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## SCIENCE, RELIGION, AND WORLDVIEW

Alfred North Whitehead once wrote that, when we consider what science and religion are, “it is no exaggeration to say that the future course of history depends [upon our decision] as to the relations between them.” Lying behind this statement was his view of science and religion not as two bodies of doctrine but as two *forces*—“the force of our religious intuitions, and the force of our impulse to accurate observation and logical deduction”—and his judgment that they are “the two strongest general forces” influencing us (SMW, 181).<sup>1</sup> When this statement was written, in 1925, it would have evoked much dissent: The modern view that religion was atavistic, a superstitious relic from bygone times soon destined to disappear, was widely held. For Whitehead to regard religion as a force to be mentioned in the same breath with science would have seemed strange. In the latter part of the twentieth century, however, the various religions of the world revealed that they are indeed sources of tremendous power. This resurgence of religion has been surprising to the modern secular mind. This resurgence is, indeed, one of the main reasons for saying that we live in distinctively postmodern times. In our day, we can appreciate, perhaps

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1. All books are cited by abbreviations, which are listed directly after the author’s name in the bibliography at the end of the book. For the present citation, for example, locate “Whitehead, Alfred North (SMW),” which refers to his *Science and the Modern World*.

better than could most of Whitehead's contemporaries, his conclusion that it is of utmost importance to overcome the fact that these two forces "seem to be set one against the other" (SMW, 182).

This conviction lies behind the present book. If our religious impulses and our scientific impulses are indeed the two strongest general forces on our thought and behavior, and yet these two forces appear to be opposed to each other, then we are drawn in opposite directions. If we are thus divided, it will be difficult to motivate and organize ourselves to take the kind of concerted action that will be necessary if we are to meet the unprecedented challenges of our day, such as political and economic injustice, domestic and international insecurity, overpopulation and ecological deterioration.<sup>2</sup> This internal division has become perhaps the central phenomenon of our political and cultural life, as those representing resurgent "religion" usually have radically different agendas from those representing "scientific rationality."

The conflict between scientific and religious impulses, however, does not occur simply between two kinds of people, as if some were purely "scientific types" and others purely "religious types." Rather, the conflict means that we as individuals are ourselves internally torn, drawn in opposing directions. For example, we read that the "fate of the earth" is in danger and that it is up to us to prevent its destruction by nuclear weapons or polluting technology, but then we hear from other voices that the fate of the world is entirely in God's hands, that it is human hubris to try to "save the world." Or, agreeing with the book's author that the fate of the world is really in human hands, we then read his paralyzing question: If life is ultimately meaningless, what difference does it really make if life on Earth is extinguished millions or even billions of years prematurely?

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2. In reflecting on a meeting that issued a "Joint Appeal by Science and Religion on the Environment," John Haught brings out the importance of consensus on the nature of reality by the scientific and religious communities if they are to reach meaningful consensus on the moral and practical level. Among the participants in the meeting, he reports, were Carl Sagan, E. O. Wilson, and Stephen Jay Gould, all of whom are well known for saying that religions, insofar as they purport to reflect the truth about reality, are essentially illusory. At this meeting, however, they each spoke "very favorably of religion's possible role in alleviating the ecological crisis," with each giving the same rationale—that although science alone gives us the facts about the cosmos, "religions can foster the kind of moral fervor that the environmental movement sorely needs" (PN 8). As Haught points out, however, this attempt to benefit from the moral passion generated by religion while denying any cognitive truth to religious worldviews is self-defeating: "[I]t is only because believers take their religious symbols and ideas to be disclosive of the *truth* of reality that they are aroused to moral passion in the first place. If devotees thought that their religions were *not* representative of the way things *really* are, then the religions would be ethically impotent" (PN 9). If Haught is right, and I am deeply convinced that he is, then the environmental crisis should provide many people today an especially urgent motive to ask whether, beneath the obviously false and mythological elements in the traditional religions, there are contained some basic truths about the nature of the universe.

How, then, are we to conceive the relation between science and religion? It might appear that Whitehead has expressed a version of the “conflict thesis” as to their relation. That thesis, however, regards science and religion to be in *essential* conflict, meaning that the very essence of what “religion” is conflicts with the very essence of what “science” is. Whitehead’s statement, by contrast, says only that science and religion *seem* to be in conflict with each other. This statement leaves open the possibility that the conflict between them is merely apparent, or at least merely temporary, being based upon contingent, accidental factors that can be overcome. That, in fact, was Whitehead’s view, and his own philosophical writings were devoted primarily to overcoming this apparent conflict. Philosophy, he said, “attains its chief importance by fusing the two, namely, religion and science, into one rational scheme of thought” (PR, 15).

