

BEYOND BARBOUR OR BACK TO BASICS?  
THE FUTURE OF SCIENCE-AND-RELIGION  
AND THE QUEST FOR UNITY

by *Taede A. Smedes*

*Abstract.* Reflecting on the future of the field of science-and-religion, I focus on three aspects. First, I describe the history of the religion-and-science dialogue and argue that the emergence of the field was largely contingent on social-cultural factors in Western theology, especially in the United States. Next, I focus on the enormous influence of science on Western society and on what I call cultural scientism, which influences discussions in science-and-religion, especially how theological notions are taken up. I illustrate by sketching the way divine action has been studied in science-and-religion. The divine-action debates may seem irrelevant to theologians because the way divine action is dealt with in science-and-religion is theologically problematic. Finally, I analyze the quest for integration and unity of science and religion that underlies much of the contemporary field of science-and-religion and was stimulated particularly by the efforts of Ian Barbour. I argue that his quest echoes the logical positivist vision of unification and has a strong bias toward science as the sole source of rationality, which does not take theology fully seriously.

*Keywords:* Ian Barbour; divine action; logical positivism; science and religion; scientism

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Ian Barbour's landmark book *Issues in Science and Religion* (1966) can be regarded as the starting point of the science-and-religion dialogue as we know it today—a field where scholars from theology and the sciences attempt to define the relationship between science and a religious (in most cases a Christian) worldview. Since the 1960s the field has grown tremendously, and it is slowly reaching a state of maturity with the institutionalization of

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[*Zygon*, vol. 43, no. 1 (March 2008)]

© 2008 by the Joint Publication Board of *Zygon*. ISSN 0591-2385

the field through academic chairs (for example at Oxford and at Princeton Theological Seminary) and the journals *Zygon: Journal of Religion and Science* and *Theology and Science*. An incredible amount of literature has appeared since the late 1960s on all kinds of topics, but most notably on the scientific worldview and the possibility of divine action (for example through quantum theory, chaos theory, and most recently emergence), evolutionary theory and the doctrine of creation, and the philosophical and theological implications of the new neurosciences. Judging by the number of books and articles, it looks as if the field has been tremendously successful.

It is difficult, however, to evaluate just how successful it has been. First, the general public still seems convinced that science and religion are in conflict with each other. This is largely the result of intellectual riots about intelligent design (ID), but the “warfare” view is fueled also by militant atheists such as Richard Dawkins (2006) and Sam Harris (2005), whose works are being translated worldwide and influence public opinion. Second, the results of the interaction between science and religion are hardly taken up by theology. Especially in systematic theology discussions concerning divine action are still largely ignored.

So, although the field may have reached a state of maturity, it also seems to have reached a kind of midlife crisis. If theologians are not taking the dialogue seriously, who is? Scientists, perhaps? Why should scientists in general take notice of discussions that pertain to an “Entity” that is irrelevant to scientific research because it is transcendent? Moreover, many scientists steer clear of such discussions because of ID, which creates a deep distrust in both science and religion and therefore has immensely damaging consequences for the dialogue between them. What place, then, for a science-religion dialogue? Who is the audience? For whom do we give lectures and write books and articles? Is the field of science-and-religion becoming an end in itself?

In this essay I want to contribute to reflections on the future of the field by focusing on three aspects. First, I look briefly at the history of the contemporary field of science-and-religion. What were the factors that stimulated its emergence during the 1960s? I argue that its emergence was largely contingent on social-cultural factors in Western theology, especially in the United States. The point of this historical exposé is to show that the viability of a dialogue between science and religion depends largely on the social-cultural, theological, and philosophical context and the ability of scholars in the field to connect to that context.

Next, I focus on the enormous influence of science on Western society and on what I call *cultural scientism*, which influences discussions in science and religion, especially how theological notions are taken up. I illustrate this influence by sketching the way divine action has been studied in science and religion. The point is to show that the divine-action debates may seem irrelevant to theologians because the way divine action is dealt with in science and religion is theologically problematic.

Third, I look at the quest for integration and unity of science and religion that underlies much of the contemporary field of science-and-religion and that was stimulated particularly by Barbour's efforts. I argue that his quest echoes the logical positivist vision of unification and has a strong bias toward science as the sole source of rationality, which does not take theology completely seriously. In the final section I bring these threads together in a plea for more contextuality in science and religion.

#### THE EMERGENCE OF SCIENCE AND RELIGION IN HISTORICAL PERSPECTIVE

It is not surprising that the field of science-and-religion emerged in the United States, since from the birth of the nation the relationship between religion (especially Protestant Christianity) and natural philosophy has been a complicated one. As I have described elsewhere in more detail (Smedes 2007), the field of science-and-religion that emerged in the 1960s has its roots especially in nineteenth-century American discussions. During that century there was a strong fusion between science (then called natural philosophy) and Protestant theology in the form of the so-called Baconian synthesis, an era of blossoming natural theology in which science was supposed to lead to conclusions about God, and the Bible to conclusions about nature (Bozeman 1977). This synthesis disintegrated during the second half of the nineteenth century with the rise of Positivism (Cashdollar 1989).

The demise of the Baconian synthesis triggered two responses. The first came from theology. The Christian fundamentalism that emerged at the end of the nineteenth century and gave rise to twentieth-century creationism was a direct reaction against the rising influence of science in both society and theology and an attempt to restore the nineteenth-century synthesis. The scientific response to the disintegration of the synthesis was an outright hostile attitude of scientists toward some forms of theology. During the era of the Baconian synthesis, theology had been dominant and had often put restrictions on scientific inquiry. The disintegration of the synthesis led to an emancipation of scientists from the shackles of theological censorship. The success of the rhetorical "warfare metaphor," coined by J. W. Draper (1874) and A. D. White (1896), can be interpreted in this light.

Barbour's *Issues in Science and Religion* emerged in a time when the scientific hostility toward theology had lost much of its vigor and the failure of creationism became visible to all. Barbour's book constitutes an attempt to revisit the interaction between science and religion that works in at least two directions. First, it is a *conceptual investigation* of the differences and perhaps meeting points and parallels between science and theology.<sup>1</sup> Barbour asks what parallels and differences there are between, for example, methods in both science and religion and between theories (such as evolutionary theory and modern physics) and the Christian doctrine of creation.

