
A MASQUERADE OF SCIENCE

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THE DUST JACKET TO P. W. ATKINS'S *THE CREATION* hails it as "an enthralling and poetic vision of modern science." Readers are further promised that they will "discover both the ultimate nature of the universe and the manner in which it came into being." In the preface the author himself tells us that "this is an account of the nature and the origin of the universe, but it is not just another book about astronomy or elementary particles."¹ Atkins wishes to deal only with the "central aspects of the universe . . . that are now open to scientific elucidation."² Consequently, to avoid the bewildering burden of detail, he chooses to "select from modern science the broad features of its explanations and implications."³

From these and similar comments, and from the numerous refer-

ences to physical phenomena and our contemporary scientific understanding of them, readers are encouraged to think of this as a book whose subject matter lies squarely within the domain of modern natural science. While both the author and the publisher candidly admit that this is a provocative and unusual book, its contents are still presented as a product of the contemporary scientific enterprise. Its conclusions claim *scientific* warrant; even its conjectures are offered as *implications* of science. In fact, the principal goal of the book is to demonstrate that the origin of the physical universe from nothing, without the intervention of any external, nonphysical agent, lies within the grasp of scientific explanation. *The Creation* is a book which claims to draw only from the well of natural science and the reservoir of its logical implications.

That claim, however, must be rejected. This is not an authentic product of natural science. Science is its mask, not its face. The domain of the book's principal thesis lies far beyond the borders of natural science. The thesis of this volume is worthy of critical examination, but only after its arena of discourse has been properly identified. For the moment, I wish only to demonstrate that the central thesis of *The Creation* does *not* reside within the domain of the natural sciences.

To facilitate this demonstration, let us establish some working definitions of important terms so that certain crucial distinctions can be made. Following the example of cosmologist Edward R. Harrison,⁴ I find it fruitful to distinguish between *Universe* and *universe*. By *Universe* I shall mean the unified and coherent whole of reality—all that exists, encompassing such categories as deity, material things, persons and ideas, and including a system of relationships which specify the status of each member relative to other members. The Universe in its fullness, however, is beyond human comprehension; therefore, we must be content to construct models, mental pictures of the Universe of which we are a part. We shall use the word *universe* to represent a humanly constructed model of the Universe.

The concept of universe varies from culture to culture and from age to age. For most of us, our concept of universe—our world view—is more an inheritance, historically and culturally conditioned, than a product of individual reflection. As members of a culture whose inheritance is drawn from many differing world-view traditions, one of our tasks is to become aware of the diverse concepts of universe present in our culture, to distinguish them from one another and to distinguish each of them from the Universe we seek to know.

In contemporary usage, however, the term *universe* is commonly employed to refer only to the physical universe. The physical universe is that component of one's universe (one's model of reality) that is accessible to the natural sciences. The universe constructed by the natural sciences is a structured and dynamically interacting system of matter, radiation, energy, space-time and like constituents. To call attention to the importance of recognizing the restricted definition of the physical universe, Harrison introduces the "containment principle," which states: "The physical universe contains everything that is physical and nothing else."⁵ Though this may appear so obvious as not to require an explicit statement, it is frequently overlooked.

Natural science, as it has come to be defined by the professional scientific community, and as manifested by the character of professional scientific literature, is limited to the study of the physical universe. The domain of contemporary natural science, we said in chapter one, is the inherent intelligibility of the physical universe. As Harrison puts it, "Modern [scientific] cosmology studies a physical universe that includes all that is physical and excludes all that is nonphysical."⁶

Note carefully: this is not to say that nonphysical entities do not exist or that they are not significant. Harrison's description of scientific cosmology is simply calling attention to the limited domain of the natural sciences. The sciences neither affirm nor deny the existence of a nonphysical realm; they choose, rather, to remain silent. The nonphysical realm has been consciously excluded from the domain

of scientific investigation. If one wishes to affirm belief in a deity who is the Creator of the physical universe, one may not claim *scientific* warrant for that belief. Similarly, if one wishes to deny the existence of anything outside of the physical universe, one must recognize that such a metaphysical assertion cannot be warranted by *scientific* investigation.