With that statement, Whitehead pointed to one of the major ways of understanding the “relation” between science and religion. According to this view, although science and religion may at times be in conflict, it is possible for them to be in harmony. This harmony is to be effected *by integrating them into a philosophical worldview*. The distinctiveness of this position can be seen by showing its place in a typology of the three major ways of understanding the relation between science and religion: independence, conflict, and possible harmony.<sup>3</sup>

### *The Relation Between Science and Religion: Three Views*

Speaking of the relation between “science” and “religion” can, of course, be confusing, because both of these terms can be taken to refer to types of *activities*, which as such cannot conflict. What is really at issue, of course, is whether some *beliefs* that are well-supported by science are in conflict with some *beliefs* that are taken to be essential to religion. Theology is the attempt to state, reformulate, and systematize the beliefs of a religious community. Most precisely put, therefore, the question is whether there is any conflict between scientific

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3. This typology is the same as Ian Barbour’s (RAS, Ch. 1), with two exceptions. First, Barbour adds a fourth position, called “dialogue,” whereas I regard those discussed under this heading as proposing either a type of integration (such as Ernan McMullin, discussed in Ch. 3) or the modified version of independence that Ted Peters calls “weak consonance.” Second, whereas he calls the third position “integration,” I call it “possible harmony” while considering integration to be the ideal. Besides agreeing with Barbour on this formal ideal, I also agree with him on most substantive issues. Insofar as my work differs from his, it does so by focusing on the issue of “scientific naturalism,” by working out an integrated position from a Whiteheadian stance more fully on a few issues, by showing, partly through the use of parapsychological evidence, how this stance can provide a more religiously robust theology (as illustrated in Chapters 7 and 8), and by emphasizing how this type of “naturalistic theism” differs from other stances to which this label is sometimes applied.

beliefs and *theology*. I will sometimes use this term. When I speak simply of the relation between science and *religion*, the referent is to the ideational or theological aspect of religion. The present question, then, concerns the three major ways of understanding the relation between scientific beliefs, on the one hand, and religious beliefs or theology, on the other.

One popular view in recent times has been idea that scientific and religious beliefs are independent from each other in such a way that they cannot possibly come into conflict. There is, therefore, no need to try to bring them into harmony. One way to declare them thus independent is simply to hold that truth is not one: Theology tells us one set of truths, science tells us another. This two-truth solution, however, is difficult for most of us to accept. We feel that truth, ultimately, must all be of a piece.

Various attempts have been made, accordingly, to provide a more palatable version of the two-truth solution. One such position holds that, although truth is one, we are, at least in this life, incapable of seeing this unity. We must simply, as religious persons, accept some truths on the basis of revelation, without being able to see how these truths are compatible with the results of scientific investigations. Science, for example, may show that all events in the world, including those events in which we make conscious decisions, are fully enmeshed in a deterministic nexus of causes and effects; from revelation, however, we know that we are responsible for our actions, which implies that we have a significant degree of freedom. As scientists, accordingly, we affirm determinism, while as religious persons we affirm freedom. The same duality may obtain with regard to the existence of God, divine providence in the world, the objective existence of ethical norms, and immortality. In the middle part of the twentieth century, this two-truth solution was phrased in terms of two languages: When speaking scientific language, we speak in terms of determinism, relativism, and nihilism, as befitting a godless universe; when speaking religiously, however, we speak in terms of God, freedom, ethical norms, and immortality. Many exponents of the independence thesis have, however, said that science and religion cannot conflict because they deal with *different domains*. René Descartes' dualism between soul and body was used, for example, as a line of demarcation: Science was to pronounce on the physical world, including the human body, while the human soul, with its relation to God, was allocated to religion. Albert Einstein's version of the independence thesis, urged more recently by Stephen Jay Gould (RA), says that science deals with facts, religion with values. Another distinction, used especially in discussions of evolution and creation, says that science asks *how* while theology asks *why*.

According to those who hold one of the other two views—the conflict thesis or the thesis of possible harmony—the independence thesis fails in all its forms. Although theology and science differ in important ways and to some extent deal with different domains, they also overlap significantly, and in this area of overlap there is the potential for conflict. The attempt to divide theology

and science along the lines of soul and body, for example, breaks down by virtue of the fact that soul and body interact: This interaction prevents a neat division between a free mind and fully deterministic bodily behavior. The same is true of the attempted division in terms of facts and values: Science involves not only facts but also values, such as the value of knowing the truth in spite of possible undesirable consequences from a religious or moral viewpoint, while the articulation of religious belief inevitably asserts, or at least presupposes, various factual claims, such as the claim that human behavior is partly free and that the world is God's creation. No more successful is the distinction between how and why, or method and purpose: The claim that the world exists because it is God's creation, for example, cannot intelligibly be made without implying something about how the world has been created that might conflict with the scientific community's attempt to state how our world has come about. And, if these various attempts to divide religion and science into separate domains all fail, it is also true, advocates of both conflict and possible harmony insist, that we cannot rest content with two irreconcilable sets of alleged truths. We need, as Whitehead put it, "a vision of the harmony of truth" (SMW, 185).

Turning now to the conflict thesis: It is important to understand that it says not merely that science and religion *have been* in conflict, but also that there is an *essential* and therefore *permanent* conflict between them. This thesis may be held by representatives of either religion or science. When held by representatives of religion, it maintains that the only reliable guide to truth is provided by a distinctively religious way of knowing. In theistic religions, this has been understood as a "revelation" that has been authoritatively transmitted. All true knowledge, at least about matters of ultimate concern, is based upon this revelation. The attempt to develop autonomous scientific knowledge, based upon experience and reason not subordinated to the truths of revelation, will inevitably lead to error. The classic statement of this position is Tertullian's rhetorical question, "What has Athens to do with Jerusalem?", with "Jerusalem" standing for the biblical revelation and "Athens" for Greek philosophy, which contained the beginnings of what is today called "natural science." Although the view that science and religion are necessarily in conflict is still held by some advocates of religious revelation, since the middle of the nineteenth century it has more commonly been associated with advocates of the scientific way of knowing, some examples of which will be provided in Chapter 2.