Besides the conceptual questions, Barbour's work also had an *apologetic intent*. At a time when logical positivist influences were still strong, Barbour's work attempted to counter positivist claims that religion was nothing but irrationalism and superstition. For example, by emphasizing the contextuality of language use, and the use of models and metaphors in science and religion, Barbour argued in effect that science and religion both have their own "grammars" or "logic," so that it is unfair to judge one by the criteria for rationality of the other. Yet he did not go so far as to argue for incommensurability between scientific and religious languages or rationalities, which would result in a full-blown separation. (I will come back to this in the final section of this article.) Another apologetic aspect of Barbour's approach is to show that religion and science do not necessarily conflict. For example, he showed that the Christian doctrine of creation is not necessarily in conflict with evolutionary theory, as in the case of creationism. The concept of *creation* is open to several interpretations, and in his book Barbour showed that there are several ways to interpret the results of evolutionary theory within the framework of a dynamic doctrine of creation.

Although I have not substantiated the claim sufficiently, it should become clear that the field of religion-and-science in the United States arose in dialogue with sociocultural developments. I believe that the two aspects that can be identified in Barbour's early approach—the conceptual investigation of differences and parallels and an apology for religion—are still an inherent part of the contemporary field of science-and-religion.

However, it also is clear that theology would benefit most from the dialogue. The apologetic component of the science-religion dialogue can be seen as an attempt to restore a view of theology as a respectable intellectual enterprise that it had been for centuries, at least up to the late Middle Ages. During the European Enlightenment, religion and theology had lost much of their credibility through the success of scientific investigation of nature by way of empirical scientific methodology that led many philosophers to abandon or even attack traditional theological doctrines. The contemporary field of science-and-religion, then, is part of a larger quest for a new space for religion and theology in a modern, scientific culture. However, such a new space cannot simply be conquered but has to be negotiated with a specific culture.

In Europe since the Enlightenment, such negotiations have become complicated. The influential German philosopher Immanuel Kant (1724–1804) was so impressed by the natural sciences that he argued that "all genuinely new knowledge comes through the sciences" (Caputo 2006, 29). This had already stressful consequences for philosophy, as John Caputo writes:

By setting philosophy up a notch, as a higher science that oversees science, setting its conditions and limits, [Kant] means to give philosophy a supervisory position, but he also effectively removes philosophy from the action, like a restaurant critic who doesn't cook! Philosophy concerns a higher level epistemological theory of science, but it has abandoned the real world to the sciences. (2006, 29)

Not only did Kant redefine the place for philosophy, but his philosophy also effectively reduced religion to ethics. For him, religion was still useful, but as a heuristic fiction useful for guiding moral behavior. Theology could no longer make a claim for knowledge, because God was a nonempirical hypothesis, not open to scientific testing. This is a very prejudicial assessment of Kant. With his Three Critiques, he laid out a metaphysical conceptuality for making distinctions between the various functions of reason. Caputo's image of the cook is humorous but inaccurate; Kant did make contributions to scientific cosmology. He did not argue for placing religion in the realm of ethics and morality in a reductionist fashion—the Second Critique (and practical reason) are not exactly reductionist. His strategy was one of disengagement, not reductionism.

In Europe, especially in Germany, theologians after Kant wrestled with these consequences. And as the historical-critical approach in biblical studies gained momentum and thoroughly undermined the validity of theological claims to historical knowledge based on the Old and New Testaments, theology turned into anthropology. For example, in Germany the “cultural Protestantism” that emerged during the second half of the nineteenth century was a liberal form of Protestantism that “disassociated itself from ecclesial dogma and emphasized the relativity of historical insights and the results of research in the history of religion. Especially through Darwin's theory of evolution, many intellectuals believed in the perfectibility of humanity with regard to intellect and moral insight” (Schwarz 2005, 118).<sup>2</sup> Theologians adapted their theology to fit better with a secular worldview, thus often rejecting the notion of revelation or interpreting revelation in anthropological terms. It was merely a matter of time before philosophers such as Karl Marx, Sigmund Freud, and Friedrich Nietzsche showed that atheism was a viable alternative to traditional religion. God became a superfluous concept that *in effect* added nothing to living a moral life.

Thus, according to Wolfhart Pannenberg (1997), theology after Kant can be summarized as a turn to anthropology and subjectivity. From particular confessional convictions that fragmented Europe during the bloody Thirty Year's War of the seventeenth century, theologians in the eighteenth and nineteenth centuries attempted to translate theology into general anthropological terms—that is, into categories that were supposed to be common among all humans. Indeed, both the existentialist and demythologizing theology of Rudolf Bultmann (1884–1976) and the dialectic theology of Karl Barth (1886–1968) emerged in dialogue with as well as in reaction to theology-cum-anthropology and atheist critiques of religion. These theologies have been characterized under the heading of “retreat to commitment” (Bartley 1984)—that is, as strategies for immunizing theology against external criticism.

Barth explicitly renounced any dialogue between science and theology, arguing that theology had nothing to gain from such a dialogue. Although

others, notably Thomas Torrance (1969), have tried to bend Barthian theology more in the direction toward openness to a dialogue with the natural sciences, such attempts have had only limited effect. In Europe, and especially in Germany and the Netherlands, Barthian theology was immensely influential (in the Netherlands at least until the late 1970s, and in many places in Germany Barthianism is still the dominant theology). It has been difficult to establish a science-religion dialogue in those countries. On a small scale it is not impossible, however, as one example may show.

In the Netherlands about fifty years ago, in 1965 and 1967, two books appeared that together constitute the final report of the multidisciplinary Committee of Faith and the Natural Sciences. This Committee had been given an assignment by the Dutch Reformed Church fourteen years earlier, in 1951, to investigate the interaction of religion and science. The preface of the first volume allows a small glance behind the scenes of what went on during the fourteen years of discussions and meetings. The editors write that the conversations between scientists and theologians were almost cancelled prematurely because the participants were unable to decide on the theme or contents of future deliberations, due to a lack of problems (Dippel and de Jong 1965, xi). All of the participants rejected the view that religion and science are in conflict. Such a conflict is possible if one believes that science and religion are competitors in the same market, a view the participants rejected. Being influenced by the German hermeneutical tradition, all participants accepted a functional and conceptual separation of science and religion. At the same time, both scientists and theologians were convinced that a dialogue was possible. But how? What seemed initially such a simple task—establishing a dialogue between theology and science—turned out to be very difficult.

