Supervenience: Two Proposals

SUPERVENIENCE AND BASIC CHRISTIAN BELIEFS

by Joseph A. Bracken, S.J.

Abstract. A field-oriented interpretation of Whiteheadian societies of actual occasions, when used to explain the notion of "strong supervenience" as applied to the mind-brain problem, allows one to claim that not only higher-level properties such as consciousness but even higher-level entities such as the mind or soul are emergent from lower-level systems of neuronal interaction. Moreover, it also explains the preexistence of God to the world and Christian belief in eternal life with the triune God in a way that is impossible within the limits of a theory of strong supervenience.

Keywords: actual occasion; God-world relationship; mind-body problem; structured field of activity; supervenience; transempirical hypothesis.

In his book, *God and Contemporary Science* (1997), Philip Clayton seeks to establish a dialogue between theologians, philosophers, and scientists with respect to the origin, the ongoing character, and the ultimate direction or finality of the cosmic process. His argument, in brief, is that all three groups have something to contribute to this discussion. Theologians, for example, bring a long history of reflection on the Jewish and Christian scriptures with their assertion that God is the Supreme Lord and Creator of the universe and, in the case of the Christian scriptures, with the added belief that God the Father created the world through Christ (as the Incarnate Word of God) in the power of the Holy Spirit (Clayton 1997, 15–81). Many scientists, in turn, have come to see that their own investigations

Joseph A. Bracken, S.J., is Professor of Theology at Xavier University, 3844 Victory Parkway, Cincinnati, OH 45207. This article was initially presented at a conference on theology and science at John Carroll University, Cleveland, Ohio, 6 November 1999. A revised version will appear as a chapter in *The One in the Many: A Contemporary Reconstruction of the God-World Relationship* (Bracken in press) and is used by permission of Wm. B. Eerdmans Publishing Company.

[*Zygon*, vol. 36, no. 1 (March 2001).]
 ISSN 0591-2385

into the origin, current status, and possible destiny of the universe "plead for meta-physical, and ultimately theological, treatment and interpretation" (Clayton 1997, 161). The data derived from science, in other words, underdetermine the theoretical conclusions that can be drawn from them. Hence, even though theologians should be "good listeners" when it comes to new scientific discoveries about the physical world, they have a right and even a duty to be "key players" when it comes to the interpretation of those scientific results. Finally, philosophers likewise should be involved in this discussion because they are especially well equipped to evaluate the various models for the understanding of the cosmic process, in particular, for the understanding of the God-world relationship.

Clayton's own focus in *God and Contemporary Science* is primarily on the contribution of philosophy to the discussion of cosmology. As he notes after reviewing a variety of positions on the relation between theology and science, "what is required is a common framework for formulating agreements and disagreements—one within which common terms and definitions can be found for presenting the whole spectrum of views. Only then can their divergences (and the best arguments for and against each one) be clearly recognized" (1997, 156). However, this is evidently the task of the philosopher, who on the one hand constructs her theory primarily on the basis of reason rather than revelation but on the other hand likewise recognizes that scientific data, as noted above, are not to be understood simply as "facts" but inevitably require further interpretation in terms of a theory or speculative framework that is not in itself empirically verifiable.

My own contribution in this article will likewise be heavily philosophical in that it will seek to reflect further on the God-world relationship in the light of the theoretical model which Clayton himself evidently prefers, namely, panentheism. In brief, I will be arguing that a field-oriented approach to the understanding of "societies" or serially ordered groups of "actual occasions" (momentary subjects of experience) within the philosophy of Alfred North Whitehead solves at least some of the philosophical/theological problems alluded to by Clayton at the end of his book, such as rational justification for belief in the preexistence of God to the world of creation and the possibility of subjective immortality for a human being after the death of the body (Clayton 1997, 257–65). In particular, I will be offering a field-oriented understanding of the key notion of "supervenience" in Clayton's model both of the mind-body relationship and of the God-world relationship. Beforehand, however, it will be necessary to summarize briefly the key features of Clayton's own position in *God and Contemporary Science.*

Divine Agency and Material Causality

In Part 3 of that book, titled "Towards a Theology of Divine Action," Clayton takes up the difficult issue of how God can unilaterally cause or at

least strongly influence the outcome of particular events taking place within the cosmic process. If one wishes to avoid Deism—the belief that God plays no further role within the cosmic process after the initial act of creation—one must find a way to show how God can be active within the world without disturbing the regularity of the laws of nature stipulated by modern natural science. Before setting forth his own position, Clayton first reviews the theories set forth by various other authors. Some have sought to find the "causal joint" for the action of God in the world within the realm of quantum mechanics, inasmuch as many scientists believe that nature itself is indeterminate at the quantum level. If, then, God were silently at work to determine the course of billions of quantum events, conceivably God could have an invisible but still very effective influence on the overall chain of events within the cosmic process as a whole (Clayton 1997, 193–95). This presupposes, of course, that variations at the quantum level will not cancel one another out but will have significantly amplified effects on higher levels of existence and activity within the cosmic process. Here still other authors have appealed to contemporary chaos theory to support the idea that microscopic differences can sometimes result in unexpected macroscopic changes. But, as Clayton comments, whether the indeterminacy operative within chaos theory is due to human ignorance of initial conditions within a given system or to some ontological indeterminacy within nature itself is still an open question within scientific circles (Clayton 1997, 195–96; 206–8).

