultural, and political norms—against everything, one could say, that smacked of tradition—has now been turned against the scientific enlightenment as well. The accusers are being relegated to the ranks of the accused. There is logic in this, and a certain justice too; but yet the harm inflicted upon society through the rooting out of tradition has not been thereby atoned or ameliorated. Readers of Ananda Coomaraswamy will understand what it is that we have lost; for indeed, despite the material advantages of modern life, we have become woefully impoverished. Worse than that: we stand at the point of losing what is truly "the one thing needful." Cut off (as never before) from the source of our being, we have all but forgotten that life has meaning: a goal which is not ephemeral. But needless to say, neither modern science nor its postmodernist critics can enlighten us in that regard. For this one requires authentic myth: the kind that belongs inextricably to sacred tradition as the paramount expression of its truth. Such myth, says Ananda Coomaraswamy, "embodies the nearest approach to absolute truth that can be stated in words."[8] A far cry indeed from "myth" in the pejorative sense to which we have grown accustomed.

Myth alone, however, no matter how exalted it may be, will not save, liberate, or enlighten us. Traditionally speaking, the illuminating myth must be received under appropriate auspices, which include conditions upon the recipient or disciple, the chief of which is *sraddhā*, faith: there can be no spirituality, no true enlightenment, without faith. Now, it is at this point, I say, that modern science touches upon the spiritual domain: it enters the picture, I contend, not as an ally of true religion, but as an impediment to faith, and therefore as a spoiler, an antagonist. It is a case of opposing myths, of mythologies that clash: or if you wish, of myth and anti-myth.

Let us try to understand this more clearly. We must not be put off by the simplistic look of traditional myth, its crudely literal sense, remembering that such myth speaks, not to the analytic mind, but to the intuitive intellect, sometimes termed "the eye of the heart,"

[8] *Hinduism and Buddhism* (Westport, Connecticut: Greenwood Press, 1971), p. 33.

a faculty which, alas, modern civilization has been at pains to stifle. It is "myth" in this high sense that constitutes "the nearest approach to absolute truth." What we have termed "myths" of science, on the other hand, deliver such content as they have to the rational mind; there is no mystery here, no reference to higher realms of truth. Quite to the contrary: these myths offer a substitute, a "quasi-truth" here below, a kind of idol of the mind, which impedes our spiritual vision. As a tool of science—as a paradigm in the strict sense—they have of course a legitimate use: think, for instance, of the now discredited Newtonian paradigm. The trouble with paradigms, however, is that they tend to become absolutized. And this is the point at which the idolatry sets in, the point where the paradigms of science turn into anti-myth.

I realize that in taking this stand I am offending against the political correctness of our day. We are told that the proverbial conflict between science and religion is based upon antiquated ideas. It has been said that in the age to come the two disciplines will be seen as complementary aspects of a single enterprise, each contributing to the good of man within its own appropriate sphere. All truth, we are assured, is ultimately consonant. But amidst this idyllic harmony, it is always religion in its traditional modes that is obliged, by the presiding authorities, to conform itself to the putative truths of science by "demythologizing" its beliefs. One forgets that science too has its mythology, and that the so-called truths at issue are also in a way mythical. The Darwinist account of man's origin, for example, is every bit as mythical as any traditional cosmogony; it is only that the respective myths are not only different, but indeed opposed. The demythologizers of religion do have a point! My complaint is that they are demythologizing the wrong thing: they have jettisoned the sacred for the profane. In the name of this or that pseudo-myth, these blind guides have cast out "the nearest approach to absolute truth that can be stated in words." The new irenic approach to the old problem proves to be deceptive: the kiss of science, I say, is the death of religion.[9]

One is reminded of the implacable antagonism between the Devas and the Asuras ("gods" and "demons," good angels and bad) as depicted in Hindu lore; and I would add that the Darwinist doctrine,

[9] Of authentic religion, that is. Drop that qualification, and my statement becomes patently false. We appear to be entering the so-called New Age, the era of pseudo-religions, many of which (if not all) are indeed the offspring of the aforesaid unholy union. For a case study pertaining to Christianity, I refer to my monograph on Teilhardism. See *Teilhardism and the New Religion* (Rockford, Illinois: TAN Books and Publishers, 1988).

in particular, can be classified as distinctly *asuric* in both its content and provenance. One could go so far as to characterize Darwinism as the quintessential *asuric* myth; it expresses to perfection the *asuric* credo as given in the Bhagavad Gita (chapter 16, verse 8):

> They say: "The world is devoid of truth, without a moral basis, and without a God. It is brought about by the union of male and female, and lust alone is its cause: what else?"[10]

From a Christian vantage point, it can be said that Darwinism is indeed the pseudo-myth of Antichrist, the Father of Lies and ancient Antagonist of man's salvation.[11] We are dealing thus, not simply with beliefs or speculations of erring mortals, but with something far greater and more perilous. In the words of St. Paul: "We wrestle not against flesh and blood, but against principalities, against powers, against the rulers of the darkness of the world, against spiritual wickedness in high places" (Eph. 6:12). It follows that the individual outside the pale of sacred tradition stands little chance of emerging from this contest unscathed. No matter how erudite or brilliant we may be, our position is then at best precarious. Far more hazardous, in fact, than we can normally imagine: it is no small thing to fall prey to *asuric* myth!