Sometimes science is said not to be in essential conflict with religion as such but only with theology. This was the thesis of one of the most well-known books promulgating the "conflict" or "warfare" thesis, Andrew Dickson White's *A History of the Warfare of Science with Theology in Christendom* (1896). White's polemic presupposed the equation of theology with "revealed religion" based on taking the Bible to be a scientific text. White's understanding of the nature of theology, however, is not the only one. Indeed, that understanding of theology has been rejected by the tradition of "liberal theology," which has

existed in various forms since the eighteenth century and to which the present book belongs.

The third basic way of relating science and religion is that of seeking to show that, although conflict certainly can occur between scientific and religious beliefs, this conflict is not necessary, which means that harmony is possible. Those who accept this third way agree that harmony is possible between theology, properly construed, and science, properly construed. Within this agreement, however, there are many different ways of understanding the proper construal of theology and the proper construal of science. There are, accordingly, many different understandings of the best way to overcome the apparent conflicts between them so as to demonstrate the essential harmony, or at least the absence of essential conflict, between them. At one extreme is the view that scientific beliefs are to be adjusted so as to be harmonious with traditional theological beliefs. This approach, which is that taken by “creation scientists,” results in a “science” that is unrecognizable as such to most members of the scientific community—a “science” that is inconsistent with various empirical data as well as with the naturalistic presupposition of today’s scientific community, according to which all occurrences, without exception, are explainable in principle without appeal to supernatural interventions. At the other extreme is the view that theology is simply to be accommodated to the views that are dominant within the contemporary scientific community. Given the reductionistic perspective that has been dominant within the scientific community, this way of reaching harmony has resulted in theologies that are unrecognizable as such by the members of the religious communities that they are supposed to represent.

Most attempts to demonstrate or bring about harmony between science and theology, however, avoid these two extremes, seeking to do justice both to historic religious beliefs and to science’s basic assumptions and established facts. These middle positions involve a twofold critique. Unlike “creation science,” which accepts historic Christian doctrines virtually wholesale and modifies scientific doctrines accordingly, these middle positions modify inherited religious doctrines in the light of scientifically established facts. And, unlike the tendency of modern liberal theologies to accept contemporary scientific ideology virtually wholesale, these middle positions distinguish between science as such and the worldview or ideology with which it has been associated in recent times. These middle positions, in other words, think of the “relation” between scientific and religious beliefs as going both ways, so that the resulting harmony results from a *mutual modification*. One of the differences among these various middle positions is in terms of where they think the greater modifications are needed—on the side of historic religious doctrines or on the side of doctrines with which late modern science has been associated. Another crucial issue is whether they think of the two-way interaction as occurring directly between science and theology as such, or more indirectly, through the mediation of philosophy.

*Whitehead's Position*

Given this framework, we can characterize Whitehead's position. He believed that the apparent conflicts between science and religion have been due about equally to inherited religious ideas and to the worldview with which science has recently been associated (which he called "scientific materialism"). And he believed that the needed modifications on both sides could only be achieved by means of philosophy, with "philosophy" understood primarily as metaphysical cosmology, the attempt to create an all-inclusive worldview in which scientific facts and inescapable religious intuitions can be harmonized. Like those who speak of the mutual independence of religious and scientific beliefs, Whitehead recognized that they originate in very different types of experience.

The dogmas of religion are the attempts to formulate in precise terms the truths disclosed in the religious experience of mankind. In exactly the same way the dogmas of physical science are the attempts to formulate in precise terms the truths disclosed in the sense-perception of mankind. (RM, 57)

Whereas scientific beliefs are based primarily on sensory perceptions, religious beliefs are based primarily on nonsensory perceptions. Unlike advocates of the independence thesis, however, Whitehead did not believe that the different roots of scientific and religious beliefs meant that they could remain unreconciled.

One reason why Whitehead believed reconciliation to be necessary is that, unlike most other science-based philosophers of recent times, he thought that truths are disclosed by nonsensory as well as sensory perceptions. He did not, therefore, think that philosophy, as the attempt to formulate an inclusive worldview, is to be based solely upon the systematization of truths derived from sensory perceptions. In fact, Whitehead's first metaphysical book, *Science and the Modern World*, begins with a repudiation of that view: "The various human interests which suggest cosmologies," he says, "are science, aesthetics, ethics, religion." Since the seventeenth century, however, "the cosmology derived from science has been asserting itself at the expense of older points of view with their origins elsewhere." It is the task of philosophy in our time to overcome this one-sidedness, which means that it is the task of philosophy "to harmonise, re-fashion, and to justify divergent intuitions as to the nature of things. It has to insist on . . . the retention of the whole of the evidence in shaping our cosmological scheme" (SMW, vii).

In speaking of "the whole of the evidence," Whitehead had in mind especially the "truths disclosed in the religious experience of mankind" referred to in the indented quotation, which came from his next book, *Religion in the Making*. Just as his former book had focused on the contribution to metaphysics made by recent developments in science, this second book contains a section

titled “The Contribution of Religion to Metaphysics” (RM, 84). It also contains a succinct statement of Whitehead’s conviction as to the way science, theology, and metaphysics are interrelated in the search for truth: “You cannot shelter theology from science, or science from theology; nor can you shelter either of them from metaphysics, or metaphysics from either of them. There is no short cut to truth” (RM, 76–77). We cannot, in other words, regard either theology or science as an autonomous discipline with truths to be protected from the encroachment of the other. We also are not to think of metaphysical philosophy as independent of experience. It is nothing but the attempt to think consistently and comprehensively about the whole range of evidence supplied by our sensory and nonsensory experiences, reconciling doctrines with origins in one type of experience with those originating in the other.