Aware of these apparent restraints on the action of God at the microscopic level of activity, John Polkinghorne advocates a "top-down" as well as a "bottom-up" approach to divine agency within the world. That is, God's role is to provide a steady stream of "information" to entities at both the microscopic and macroscopic levels of activity so as to influence the formation of "dynamic patterns" leading in one direction rather than in another (Clayton 1997, 204).[1] As evidence for this mode of interaction between the physical and the mental or spiritual, Polkinghorne points to the way in which the human mind seems to influence what is happening in the body; the mind, in effect, directs the body by supplying "information" about ends and means, goals and values, otherwise unavailable to the organism as a whole. A similar model for the God-world relationship is advocated by both Nancey Murphy and Arthur Peacocke. That is, for both of them God directs the cosmic process by cooperating with various finite causal agencies even as God subtly influences the outcome of those same processes. Murphy, to be sure, like Polkinghorne, believes that God directly intervenes so as to determine quantum-level events even as God provides for the overall direction of the cosmic process from the top down (Clayton 1997, 217–19). Peacocke, on the other hand, is wary of any talk of direct divine intervention at the quantum level and prefers to think of God's holistic direction of the cosmic process exclusively from the top down.

Thus God influences the individual entity in its activity only through the mediation of the myriad causal systems that make up the cosmic process as a whole (Clayton 1997, 224–25).

The Notion of Supervenience

What Clayton borrows from Peacocke for elaboration of his own theory of divine agency in the natural world, however, is the notion of emergent properties or "supervenience." That is, Clayton believes with Peacocke that higher-level systems within nature possess emergent properties that are distinct from the properties of their component parts or members. Water, for example, possesses properties (such as the ability to quench one's thirst) that are not possessed by hydrogen and oxygen molecules in isolation. In that sense, properties peculiar to water as a compound of hydrogen and oxygen molecules "supervene" on properties peculiar to hydrogen and oxygen atoms in isolation from one another. Carried over into the analysis of the mind-body relationship, mental or spiritual properties such as consciousness or acts of cognition can then be said to "supervene" on the physical properties of the neurons operative in the human brain. The mental is thus emergent from the physical but is still basically interactive with the physical for its own existence and activity as a higher-level system within nature as a whole.

There are, to be sure, two different explanations for this notion of supervenience. What Clayton calls "weak supervenience" is the position held by Jaegwon Kim (1992; 1993) and others to the effect that mental properties such as consciousness are indeed supervenient upon the purely physical properties of the neurons in the human brain, but they are ultimately to be explained in terms of neuronal interactions (Clayton 1997, 253). Consciousness has thus no ontological independence of the activity of neurons in the brain. What Clayton himself defends is what he calls "strong supervenience"—namely, the belief, first, that one mental state can directly cause another mental state without the mediation of an antecedent change in neuronal states, and second (and much more important), that a mental state can itself effect a change in a subsequent neuronal state. Hence, causal activity can, at least in principle, take place primarily on the mental level with physical changes on the neuronal level as a byproduct rather than the reverse, namely, that true causal activity is always operative on the physical level with changes in mental states being simply byproducts.

Yet, even granting the legitimacy of this notion of "strong supervenience," there are problems with its application to the explanation of two closely related Christian beliefs: the belief that God is transcendent of the world as well as immanent within it and the belief that the human being somehow survives the death of the body. In making the mental or spiritual capacities of human beings supervenient upon the appropriate organization of neurons in the brain, one is likewise forced to conclude that those

same mental capacities should disappear at death with the cessation of neuronal activity in the brain. Similarly, if one were to liken God's activity in the world of nature to the mind-body relationship within human beings, the reality of God would not in any sense be independent of the cosmic process but rather emergent from it as an unintended byproduct of enhanced neuronal organization within the human brain. Yet, argues Clayton, one cannot simply return to the postulates of classical metaphysics on the mind-body relationship and the God-world relationship without equally unhappy results. That is, one would not want to say that God and the human soul are spiritual substances entirely different from the material world, because then one could not explain either how God as an independent spiritual reality can interact with the world of creation or how the mind as likewise a spiritual substance can interact with the body in which it is housed (Clayton 1997, 258).

