

DIVINE ACTION: IS IT CREDIBLE?

by James S. Nelson

Abstract. The concept of God's acting in the world has been seen to be problematic in light of the claims of scientific knowledge that the regularity of a lawlike universe rules out divine action. There are resources in both scientific knowledge and religion that can render meaningful and credible divine action. The new physics, chaos theory, cognitive psychology, and the concept of top-down causation are used to understand how God acts in the world. God's action is not an intervention, but is understood on the model of how the mind influences the brain in a downward causative manner. Suggestions for imagining God's actions are discussed.

Keywords: chaos theory; divine action; mind/brain interaction; modeling; new physics; top-down causation.

In a justly famous article, "Cosmology, Ontology, and the Travail of Biblical Language," Langdon Gilkey pointedly criticized the concept of the act of God as it appeared in the so-called biblical theology movement. The assertion that God acts in history and nature is made without meaning or justification as a concept in itself and in light of scientific knowledge. Gilkey concludes:

What we desperately need is a theological ontology that will put intelligible and credible meanings into our analogical categories of divine deeds and of divine self-manifestation through events.

Only an ontology of events specifying what God's relation to special events might be, could fill the now empty analogy of mighty acts, void since the denial of the miraculous. (Thomas 1983, 40, 37).

This discussion will concentrate on the meaning and the possibility of the concept of God's actions in light of scientific knowledge and will not attempt to develop the ontology that Gilkey calls for. Yet, what is done can have important implications for an ontology of divine events.

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It is evident from even a cursory reading of the Bible that God is portrayed as acting in the most specific ways to accomplish certain purposes. Whether the concern is with the exodus of the Hebrew people from Egypt, the life of a common sparrow, or likening God's care for people to the numbering of the hairs on their head, actions of God are assumed to be taking place. The statement in Isa. 46:9-11 is strong but typical:

I am God, and there is no other; I am God, and there is no one like me, declaring the end from the beginning and from ancient times things not yet done, saying, "My purpose shall stand, and I will fulfill my intention". . . I have spoken, and I will bring it to pass; I have planned, and I will do it. (N.R.S.V.)

Can such a faith in God's caring and guiding actions be maintained and justified in light of the growing scientific knowledge whereby so many phenomena in reality are now explained by natural causes and shown to conform to the regularity of law? Certainly most people who live after the scientific revolution have felt the force of Bonhoeffer's words:

Man has learnt to deal with himself in all questions of importance without recourse to the "working" hypothesis called "God." In questions of science, art and ethics this has become an understood thing. (Bonhoeffer 1967, 178)

As we understand more fully how things work, the place for God to act has become smaller, and, as Bonhoeffer says, God is pushed out of the world and seen less as a significant reality.

Theologians have tried to meet this challenge in different ways. A recent attempt was made by Maurice Wiles in his 1986 Bampton lectures, *God's Action in the World*. It will not be our purpose to analyze and critique Wiles's position in any detail, but his position can be stated in summary form for the purpose of contrast to alternative positions brought forward and investigated as a constructive proposal here. Thus Wiles states:

The proposal that I want to make is that the primary usage for the idea of divine action should be in relation to the world as a whole rather than to particular occurrences within it.

So for the theist, who is necessarily committed to a unitary view of the world, the whole process of bringing into being of the world, which is still going on, needs to be seen as one action of God.

We can make best sense of this whole complex of experience and of ideas if we think of the whole continuing creation of the world as God's one act in which he allows radical freedom to his human creation. The nature of such a creation . . . is incompatible with the assertion of further particular divinely initiated acts within the developing history of the world. (Wiles 1986, 28, 29, 93)

However we understand Wiles's position regarding God's act as the entire process of creation understood as a whole, the fact that it rules out particular acts of God in deference to a unitary view of reality and the results of reputed scientific knowledge means that God really is not active in the world. On his view it is hard to see how any personal relationship with God can be understood. If God does not make specific responses within the situation of individuals, the notion of a God of love and care who relates to humans personally is evacuated of meaning.