A second reason why it is necessary to reconcile science and religion is a twofold human tendency (1) to take a given method of obtaining truth as the only valid method, and (2) to exaggerate the truths obtained from that method. Of the first of these tendencies, which Whitehead called “obscurantism”—but equally well could have called “intellectual original sin”—he says:

This obscurantism is rooted in human nature more deeply than any particular subject of interest. It is just as strong among men of science as among the clergy. . . . A few generations ago the clergy, or to speak more accurately, large sections of the clergy were the standing examples of obscurantism. Today their place has been taken by scientists—

*By merit raised to that bad eminence.*

The obscurantists of any generation are in the main constituted by the greater part of the practitioners of the dominant methodology. Today scientific methods are dominant, and scientists are the obscurantists. (FR, 43–44)

The dominant form of obscurantism in earlier ages, in other words, was *revelationism*, the belief that the learned interpretation of divinely given revelation provided a self-sufficient path to truth; the dominant form of obscurantism today, especially in intellectual circles, is *scientism*, the belief that the scientific method (as hitherto employed) is the only way to discover truth.

Obscurantism is made all the worse by the second tendency, which is to exaggerate the truths that are found through one’s preferred method, formulating them in such a way as to exclude complementary truths. “Thought is abstract,” Whitehead says, “and the intolerant use of abstractions is the major vice of the intellect” (SMW, 18). Religious and scientific doctrines, in other words, both involve abstractions, and theologians and scientific philosophers both tend to exaggerate the truth of their respective abstractions, then to use these exag-



gerated doctrines to deny the truth of the abstractions from the other side. For example, the theologian or religion-based philosopher, being impressed by the evidence for divine providence in the world, may define this providence as all-determining causality, thereby ruling out the complementary truth that events in the world are causally conditioned by antecedent events. The scientist, or science-based philosopher, being impressed instead by this latter fact, may construe the world's cause-effect nexus so that divine providence is totally ruled out. Again, the theologian or philosopher of religion, in the interest of stressing human responsibility, may portray human freedom so as virtually to ignore the degree to which our freedom is often limited by a wide range of causal conditions beyond our control (such as genetic inheritance and early childhood experiences). The science-based philosopher, by contrast, may construe these causal constraints as total determination, thereby ruling out responsible freedom altogether.

The task of philosophy in all these conflicts is to be the "critic of abstractions" (SMW, 59), showing how the abstractions of religious thought and of scientific thought are compatible by overcoming their respective exaggerations and placing them within a larger, more inclusive worldview than either had provided by itself.

### *Scientific Naturalism*

Today, the discussion of the apparent conflicts between science and religion has increasingly been stated in terms of the issue of "scientific naturalism." Science, it is widely agreed in scientific, philosophical, and liberal religious circles, necessarily presupposes naturalism. Given this assumption, having an integrated worldview with no conflict between scientific and religious beliefs would require a religion devoid of supernaturalism. Some liberal theologians have suggested the possibility of a worldview that is religious while being naturalistic. Most philosophers, theologians, and scientists, however, believe that scientific naturalism is incompatible with any significantly religious view of reality.

To a great extent, this difference revolves around an ambiguity in the idea of "scientific naturalism," which can be understood either in a minimal or a maximal sense. In the *minimal* sense, scientific naturalism is simply a rejection of supernatural interventions in the world, meaning interventions that interrupt the world's most fundamental pattern of causal relations. Understood *maximally*, by contrast, scientific naturalism is equated with sensationism, atheism, materialism, determinism, and reductionism. Thus construed, scientific naturalism rules out not only supernatural interventions, as just defined, but also much more, such as human freedom, variable divine influence in the world, and any ultimate meaning to life. If scientific naturalism is understood in this maximal sense, those who say that it rules out a significantly religious worldview are right. If,

however, science is understood only to require naturalism in the minimal sense, the quest for a worldview that is fully religious while being fully naturalistic may not be quixotic.

The conflicts revolving around naturalism can be understood in terms of the tendency, discussed above, of parties on both sides of a conflict to become fixated on an exaggeration. Although each position is giving witness to a truth, in its exaggerated form this truth is a falsehood, because it excludes the element of truth in the other position. The suggestion of the present book is that both “scientific naturalism,” as usually understood, and “supernaturalism,” as usually understood, are falsifying exaggerations. On the one hand, the minimal form of scientific naturalism is true, but the maximal form, with its sensationism, atheism, and materialism, is false. On the other hand, theism, with its notion that a divine reality exerts variable influence in the world, is true, but it is a falsifying exaggeration to think that this influence can be all-determining, so that it could interrupt the causal powers and principles of the world.

#### *Four Kinds of Conflict*

Given the above understanding of the relation between science and religion and of the distinction between the two versions of scientific naturalism, the possible conflicts between science and religion are of four basic kinds. *Conflict of the first kind* results when a religious community is committed to a supernaturalist worldview, according to which God is understood to be a being outside the world who can and perhaps does supernaturally intervene in it, interrupting the causal powers of the creatures. This belief, which can be called *ontological supernaturalism*, conflicts with the naturalistic worldview, which has been increasingly presupposed and confirmed by the scientific community during the past two centuries. This minimal naturalism holds that all events are enmeshed in a universal cause-effect nexus, so that all events have natural causes and effects: There could be no events devoid of natural causes and no events devoid of natural effects.