The study of the inherent intelligibility of the physical universe is incapable of determining whether that universe is self-existent or is dependent on a divine Creator for its existence. The basis for such a metaphysical choice lies outside of the domain of natural science. To be cognizant of the limited domain of science is a matter of competence; to honor the boundary of that domain is a matter of integrity.

If the domain of natural science is the inherent intelligibility of the physical universe, can Atkins's book, *The Creation*, be considered a product of the scientific enterprise? Clearly not. The chief topic of *The Creation* is the ultimate question of cosmogenesis: What is the source, or cause, of the existence of the physical universe? *

As Atkins states in the preface, "My aim is to argue that the universe can come into existence without intervention, and that there is no need to invoke the idea of a Supreme Being in one of its numerous manifestations."⁷ And what does Atkins offer the reader as the basis for his argumentation? None other than the results of *natural science*. "What I am trying to do, it should always be remembered, is to show that deep questions about cosmogony [by which he means cosmogenesis] can be asked, that in some cases they have already been answered, and that in others *science* is pointing to the type of answer that may be forthcoming quite soon."⁸ Elsewhere he wishes the reader to "admit that *science* is extraordinarily strong and . . . that it appears

*Note: Atkins uses the word *cosmogony* rather than *cosmogenesis*. I prefer, however, to employ Harrison's distinction between *cosmogony* (the study of the formation of material systems within the physical universe, such as galaxies, stars and planets) and *cosmogenesis* (the study dealing with the origin—in the sense of source or cause—of the existence of the physical universe as a whole).⁹

to be on the edge of explaining everything."¹⁰

To assert that science has the potential for explaining everything, including cosmogenesis, constitutes a grievous misrepresentation of the scientific enterprise. Perhaps Atkins is merely semantically trapped by his own dogmatic reductionism. For Atkins, the physical universe is all there is. Therefore, if science is the study of the physical universe, then science is the study of all there is.

But I believe the shortcomings of Atkins's claims are more serious than this semantic ambiguity. By denying the existence of anything outside of the realm of physical phenomena, he equates the Universe with the physical universe modeled by contemporary science. Furthermore, he wishes to warrant that denial by appeal to the results of scientific investigation. However, as we have already noted, natural science is inherently incapable of warranting either the denial or the affirmation of a nonphysical realm. Thus, Atkins must own either of two major shortcomings in his argumentation: (1) he is employing, without candidly informing his readers, an unconventional definition of natural science; or (2) he is illegitimately claiming scientific warrant for his metaphysical assertions concerning the contents of the Universe.

Atkins's *The Creation* may be "an enthralling and poetic vision," but it surely is *not* the product of modern natural science. Neither can its conclusions be hailed as "implications" of contemporary science. Atkins's assertions will have to be judged on their own merits. Any appeal to the power or prestige of natural science is entirely unwarranted and must be rejected as grossly misleading. Atkins is no doubt welcome to express his personal world view, but his readers certainly deserve to be more accurately and honestly informed concerning the source of that perspective. Natural science is not the source of Atkins's beliefs. For him to admit this openly would constitute an admirable display of both personal and professional integrity. For him to deny it is to cover the face of his naturalistic creed with the mask of natural science.

The Face Unmasked: Naturalism

The Creation does not offer its readers a system of scientific theories for evaluation by the conventional criteria of professional natural science. Rather, it presents readers with P. W. Atkins's attempt to find scientific warrant for his personal world view—his naturalistic creed. While Atkins does employ arguments which refer to scientific theories, his purpose is not to evaluate the theories per se, but to convince readers that (to use Harrison's terminology) the Universe contains no more than the physical universe.

The principal objective of *The Creation* is to persuade its readers that there is no divine Creator; that the physical universe has created itself from absolutely nothing; that the universe is autonomous (self-regulated, not divinely governed); that neither the universe nor we who inhabit it have any ultimate value or significance; and that the existence and history of the corporeal cosmos is utterly without purpose. Atkins's message is that we are *nothing more* than complex assemblages of self-created matter, that we are merely "the children of aimless chance."¹¹

Behind the mask of natural science we find the face of naturalism. Although natural science self-consciously restricts its domain to the inherent intelligibility of the physical universe, naturalism makes bold credal assertions concerning the status of the physical universe relative to deity and the implications of that status for questions concerning the origin, governance, value and purpose of the universe.