Merely asserting these critical remarks regarding Wiles's position does not carry much weight, however, unless particular and personal actions of God can be shown to be possible and credible from an understanding of reality in some other way justifiable to those who want to be true to the best knowledge available. In this regard the knowledge that science gives us attributes a relative autonomy to many aspects of creation, even a regularity that can be characterized by automatic processes. This knowledge needs to be respected. The problem for a Christian theology of divine activity is not to accommodate unduly to the idea of a structured world that evolves without the involvement of God as its creator and sustainer. What this means is that the discussion must move between modeling God's relation to the world by deism and by interventionism. God is neither distant, as in deism, nor an intervening God, if by that it is understood that God comes into creation from the outside in order to act. An instructive statement from Donald MacKay in *Science, Chance, and Providence* anticipates a position that will be taken in this discussion concerning the nature of God's activity:

This is perhaps the point at which to express some misgivings about the common use of the (non-biblical) term "supernatural" to refer to the miraculous. If all it means is "unprecedented," this is harmless enough; but the term has pagan overtones that can cause confusion. The danger is that it lends credence to a thought-model (derived from ancient Greek sources rather than the Bible) in which "nature" has a self-sustaining power independent of God, and a miracle happens when God "intervenes" by exerting a superior power. For biblical theism, the miraculous is not so much an intervention (since God's sustaining activity is never absent) as "a change of mode" of the divine agency. (MacKay 1978, 18)

MacKay's challenge to the dualistic supernatural/natural way of conceiving the divine reality will be an issue throughout our investigation into divine activity.

I

It is well known that the rise of modern science in the seventeenth century, centering around Newton and others, resulted in the vision of a mechanistic universe. The order of nature was understood to be a self-sufficient system operating by strict cause and effect regularity in a lawlike way. The universe, understood as a great machine governed by deterministic laws, appeared to have little or no place for a God who acts to accomplish purposes. Science developed, as C. C. Gillispie expressed it, as "the edge of objectivity." The sciences understood their method to involve the relations between objects and the laws and theories that explained those relations. Not only is God ruled out but persons as subjects find no place in such an approach to knowing reality. Thus by 1835 we have David Strauss declaring quite categorically in his *Life of Jesus* that "we may summarily reject all miracles, prophecies, narratives of angels and demons, and the like, as simply impossible and irreconcilable with the known and universal laws which govern the course of events" (Allen 1989, 166).

Is this mechanistic picture of the results of the scientific method adequate in itself and reflective of reality? A recent, more critical reflection on the scientific method and the results of the "new physics," which arose around 1900, led to a serious questioning of this classical worldview that seemed to push God out of the picture. It is now recognized that scientific models do not catch all aspects of the reality analyzed and that their explanatory function is not always literal in reference. Theories are isolated and abstract and therefore deal with only aspects of reality; they exclude other aspects of reality and causal factors of whatever kind. Heisenberg's principle of indeterminacy, which arose out of study of subatomic phenomena and resulted in quantum physics, has led to the understanding of an open universe, less determined and more flexible. Physical states cannot be precisely specified, and events in the small world of the atom are viewed in terms of probability waves understood statistically rather than subatomic particles having precise location. Rather than being precisely and deterministically knowable, the world has at its roots the character, to use Karl Popper's famous words, of both "clouds and clocks."

If we move to an analysis of the larger world of everyday experience, it appears to be regular and not to reflect the indeterminacy of the subatomic world. However, the behavior of large-scale systems of some complexity has revealed to recent physics some surprising characteristics, described in chaos theory. Chaos theory points to complex systems as having an openness and unpredict-

ability that cannot be characterized by the clocklike regularity formerly thought. Physicist and theologian John Polkinghorne describes chaos theory in the following way. Systems of complexity are exquisitely sensitive to circumstance. If we take the example of molecules of air moving around in a room, their action is like billiard balls in motion. In a period of only one-ten-thousand-millionth of a second, or 10^{-10} seconds, each of these air molecules has about fifty collisions with those around it. To predict what will happen from the beginning of that period to its end, how accurate do I have to be in my knowledge of the molecules' initial state, Polkinghorne answers in this way:

It turns out that my calculation of how these billiard ball molecules would be moving will be badly out if I have neglected to take into account the presence of an extra electron (the smallest particle of matter) on the other side of the observable universe (about as far away as you can get) interacting with the molecules through its gravitational force (the weakest of the intrinsic forces of nature). (Polkinghorne [1989] 1990, 6)

Predictability is thus impossible, as we understand from attempts to predict the weather. It is here that the famous butterfly effect comes into play: a butterfly halfway around the world stirs the air and two weeks later a storm system will be affected. From this Polkinghorne draws the the conclusion that the future is really open, not so much in a random sense, but in a structured way characterized by a flexible process.

II

It is now time to come to the heart of the problem, which is how it is possible to understand that God acts in the world. No doubt any attempt to answer this question will leave a great deal of mystery, for no one can claim to identify and comprehend just how and why God acts in the world. Yet to admit that we deal with great mysteries does not absolve us from the theological responsibility to be as clear about the possibility as we can and to seek to show that it can be meaningfully said that God acts with some consonance with what can be known about reality, especially in light of our best knowledge from the sciences. If God's revelation can only give us illumination without our being illumined by what we can know of the world to give understanding of how God relates to the world, knowledge of God will not be possible.