The participants were aware that the dialogue was no goal in itself. Because of the rapidly changing scientific worldview and because of ethical questions related to the threat of technological devastation in the heat of the Cold War, members of the Committee remained true to their assignment. To establish a dialogue that transcended differences, scientists and theologians taught each other about theology and science, because all participants were in agreement that, in order for dialogue to happen, each needed a basic understanding of the other's perspective. So, in the fourteen ensuing years, theologians explained to scientists the basic notions of Christian theology, and scientists explained to theologians the foundations of the scientific worldview. The participants did not shy away from facing philosophical difficulties and fundamental questions: What is theology? What is science? How do they differ from and perhaps relate to each other? The Committee did not resolve any problems, but they learned to rule out the wrong questions. In the process, they were conducting the dialogue they were searching for, simply by doing it.

## CULTURAL SCIENTISM AND DIVINE ACTION

The participants in the Dutch discussion in the 1960s were aware that they could no longer run from science, because it permeates our very existence. The Cold War was also a war about scientific knowledge, and during that war science received an enormous stimulus. Today the influence of science and technology is so large that we hardly notice it anymore. Science even influences the way we think, although this fact is hardly ever discussed.<sup>3</sup>

Nowadays, this point is brought to the fore by proponents of ID. It is so obvious that it needs no extensive arguing that ID is both scientifically and theologically “mere bogus” (to paraphrase Harry Frankfurt’s more colorful term [Frankfurt 1988, 117–33]). Yet, one of the points with which ID confronts theology is the pervasive and still-growing influence of science on everyday affairs. ID calls this influence *naturalism*, and has its own methods of dealing with it. I do not share the evangelical-theocratic view of society that underlies ID, but I agree that science has an enormous formative influence on our lives and our ways of thinking, although it is difficult to pinpoint the exact nature of that influence.

In his book *Without Answers* the philosopher Rush Rhees tried to analyze the immense influence of science on our everyday lives. He writes:

Scientific understanding is what scientists show in their own fields—in physics and in biology, for instance. There will never be very many scientists, and scientific understanding will never be a common thing. But science may influence our understanding of things in other ways—not by what it teaches us about them, but, or so it is said, by the way in which it teaches us to look at them. The scientific outlook, it is held, need not be confined to the special inquiries of sciences. It is largely a matter of adopting scientific methods in what we do. And a scientific age would treat all problems in that way. (Rhees 1969, 1)

Of course, Rhees acknowledges that in fact we *do not* treat all problems with the help of scientific methods, and yet, “the prevalence of science affects the way we think of things, or look at things, besides the special matters which it investigates. It may affect the way in which we understand questions in religion or in art, for instance, even if we are not trying to introduce scientific method into them” (p. 6). The scientific way of dealing with things thus affects the way we go about our lives.

In Rhees’s view, the influence that science has upon our lives extends to matters of religion and theology, even though we are mostly unaware of the fact that it does. Under the influence of science, we “have come to rule out certain questions and certain sorts of explanations” (p. 7). Because of the influence of science upon our thinking, even certain theological concepts have become alien to us. Consider Rhees’s reflections on miracles:

If anyone were to speak about religious doctrines now in the way in which he might have spoken in the thirteenth century, we should hardly listen to him. Not so much because he would be offering views which science has shown to be wrong,

but because his whole way of arguing or presenting his case would seem unconvincing to us. It would not strike us as an argument at all—we might call it a verbal subterfuge—and we should not understand how anyone could be impressed by it. Consider the “evidence” that was supposed to be afforded by miracles. The difficulty is not because science has shown that there are no miracles (How could it show that?) Our difficulty is partly in understanding what a miracle would *be*; and this is a result of our scientific ideas—a result of the mass of preconceptions from which we start and which we cannot escape, regarding how things should be viewed. And we find it even more difficult to see what could be meant by accepting a miracle as *evidence* for anything. For those who did accept them, they obviously had a force which we cannot understand. And this is not because science has shown that they were *wrong* in finding such force in them. But the scientific treatment of natural events has come to take our attention and play a role in our lives as it never did for them. And we cannot move outside it in our thinking. (1969, 6f.)

Philosophers and historians have testified to the idea that with the Enlightenment reception of science, something radically changed in the Western worldview that eventually led to a situation in which the theories and methods of science came to shape and guide our thinking and attitudes (see Chadwick 1975; Cassirer 1951; Dupré 1993; 2004; Gauchet 1997; Gay 1966; 1969; Kondylis 2002; Porter 2001; Israel 2001; 2006). Since then, science no longer pertains solely to the material world but also to the way we think about certain things; it guides our attitude toward reality in general. This has consequences for religious belief, as Owen Chadwick writes:

Something happened to religious people which affected their attitude to the world; I do not say for better or worse, for gain or for loss; a change in attitude remotely comparable to the change when Greek philosophy became available to the schoolmen, or to the change when the Renaissance altered men's attitudes to humanity. We may have less sense of providence in our lives. (Chadwick 1975, 258)

I propose to call this scientific way of thinking *scientism as a cultural mode of thinking*, which also affects the way we deal with religious and theological notions. One could call it a tacit faith or basic trust in science, an incorporation and internalization of scientific modes of thinking in our everyday-life mode of thinking—or, alternatively, the accommodation of our everyday-life mode of thinking to a scientific mode of thinking. This scientism belongs to the tacit assumptions of present-day Western culture. It guides our thinking and acting and rules out certain questions and answers in advance as irrelevant or meaningless. And, as Rhees makes clear, since theology is part of the Western culture, one can expect that cultural scientism is present in the background of contemporary theological discourse.

It is my intention in the rest of this essay to show to what extent this scientism as a cultural mode of thinking influences discussions in religion-and-science. I look first at discussions concerning divine action and then at the cultural scientism inherent in the quest to integrate science and religion.

## HUMAN AND DIVINE ACTION

The influence of the cultural and tacit scientism in the field of science-and-religion can be found in discussions about divine action. In theology a distinction is made between God's *general* action and God's *special* action (or actions), sometimes expressed through the Latin notions of God's *providentia ordinaria* and *extraordinaria*. God's general action denotes the power by which "God conserves, supports, and governs all things through the instrumentality of secondary causes in accord with the laws of nature" (Muller 1985, 252). God's general action thus pertains to the universe as a whole and specifies God's relation to the universe by relating it to God's use of the causal nexus of the created natural order to achieve some particular goal. God's special action refers to the notion that "God performs in his wisdom special acts or miracles . . . that lie beyond the normal possibilities inherent in secondary causality and that can, therefore, be termed either *supra causas*, beyond or above causes, or *contra causas*, against or over against causes" (1985, 252).