Atkins's brand of naturalism might also be called "reductive materialism," the belief that all of reality can be reduced to the material (physical) world and that all real phenomena can be understood in terms of material behavior alone. According to Atkins, there is no realm of deity, no God, no Creator. Furthermore, what we are tempted to perceive as a meaningful realm of human self-consciousness or human thought is fully reducible to the complex electrochemical processes that take place in those marvelous molecular machines that we call the human brain. Atkins's concept of reality resonates with

that of Carl Sagan who equates the Cosmos with the physical universe, and for whom "The Cosmos is all that is or ever was or ever will be."¹²

The only kind of deity considered by Atkins in *The Creation* is a deistic version of a creator whose sole function is to effect, by "intervention," the inception of the physical world. But even this distant echo of deity is silenced by Atkins. His strategy is to present a series of increasingly strong assertions that the task of such a creator is far smaller than traditionally believed; in fact, according to Atkins, it is now scientifically demonstrable (or very nearly so) that such a creator has essentially nothing to do and can therefore be an "infinitely lazy creator."

For Atkins, "the only way of explaining the creation is to show that the creator had absolutely no job at all to do, and so might as well not have existed."¹³ Atkins leads the reader on a "journey to discover . . . the manner in which [the universe] came into being."¹⁴ Toward the end of this journey the reader is informed that "we have been back to the time before time, and have tracked the infinitely lazy creator to his lair (he is, of course, not there)."¹⁵ Atkins thereby presumes to have fulfilled his earlier promise to show "how a non-existent creator can be allowed to evaporate into nothing and to disappear from the scene."¹⁶

While I fully reject Atkins's atheistic world view, nevertheless I think he has performed a valuable service by demonstrating where a consistently naturalistic perspective leads—to a concept of a completely meaningless existence. Having rejected the existence of God, even of an infinitely lazy deistic type of creator, Atkins must search for meaning and significance for humanity in purely materialistic terms. Quite appropriately, Atkins finds nothing significant in a Universe without God or in a humanity unrelated to deity. The implications of this insignificance for the life of a person or of a community would be of utmost importance, but Atkins chooses not to explore this territory.

Humanity, as presented in *The Creation*, has no ultimate significance. The human being is no more than a complex arrangement of

elemental atoms. Listen to Atkins profess his own insignificance:

If there are atoms there will in due course be molecules; and if there are molecules on warm, wet platforms, there will in due course be elephants. (p. 5)

... elephants, and things resembling elephants will in due course be found roaming through the countryside. (p. 3)

Some of the things resembling elephants will be men. They are equally unimportant. . . . Their special but not significant function is that they are able to act as commentators on the nature, content, structure, and source of the universe and that, as a sideline, they can devise and take pleasure from communicable fantasies. (p. 3)

Man and his counterparts elsewhere are merely elephants with a tendency to hubris. We are fragments of the universe, elephants happily free to roam intellectually as well as spatially. As elaborate outcrops of the physical world, *and no more than that* we are no more necessary to its existence than is a breeze. (p. 85, emphasis added)

Presumably, if either the readers or the writer of these words has a sense of significance, a sense of being more than a mere material machine, even that is a delusion arising out of electronic noise in the brain's electrochemical machinery.

The heart of a world view—a creed—is a set of concepts concerning the relative status of God, humanity and the physical world. Atkins's naturalism (or reductive materialism) asserts a Universe without deity, a Universe composed wholly of things physical. Its concept of the human person is thoroughly mechanistic. Humanity is an intriguing but insignificant assemblage of atoms arranged into a structure of sufficient complexity to experience the illusion of significance. The only reality is the physical world, but, as we shall see later, even that physical world, according to Atkins, is but a variant form of "nothing." The physical world has the status of "all there is." As the ultimate reality, the physical universe stands in place of God, making his existence an unnecessary conjecture, in Atkins's judgment.