Our knowledge of the world process has shown it to be an open and flexible one, in contrast to the classical view of a deterministic, closed, and rigidly law-governed process. In considering whether it

is conceivable to meaningfully understand God's action, we will seek to show what it means for God to act in and through and with the events of the world. We will approach this topic by analyzing various ways in which such action might be understood, seeking to show the strengths of each position as well as its weaknesses. It would be too strong to say that various models of divine activity are to be presented. Our more modest task will be to suggest, tentatively, ways of understanding how God acts in creation.

Austin Farrer has written eloquently and with insight on divine activity, especially in his Deems lectures, *Faith and Speculation* (1967). Farrer builds on the rejection of a closed, mechanistic view of the world to show that God's influence is conceivable in a world process that is open and flexible. Though he is agnostic as to how the "causal joint" works in God's action, it is meaningful to say that there is room for God to act. Farrer's statement on this matter is to the point: "The grid of causal uniformity does not (to any evidence) fit so tight upon natural processes as to bar the influence of an over-riding divine persuasion" (Farrer 1967, 62).

What this means is not that there is a gap in the uniformity of nature in which God might act, finding as it were a loophole in the world system. God's action is not in causal indeterminism. Farrer is not expressing the notion of a "God of the gaps," who acts in what is as yet unknown to humans. It is Farrer's claim that the entire web of the events of creation is pliable to the hand of God in providential action. This action of God takes place in a dimension that for Farrer is unknowable in principle. The created systems of God's world are given a relative independence to be themselves, so that the divine action, while effecting a purpose, does not violate or force, to use Farrer's terms, creaturely integrity. For Farrer, "it is enough to say that God knowing each of his creatures from within its action, and viewing its world from the standpoint of its being, cares for such mutual harmonization of natural agents as are necessary to the existence or the development of the creatures he creates" (Farrer 1967, 153). Thus an open universe, combined with created entities and systems having active powers of their own, enables an understanding of God acting in and through creaturely events. What this means is that God's actions cannot be extricated from creaturely realities. Neither do divine actions compete with or force themselves upon the activities of the world. God's actions take place in and through law-governed regularities and structures. God does not act in the contingencies of the process so as to manipulate events. It is not individual events that are acted upon by God; rather, God as ultimate sustainer of all processes, acts from within in a continuous

way to achieve purposes, while delicately respecting the integrity and freedom of creative systems and events.

We need to make clear that the notion of God acting in and through the processes of events does not mean that God is an agent or cause alongside other agents and causes. Bultmann is right to aver that to make God a cause alongside other causes is to confuse categories and make something finite infinite and therefore mythological. It is also to make God an intervening divinity, who to act in the world must come into it from the outside, thus slicing up reality. A moment of thought will tell us that, though God is transcendent, this has not meant that the divine reality is outside of the creation and needs to get into it to act. Such a notion, popular as it is, comes from the eighteenth-century understanding of nature as a self-sufficient mechanism and God, who began or even sustained the process, as distant from it, as in deism. The project of our discussion is to leave such theological thinking behind. Farrer expresses the issue well: "God is not, indeed, out there in space beside us, like some of our neighbors; he is at the causal root of our being, and of every being; and it is through our root that we receive his Grace" (Farrer 1967, 47). Our mental and spiritual actions and intentions are no more a cause among the causes of our physical bodies than is God just another agent in a world of agents. Thus it is inappropriate to speak of God acting in the gaps, either of our knowledge or of our reality. God acts in the process, as we have described it, and not as an occasional intervener.

Because God's action is not external to the universe, divine action does not take place as one cause interacting with another, as in human relations to things. God's action is undergirding and continuous. Therefore, the reality of God does not come into an explanation in a science such as physics, which in principle is complete according to its own methods, but that does not mean that what physics can know is all that is going on. Reacting to the challenge of Darwin in the nineteenth century, Aubrey Moore in *Lux Mundi* expressed these insights in relation to God's action: "Either God is everywhere present in nature, or He is nowhere. . . . Everything must be His work or nothing. We must frankly return to the Christian view of direct divine agency, the immanence of divine power in nature from end to end . . . or we must banish him altogether." So also Charles Kingsley stated that scientists who find "they have got rid of an interfering God . . . have to choose between the absolute empire of accident, and a living, immanent, ever-working God" (Moore 1979: 378). While such an understanding of God's actions may have theological meaning within the Christian tradition, is it

credible for contemporary understanding within a scientific context? One analogy that has been used for divine action compares the mind/body relation and God's relation to the world. In relation to how causation may be understood and the results of brain research, I believe God's actions in the world can receive illumination and credibility.