Transempirical Hypotheses

Clayton's solution to this theological conundrum is to propose that, just as theologians should attend carefully to the results of scientific inquiry about the world of nature in the formulation of their hypotheses about the God-world relationship and related matters, so scientists should be willing to accept as plausible theological explanations of "trans-empirical" questions arising out of their research that resist determination by the scientific method alone. For example, with reference to the question of whether God's existence is essentially dependent upon the world or in some sense independent of it, Clayton comments: "Nothing within the world could dictate the answer to this question, since nothing within the world could determine whether its source is essentially independent of it" (Clayton 1997, 260). Hence, although some scientists might propose that the reality of God is nothing more than an emergent property of the human brain at a certain stage of its development, they can no more empirically verify this theory than the theologian can empirically verify the claim that God is the transcendent Creator of the world. In both cases, one is dealing with a truth claim that is strictly transempirical and thus beyond scientific verification.

I agree with Clayton that theology should thus have an impact on the existential mindset of scientists, even as the results of natural science should not be overlooked by theologians in the formulation of their hypotheses about the God-world relationship. There is, however, a weakness in his argument at this point. Because he does not develop in his book an explicit philosophical conceptuality to serve as the common ground on which both theologians and scientists could possibly agree as the basis for their common discussion on a given issue, his overall argument for such exchange between theologians and scientists remains inevitably somewhat tentative. It is one thing, for example, for theologians to claim that there

must be a subject underlying the mental properties to be found in scientific research on the workings of the human brain; but how is this subject of mental properties to be distinguished from the "soul," or spiritual substance, which was originally postulated by classical metaphysics but which has in subsequent centuries been radically called into question by empirical studies on the physiology of the human brain? In a recently published book, Warren Brown, Nancey Murphy, H. Newton Malony, and their collaborators, for example, argue against the notion of the soul as an entity distinct from the body. Rather, in support of what they call "non-reductive physicalism," they argue that the human brain possesses mental properties such as consciousness that are "supervenient" upon the activity of neurons but without any ontological substrate other than the brain itself (Brown, Murphy, and Malony 1998, 127–48).

Similarly, while the concept of supervenience seems to allow for the emergence of higher-level wholes or dynamic systems within the natural order which have specific properties and functions that are not reducible to the properties and functions of their component parts or members, how is one, philosophically speaking, to distinguish this new type of organizational totality from the generally discredited notion of substance? Is not a substance by definition likewise a whole greater than the sum of its parts? Finally, how is a theologian who no longer feels comfortable with the notions of primary and secondary causality advanced by Thomistic metaphysics to justify philosophically the reality of God as a transcendent subject of experience who nevertheless interacts with the world of nature? At this juncture Clayton, as noted, postulates the transempirical hypothesis, first, that God is the transcendent subject of the various mental properties traditionally attributed to the divine being and, second, that human beings as in the "image of God" likewise are (finite) subjects of consciousness capable of knowledge and free decision. As I see it, the weakness of this approach is that such a transempirical hypothesis is not itself grounded in an underlying philosophical conceptuality that is at least plausible to the natural scientist. Instead, it is grounded simply in the testimony of the Bible, an appeal to faith rather than to rational argument.

Here I propose, accordingly, that the metaphysical scheme of Alfred North Whitehead, albeit with certain key modifications, might well provide that philosophical common ground on which theologians and natural scientists might talk more seriously with one another about the forenamed issues. They would in effect have with Whitehead's metaphysical categories a common language with which to trade insights arising out of their separate disciplines and, as Clayton himself notes, to see more clearly specific points of agreement and disagreement. Introducing a philosophical scheme into discussions between theologians and scientists, to be sure, initially complicates matters, for one has then to wrestle with still another transempirical hypothesis that cannot be settled by appeal either to com-

mon sense or to scientific data. Once understood and basically accepted, however, a philosophical conceptuality is an invaluable tool for experts in different disciplines at least to communicate, if not always to agree, with one another.

Whiteheadian Societies as Hierarchically Ordered Fields of Activity

As noted earlier, my focus with these remarks will be on a Whiteheadian, or more precisely a neo-Whiteheadian, explanation of the notion of supervenience, the way in which higher-level systems in nature seem to exhibit properties that are not reducible to the properties of their constituent parts or members. My argument in brief is that, if Whiteheadian "societies" are understood as enduring structured fields of activity for successive generations of dynamically interrelated "actual occasions" or momentary subjects of experience, then one has an analogy for the classical notion of substance without many of the theoretical difficulties attached to the latter concept in the modern era as a result of scientific research. That is, where natural scientists are understandably wary of the notion of substance as a strictly nonverifiable entity, the notion of a field that acquires properties or characteristics by virtue of the events taking place within it over a period of time might well have greater plausibility with the scientific community if only because one can readily appeal to the notion of fields as operative within physics and other empirically oriented scientific disciplines. Furthermore, if, as I shall explain, one can make clear in virtue of this philosophical construct how there can be properties characteristic of the field as such that are not immediately derived from the properties of individual events within the field, then one has equivalently a philosophical explanation of the concept of supervenience.