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The case of Darwinism is admittedly exceptional; as we have had occasion to observe, the Darwinian paradigm stands out even from a scientific point of view by its conspicuous failure. But what about the other paradigms of science: are they likewise opposed to the traditional worldview? There are of course a great number of paradigms in scientific use at the present time; the structure of contemporary science is highly complex, and there are literally "paradigms within paradigms." However, it is the top-level paradigms that matter most from a philosophical and cultural point of view; it is these that have

[10] Having thus formulated the *asuric* credo, the Gita proceeds to describe the men who have made that creed their own: "Holding such a view, these lost souls of little understanding and fierce deeds rise up as the enemies of the world for its destruction." One cannot but think of the technocrats who will be "running the world" under the New World Order!

[11] This view has been forcefully propounded by the late Orthodox hieromonk Seraphim Rose. See his masterful monograph, *Genesis, Creation and Early Man* (Platina, California: St. Herman of Alaska Brotherhood, 2000).

mainly shaped the prevailing scientific outlook. In particular, it can be argued that this *Weltanschauung* is in fact largely defined by the three paradigms which I have singled out for consideration: the Newtonian, the Darwinian, and the Copernican. And I contend that all three are irreconcilably opposed to the traditional worldview. Having already identified Darwinism as an *asuric* myth, it remains to consider the Newtonian and Copernican claims. I must of course be brief; but I shall try at least to touch upon the crux of the matter.

It is comparatively easy to see that there could be no such thing as spiritual life in a mechanical universe, because in such a universe there could in fact be no life at all: not even an amoeba could exist in a Newtonian world. And why not? For the simple reason that no living organism is reducible to the sum of its parts. This fact has been well understood by philosophers at least since the time of Aristotle, and is being rediscovered and reemphasized today by some leading biologists. Traditional cosmologies, on the other hand, refer to the authentic cosmos, the world which not only serves as a habitat to plants and animals, but houses artists and poets, mystics and saints. So far from constituting a mechanical system, the authentic universe is in truth a theophany: a manifestation of what the Vedas term *nāma*, Plato terms Ideas, and St. Paul "the invisible things of God"—not forgetting that to the pure in heart it mirrors "even His eternal power and Godhead" (Romans 1:20). There could in fact be no greater disparity between the cosmos, as traditionally perceived, and a Newtonian world: the two, it turns out, are not merely incompatible, but indeed antithetical. Whereas the former exceeds what we are able to grasp by virtue of its inexhaustible fullness, the latter eludes our grasp on account of its emptiness, an indigence which literally defies imagination. And let us not fail to note that the impact of a Newtonian cosmology upon human culture cannot but be stifling in the extreme; as Huston Smith has well said: "A meaningful life is not finally possible in a meaningless world."

The insufficiency of the Copernican paradigm is perhaps harder to discern, because it pertains to things remote in space and time, and thus remote from the familiar world. One must however recall that the sun, moon, and stars play a major role in the traditional worldview; as we read in a famous psalm of David: "The heavens declare the glory of God; and the firmament sheweth his handywork" (Ps. 19:1). According to the Copernican principle, however, the cosmos at large exhibits no global structure, no hierarchic architecture, no trace of exemplarism or design: only matter randomly distributed, like so

many raisins in a pot of oatmeal. Whereas the Darwinian paradigm denies God as the Creator of life, the Copernican denies Him as the Architect of the universe. The assumption of a constant average density of matter throughout space may be a useful device for obtaining solutions to the field equations, but is hardly compatible with the perennial wisdom of mankind.

Fortunately, however, science is self-corrective to a degree, which is to say that faulty paradigms are eventually replaced. The Newtonian has already been superseded, and both the Darwinian and the Copernican are now under attack. It may be true, as Thomas Kuhn maintains, that failed paradigms are invariably retained until a new one has been approved by the scientific community; but in the end this does take place—so long, at least, as the scientific establishment retains a modicum of integrity. Science is an ongoing process, and its paradigms are by no means sacrosanct.

The only things sacrosanct, in fact, are the core elements of sacred tradition. It is the distinctive characteristic of sacred tradition to have a more-than-human, more-than-merely-historical origin, implying that authentic tradition, in all its essential elements—from doctrine and ritual to moral codes—partakes somewhat of eternity. We may accept or reject sacred tradition: that is our inalienable option; but let us understand that outside of the sacred there can be no certainty, no absolute and abiding truth.

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