

Commentary

ON TWO ISSUES IN SCIENCE AND RELIGION: A RESPONSE TO DAVID GRIFFIN

by Ian G. Barbour

Abstract. In responding to David Griffin's critique of my book, *Issues in Science and Religion*, I suggest that most of the points which he initially presents as differences between us concerning reduction and emergence are resolved in the second half of his article. I spoke of the emergence of higher-level "properties" and "activities," rather than "entities," but my analysis of whole and parts is similar to his, although it was perhaps not always clearly articulated. We agree also that Alfred North Whitehead's God is involved in every event in ways which avoid the problems of the supernaturalist "God of the gaps," but we differ as to whether God's action might be taken into account in a new "post-modern" science.

Keywords: emergence; god-world relation; mind-body relation; process philosophy; science and theology.

I am very grateful to David Griffin for helping to clarify two important issues: the reduction/emergence debate and the representation of God's activity in the world. I have learned much from his detailed analysis. In the end, I think the differences between us are relatively minor compared to our areas of agreement, but perhaps it would be helpful to indicate briefly my understanding of these differences.

On the topic of reduction and emergence, Griffin was kind enough to send me an early draft of the first two sections of the current article, and I sent several pages of comments in reply. He took those comments into account mainly by adding a third section, "Activities and Actual Entities," which gives an accurate rendition of my view. He states at the start of this section (more than half way through the article): "Thus far

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I have presented a one-sided reading of Barbour's portrayal of process organicism. . . . It is a one-sided reading which does not reflect the entirety of Barbour's interpretation of process organicism and hence his own position on emergence, life, and mind" (Griffin 1988, 69). It might have been helpful to the reader to have known at the outset that the whole first half of the article was not going to reflect "the entirety of my position" on each of these issues but only "a one-sided reading." Most of what are initially presented as differences between us are resolved by the end of the third section.

For example, Griffin quotes from my discussion of atomic systems in physics: "New wholes do not of course contain any mysterious entities in addition to their parts, but they do have distinctive principles of organization as systems and therefore exhibit properties and activities not found in their components" (Barbour 1966, 297). He initially discusses only the first third of the sentence which rejects the idea of higher-level *entities*. The adjective "mysterious" may indeed represent an unnecessary attempt to distance myself from vitalism. Yet not until the third section does Griffin consider the rest of the sentence which affirms higher-level *properties* and *activities*. He agrees that the term *entity* in our culture sounds more static, substantialist, and nonrelational than *event* or *activity*. However, he advocates Alfred North Whitehead's strategy of redefining or reforming the term *entity* (he notes that "all actual entities are events or activities"), whereas I would argue that there are advantages in making use of prevailing concepts whenever possible.

In my book I gave an extended discussion of distinctive "levels of analysis" (an epistemological concept) and also distinctive "levels of organization" and "levels of activity" (both ontological concepts) (Barbour 1966, 335-37). This discussion clearly rejects ontological reductionism. I do not assign greater reality to parts and lower-level activities than to wholes and higher-level activities. I may have been unwise to say that organisms are composed of "nothing but atoms," but I do not say that atoms are entities while cells and organisms are not (and I do not think I "imply" this). The quotation cited above, which rejects the idea of entities, was from the chapter on physics and referred specifically to atoms themselves.

In short, I can see that there are a number of passages in the book which are dubious or inconsistent, and I am grateful to Griffin for pointing them out. However, I think that in the first half of the article he builds up a case by ignoring any passages which might call it into question.