Naturalism in this minimal sense can be identified with what has historically been called “uniformitarianism,” which is the assumption that the same general causal principles obtain for all events. Naturalism in this (minimal) sense does not necessarily rule out many things that “scientific naturalism” is usually thought to rule out (such as divine influence, freedom, and paranormal events). But it does rule out the reality and even the possibility of occasional supernatural interruptions of the most fundamental causal principles of the world. Insofar as theology asserts or presupposes ontological supernaturalism, it necessarily stands in conflict with the most fundamental assumption of the contemporary scientific worldview.

Many features of traditional Christian belief have exemplified this supernaturalistic worldview. The most obvious example is the belief in “miracles” defined as supernatural interruptions of the normal cause-effect relationships. A miracle, in fact, has usually been *defined* as an event that is caused totally and directly by God, without the use of any natural (“secondary”) causes. Another example of supernaturalism is provided by the traditional christology, according to which God’s activity or presence in Jesus was metaphysically different in kind from God’s activity or presence in all other human beings. A third example is the belief that the rise of life and then the rise of the human mind required supernatural interventions, in which God’s activity was different in kind from the providential activity that God exerts always and everywhere. A fourth example is provided by the belief that life after death will be brought about by a supernatural act of God, such as a resurrection of our physical bodies. In many ways the most important example, however, is the belief in an infallible revelation or inspiration, according to which divine causation overruled the normal human thought processes, with their usual fallibility, so as to produce statements that directly express the divine knowledge and will. This last example is especially important because it provides the transition from ontological to *epistemic* supernaturalism, according to which some ideas are to be accepted not because of their intrinsic merits, but solely because of their alleged origin in an infallible revelation—which leads to the next category.

*Conflict of the second kind* occurs when a religious community remains committed to beliefs about particular facts after science has demonstrated them to be almost certainly false. Among the most notorious examples have been the geocentric view of the universe, the idea that the universe was created only a few thousand years ago, and the idea that Moses wrote the first five books of the Bible. These and other beliefs have been held onto, even after being shown by good evidence to be almost certainly false, because they were thought to have been infallibly revealed, so that reasoning on the basis of empirical evidence was not allowed to disconfirm them. This epistemic supernaturalism, therefore, depends upon ontological supernaturalism, according to which God can, through supernatural intervention, annul the fallibility that normally characterizes human ideas.

Conflicts of these first two kinds conform to the picture of the conflict between science and religion prevalent in intellectual circles today, according to which the conflict is the result of a dogmatic religious mentality, unwilling to accept the results of the scientific method and the naturalistic worldview upon which it is based. Conflicts of the third and fourth kinds, however, suggest a more complex picture.

*Conflict of the third kind* occurs insofar as the scientific community is committed not only to minimal naturalism, but also to the maximal form of naturalism, which rules out beliefs vital to religion. This has largely been true

since the middle of the nineteenth century, as the scientific community became increasingly committed to a sensationist, mechanistic, materialistic, deterministic, reductionistic, relativistic, nihilistic worldview, which rules out not only supernaturalistic religious belief but also any significantly religious interpretation of reality whatsoever.

To see why this is so, we can begin with the epistemic side of this worldview, its *sensationism*, which says that we have no mode of perception except sensory perception. This doctrine rules out any theistic religious experience understood as a direct, nonsensory apprehension of a Divine Actuality distinct from oneself. It also rules out moral and aesthetic experience, understood as a direct nonsensory apprehension of normative ideals or values. This sensationist doctrine often leads to relativism, according to which all value-judgments are purely subjective preferences, with no possibility of being true, in the sense of corresponding with any normative ideals in the nature of things.

The ontological dimensions of this worldview also rule out a significantly religious interpretation of the universe. Its *mechanism* forbids any purposive, teleological causation. Its *materialism* forbids any distinction between the mind or soul and the brain, thereby ruling out life after death (apart from a supernatural resurrection of the body, which is, of course, also ruled out). The mechanism and materialism, taken together, imply determinism, thereby ruling out human freedom. This worldview's *reductionism*, according to which all vertical causation goes upward, from the simpler to the more complex, reinforces the denial of freedom (which would require "downward causation" from the mind to the body). The *atheism* of this worldview, besides denying any transcendent source of religious experiences, combines with the reductionism to rule out the idea of a divine creation of the world and even any divine influence in the world. This atheism, especially when combined with relativism, leads to nihilism, according to which life has no ultimate meaning.

The *basic* ideas of this worldview, then, are its sensationism, mechanism, materialism, reductionism, and atheism, with its determinism, relativism, and nihilism being implications (which exponents may seek to deny or at least qualify). Also, the mechanism and reductionism of this worldview can be regarded as implicit in its materialism. The basic ideas, accordingly, can be reduced to three: sensationism, atheism, and materialism. Then, using "s" for sensationism, "a" for atheism, and "m" for materialism, we can refer to this maximal naturalism as *naturalism<sub>sam</sub>*. This maximal naturalism is also called "scientific materialism," "reductionistic naturalism," "materialistic naturalism," and "atheistic naturalism." In any case, if science appears to be committed to *this* type of naturalistic worldview, then it is necessarily in conflict not only with supernaturalistic theology but with any significant religious belief whatsoever.