Let us begin by reviewing briefly what Whitehead himself says about the nature of societies and then make clear how my own field-oriented approach to societies extends his remarks in a new direction that may be helpful for understanding the notion of supervenience. In his master work *Process and Reality*, Whitehead proposes that a "society" is a set of actual occasions with "social order," that is, with a "common element of form" or defining characteristic analogously shared by each of the actual occasions constituting that society at any given moment (Whitehead 1978, 34). What is important for our purposes is to recognize that each of the actual occasions thus shares in that common element of form in a slightly different way from its contemporaries. Or, stated otherwise, each of the constituent actual occasions contributes to the maintenance of a common element of form for the society as a whole that the occasion by itself only imperfectly embodies. Thus there is from the beginning, in this understanding of a Whiteheadian society, an implicit distinction between the properties of

the constituent parts or members (the actual occasions) and the properties of the society itself as that which is brought into being by the interplay of actual occasions but enjoys its own ongoing identity precisely as a society.

Here I may be already moving beyond what Whitehead himself thought and certainly beyond what many Whiteheadians think about the nature of societies as nexūs or sets of actual occasions. For disciples of Whitehead (and possibly for Whitehead himself), there is no strictly defined form for the society as a whole but only a somewhat similar form shared by a group of actual occasions that is sufficient to link them together as an aggregate of individual entities but that in no way constitutes them as a higher-level organizational totality. If, then, a given set of actual occasions evidently achieves such a higher-level organization or ontological status, becoming what Whitehead calls a "structured society"—a society made up of subsocieties of actual occasions, such as a physical organism with its different levels of internal organization—then the unity of this more complex society of actual occasions is provided from moment to moment by the latest member of the regnant subsociety of actual occasions within that overall group of subsocieties. As such, this regnant subsociety is equivalently the "soul" or unifying principle of the structured society. Such was in fact the line of thought proposed by Charles Hartshorne many years ago with his distinction between "composite individuals," or mere aggregates of actual occasions with only an analogous common element of form, and "compound individuals," which represent societies of actual occasions organized into a new higher-level totality in virtue of a regnant subsociety or "soul" (Hartshorne 1936, 193–220).

My own argument for many years now has been that all Whiteheadian societies, whether monarchically organized or not, constitute a higher-level ontological totality, namely, a structured field of activity that serves as the environment or ontological context for the interplay of its constituent actual occasions from moment to moment (Bracken 1991, 39–56). Precisely as an enduring field of activity, however, rather than a momentary subject of experience, a Whiteheadian society in its own structure and properties is distinct from the structure and properties of those same actual occasions. A Whiteheadian society is thus necessarily a whole or totality greater than the sum of its parts or members. Admittedly, it initially came into existence and is here and now sustained in existence only by virtue of the interrelated activity of successive generations of actual occasions. But what these interrelated actual occasions are bringing into existence at every moment is an objective reality (namely, a field of activity) distinct from themselves as interrelated subjects of experience. Furthermore, as I noted earlier, it is this admittedly somewhat unorthodox understanding of Whiteheadian societies that provides a philosophical justification for the concept of supervenience used by many natural scientists to explain the emergent properties of higher-level systems in the world of nature and by theolo-

gians such as Philip Clayton to explain, first, the mind-body relationship and then, by analogy, the God-world relationship. Likewise, for those theologians (like Clayton) who support the notion of "strong supervenience" as opposed to the theory of "weak supervenience," this field-oriented approach to Whiteheadian societies underwrites their belief in the emergence not only of higher-level properties of basically lower-level entities but also of higher-level entities distinct from those same lower-level entities.

Within the conventional understanding of Whiteheadian societies, for example, the mind is a new set of actual occasions distinct from the actual occasions constituting the various subsocieties or subfields of activity within the human brain at any given moment (Whitehead 1978, 106–9).[2] Within my own field-oriented approach to Whiteheadian societies, the mind should be understood rather as an enduring intentional field of activity constituted by the ordered succession of those same higher-level, strictly mental actual occasions. In this way, the field provides the ongoing context or lawlike environment for the patterned succession of mental actual occasions, and the mental actual occasions by their regular succession sustain the existence of the field. This intentional field, moreover, overlaps the interrelated fields of activity proper to the various subsocieties of actual occasions within the brain as a physical organ. Each new actual occasion within the intentional field proper to the mind, therefore, "prehends" or mentally grasps the structure already existent within its own field but also whatever structure may be emergent out of the lower-level fields of activity within the brain in terms of neuronal organization. All that information is incorporated into its own self-constituting decision as the latest member of the mind's intentional field. Finally, this decision of the presiding occasion in the mind is then transmitted first to the subfields of activity within the brain and then in various ways to all the other fields of activity within the human being as a complex physical organism (Whitehead 1978, 108–9).[3]