Griffin gives a helpful analysis of a spectrum of views: reductionism, relational emergentism, process organicism, and vitalism. The last

three positions reject reductionism and defend emergence, although they differ as to what it is that emerges. I see *relational emergentism* as quite close to *process organicism*, especially in the light of the process conviction that all beings are constituted by their relationships. While Griffin initially distinguishes *reductionism* from *relational emergentism*, he often portrays them as very similar, and even states that the latter is a form of the former. He says of me that “it would be easy for the reader of his book to conclude that process organicism is simply a version of relational emergentism and hence simply a tempered form of reductionism” (Griffin 1988, 63). Perhaps I offer a tempered form of process organicism, but not, I submit, “a tempered form of reductionism.” I do indeed quote a passage from Ernest Nagel rejecting epistemological reductionism, despite the fact that he accepts ontological reductionism. However, these are separable issues, as Griffin indicates early in his article, and as I should have emphasized more clearly myself.

Griffin and I both make use of Charles Hartshorne’s distinction between two kinds of wholes: nonindividuated aggregates (corpuscular societies) and unified compound individuals. He is right that in one passage I mistakenly spoke of a stone as having vanishingly small novelty when I should have said (as I did in several other passages) that a stone as an aggregate exhibits no novelty at all. Computers are another question. I am not sure that one can rule out in principle the novelty of the unified, integrated activity which a future computer might exhibit; its organizational structure would probably be in many ways similar to that of the human nervous system, far from an aggregate or “corpuscular society.” Perhaps we need to modify Hartshorne’s sharp dichotomy of two kinds of wholes in order to allow for a continuum reflecting varying degrees of individuation and structural and dynamic integration, as suggested by recent work in hierarchy theory, systems theory, and information theory.

Griffin wants to reserve the term *dualistic* for the double assertion that mind and brain are *numerically distinct* and *ontologically different* in character, as René Descartes asserted. He refers to the process view as “nondualistic interactionism,” since it sees the mind and the cells of the brain as distinct but not ontologically different. (The cells of the brain have the same basic characteristics as the higher-level compound individual, the mind, which arises when the cells are organized in a complex structure.) I take it that Griffin holds that the mind is “numerically distinct” in the sense of being individually unified and conceptually distinguishable, not in the sense that it is separable or can exist independently of the structure of brain cells. Yet when I speak of mind and brain as “two aspects of one system,” does this not also provide for

individuated unity and conceptual distinguishability? Similarly, when I say that higher-level events exert constraints on events at a lower level, and vice versa, does this not also acknowledge interactions (which Donald Campbell refers to as “top-down” as well as “bottom-up” causality [Campbell 1974, 180; see also Sperry 1985, 47-48])?

Griffin may be right that I take too seriously the objections of most scientists to vitalism and dualism. On the other hand, I do want to communicate with scientists, and there are good historical reasons for their objections to vitalism and dualism. Griffin uses three criteria in his review: internal consistency, conceptual adequacy, and fidelity to Whiteheadian thought. The last of these criteria is less important to me, although Griffin has a legitimate concern that I should not misrepresent Whitehead. I am more willing to adapt rather than to adopt Whitehead’s ideas, as long as it is clear that I am doing so.

Because I want to communicate with people unfamiliar with Whitehead’s special terminology, I tend to use commonly understood terms whenever possible as Griffin and John B. Cobb, Jr. do so effectively in many parts of their book, *Process Theology* (see Cobb & Griffin 1976). As Griffin notes, for Whitehead *physical* and *mental* poles are technical terms, defined as two aspects of subjective experience: the former repeats what is received from others; the latter introduces self-determinative novelty. Could the process view be presented without having to redefine these commonly used terms, as long as one uses terms consistently? (In a subsequent communication to me, Griffin suggests “receptive and self-creative phases of experience.”)

Griffin gives a nice discussion of the “God of the gaps” arguments in which God was invoked to explain scientifically unexplained phenomena. God was assumed to intervene in a self-sufficient mechanical process, acting as a supernatural cause replacing natural causes. As Griffin indicates, I am in agreement with his claim that process theology avoids this kind of “God of the gaps.” The process God is involved in every event, so there is no self-sufficient godless process into which God would have to intervene. I am not sure that there is any great gain in speaking of a *hole* rather than a *gap*, since the two words have similar connotations. The important point, on which I agree, is that Whitehead’s God has a very different role in relation to the world from that in the earlier supernaturalist account.