Discussions about God's action can be mirrored by discussions about human free action. In philosophical discussions concerning free will, a distinction often is made between the compatibility and incompatibility between the free will and the causal nexus of the universe. If the universe is deterministic, that is, if the conditions of the universe at one moment fully determine the ensuing history and evolution of the universe, and if humans are fully part of the (material) universe, then, according to the incompatibilists, human free will is an illusion. Compatibilists, however, argue that human freedom and the natural order do fit together, although in that case the universe cannot be fully deterministic if free will is to be real. The compatibilist thus argues that free human actions are possible without being reducible to mechanistic causes and without being interventions in the causal order of the universe.<sup>4</sup>

In the debates about divine action, there are compatibilists and incompatibilists. Nicholas Saunders writes that according to incompatibilist views God's actions "are achieved by the initiation of new and original causal sequences in nature" (2002, 45). If so, nature cannot be causally deterministic, otherwise God's action would not be possible. An example of an incompatibilist position toward (and rejection of) divine action is Anthony Flew's now famous definition of miracle as "an overriding of the order of nature" (1967, 346). Many scholars in science-and-religion find Flew's definition theologically problematic. To argue that God works against the laws of nature, or suspends them temporarily, would make the concept of God inconsistent. If in general providence God acted continuously through the nexus of secondary causality in accord with the laws of nature, and if at the same time God worked against these laws by putting them temporarily out of order, the action would be internally inconsistent: God's special action would work against God's general action.

This tension between God's general and special action has led to a separation of scholars into two camps. One group holds that God does not perform special actions but keeps only to general providence. In that case there is no difference between God's general and special providential actions, because God's special actions, if they happen at all, are considered to be already preprogrammed in creation according to God's general providence. The entire evolution of the universe is then seen as one single act of God, although from our perspective this single act can have different discrete moments. The single-act approach (Kaufman 1972; Wiles 1986) is consistent with both deterministic and indeterministic worldviews and is thus a compatibilist position.

However, the majority of science-and-religion scholars agree that a more theologically adequate way to talk about God's action is to speak of continuous interaction between God and world and abandon the notion of interventionism, or God's suspension of the laws of nature. God's interaction with the world is consonant with the biblical image of God as actively present in the world and engaged in a relation with its creatures. However, a continuous interaction between the transcendent and the innerworldly implies that the world is somehow "open" to God's presence and action (Smedes 2003). Most scholars engaged in discussions concerning divine action thus commit themselves to incompatibilist views of God's action. The presupposition of such views is that "acts of God make sense only if there are realms of physics where the behavior of bodies is not determined by physical law: then and only then is there room for objective acts of God. . . . Attributions of an event to an act of God and to deterministic explanation by physical law are taken to be mutually exclusive" (Porter 2001, 4). In other words, incompatibilists argue that the world is not deterministic and hence is open to God's influence.

A lot of effort in discussions of divine action is devoted to exactly this challenge. In recent years, such discussions have referred to several scientific theories to argue for ontological openness and the scientific plausibility of divine action. Quantum theory, chaos theory, evolutionary theory, self-organization and emergence, and neuroscience were the theories that were considered possibly fruitful roads toward answering the question of whether divine action is possible from a scientific perspective.<sup>5</sup>

#### THE DIVINE-ACTION DEBATES: THE WRONG ANSWER OR THE WRONG QUESTION?

However, what is the use of such discussions? Does making a case for incompatibilism really add anything to the plausibility of divine action? Will a full-blown theory of divine action, say, persuade atheists that divine action is possible after all? If not, what is the use of such a theory? These questions are hardly ever asked. Moreover, what is the theological response to discussions about divine action? Do theologians take these discussions

seriously and mention them in books on systematic theology? Surely, some systematic theologians do take such discussions seriously, but browse through a randomly picked volume in systematic theology and you will be hard pressed to find any mention of the science-religion dialogue and of “scientific” discussions of divine action.<sup>6</sup> Why is that?

One possible explanation for the relative invisibility of discussions concerning the relationship between science and religion among theologians is that these discussions are relatively new. The field of science-and-religion is slightly over forty years old and still under development. Perhaps in time these discussions will be taken up by theologians and be part of their theological discourse. Another, and in my view more plausible, possibility is that the answers given are considered too scientific. They seem to have little to do with religion or theology and in some cases even lead to flawed theology. Such a view is related to the influence of scientism in theology, or what physicist and theologian Andrew Porter calls *theological naturalism*. In many discussions about divine action

It is as if for God to act in the world, something in the world has to move over to make room for God to act. There has to be a hole cut in the world to make space for God to act. For God to act, he has to push on something, and for that to happen, ordinary forces have to stop pushing on that something, or he has to add his own force on top of whatever natural forces are also pushing on the thing that he has to move in order to act. . . . It assumes that for God to act he has to come “into” the world and act the same way that other actors act in the world. (Porter 2001, 2)

Theological naturalism, as Porter defines it, “seeks to describe divine action in the same terms that in other parts of life are used to describe natural phenomena” (2001, 8). This says something not only about assumptions concerning divine action but also more broadly about God’s immanent presence in the world, for it assumes that “*immanence* can only work by pushing aside a part of the *intramundane* to make room for the immanent presence of transcendence. . . . Something can be an immanent presence, or it can be intramundane, but it can’t be both at once” (p. 41). Porter concludes, “I don’t know why people think this way, but they often do. It is a very naturalistic way to think. (It comes instinctively in the modern world.)” (p. 41).

In this conclusion Porter echoes Rhee’s words, quoted above, about the influence of science on thinking in other parts of life. In discussions concerning divine action, it seems as if the participants have turned to science to answer a theological question. Rhee was correct: Science not only has become our sole heuristic instrument to tackle questions that relate to our world but has extended its reach to deal with theological questions.

This may be related to the kind of scholars engaged in religion-and-science. These days it seems that more scientists are involved in the field than theologians. Barbour, John Polkinghorne, and Arthur Peacocke, some of the most influential scholars in the field, were all actively engaged in science before turning to theology. Their personal religious conviction and

questions are present throughout their engagement with the interaction of science and theology. Yet, reading their books, it becomes obvious fairly quickly that they approach those theological questions as scientists. As I argued in my book *Chaos, Complexity, and God* (Smedes 2004), Polkinghorne and Peacocke address the issue of divine action specifically from a scientific point of view. Their scientific *Vorverständnis* colors their approach: They argue as if divine action is to be treated as a scientific problem rather than as a theological or existential one. They hardly deal with conceptual issues, such as questions about the meaning of theological terms. In my book I showed how this leads to serious theological problems, because they subject religious belief to criteria of meaning that simply do not apply to it. They take the “categorical framework”<sup>7</sup> of science as the ultimate categorical framework, without considering the internal logic of theological discourse. In their attempts to understand divine action, they are looking in the wrong direction and thereby not taking theology seriously.