This scientific materialism is often thought to be part and parcel of the naturalistic worldview required, and increasingly confirmed, by science. This

maximal naturalism, or naturalism<sub>sam</sub>, however, goes far beyond the scientific naturalism discussed in relation to conflict of the first kind. That minimal naturalism insists upon nothing but the rejection of supernaturalism. Beyond presupposing the uniformitarian belief that the basic causal processes of the world are never violated, science need not be committed to any more restrictive dogma as to the nature of these processes. Scientific naturalism need not and should not be committed, for example, to the idea that the basic causal processes are all mechanistic, so that all apparently purposive causation must be illusory. Also, not being wedded to materialism and reductionism, scientific naturalism need not be committed to the identity of mind and brain but should leave that question open, to be decided by empirical and theoretical considerations. Scientific naturalism need not be closed, therefore, to genuine freedom or even the possibility of life after death. The naturalism required by science also requires no commitment to the idea that all the basic causal processes of the world are between contiguous things or events. It can be relaxed, therefore, about claims about so-called paranormal interactions, letting these claims be settled by the evidence. Scientific naturalism, not being committed to the sensationist view of perception, also need not rule out *a priori* the possibility of genuine moral, aesthetic, and religious experience. The rejection of supernaturalism, finally, does not even rule out theism of all forms. It rules out only the supernaturalistic form of theism, according to which God can interrupt the basic causal processes of the world. Scientific naturalism could, therefore, be compatible with a naturalistic theism, or theistic naturalism, if such there can be.

This nonreductionistic naturalism, accordingly, could be compatible with a significantly religious interpretation of the world. Scientific naturalism in this sense, therefore, is not necessarily in conflict with theology, at least if, as I will argue, a significant theology is possible without supernaturalism. This prospect of harmony is ruled out, however, if scientific naturalism is equated with naturalism<sub>sam</sub>. Because this equation has usually been made, and because this equation is the most important source of conflict between science and religion in intellectual circles today, most of this book is directed against this equation.

*Conflict of the fourth kind* occurs when, on the basis of naturalism<sub>sam</sub>—rather than on the basis of factual evidence—scientists make judgments about particular events that conflict with beliefs that are vital to religious communities. For example, scientists may declare that our universe's origin was in no way influenced by a purposive creator, a statement for which there is obviously no hard evidence—in fact, no evidence whatsoever. Another example is provided by the claim that a purposive creator in no way influenced the rise of life in general and the rise of human life in particular. Needless conflict of this fourth type also occurs if scientists go beyond the historical evidence, which suggests that the prophets, Jesus, and biblical authors were, like the rest of us, fallible human beings, to declare that they were *in no way* inspired by a Divine Reality. No

science, be it physics, biology, psychology, or archeology, provides evidence to support such a claim. Another example is the claim that “science” implies that the reported post-crucifixion appearances of Jesus were either fabrications or purely subjective hallucinations, involving no influence from any continuing experiential activity of Jesus.

Conflict of this fourth kind, it should be evident, is parallel to conflict of the second kind, which arises from the epistemic supernaturalism of some forms of religion. Devotees of naturalism<sub>sam</sub> do not, of course, explicitly believe in a revelation from on high that authorizes them to make pronouncements not based upon empirical evidence. But they often allow their worldview to function in an analogous fashion. Just as religious supernaturalists may hold that their interpretation of various facts “must” be true, regardless of the empirical data, reductionistic naturalists may be so convinced that their interpretations “must” be true that they claim the authority of science for these interpretations, even if they are empirically groundless. When scientists engage in this kind of speculation while labeling it “science,” they violate their own commitment to epistemic naturalism, according to which beliefs are supposed to be based upon the rational-empirical method rather than upon some presupposed revelation, whether explicit or implicit, which exempts their knowledge-claims from the need to be supported by evidence.

Although any of these four kinds of conflict by itself can be serious, the most dramatic and most publicized kinds of conflict between science and religion occur when reductionistic naturalism, with its sensationistic, atheistic, materialistic worldview, encounters religious supernaturalism. The best-known confrontation of this kind in our time is that between the neo-Darwinian theory of evolution and “scientific creationism,” which claims to confirm on scientific grounds the idea, derived from a literalistic reading of Genesis, that the Earth was created only a few thousand years ago. Insofar as the “relation between science and religion” is equated with this conflict—an equation that the mass media, with their love for extreme confrontations, tend to promote—a harmonious relation seems impossible. This is because the confrontation is doubly extreme, with all four kinds of conflict occurring at once. On the one hand, “the religious view” is equated with a doctrine that, because of its supernaturalism, is incompatible with even the most open form of scientific naturalism and insists upon a wildly implausible reading of the empirical data. On the other hand, “the scientific view” is equated with a doctrine that, because of its materialistic atheism, is incompatible not only with supernaturalism but with *any* idea of theistic guidance of the evolutionary process.

To put the issue in terms of Whitehead’s statement that “the intolerant use of abstractions is the major vice of the intellect”: In conflicts of the first and second kinds, theologians are using their abstractions intolerantly. In conflicts of the third and fourth kinds, scientists (or science-based philosophers) are using *their* abstractions intolerantly. Confrontations involving all four kinds of conflict

are particularly vicious because each side is using its abstractions intolerantly against the abstractions of the other side. However, although these confrontations are especially dramatic, they present no fundamentally new problem for the prospect of harmony. Their resolution would follow simply from the solutions implicit in the description of the four kinds of conflict. As that description showed, these four kinds ultimately reduce to two. That is, conflicts of the second kind, being based upon epistemic supernaturalism, are derivative from conflict of the first kind, which results when a religious community is committed to ontological supernaturalism. Conflicts of the fourth kind are equally derivative from conflict of the third kind, which is rooted in the identification of science with naturalism<sub>sam</sub>. Conflicts of the first and third kinds, accordingly, are fundamental.