Not every supervenient field, to be sure, is, like the human mind, presided over by a single "personally ordered" actual occasion from moment to moment. Most Whiteheadian societies and therefore most supervenient fields of activity are constituted by a number of actual occasions at any given moment that are both spatially and temporally ordered. The key point here for our purposes is that, as soon as a new field of activity with unexpected emergent properties is spontaneously generated by the interrelated activity of lower-level actual occasions, higher-level actual occasions concomitantly emerge to populate and sustain that new field of activity. Atomic actual occasions thus give rise to molecular actual occasions as soon as conditions are ripe for the emergence of those higher-level actual occasions, that is, as soon as a field of activity suitable for the ongoing existence and activity of molecular actual occasions is available. Hence, new forms of subjectivity emerge from lower forms of subjectivity through the medium of progressively more organized fields of activity. In recent

issues of *Zygon*, Niels Henrik Gregersen has first proposed and then defended against critics the notion of "autopoietic processes," processes that are more than the self-organizing of preexistent elements into new systematic configurations but at the same time are not fully self-constituting inasmuch as they require antecedent subsystems out of which to evolve (Gregersen 1998, 333–67; 1999, 117–38). As I see it, the field-oriented interpretation of Whiteheadian societies presented above provides a philosophical justification for this notion of autopoiesis. For, in line with Gregersen's notion of autopoietic processes, Whiteheadian societies (structured fields of activity) are hierarchically ordered with lower-level fields providing the necessary infrastructure first for the emergence and then for the autonomous operation of higher-level fields of activity.

Application to the Mind-Brain Problem

Furthermore, specifically applied to the mind-brain relationship, my hypothesis provides philosophical justification for the notion of strong supervenience (as opposed to weak supervenience) in that one has a philosophical explanation not only for the emergence of higher-level properties among lower-level entities but for the emergence of higher-level entities, which can exert "top-down" causation on those lower-level entities. Here I take issue with the otherwise laudable efforts of Brown, Murphy, and Malony in *Whatever Happened to the Soul?* to account for the existence of mind in terms of "non-reductive physicalism." For, while I agree with them that the classical dualism of spirit versus matter must be avoided, I do not think it necessary to conclude that "the human nervous system, operating in concert with the rest of the body in its environment, is the seat of consciousness (and also of human spiritual or religious capacities)" (Brown, Murphy, and Malony 1998, 131). In effect, then, for Brown, Murphy, and Malony there is no "mind" over and above the brain or nervous system in the human body but only higher-level functions of the brain. In terms of my own neo-Whiteheadian theory, there is a distinct set of personally ordered actual occasions proper to the mind, as opposed to the various subsets of actual occasions proper to the brain. The mind, accordingly, when understood as an ongoing intentional field of activity for its constituent mental actual occasions, is indeed an entity and not just a higher-level activity as in the theory of Brown, Murphy, and Malony. It is a field-based entity, however, that is structurally akin to the lower-level fields of activity out of which it emerged and on the basis of which it continues to exist. Hence, the mind is not separate from the brain and the rest of the body as "spirit" in classical philosophy and theology was separate from "matter."

Brown, Murphy, and Malony do not wish by their theory of nonreductive physicalism to cast into doubt traditional Christian belief in the resurrection and life after death. As they make clear elsewhere in their book,

they argue for the continuance of personal identity or life after death as a result of the power of God: "The identity for self as a body/soul unity is now dependent upon a source and power beyond its own capacity for survival" (Brown, Murphy, and Malony 1998, 189). But my counterargument is basically the same as my argument earlier against the position of Clayton, namely, that theological transempirical hypotheses in the religion-and-science debate are certainly legitimate in terms of one's antecedent belief in the truth claims of Christian revelation. But there is as a result no philosophical common ground with nonbelievers, whether they be agnostic scientists or the adherents of differing faith traditions. As I will make clear shortly, however, there is in my judgment a philosophical explanation of how the human person can be incorporated into the communitarian life of the triune God at the moment of death, one that is consistent with my overall metaphysical scheme for the nature of reality.