Let me explain this in more detail. From a theological perspective, there are no creaturely limitations to God’s action. Because God is not part of the created order, things that limit human action and that are bound up with the created order cannot be limitations for God. If there are limitations to God’s power and knowledge, these cannot be forced upon God externally and involuntarily, for, as Colin Gunton writes, “Whatever constrains God’s actions from without is effectively God” (2002, 17). Now, incompatibilism in discussions about divine action assumes that if the created order is closed, God cannot act; thus the created order imposes limitations on what God can or cannot do. In order for God to act, something in the natural order has to give way—hence the active search for irreducible ontological gaps in the causal nexus.<sup>8</sup>

Such an argument implies that God’s action and the workings of the natural order are in competition: Creaturely potentials (laws of nature) are in competition with God’s potentials, as if the two act on the same level. This argument ignores the categorical distinction between God and the world (that is, God’s transcendence). God is the Creator of the universe and therefore of a different order than the creaturely. God cannot be compelled or constrained by the powers inherent in the universe, because God “stands above” the laws of nature, transcends them. Incompatibilism with regard to divine action thus rests upon a category mistake, confusing the logic implicit in speaking about the natural order with the logic implicit in talking about the order of the divine.<sup>9</sup>

Where does this category mistake come from? How is it possible that God and creation are placed on the same level? In my opinion, underlying this mistake is a metaphysical postulate that entails a reduction of what is logically possible to what is physically or scientifically possible. In philosophy, the set of physical possibilities is a subset of the broader (actually infinite) set of logical possibilities. That I would jump so high as to overcome the pull of gravity and fly off into space may be impossible from a

physical or scientific point of view, but it remains a logical possibility that may be exploited in a science-fiction story. That a human being should rise from the dead after three days may be scientifically implausible and by some even considered impossible on the basis of present knowledge about death and decay of the human body, but it remains a logical possibility.

The basic distinction between logical and physical (im)possibility can be stated as follows: Logical impossibilities yield a contradiction, while physical impossibilities do not. Philosopher Mark Sainsbury writes that logical (im)possibility “typically issues from the very nature of the concepts involved, and is not beholden to the laws of nature. It is logically possible for the laws of nature to be very different from what they actually are” (2001, 15). It is a contradiction (logically impossible) to say that Jack is a married bachelor, because a bachelor is per definition unmarried. It is a contradiction to say that I am in possession of a round cube. Such logical impossibilities also entail physical impossibilities. But there is no contradiction involved in saying that if I had a long enough rope I could pull the moon down to earth, although it is physically impossible.

Philosophically speaking, then, what is physically possible is also logically possible, but not the other way around. What happens in discussions concerning divine action is that the distinction between logical and physical possibilities is collapsed so that the set of logical possibilities is reduced to what is merely physically possible. What is “possible” is tacitly considered to entail what is physically or scientifically possible. The possibility of God’s action then becomes a physical possibility, and for that to be true, science has to allow for that possibility. That this constitutes a flagrant reduction of divine power to physical potentiality is not an issue, though it should be. Medieval philosophers such as Thomas Aquinas agreed that logical impossibilities are also impossibilities for God, so that it is impossible for God to create a round cube. But Aquinas never voiced the idea that the range of divine action might be limited by creation, because that would be considered heresy. Because of the cultural scientism in Western society, God’s action now is limited to physical and mechanistic categories, thereby letting God compete with innerworldly physical and mechanistic causes.

However, if one accepts the philosophical distinction that the set of physical possibilities is a subset of the broader set of logical possibilities, divine action would not necessarily involve a competition between the divine and the creaturely order. Divine action would not even be considered a problem for science, because there is the logical possibility that God acts in ways that do not break the natural order but circumvent it. Even though our conceptual apparatus may be ill-equipped to consider it (just as for most of us our conceptual apparatus is ill-equipped to think in more than three dimensions), there may be possibilities for God to act in ways that are physically or scientifically unforeseen but nevertheless logically

and physically possible. (For a more extensive discussion of these issues see Smedes 2004, 212–27, and Smedes 2006.)

Any reduction of divine action to scientific categories, and thus to physical possibilities, is a reduction of the Divine to human proportions (or at least to what is humanly conceivable), which from my theological perspective is unacceptable, since this entails a reduction of the Creator to the creaturely. However, the implication of taking seriously the philosophical distinction between logical and physical possibilities and applying it in a theological context to divine action is that divine action poses no problem for a scientific categorial framework. Science deals only with physical categories and possibilities. God is not a physical category, and divine action is not necessarily a physical kind of action, so God's action is out of reach for science. Science can neither confirm nor deny the possibility of divine action.

Is divine action, then, a vacuous concept? Although from my perspective nothing can be said about divine action scientifically, the Christian tradition entails plenty of examples of witnesses claiming to have experienced God's presence and activity in their lives. Some may want to reduce those statements to hallucinations, projections, or misfiring in the brain, but I am content to leave the statements as they are: personal expressions of human experiences irreducibly couched in religious language.<sup>10</sup> Asking what if anything is behind the experiences would be giving in to a cultural scientific mode of thinking that is not interested in the phenomena themselves but in what is behind them.

#### BARBOUR AND THE QUEST FOR UNITY

What is the ultimate goal of the science-religion dialogue, and what are the challenges lying ahead? Should the goal be the unity of science and religion? I already mentioned that in Europe, because of the influence of existentialist and Barthian theology, there is the challenge of establishing a science-religion dialogue in the first place. Moreover, because of the influence of hermeneutical thinking in theology, there is widespread hesitation regarding the unification idea that underlies many American science-and-religion projects. Especially in Germany, but also in the Netherlands, the irreducible distinction between *Geisteswissenschaften* and *Naturwissenschaften* (humanities and natural sciences) is firmly established in the Academia.

Of course, attempts have been made in the past to unify knowledge in a single framework. Notably the Vienna Circle and the ensuing logical positivist movement took the empirical sciences as the only means to gain reliable knowledge about a world that they considered to be objectively knowable (Stroll 2000; Soames 2003a). The methods of the natural sciences, especially those of physics, were taken to be canonical for methodology in general. Therefore, the idea that there could be different kinds of sciences with different methodologies was rejected, and the aim was set at a unification of science based on the empirical sciences.