### *The Road to Harmony*

On the basis of this analysis, we can see that the relation between science and religion could move from a relation of conflict to one of harmony if and only if two things were to occur: if the theistic religious communities were to give up all remnants of supernaturalism in favor of a theistic naturalism, and if the scientific community were to give up reductionistic naturalism, with its sensationism, atheism, and materialism, in favor of a naturalism restricted to the rejection of supernatural interruptions of the world's basic causal processes. However, the scientific community will not change its worldview simply for the sake of effecting this harmony, and the same is true of most theistic religious communities. Whether this dual development will appear conceivable, therefore, depends upon the answer to two fundamental questions. The first question is whether there is a form of theistic naturalism that can provide the basis for a theology or religious philosophy with sufficient robustness and continuity with historic Christian faith for it to be widely accepted by the coming generations of Christian thinkers. (A similar question would obtain for other theistic religious faiths, such as Judaism, Islam, and theistic forms of Hinduism.) The second question is whether there is a version of scientific naturalism that provides a more adequate basis for science than does the materialistic version. The harmony between the scientific and religious communities would be complete, of course, only if one and the same naturalistic worldview were to be accepted by both.

The twofold question, accordingly, is whether there is a naturalistic worldview that, besides being adequate to the various beliefs presupposed by religious faith, also provides a better context for science than the materialistic, sensationistic naturalism with which science has been associated since about the middle of the nineteenth century. If so, we could have an integrated worldview that is at once scientific and religious. The present book is based

on the conviction that Whitehead's worldview, which is a theistic naturalism based upon a nonmaterialistic ontology and nonsensationist epistemology, provides the basis for giving an affirmative answer to this twofold question.

At the root of the distinctive aspects of the Whiteheadian worldview, which is sometimes called "process philosophy," is the ultimate reality of time, or temporal process. From the perspective of this worldview, most of the problems of philosophy and theology, including the conflicts between science and religion, have been finally rooted in the neglect of time or process—of the fundamentally temporal nature of existence. From this perspective, to be *actual* is to be a process with temporal duration. This seemingly tiny modification provides a new perspective on virtually every issue, from the reality of time for physics to the reality of time for God, from the mind-body relation to the God-world relation, and from the reality of human freedom to the possibility of speaking of teleological causation and progress in the evolutionary process. By providing the basis for affirming theistic naturalism and for rejecting materialism without returning to dualism, this modification gives us a way to integrate our religious intuitions and our scientific convictions into a unified vision.

### *Preview of the Following Chapters*

The remaining chapters of this first part of the book continue the focus on science, religion, and naturalism. Chapter 2 traces the development through which the materialistic version of scientific naturalism arose out of the first version of the modern scientific worldview, with its supernaturalistic dualism, then illustrates the ways in which this materialistic naturalism leads to conflict with any significantly religious outlook. Crucial to this whole issue, I suggest, is the development of modern thinking about divine action in terms of the scheme of primary and secondary causation.

In the third chapter, I look at three approaches to harmonizing science and religion that challenge my central theses. One of these approaches rejects both of my theses—that religion can thrive without supernaturalism and that science rightly presupposes naturalism in the minimal sense. I examine this approach, which argues that harmony can result only if science is dissociated from even minimal naturalism, in terms of the writings of Alvin Plantinga and Phillip Johnson. A second approach accepts the view that science rightly presupposes naturalism, but rejects my view that harmony with religion can be achieved only if the religious community also accepts a form of naturalism. This approach, which places a purely methodological scientific naturalism within a supernaturalistic framework, will first be examined in terms of three of its contemporary representatives—William Hasker, Ernan McMullin, and Howard Van Till—then in terms of Rudolf Otto's more consistent version of it. A third approach accepts



my view that harmony requires the rejection of supernaturalism by the religious community, but rejects my contention that harmony also requires the materialistic form of naturalism to be rejected by the scientific community. I examine this position in terms of its recent advocacy by Willem Drees.

In the fourth chapter, I begin the exposition of the approach advocated in this book: harmonizing science and religion in terms of a richer, more open version of naturalism. After looking briefly at the attempt to effect this harmony on the basis of John Dewey's version of naturalism, I summarize Whitehead's version, showing how he simultaneously rejected both religious supernaturalism and scientific materialism. Then, after indicating some ways in which Whitehead's alternative to materialism results in a naturalism that is more open to religiously important experiences and beliefs, I point briefly to some scientific developments that undermine the determinism, reductionism, and sensationism of the materialistic version of scientific naturalism.