If, by virtue of its being all that exists, the physical universe has the status of ultimate reality, then it cannot owe its existence to any other being. The universe of naturalism must be self-originating. For this reason, I surmise, Atkins devotes the bulk of his effort in *The Creation* to the development of an argument for the credibility of a self-originating universe—one that is able to create itself from nothing (whatever that may mean). Having speculated (or we might say, "devised a communicable fantasy") concerning the existence of a primordial "dust" of spacelike and timelike points not yet organized into four-dimensional space-time as we know it, Atkins says: "But we need one more concept, a concept able to account for the emergence of things out of nothing."¹⁷ Atkins expresses a deep faith that natural science is capable of providing such a concept, and he thinks "we can see the rudiments of the self-inception of the world."¹⁸

What are the ingredients of this self-inception concept?

There are two ingredients. First we need the points that are to assemble into patterns defining space and time.

Then we need the points that separate from their opposites by virtue of the pattern of time. Time lends life to the points; the points lend life to time. Time brought the points into being, and the points brought time into being. This is the cosmic bootstrap. (p. 111)

In a word, the central speculation is that space-time generates its own dust in the process of its own self-assembly. The universe can emerge out of nothing without intervention. By chance. (p. 113)

Atkins is displaying honesty by identifying this as *speculation*. Further clarification, however, is essential. In the context of the discussion, readers may be misled into thinking of this self-inception concept as being a *scientific* speculation. Such, however, is not the case at all. As a conjecture concerning the ultimate source and nature of reality, this is a *metaphysical* speculation, with religious implications. Atkins's "enthraling and poetic vision" must be perceived as a profession of his naturalistic creed, not as a specimen of scientific theorizing. Atkins's

vision is indeed an intriguing speculation. But it must be seen as a religious conjecture concerning the implication of his reductive materialism for the source of existence itself. Such a matter is not a concern of professional natural science, but a tenet of Atkins's naturalistic creed.

Within the framework of a theistic world view, the physical universe is perceived as being totally dependent on the sovereign Creator for both its existence and its governance. The Bible, for example, speaks of God the Creator not only as the originator of the created world, but also as its governor. Even the behavior of inanimate material systems is ultimately governed by divine action.

This is not to say that the Creator dictates every physical event, thereby destroying the possibility of human responsibility. Rather, in a manner consistent with biblical talk concerning God's active presence in his created world, we seek to recognize that the source of governance and the source of existence for the physical world are identical—the activity of its divine Creator. The character of divine governance, as depicted in the Bible, precludes the meaninglessness inherent in either total chaos or absolute dictation. Furthermore, the reality of divine governance ensures that cosmic history will achieve the ultimate purposes of the Creator for his creation.

According to the perspective of reductive materialism, however, the physical universe must be autonomous. If the self-originated material world is all there is, then its behavior must be self-governed. The natural sciences excel in discovering the patterns of material behavior; we often refer to these patterns as the "laws of nature." Atkins, however, appears to be uncomfortable with talk about "laws" or "rules" (perhaps this is because a reference to rules so readily suggests the existence of a rule-giver) and argues that a thing's *behavior* is fully determined by its *nature*. If it is a thing's nature to act in a certain way, its action need not be regulated by a creator-imposed rule. Says Atkins: "An infinitely lazy creator would avoid the specification of rules if an entity's nature alone could govern its behavior."¹⁹

Following this introduction to the topic of governance, Atkins proceeds to argue his case that even rules of material behavior are an illusion. The patterns of behavior exhibited by light or particles, claims Atkins, are not to be seen as evidence for their response to a governing power, but rather as a product of their complete freedom to explore all possible paths of activity. The resulting patterns of behavior are merely an artifact of survival. Other possible paths of behavior are inherently self-annihilating. The kind of behavior that survives forms a pattern, thereby giving the illusion of obeying a rule.