To achieve this aim, reductionist strategies were invoked. Logical positivism aimed at the construction of a unified and unifying language of science, which implied “the reducibility of all empirical propositions to elementary propositions and their truth-functional combinations” (Hacker 1996, 61). This meant going to the most elementary experiences, and thus the most elementary entities, which constituted “the given.” For many logical positivists, not only was physics the paradigm for all other sciences, but it even meant “that all sciences, including psychological and social sciences, might one day be unified and reduced to common, fundamental physical terms” (Ray 2000, 243; and see p. 250). All of the sciences thus were considered to be reducible in principle to physics. A complementary claim was that everything that exists can eventually be reduced to physical components, a claim later dubbed “physicalism” or “materialism.” Thus in logical positivism at least four related reductionist strategies can be identified: the reduction of all knowledge to scientific knowledge, the reduction of all languages to a single scientific language, the reduction of all sciences to physics, and the reduction of reality to physical or material reality.

Karl Popper had already criticized the basic tenets of logical positivism in his *The Logic of Scientific Discovery* (1959), but the landscape changed drastically after the publication of Thomas Kuhn’s *The Structure of Scientific Revolutions* (1962). Kuhn acknowledged openly that metaphysics and values were an integral part of science, because these were inherent to any prevailing paradigm. Metaphysics should be looked upon not with disdain but as a necessary part of doing science. Furthermore, it was acknowledged that we do not have objective, neutral knowledge of reality but that all of our perceptions are partly colored by our presuppositions, assumptions, and values, so that strong claims to objective knowledge needed to be treated with proper caution. Finally, it was acknowledged that the “picture theory” of language, which logical positivism had defended, should be abandoned. As a result of the influence of “ordinary language” philosophers including Ludwig Wittgenstein, Gilbert Ryle, and John Langshaw Austin, it was shown that language was multifunctional—that the meaning of words was determined not by some mysterious link with reality but by their use in a specific context of discourse (Soames 2003b). Moreover, it was shown by philosophers of science that figures of speech such as analogies, metaphors, and models played a much larger role in the scientific creative process than was previously assumed.

This change in the perception of the metaphysical, epistemological, and linguistic aspects of science is mirrored in Barbour’s works, especially in his early adoption of the modest metaphysical position of critical realism:

A “*critical realism*” must acknowledge both the creativity of man’s mind, and the existence of patterns in events that are not created by man’s mind. . . . *Critical realism* acknowledges the indirectness of reference *and* the realistic intent of language as used in the scientific community. It can point to both the extraordinarily

abstract character of theoretical physics *and* the necessity of experimental observation which distinguishes it from pure mathematics. It recognizes that no theory is an exact description of the world, *and* that the world is such as to bear interpretation in some ways and not in others. It affirms the role of mental construction and imaginative activity in the formation of theories, *and* it asserts that some constructs agree with observations better than others only because events have an objective pattern. (Barbour 1966, 172)

Barbour defines critical realism here as a middle position between the extremes of naive realism and antirealist instrumentalism and idealism. He thinks that it is the most appropriate position for theological inquiry. Moreover, from a critical realist position, one could identify parallels between theology and science (1966, 125ff.). Finally, it allows for a genuine dialogue between theology and science on scientific theories and their impact on theological reflection.

In *Issues in Science and Religion* (1966), as well as in his later *Myths, Models, and Paradigms* (1974), Barbour is remarkably keen on keeping science and religion apart. Although the contrasts between science and religion are not absolute, Barbour warns us against “category mistakes” in the sense of confusion between religious doctrine and scientific theory (1966, 268). He shows himself to be sensitive to differences in the languages of science and theology and argues that when specific issues in religion and science are addressed, “the ‘*alternative languages*’ approach is taken as the starting point of a satisfactory solution,” although he regards these languages as not mutually exclusive (1966, 269). He is aiming at a “*dialogue between two communities that respect one another’s integrity*” (p. 270).

In his later works Barbour’s perspective shifts. While in *Issues* he claims that process theologians often are guilty of category mistakes as they assimilate science and religion in a general metaphysical schema (1966, 453), in later writings he uses aspects from process philosophy to integrate religion and science at least with regard to specific themes (see Berg 2002, 70f.). In later books he tends more toward *integrating* religion and science, though he still warns against conflating them. The sensitivity to the difference in languages remains, but, as Christian Berg writes in his analysis of Barbour’s works, Barbour seems to have become more skeptical about the idea of complementary-yet-different languages, because he believes this idea could lead eventually to a separation of religion and science (Berg 2002, 70). In Barbour’s own words, “the compartmentalization of thought thwarts the quest for unity” (1966, 268).<sup>11</sup> It is clear that for the later Barbour the underlying drive to relate science and religion is a quest for unity, a unified view of the world. To achieve such a unified worldview, categories common to both disciplines should actively be sought. It is in this context that Barbour employs the metaphysical, panentheistic framework of process philosophy, which constitutes a complete metaphysical cosmology that encompasses both science and theology and harmonizes the two.

Barbour does not indicate what the benefits of such unification would be for science. However, there are obvious benefits for theology. Compartmentalization, in Barbour's view, "makes the gospel immune from attack at the cost of isolating it from contemporary intellectual life, or of destroying bridges of communication between theology and 'secular culture'" (1966, 269). Compartmentalization may rescue religion from criticism, but at the cost of separating theology from its wider cultural context. Unifying science and religion would make religion part of the wider context of "secular culture." Barbour seems to assume that science is already part and parcel of that culture. If theology wants to connect to secular culture as well, it should seek unification with science. Here we have a position that places the burden of proof to establish its rationality on the shoulders of theology, while the rationality of science is tacitly assumed.

This raises the question as to what extent Barbour's approach suffers from cultural scientism. I briefly described above how logical positivism aims at the unification of all sciences into a single *Einheitswissenschaft* (unified science) modeled upon physics. Religion and ethics, or at least their functions, would also be subsumed under this unified science. We see that Barbour also aims at unification, although of a category rather different from the unification that logical positivism sought. Barbour aims to unify and harmonize science and religion via process philosophy. Although there is a categorial difference between Barbour's approach and logical positivism, especially concerning the role of metaphysics, I believe that there is at least a resonance between them.