Because the mechanistic view of nature, which is the one ontological doctrine held in common by the first and the second versions of the "modern scientific worldview," has been so strongly identified with *the* scientific view of nature, Chapter 5 backs up to look at the origin of this mechanistic view, showing that it was based less on scientific (rational and empirical) considerations than on theological and sociological interests of the time. Another point of this chapter is that the Neoplatonic-magical-spiritualist tradition, which was the main opponent of the mechanical philosophy in the seventeenth-century battle of the worldviews, can, as a religious and scientific naturalism, be regarded as a premodern precursor to the *postmodern* naturalistic worldview developed by Whitehead.<sup>4</sup>

Part II shows how Whitehead's naturalism provides the basis for harmonizing religious and scientific beliefs in relation to some issues on which there has been considerable conflict during the late modern period. Chapter 6 addresses the mind-body problem as it occurs in the current science-based philosophical discussion, showing how the retention of the Cartesian view of matter has increasingly led to the conclusion, in both materialistic and dualistic thinkers, that the relation of the brain to conscious experience is an inexplicable mystery. I then argue that Whitehead's panexperientialism not only can provide a naturalistic account of the rise of consciousness but also can account for the reality of the freedom that we all presuppose—in our scientific as well as our religious activities.

Chapter 7 then explores the relations between religious belief and the most controversial of all the sciences, parapsychology. I suggest that the prejudice

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4. For the way in which the term "postmodern" is used here, in contrast with its more well-known usage, see my series introduction at the outset of this book.

against parapsychology has been just that—a prejudgment, made almost solely on *a priori*, philosophical grounds—and that religious philosophers and theologians, most of all, should not succumb to this prejudice, because the assumptions of the reigning orthodoxy in the scientific community that have created this prejudice are the same assumptions that have created a similar prejudgment against religious beliefs. I suggest, further, that it is finally time to respond appreciatively to the claim by some of the advocates of parapsychology that it is “religion’s basic science,” the one that most clearly provides positive support for a religious interpretation of human experience in particular and reality in general. I conclude by looking at the importance of parapsychological findings for various issues of religious importance, including the possibility of genuine religious experience and life after death. This chapter is crucial, because one of this book’s main theses, that a robust religious worldview is possible within a naturalistic framework, depends heavily upon the evidence from parapsychology—this being one of the reasons that I did not heed the advice that, for the sake of “credibility,” I should delete this chapter.

In Chapter 8, we come to the issue that has been at the very heart of the conflict between science and theistic religious belief since the time of Charles Darwin: the idea that our world, rather than being created *ex nihilo* by a supernatural creator, has come about by a naturalistic, evolutionary process. After reviewing various facts showing that the neo-Darwinian version of naturalistic evolutionism seems to be almost as far from the truth as supernaturalistic creationism, I suggest that Whitehead’s theistic naturalism provides resources for developing a position that combines the strengths of each of these views while avoiding their problems. The resulting view, building on the idea of “punctuated equilibria,” shows how the idea of rather radical jumps, which seems demanded both by conceptual considerations and the empirical evidence, is supported by Whitehead’s theistic naturalism.

A comment about the difficulty of some of the chapters: The task that Whitehead took on, that of trying to integrate the truths of science, religion, ethics, and aesthetics into a comprehensive worldview, is not easy. It is a task that most of the philosophical movements of the twentieth century, such as logical positivism, linguistic philosophy, phenomenology, existentialism, and most types of philosophy called “postmodern,” have tried to avoid. But if Whitehead is right in holding that there is no shortcut to truth—and he surely is—then the task of trying to integrate the truths from our various types of experience cannot be avoided.

The understanding of the relation of science, theology, and philosophy articulated here also means that the task of theology is not easy. If theology must incorporate both science and philosophy, then “doing theology” is, despite understandable desires to the contrary, necessarily difficult. But this should be expected: The world as revealed by modern and postmodern science is exceedingly complex. The complexities are increased, furthermore, when we add the

varieties of religious, ethical, and aesthetic experience. If a philosophy or theology is simple, accordingly, we can be fairly certain that it is grossly inadequate. Most of the theologies of the twentieth century, of course, tried to avoid these complexities—by basing themselves on biblical revelation alone or on one of the types of philosophy mentioned in the previous paragraph. But these theologies have proven to be inadequate, not least because they failed to show how what they were saying could be true and important, given the fact that what has passed for “the scientific worldview” seems to rule out meaningful religious and even ethical discourse altogether. And the failures of these theologies and philosophies of religion, I am convinced, are responsible to no small degree for the many failures of the religious communities in modern times. If these communities are to be more adequate in the twenty-first century to the desperate needs of both individuals and the public world, they must have a more adequate theological foundation. This book, with all of its difficulties, is my attempt to make a helpful contribution to this cause.

In dealing with these issues, I have done so with specifically *Christian* faith primarily in mind. Besides the fact that this is my own tradition, it is also the tradition in which most of the discussion of the relation between science and theology has occurred. However, most of the issues discussed in this book belong to what has traditionally been called *natural* or *philosophical* theology (or, in one meaning of the phrase, the *philosophy of religion*), so that, in spite of my Christian biases, I hope that most of my discussion will be regarded as relevant to other religions as well, especially other theistic religions.

Given the centrality of physics in most discussions of science and religion, I should perhaps mention that I had originally planned to include two chapters on the relation of physics to time: one on the relation of panexperientialism to pantemporalism and one on the relation of temporalistic theism to relativity physics. Because of limitations of space, however, both had to be omitted. Although it would have been desirable to include both or at least one of these chapters, their absence is justified by two considerations. First, I have published essays on these topics elsewhere (Griffin HG; PAP; PUST), which the interested reader can use to supplement the picture provided here. Second, this book is not a discussion of the relation of religious thought to the sciences as such—of the sort provided by Holmes Rolston’s *Science and Religion*—but of its relation to the philosophical position(s) known as “scientific naturalism.” It is not essential, therefore, to have discussions of all the various sciences, even one as important as physics.