Although Atkins has devised a fascinating scenario for the generation of patterns in material behavior, he has not been able to avoid the question of governance. Whereas traditional discussions may have distinguished between a thing's *properties* and its *behavior*, Atkins has chosen to combine both of these qualities into a thing's *nature*. Whereas other adherents of naturalism might speak of autonomous material behavior, Atkins employs a concept of self-generated nature.

The basic question, however, remains: Does the source of a thing's nature (including the manner of its behavior) reside wholly within the physical universe, or does a thing's nature originate in the action of an agent distinctly different from the physical universe—a divine Creator, for example? As in the case for origin of existence, so also the question of governance (origin of behavior) is a profoundly metaphysical and religious question. Atkins's answer is not the product of scientific theorizing; it is a tenet of his naturalistic creed. Atkins is entitled to profess his creed, but in order to evaluate it appropriately we must be careful to distinguish creedal assertions from scientific conclusions. The evaluation of scientific theories is an activity appropriate for the science classroom. The evaluation of religious perspectives, however, might better be carried out in a different context.

Closely related to the question of governance is the question of purpose. Is there a purpose for the existence of the universe and the course of cosmic history? Consistent with his reductive materialism, Atkins considers purpose to be an illusion. Basing his perspective on

his interpretation of the second law of thermodynamics, Atkins asserts that, "All change . . . arises from an underlying collapse into chaos. We shall see that what may appear to us to be motive and purpose is in fact ultimately motiveless, purposeless decay."²⁰ According to Atkins, *nothing* is exempt from this indictment. "Everything is driven by motiveless, purposeless decay."²¹

How then does it happen that the illusion of motive, or purpose or mind appears so prevalent in the world? Speaking about the atomic and molecular activity that takes place in the brain, Atkins says: "That this motiveless, purposeless, mindless activity emerges into the world as motive and purpose, and constitutes a mind, is wholly due to the complexity of its organization."²²

If Atkins were to say that natural science is incapable of dealing with questions of ultimate purpose, that would be an appropriate recognition of the limited domain of the natural sciences. Science, performed with integrity, is eager to recognize its own limitations in both domain and methodology. Atkins, however, makes assertions far outside of those limits. Having failed to find a way to comprehend motive, purpose or mind in wholly physical terms, Atkins asserts that such concepts are no more than illusions of complexity. In essence, Atkins would have readers believe that if something cannot be comprehended within the categories accessible to the natural sciences, then it simply does not exist. By now it should be clear that such a belief cannot be warranted by appeal to the natural sciences; it is no more than an assertion of reductive materialism.

The principal thesis of *The Creation* is that the physical universe is the self-originating, self-sustaining, self-governing, motiveless, purposeless, mindless sum total of all reality. Consequently, *The Creation* must be seen as Atkins's profession of faith, his statement of belief in reductive materialism, his naturalistic creed. But insofar as Atkins attempts to employ the results of natural science to provide warrant (or at least the appearance of warrant) for his creedal commitments, *The Creation* functions as an exemplar of naturalistic folk science.

Creationist folk science (more commonly called "creation-science") strives to warrant its belief in a particular concept of divine creation by means of unconventional interpretations of selected empirical data. Naturalistic folk science seeks to warrant its belief in reductive materialism by constructing arguments which have the appearance of being logical extrapolations from the results of professional natural science. In neither case are the boundaries of the domain of natural science honored. In both cases science has become indentured in the service of an ideological or religious commitment. Behind the mask of numerous references to scientific investigation we find the face of Atkins's naturalistic creed.