Application to the God-World Relationship

Turning now to my exposition of the God-world relationship, I note, first of all, that the notion of supervenience does not seem to work in this context. The reality of God, in other words, cannot be supervenient upon the evolution of the human brain in the same way that the mind, with its distinct field of activity, is supervenient upon the development of the field (or fields) of activity proper to the brain. God as Creator of the cosmic process, according to orthodox Jewish-Christian-Islamic belief, must antedate the gradual evolutionary development of the cosmic process, including the evolution of the human brain. The field-oriented approach to Whiteheadian societies, however, might still provide an answer for this theological conundrum. The notion that elementary fields of activity over time coalesce so as to form more complex, highly structured fields of activity would seem to imply the concomitant existence of an antecedent, all-encompassing field of activity as the necessary ontological context for their interrelated growth and development. In *Process and Reality*, for example, Whitehead lists as one of the givens of his metaphysical system what he calls "the extensive continuum," namely, "one relational complex in which all potential objectifications [of actual occasions] find their niche. It underlies the whole world, past, present, and future" (Whitehead 1978, 66). He also refers to it as the "physical field" for the actual world (1978, 80). Whitehead, to be sure, makes no explicit connection between this extensive continuum and the activity of God in the world, perhaps because he developed the notion of God as personally interactive with the world only in the final pages of *Process and Reality*, when he introduced the concept of the "consequent nature" of God (Ford 1984, 227–29). In recent issues of *Process Studies*, to be sure, there has been a lively exchange among Whiteheadians about the nature of the God-world relationship, with my own field-oriented approach to the issue included among them (Hurtubise 1998;

Oomen 1998a, b; Ford 1998; Voskuil 1999; Bracken 2000). Here it suffices to say that, although Whitehead evidently did not conceive the God-world relationship in terms of a joint field of activity for God and creatures, in my judgment with the category of the extensive continuum he could readily have been thinking along those lines.

Likewise, Hartshorne, Whitehead's most distinguished disciple, does not make explicit use of the image of a common field of activity for God and the world in his analysis of the God-world relationship. But, insofar as he conceives of God not as a single nontemporal actual entity (as Whitehead does) but as a "personally ordered" society of actual occasions much like the mind or the "soul" within human beings, and insofar as he considers God as thus understood to be the "soul" of the world and the world to be the "body" of God (Hartshorne 1964, 174–211), the notion of a common field of activity for God and the world is an easy inference. That is, in line with my explanation for the mind-body relationship given above, the field proper to God as a personally ordered society of actual occasions thus coincides with the extensive continuum as the all-encompassing field of activity for the societies of actual occasions in the world, past, present, and future. At the same time, in line with Hartshorne's own belief that God is the life principle or "soul" not only of this world but of any and all other worlds, possible or actual (Hartshorne 1964, 230–32), one may likewise claim that for Hartshorne God is not emergent from the world but always ontologically prior to it. Unlike the human mind or soul, which in line with the notion of strong supervenience is said to be emergent from the activity of neurons in the human brain, God as the "soul" of the physical universe is indeed never without a "body," a world with which to interact, but is in no sense dependent upon precisely this body, this world, for God's own existence.

This notion of God's ontological independence of the world is even more strikingly confirmed in my own trinitarian reinterpretation of Whitehead's and Hartshorne's understanding of the God-world relationship. As I have made clear elsewhere (Bracken 1991, 123–39), the triune reality of God should be understood in Whiteheadian terms as a "structured society" composed of three personally ordered societies of actual occasions corresponding to the three divine persons of orthodox Christian belief. They are one God rather than three gods in close interrelationship because they preside over a single all-comprehensive field of activity proper to themselves in their own divine being. That is, instead of presiding over separate fields of activity proper to themselves as individual persons, they preside over this single all-encompassing field of activity, which constitutes their common nature or essence as one God. Furthermore, this divine field of activity has no necessary connection either with the field of activity proper to this world or with the field of activity proper to any other world, possible or actual. In this way, the reality of God does not in

any sense emerge from the field of activity proper to the world, but, quite the contrary, the reality of this world must necessarily emerge from the field of activity proper to the three divine persons in their dynamic interrelation.[4]

That is, if this world originated in a Big Bang, as many cosmologists believe, then this Big Bang necessarily took place within the "divine matrix" or divine field of activity. As Hartshorne pointed out many years ago (1963, 499–514), this is the logic of the notion of panentheism. All things other than God must exist in God and yet be themselves at the same time. For, as Hartshorne comments, "The superrelative or reflexively transcendent perfection of God is the fullness of his being, his wholeness as always self-identical, but self-identical as self-enriched, influenced but never fully determined by (and never fully determining) others—in short, a living, sensitive, free personality, preserving all actual events with impartial care and forever adding new events to his experience" (1963, 514). What Hartshorne excludes from this conception of the God-world relationship, of course, is the possibility of subjective immortality, at least for human beings if not for all finite entities, as a result of their coming to be and continuing to exist within God. And yet, as Clayton points out, this is another crucial Christian belief that must be somehow vindicated in the ongoing dialogue between religion and science. My own conviction is that a field-oriented approach to the God-world relationship such as I have laid out here could likewise contribute significantly to a philosophical justification of this traditional Christian belief.