The motive behind Barbour's view of unification is to be found in his critical realism:

I advocate a critical realism holding that both communities make cognitive claims about realities beyond the human world. We cannot remain content with a plurality of unrelated languages if they are languages about the same world. If we seek a coherent interpretation of all experience, we cannot avoid the search for a unified world view. (Barbour 1997, 89; see Barbour 2000, 22)

Although we have no direct access to reality, our concepts, theories, and models "make tentative ontological claims that there are entities in the world something like those postulated in the models" (Barbour 1997, 117). Critical realism assumes that there is a single world about which both both religion and science make cognitive claims. If so, "we cannot remain content with a plurality of unrelated languages if they are languages about the same world" (p. 89). Here again is a faint echo of logical positivism, especially concerning its obsession with a single language. Logical positivists such as Otto Neurath and Rudolf Carnap believed that empirical propositions could be reduced to elementary propositions and their truth-functional combinations. Physicalist language was taken as the language "which scientists employ in their pre-systematic communications about their work" (Hacker 1996, 61). This language was ultimately "reducible to propositions

couched in the 'thing-language' which we use 'in speaking about the properties of the observable (inorganic) things surrounding us'" (Hacker 1996, 61, quoting Carnap). In other words, logical positivism believed that all language could be reduced to a single cognitively meaningful "thing-language."

To repeat, I see a categorial difference between Barbour's approach and logical positivism, because Barbour has abandoned the "picture theory" of language inherent to the idea of a single "thing-language," as is testified by his occasionally referring to linguistic analysis and Wittgenstein's language games (see Barbour 1997, 87). But whereas Wittgenstein stressed the fact that there are different, unrelated and irreducible language games, Barbour asserts that he *cannot* remain content with such a plurality of languages.

According to Barbour, there is a difference between scientific and religious use of language, yet ultimately they cannot remain unrelated. But how should they be related? He does not provide us with an answer but suggests that the conceptual framework of process thought—laid out in detail by Alfred North Whitehead in *Process and Reality* (1978)—provides the single language that can be used by both scientists and theologians. Whitehead's writings often are perceived as obscure. He conjured up new concepts such as *actual occasions*, *concrecence*, and *God's primordial and consequent nature* and used the words *nexus*, *feeling*, and *experience* in ways different from our use of the words in ordinary or even in scientific language. One could say process philosophy has constructed its own language.

If scientific and theological concepts could be translated into the language of process thought, this could perhaps function as the unified language for communication between scientists and theologians. Such a translation is specifically necessary in the case of religion, if it is to communicate with science. As Barbour describes, religious language "serves diverse functions, many of which have no parallel in science. It encourages ethical attitudes and behavior. It evokes feelings and emotions. Its typical forms are worship and meditation. Above all, its goal is to effect personal transformation and reorientation (salvation, fulfillment, liberation, or enlightenment)." Religion thus "requires more personal involvement than does scientific activity" (Barbour 1997, 157). The consequence for religious language is that in its primary function as a way of life with its ethical and personal dimensions, "the use of language is *noncognitive* and no explicit propositional assertions about reality are made" (p. 158). Barbour makes no comment as to how and on what grounds he arrives at this conclusion, but, as Berg also argues, there is an echo of the logical positivist deflation of metaphysics and religion as noncognitive and, thus, cognitively meaningless (Berg 2002, 151f.). However, Barbour does not conclude that religious language is cognitively meaningless, for the use of noncognitive language "presupposes *cognitive beliefs* and assertions" (Barbour 1997, 158). Yet, his use of the term *noncognitive* suggests that ethical

issues and questions regarding religion and a way of life cannot be accessed by rational arguments.

Does this suggest that science is more rational than religion and/or theology? Barbour does not say so explicitly. Still, he identifies four important criteria of science (agreement with data, coherence, scope, and fertility [1997, 109, 113, 158f.]) and describes to what extent religion is in accordance with these criteria. His conclusion is that “religion cannot claim to be scientific or to be able to conform to the standards of science. But it can exemplify some of the same spirit of inquiry found in science” (p. 159). Now, the last sentence of this quotation seems merely descriptive, but that is not entirely true. There is an assumption here that rational elements are found in religion, and it is with regard to those elements that religion shares in the rationality of science.<sup>12</sup> In other words, science is tacitly assumed to be the standard of rationality. I will not say much about the content of Barbour’s theology and potential influences of scientism, though Berg argues in his dissertation on Barbour (Berg 2002) that it is possible to identify more strands of thought that are a result of the tacit dominance of scientific categories.

In sum, without questioning in any way the tremendous value of Barbour’s contribution, which stimulated the contemporary field of science-and-religion, there is nevertheless in his approach a strong dominance of scientific categories. The endeavor to unify science and religion proceeds according to standards coming mainly from science; the status quo of science and scientific rationality in our culture is relatively uncritically accepted. Moreover, echoes from logical positivism resound in his writings. Future research may reveal more about the influence of scientism on his thought. In my earlier book (Smedes 2004), I argued that a similar tacit acceptance of scientific rationality as the *a priori* standard of rationality—as such can be found in the works of Polkinghorne and Peacocke. If it is true that cultural scientism is pervasive in Barbour’s, Polkinghorne’s, and Peacocke’s approaches, and if we take into account the influence these three scholars have had and still have on the science-religion dialogue, it seems to me that, contrary to what we might expect, the context in which the contemporary dialogue takes place is very much determined by scientific presuppositions.

This scientism is a remnant from logical positivism. Logical positivism was more than merely a philosophical position. It was a comprehensive form of scientism that regarded science as a way of life, an attitude toward and a way of looking at the world. Consequently, overcoming the logical positivist mode of thinking entails not simply replacing one set of propositions with another but changing one’s entire perspective on things. It takes, in Kuhnian terms, a paradigm shift, a complete transformation and refiguring of one’s outlook, comparable to a religious conversion. This may not be easy, as can be shown in the tacit scientism of Barbour, Polkinghorne,

and Peacocke. It may be partly explained by the fact that before turning to theology they received their original training in science, in an era in which the influence of logical positivism upon science was strong.

Still, I believe that overcoming scientific assumptions is necessary if the religion-science dialogue is to be conducted as a fair discussion, one in which the burden of proof is equally shared by both parties. In the case of Barbour and many others working in the science-and-religion field, the burden of proof is still placed mainly on the shoulders of religion, which has to prove that its rationality equals that of science.

As I argued above, the pervasive influence of cultural scientism on the dialogue not only shapes the way the debate proceeds but also influences the way of talking and thinking about religious issues such as divine action. From a scientific perspective, the language believers use to speak about divine action is considered as being similar to, say, the way scientists report the outcome of an experiment. This is a misinterpretation of the language of divine action, fueled by a deeply rooted yet tacit assumption that the logically possible is exhausted by what is physically possible.