- ¹³Henry M. Morris, *The Genesis Record* (San Diego: Creation-Life, 1976).
- ¹⁴Asimov's view of the Bible falls far short of an adequate view of Scripture as the Word of God. "The Biblical writers and editors were thoughtful men who borrowed selectively, choosing what they considered good and rejecting what seemed nonsensical or unedifying. They labored to produce something that was as reasonable and as useful as possible" (p. 3).
- ¹⁵Asimov, *In the Beginning*, p. 11.
- ¹⁶*Ibid.*
- ¹⁷For a satisfying, readable overview of the genuine reactions of scientists in response to the developments of science see, for example, C. A. Russell, *Cross-Currents* (Grand Rapids: Eerdmans, 1985). Many other excellent works on the history of science also make it plain that many outstanding scientists, such as Faraday, Newton, Maxwell, Kelvin and others did not draw the conclusions that Asimov thinks were drawn. Consult, for example, the work of Hooymaas, Klaaren, Raven, Dillenberger and Peacocke. A very readable new work is that of C. E. Hummel, *The Galileo Connection* (Downers Grove, Ill.: InterVarsity Press, 1986).
- ¹⁸Asimov, *In the Beginning*, pp. 11-12.
- ¹⁹We are not here making any judgment about the validity of Futuyma's case for evolution. Futuyma presents the case for evolution cogently and eloquently, but whether or not evolution is "true" is beside the point of the argument that is being made in this case study.
- ²⁰Futuyma, *Science on Trial*, p. 209.
- ²¹*Ibid.*, p. 213.
- ²²*Ibid.*, p. 167.
- ²³*Ibid.*, pp. 169-70.
- ²⁴*Ibid.*, p. 147.
- ²⁵*Ibid.*, pp. 12-13.
- ²⁶*Ibid.*, pp. 98-99.
- ²⁷Christians, of course, also confess that God placed us on earth to be conscientious stewards of his good creation. Though we may use the earth, we must use it responsibly as those who are image-bearers of the living God and as those who have been entrusted with something that ultimately belongs to the Creator.
- ²⁸Futuyma, *Science on Trial*, p. 131.

Chapter 8: A Masquerade of Science

- ¹P. W. Atkins, *The Creation* (San Francisco: W. H. Freeman & Company, 1981), p. vii.
- ²*Ibid.*
- ³*Ibid.*
- ⁴Edward R. Harrison, *Cosmology: The Science of the Universe* (Cambridge: Cambridge University Press, 1981), pp. 10-11.
- ⁵*Ibid.*, p. 100.
- ⁶*Ibid.*
- ⁷Atkins, *Creation*, p. vii.
- ⁸*Ibid.*, p. 6, emphasis added.
- ⁹Harrison, *Cosmology*, pp. 107-11.
- ¹⁰*Ibid.*, p. viii, emphasis added.

- ¹¹*Ibid.*, p. 127.
- ¹²Carl Sagan, *Cosmos* (New York: Random House, 1980), p. 4.
- ¹³Atkins, *Creation*, p. 17.
- ¹⁴*Ibid.*, p. 17.
- ¹⁵*Ibid.*, p. 115.
- ¹⁶*Ibid.*, p. 17.
- ¹⁷*Ibid.*, p. 107.
- ¹⁸*Ibid.*, p. 111.
- ¹⁹*Ibid.*, p. 45.
- ²⁰*Ibid.*, p. 21.
- ²¹*Ibid.*, p. 23.
- ²²*Ibid.*, p. 37.

Chapter 9: Sagan's Cosmos

- ¹Carl Sagan, *Cosmos* (New York: Random House, 1980), p. 39; though I refer to the television series, quotations will normally be cited from the published version.
- ²*Ibid.*, p. 131.
- ³*Ibid.*, p. 4.
- ⁴*Ibid.*
- ⁵*Ibid.*, p. 180.
- ⁶*Ibid.*, p. 127.
- ⁷*Ibid.*, p. 258.
- ⁸*Ibid.*, p. 242.
- ⁹Sagan, "Cosmos," Episode 12, emphasis added.
- ¹⁰Sagan, "Cosmos," Episode 10, closing lines.
- ¹¹Sagan, *Cosmos*, p. 176.
- ¹²*Ibid.*, p. 173-74.
- ¹³*Ibid.*, p. 174.
- ¹⁴*Ibid.*, p. 177.
- ¹⁵*Ibid.*, p. 258.
- ¹⁶*Ibid.*, p. 257.
- ¹⁷Sagan, "Cosmos," Episode 4.
- ¹⁸Sagan, *Cosmos*, p. 333.
- ¹⁹*Ibid.*, p. 345.
- ²⁰*Ibid.*, p. 250, emphasis added.
- ²¹*Ibid.*, p. 4.