In a previous publication, I took note of my basic agreement with the hypothesis of Marjorie Hewitt Suchocki that God "prehends" or mentally grasps human beings at the moment of death in their subjective immediacy as they complete their lifelong process of self-constitution (Bracken 1991, 143–47; Suchocki 1988, 81–96). Thus, God incorporates human beings into the divine consequent nature or the fullness of divine life in such a way that they are not only objectively immortal (as Hartshorne and presumably Whitehead himself believed) but subjectively immortal, experiencing themselves for the first time as a unitary reality before God. This full self-awareness before God, to be sure, may be initially painful because, in being so, one has to come to terms with the full consequences of one's life both for oneself and others. In the end, however, the individual will presumably come to terms with her inevitable limitations and peacefully take her place within the overall cosmic drama of creation, thus enjoying eternal life with a loving God (Suchocki 1988, 109).

At the same time, in that earlier publication I proposed that a field-oriented approach to the God-world relationship might help to resolve some of the residual ambiguities in Suchocki's proposal. First, the idea that God and all of creation occupy a common field of activity helps to explain how creatures—above all, human beings—can begin to live the divine life more fully at the moment of death. They have been, in other

words, unconsciously participating in the divine life during their earthly existence; at the moment of death they are consciously assumed into this transcendent matrix of divine life. One has to remember here that in terms of Whitehead's metaphysical scheme a human life (and, indeed, the finite existence of all creatures) is a moment-by-moment affair, an ongoing series of actual occasions rapidly succeeding one another. Once these occasions of experience achieve "satisfaction," that is, complete their momentary process of self-constitution, they leave their mark on the society or field of activity of which they were a member and pass out of existence, at least as a subject of experience. If, however, the society or field of activity to which they belong is integrated with the divine field of activity, one can readily conjecture with Suchocki that in becoming more fully part of the divine field of activity they take on the subjective immortality proper to God in God's own being. They contribute to the subjective immortality of God not simply as an objective fact of past experience for God but as a conscious coparticipant with God in the ongoing divine field of existence and activity.

Furthermore, this field-oriented approach to the God-world relationship likewise resolves the speculative issue of how one at the moment of death is reunited with all one's past moments of experience without having to experience them serially all over again. In terms of my field-oriented approach to Whiteheadian societies, what exists at any given moment is not so much the single actual occasion as the field of which the occasion is the latest member. Thus, if the intentional field of activity that constitutes the mind or soul of a human being in all the conscious moments of his life until death is preserved as part of the divine field of activity, then the actual occasion that is operative at the moment of death will be consciously reunited not with all its predecessor actual occasions, taken individually, but with the field to which they all belong in God. In and through becoming fully aware of itself as the focus of an individualized field of activity within the divine being, this surviving actual occasion within the human mind can both take possession of itself as a unitary reality and at the same time experience its participation in the divine being. That is, once the limiting conditions of life in the body are removed at the moment of death, then in and through its first moment of conscious experience after death each human subject should be able to experience herself or himself in a new way as a unitary reality within the divine life (Bracken 1991, 150).

Conclusion

To sum up, then: In this article I first summarized the argument of Philip Clayton that theologians, philosophers, and natural scientists should all have something to contribute in any discussion of the origin, ongoing existence, and ultimate destiny of the cosmic process. In particular, I noted

his use of the philosophical concept of strong supervenience to explain so-called top-down causation—above all, in terms of the mind-body relationship. But I also called attention to the fact that Clayton did not provide an explicit philosophical conceptuality for theologians and scientists to use in exchanging rival transempirical explanations of empirical data. My own contribution lay precisely in providing that philosophical grounding for the notion of supervenience in the mind-body relationship. I proposed that the Whiteheadian category of society should be understood as a structured field of activity for its constituent actual occasions. Likewise, I suggested how, by virtue of this modest rethinking of Whitehead's conceptual scheme, one would be able to affirm (a) the reality of the mind or soul as the ongoing subject of mental experiences not reducible to the activity of neurons in the brain, (b) the reality of God as transcendent of as well as immanent within the cosmic process, and (c) the possibility of subjective immortality for human beings after death. All of these are key Christian beliefs that, as Clayton says, must somehow be affirmed in the ongoing dialogue with natural scientists. My purpose in this essay was simply to provide a philosophical rationale for making those same truth-claims and thereby to vindicate the legitimacy of my reinterpretation of Whitehead's metaphysical scheme as a logical tool in the ongoing discussion between theologians and scientists on matters of common concern.

Notes

1. See also Haught 2000, 57–80. Haught uses the notion of "information" to indicate how God can influence the cosmic process without direct divine intervention, but he also makes clear how one can repristinate a hierarchical order within the physical universe without resorting to an ontological dualism.

2. See also Hardy 1998, 60: "I propose a transversal network-type organization between semantic and neural levels of organization. This underlying, network-based level of semantic processes is hypothesized to interconnect with neuronal and subneuronal networks. . . . We thus have two interlaced and interwoven dynamical-network systems. Each system's configuration, and their common interlacing, are both products of self-organizing dynamics." As I see it, Hardy's explanation of mental activity in terms of self-organizing "semantic constellations" or clusters of concepts, beliefs, feelings, and behaviors within an individual's "semantic field" (1998, 3) bears a strong resemblance to Whitehead's description of the mind-body relation (noted previously), especially if one thinks of Whiteheadian societies as structured fields of activity for their constituent actual occasions.