III

It often has been claimed that God's action in the world can be understood by analogy to the mysterious way mental experience effects an intention in and through the regularly functioning physical brain and our own bodies. If we know this as a reality it is not unreasonable to believe that God can act in and through the regularities of the created order. However, for this to be credible, some evidence for its meaning and possibility must be brought to light. Recent developments in cognitive psychology have indicated that human consciousness, or mental experience, can exercise a "top-down" or "downward causation" effect on the human brain. The Nobel laureate Roger Sperry, who distinguished himself in the area of split-brain research, claims that new reasoning about causation in relation to mental phenomena shows that consciousness is an explanatory reality in brain function. It is Sperry's claim that causation at the neurocellular level, while remaining regular, is subjected to a higher mental causation which determines how patterns at the neurocellular level work.

In cognitive processing, however, these neurocellular events are seen to be enveloped within, and thus controlled by, higher-level types of causal phenomena. In a train of thought, for example, the causal progression is determined at each step by the holistic network properties of mental images, percepts, insights, cognitive associations, and the like, thereby obliging the constituent neurocellular components to fire in patterns determined largely at conscious mental levels. (Sperry 1991, 243)

Again, Sperry says, "The unified subjective intent must causally program the patterns of neuronal firing within each hemisphere without interfering with the physical or chemical laws of the neuronal processing at physiological levels" (Sperry, 1991: 243-44). Arthur Peacocke, in discussing this issue, refers to ideas that the distinguished American philosopher Donald Davidson expresses in his article "Mental Events," which are in essence similar to Sperry's position. It is Davidson's position that mental events are "supervenient" on neuronal events in the brain and do not intervene in them, so that mental events are seen to have a controlling, directing

supervisory influence on the regularity of the brain process without being disruptive of it (Peacocke 1990, 203). For Sperry mind is put back into the reality of brain science, and a different model of causation is highlighted which “combines traditional bottom-up with emergent top-down causation in a ‘reciprocal’ or ‘doubly determinate’ form of hierarchic control” (Sperry 1991, 243).

In Arthur Peacocke’s recent book, *Theology for a Scientific Age*, the motion of top-down or downward causation is used in an illuminating way to understand how it may be possible to speak of God’s action in the world. In an earlier book, *Creation and the World of Science*, Peacocke modeled God’s action on the conviction that God from the beginning had instilled into matter those potentialities that would develop into the world we now have. God’s creation is not a necessary process, but through chance and determination God rings out the possibilities of creation in a manner analogous to a great Bach fugue. However, God is not seen to be directly acting to bring this about, though God’s activity undergirds and sustains the whole process. Now Peacocke has found a way to meaningfully understand God’s actions in the world by the conceptuality of top-down causation, which is based on scientific understanding. The argument is that if in science top-down causation is a reality, then God’s way of acting in the world may be by way of downward causation consistent with such reality. However, the so-called “causal joint” between God’s action and creation will always remain a mystery, though the conception of downward causation makes God’s actions, at least, credible.

Peacocke gives examples from science of top-down causation. He notes that smaller entities that are parts of larger wholes are affected by the velocity of the whole, so that if a box containing gas is dropped, its movement is a causal factor for individual molecules (Peacocke 1990, 50). Another example is the Benard phenomenon. At a critical point individual molecules in a hexagonal cell move from random motions in relation to each other to a motion of common velocity in a coordinated way. In reaction systems thousands of molecules change to another form, where previously the probability of such a change was independent of their location. Peacocke concludes: “In both these instances, the changes at the micro-level, that of the constituent units, are what they are because of their incorporation into the system as a whole, which is exerting specific constraints on its units, making them behave otherwise than they would in isolation” (Peacocke 1990, 53–54). Peacocke takes an example from an important article by Donald T. Campbell, “Downward Causation in Hierarchically Organised Biological Systems.” The worker

termite has jaws that are highly efficient, and their operation depends on the way the particular proteins of which the jaws are made are arranged. It is Campbell's claim that natural selection, which is responsible through a process requiring several generations for optimizing the viability of the whole organism, in this case by maximizing its ability to gnaw wood, has constructed principles that specify the structure and distribution of protein and then determined the DNA sequence upon which the production of these proteins depend. From this analysis he concludes that the behavior of the whole organism acts to determine the particular DNA sequence, and thus we have an example of downward or top-down causation. Campbell goes on to describe how division of labor leading to specialization of different types of jaws leads to varying subgroups, so that laws of sociological organization are seen to be a determining force in causing the DNA sequence. Thus Peacocke concludes: "When there is selection of the whole organism at the higher level, the higher level laws are necessary for a complete explanation and specification of the lower. The part of the DNA that controls the jaw protein sequence is constrained to be there and be what it is by virtue of its presence within the whole system of an organism-with-an-evolutionary-history" (Peacocke 1990, 57-58).