If we say that God is the source of novelty and order, are we not introducing God to answer metaphysical questions, different from those asked by the scientist? If so, there are neither gaps nor holes in the scientific account, although that account does not answer other kinds of questions. As in the Thomistic distinction of primary and secondary causes, God does not operate in the same way as natural

causes from the past. However, in contrast to Thomism, the self-creation of every individual and the ordering of aims by God, as well as the influence of the past, play an immediate role in the unfolding of every event.

In *Issues in Science and Religion* (1966) I gave only brief attention to the role of models in representing God's relation to the world, although I explored this further in *Myths, Models and Paradigms* (1974). Since then, I have been even more convinced that imaginative models are central in the life of the religious community. I am exploring the kinds of model that express process insights—not to the exclusion of a systematic process metaphysics, but adding a communicative and expressive power which abstract concepts lack. One such model, mentioned by Hartshorne, is the idea of the world as God's body, and God as the world's soul. This agent model uses the language of agency and intention drawn from human actions, while avoiding a mind-body dualism. However, a more pluralistic model of God and the world as a cosmic society probably best represents process insights and avoids the one-sided emphasis on God's power in the medieval monarchical model. Griffin's own writings on evil and on Christology express many aspects of the process view of God's relationship to the world which can be represented by models as well as by metaphysical propositions. These seem to me promising ways of talking about God's action in the world without reverting to "the God of the gaps."

I would want to know more about Griffin's concluding proposal concerning a post-modern science before commenting on it. If the first half of Charles Birch and Cobb's *The Liberation of Life* (1981) is considered an example of post-modern science, I am comfortable with it. They believe that experience at all levels of reality reflects both efficient and teleological causation, and they illustrate this thesis at various levels of behavior, from cells to animals and human beings. They stress the ecological interdependence of all creatures, the continuity of life forms, and the dangers of dualism and anthropocentrism. In all this they draw support from relatively well-established scientific findings, although they challenge the mechanistic assumptions of many biologists. I am more dubious about the ideas of Rupert Sheldrake (1981), whom Griffin mentions here only in passing but defends elsewhere. Sheldrake does propose some possible experiments to test his hypothesis that forms of biological organization can be communicated across large intervals of space and time, but the evidence so far is unconvincing to most biologists. Perhaps Griffin only wants to be sure that Sheldrake is taken seriously and given a fair hearing.

Can science include reference to the *experience, aims, and creativity* of organisms and human beings, the "inner" side of their lives? Clearly

psychology must do so in the human case, unless it adopts a strict behaviorism. I agree with Griffin that it would be anthropocentric to draw a sharp line between human beings and other organisms. Research on animals and lower organisms also makes any such line dubious; the kind of evidence cited by Birch and Cobb seems to me persuasive. A greater openness to such ideas in the future would indeed encourage new directions of scientific research.

Should science include reference to *divine aims and purposes* in its analysis of either evolutionary history or the life of organisms today? Here I tend to be more cautious. On this issue (as distinct from the previous one) I incline toward the more "conservative" tendency in Whitehead: acceptance of the selective and abstractive character of science, along with the need "to supplement the scientific account by including it in a larger synthesis" (Griffin 1988, 77). Invoking the "God of the gaps" has sometimes hindered science; arguments from design have contributed no testable hypotheses to science although they have not impeded scientific research. However, process thought does open new possibilities which avoid the pitfalls of earlier natural theology. As Griffin writes in a letter commenting on a first draft of this response, "The issue is whether this new nonsupernaturalistic view of the divine-world relation might significantly change the situation, so that speaking of the relation of God (as newly conceived) as influential in the world (as newly conceived) might be possible in science (as newly conceived)." Would the new science differ methodologically from earlier science, or only differ in the range of types of concept utilized? I will await with interest the volumes which Griffin is editing on post-modern science, and in the meantime I can thank him for his help in clarifying my own thinking.

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