3. James B. Ashbrook and Carol Rausch Albright (1997) postulate a "triune" brain with different functions in the mental life of individuals. In my judgment, their notion of a "triune brain" could be readily transposed into my metaphysical scheme with interrelated, hierachically ordered fields of activity as constitutive of brain function. Briefly stated, I would propose that the intentional field proper to the mind or soul might well be centered in the frontal lobes of the neocortex but likewise overlap the fields of activity proper to the so-called reptilian brain, the paleomammalian brain or limbic system, and the rest of the neocortex or neomammalian brain (1997, 52–55).

4. My conclusions here bear some resemblance to the cosmological speculations of the celebrated philosopher-anthropologist Pierre Teilhard de Chardin. See Gray 1969, 21: "For Teilhard the whole of reality is a process involving the unification of the multiple, and this process in its entirety springs from God, is patterned upon his own life, and is destined to participate in that trinitarian life from which it has come."

REFERENCES

Ashbrook, James B., and Carol Rausch Albright. 1997. *The Humanizing Brain: Where Religion and Neuroscience Meet*. Cleveland, Ohio: Pilgrim Press.

Bracken, Joseph A., S.J. 1991. *Society and Spirit: A Trinitarian Cosmology*. Cranbury, N.J.: Associated Univ. Presses.

———. 2000. "Prehending God in and through the World." *Process Studies* 29:4–15.

———. In press. *The One in the Many: A Contemporary Reconstruction of the God-World Relationship*. Grand Rapids, Mich.: Wm. B. Eerdmans.

Brown, Warren S., Nancey Murphy, and H. Newton Malony, eds. 1998. *Whatever Happened to the Soul?* Minneapolis: Fortress.

Clayton, Philip D. 1997. *God and Contemporary Science*. Grand Rapids, Mich.: Eerdmans.

Ford, Lewis S. 1984. *The Emergence of Whitehead's Metaphysics 1925–1929*. Albany: State Univ. of New York Press.

———. 1998. "The Consequences of Prehending the Consequent Nature." *Process Studies* 27:134–46.

Gray, Donald P. 1969. *The One and the Many: Teilhard de Chardin's Vision of Unity*. New York: Herder and Herder.

Gregersen, Niels Henrik. 1998. "The Idea of Creation and the Theory of Autopoietic Processes." *Zygon: Journal of Religion and Science* 33 (September): 333–67.

———. 1999. "Autopoiesis: Less than Self-Constitution, More than Self-Organization: Reply to Gilkey, McClelland and Deltete, and Brun." *Zygon: Journal of Religion and Science* 34 (March): 117–38.

Hardy, Christine. 1998. *Networks of Meaning: A Bridge between Mind and Matter.* Westport, Conn.: Praeger.

Hartshorne, Charles. 1936. "The Compound Individual." In *Philosophical Essays for Alfred North Whitehead*, ed. F. S. C. Northrup. New York: Russell and Russell.

———. 1963. "The Logic of Panentheism." In *Philosophers Speak of God*, ed. Charles Hartshorne and William L. Reese. Chicago: Univ. of Chicago Press.

———. 1964. *Man's Vision of God and the Logic of Theism*. Hamden, Conn.: Archon Books.

Haught, John F. 2000. *God After Darwin: A Theology of Evolution*. Boulder, Colo.: Westview Press.

Hurtubise, Denis. 1998. "The Enigmatic 'Passage of the Consequent Nature to the Temporal World' in *Process and Reality*." *Process Studies* 27:93–107.

Kim, Jaegwon. 1992. "'Downward Causation' in Emergentism and Non-reductive Physicalism." In *Emergence or Reduction? Essays on the Prospects of Nonreductive Physicalism,* ed. Ansgar Beckermann, Hans Flohr, and Jaegwon Kim, 131–32. Berlin: W. de Gruyter.

———. 1993. *Supervenience and Mind*. Cambridge: Cambridge Univ. Press.

Oomen, Palmyre M. F. 1998a. "Consequences of Prehending God's Consequent Nature in a Different Key." *Process Studies* 27:329–31.

——— 1998b. "The Prehensibility of God's Consequent Nature." *Process Studies* 27:108–33.

Suchocki, Marjorie Hewitt. 1988. *The End of Evil: Process Eschatology in Historical Context*. Albany: State Univ. of New York Press.

Voskuil, Duane. 1999. "Discussion of Palmyre M. F. Oomen's Recent Essays in *Process Studies*." *Process Studies* 28:130–36.

Whitehead, Alfred North. 1978. *Process and Reality*. Corrected Edition, ed. David Ray Griffin and Donald W. Sherburne. New York: The Free Press.