#### OUTLOOK

A few years ago, historian of science David Livingstone published an intriguing book with the title *Putting Science in Its Place*. He begins the book thus: "Scientific knowledge is made in a lot of different places. Does it matter where? Can the location of scientific endeavour make any difference to the conduct of science? And even more important, can it affect the content of science? In my view the answer to these questions is yes" (Livingstone 2003, 1). Now, replace "science" in the above quotation with "science and religion," and the contextuality is right there. Livingstone writes about the "local, regional, and national features of science"; that "What passes as science is contingent on time and place; it is persistently under negotiation"; and that "Science is not some preordained entity fulfilling an a priori set of necessary and sufficient conditions for its existence. Rather, it is a human enterprise, situated in time and space" (p. 13). The challenge for the future of science-and-religion is to acknowledge fully that the same holds for the dialogue between science and religion.

This means that in my work in science-and-religion I have abandoned grand visions of unification and set myself the modest goal of reaching understanding between theologians and scientists. The longer I work in the field, the more I become convinced that perhaps it is even inappropriate to speak of *the* field of science-and-religion, even though for simplicity's sake I have done so here. Every spatiotemporal context needs its own dialogue—that is one of the basic points I have been trying to make.

I close with a few reflections about what I consider the future tasks of science-and-religion.

1. The field of science-and-religion has always been inherently connected to science popularization and education. Natural theologies of the seventeenth and eighteenth centuries may be outdated, but they were in their days marvelous instruments to educate people about scientific achievements. Now, in an age when in the United States scientific literacy has reached a historical low point, this task is more necessary than ever before.

2. Theologians active in the field should be willing to listen to scientists and let themselves be educated by them. I have learned from experience that there is a huge difference between theological and scientific attitudes and outlooks. Theologians should be willing to open themselves to an understanding of, for example, the guiding role methodological naturalism plays in scientific research. Basic scientific training for all theologians, including work in labs, would be ideal. It should be part of the training of pastors so that they at least get some understanding of what science is about. I believe that this would clarify both the distinction between science and religion and their commonalities, such as, for example, personal fascination with the unknown.

3. It would be extremely useful to go back to conceptual and methodological questions. Through my work with small groups of young German scholars engaged in the science-religion dialogue as well as my conversations during conferences of the European Society for the Study of Science and Theology (ESSSAT), I have become convinced that basic methodological questions are largely forgotten or easily skipped in the Anglo-Saxon field of science-and-religion. Simple questions such as What is science? and What is religion? are hardly ever asked anymore. Going back to the basics also entails a critical evaluation, for both scientists and theologians, of one's own presuppositions—that is, the application of a hermeneutics of suspicion to one's own view of science and of theology, with the risk of exposing cultural scientific presuppositions.

4. Scholars active in science-and-religion need to learn that most of the time the answers are not as important as finding the right questions. This we can learn from science.

5. The most basic of questions, which are in dire need of answers but seem never to be asked, are these: Why do we need an interaction between science and religion? What is the use? and for whom? I believe that there is no single answer to these questions that is generally applicable to all times and places. There will be a plurality of answers, and an inventory of those answers would in my view be both a modest goal and a major step forward in the development of the field of science-and-religion.

## NOTES

1. Barbour speaks of *religion* but often seems to conflate theology and religion. I see theology as the systematic reflection on the language used by religious believers who adhere to religion. I would thus rather say that the dialogue is between science and theology, or even,

ideally, between scientists and theologians. Yet, for convenience, I will stay with the mainstream use and refer to "science and religion."

2. It was this cultural Protestantism with its view of the perfectibility of human beings that later became linked to Nazi ideology. The theology of Karl Barth unrelentingly rejected such cultural Protestantism.

3. Philosophers such as Martin Heidegger and Ludwig Wittgenstein, however, made the influence of science on the way we think the central focus of their thought.

4. To complicate matters slightly, some compatibilists hold that free will is compatible with a full-blown ontological determinism. This, however, is possible only if the workings of the human mind cannot be reduced to materialistic and mechanical processes. For an overview of compatibilism/incompatibilism discussions, see Honderich 2002; Kane 1998; 2002; Van Inwagen 1983; Dennett 1984; 2003.

5. See for instance the enormous range of articles in the already classic volumes: Russell et al. 1988; 1993; 1995; 1998; 1999; 2001. Wesley Wildman (2004) evaluates the outcomes of these volumes. See Smedes 2004 for an extensive discussion of the incompatibilist models of divine action by John Polkinghorne and Arthur Peacocke.

6. Notable exceptions are the German theologians Wolfhart Pannenberg (1991–1997) and Jürgen Moltmann (1985), and Thomas Torrance (1969) and Alister McGrath (2001; 2002; 2003).

7. The concept of *categorial framework* is defined by philosopher Stephan Körner: "To indicate a thinker's categorial framework is to make explicit (i) his categorization of objects, (ii) the constitutive and individuating principles associated with the maximal kinds of his categorization, (iii) the logic underlying his thinking" (1970, 10).

8. It is important to stress the difference here between ontological and epistemological gaps. Ontological gaps refer to irreducible gaps in the causal structure of the universe, while epistemological gaps refer to gaps in our knowledge of the universe. An argument for divine action built upon epistemological gaps constitutes a classic "God of the gaps" strategy and is generally rejected by those working in science-and-religion.

9. Incidentally, ID proponents make exactly the same category mistake. By arguing that Darwin's theory of evolution cannot fully explain the emergence and development of life, and that therefore science should allow for other, non-natural explanations (such as God), ID accepts incompatibilism: If Darwin's evolutionary theory explains entirely the emergence and development of life on Earth, there is no room for God to act in the initial conditions of life. Ironically, underlying ID is the same assumption made by the naturalism it attacks.

10. This does not mean that it is not interesting or even necessary to study the relationship between religious expressions of certain experiences and compare them to hallucinations and so forth. However, this study and comparison already has a scientific focus, and the outcome may not correspond to the way the person experienced it. In those cases, we may tend to give the scientific explanation more weight than the personal expression, but there is nothing that demands such an evaluation. I would prefer to say that in this case we have two descriptions of an experience from two different and irreducible perspectives.

11. Berg accuses Barbour of committing a *non sequitur*, for Barbour seems to suggest that independence implies the impossibility of relationship (Berg 2002, 74).

12. "Das, was in der Religion an Rationalität vorhanden ist, findet sich auch in der Naturwissenschaft; das Rationale an der Religion ist das, was diese mit der Naturwissenschaft teilt" (Berg 2002, 322).

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