We are not dealing in these examples with causation at only one level of explanation. For both Peacocke and Polkinghorne downward causation refers to an explanation of form by a flow of information and not an exchange of energy. In the evolution of the worker termite's jaw it is information—specific DNA sequences—that is selected for in producing molecular mechanisms. Recognizing the role of information in this causal framework places explanation in terms of nonphysical categories that have real physical effects at the same level as the more commonsense energetic causal sequence. This can be seen also in the way information programs a computer when the program has causal efficacy in relation to the electronic processes taking place within it (Peacocke 1990, 59). By analogy with such cases in information theory and computer operations God's actions in creation in and through its processes can be understood and seen more clearly as a model of top-down causation. Analogies, though, have their limitations and in the case of theology only provide hints and clues to the mystery of a transcendent God in relation to the creation.

Both Peacocke and Sperry project such top-down causal factors as are found in the mind/brain relation to the entire complexity of the hierarchically structured world. This world as a whole is a total

system, and its general state is a top-down causal factor or constraint on phenomena at lower levels of complexity. It is Peacocke's claim that such conceptualities can provide new resources for understanding how God interacts with the world, accomplishing particular purposes without interfering with or violating the structure of creation. The world system, as it has evolved, is sustained by God, and the divine presence fills and is present to the creation in a way analogous to the way human minds are present to bodies. This vision of God's relation to the creation is memorably and eloquently expressed by Augustine in his *Confessions*:

I pictured you, O Lord, as encompassing this mass on all sides and penetrating it in every part, yet yourself infinite in every dimension. It was as though there were sea everywhere, nothing but an immense, an infinite sea, and somewhere within it a sponge, as large as might be but not infinite, filled through and through with water of this boundless sea. In some such way as this I imagined that your creation, which was finite, was filled by you, who were infinite. I said to myself, "Here is God, and here is what he has created. . . . This is how he contains them all in himself and fills them all with his presence." (Peacocke 1990, 159)

In Peacocke's use of top-down causation to understand God's actions in the world, God is present to creation as a whole and to its parts, and is causatively active in a downward way to accomplish specific ends.

Keith Ward, in his helpful discussion of these issues in *Divine Action*, quotes T. F. Torrance to the same effect regarding top-down causation: "As a unitary intelligible whole the universe must be thought of as ultimately integrated from above through the creative bearing upon it of the Trinitarian relations in God himself" (Ward 1990, 70). Ward makes use of Torrance's notion of "integration from above" to indicate how God can be a purposive influence on all things without being an additive agent within the physical structure of the world. Nor will God be seen to be a causative agent manipulating elementary particles or as one cause among others at the same level of causality. The processes of the world through which God acts are, as we have seen, essentially unpredictable, either at the micro-level described by quantum theory or the macro-level events described by chaos theory. This feature is combined with the openness and flexibility of the created process; though God works through all things, the creation has a measure of freedom and autonomy—not everything that takes place is a result of God's actions. This freedom within the world and in God, whose world reflects the divine nature, allows for accident and contingent events, which God may or

may not influence. This brings up the question of theodicy, which is not a part of the theme of this discussion. It may be suggested, however, that whether God acts or not will depend not only on the divine purposes but also on God's respect for the created structures being essential to some overall purpose (see Ward 1990, 134, 143, 145–46).

IV

Our purpose has been to conceive of divine action in a credible way, using certain scientific knowledge to illumine the theological notion of God's acts in creation. Such a relating of Christian theology and science is a necessary part of the theological endeavor. Another task of theology is to provide people with a comprehensive vision that is not only credible but meaningful, in a way that is relevant to their own situation and in language that captures and lights up their imaginations. I would want to say the following, as John Calvin does in a eloquent statement from the opening of his discussion of God's providence:

Moreover, to make God a momentary Creator, who once for all finished his works, would be cold and barren, and we must differ from profane men especially in that we see the presence of divine power shining as much in the continuing state of the universe as in its inception. (Calvin [1536] 1960, 187)

How might we show forth best the shining power of the divine in a creation that continues and where God's actions take place? It may be that the world of the imagination is finally the only medium whereby the reality of divine action impresses itself on human sensibilities. What this might mean is far from clear, but it probably will have to do with the use of symbol, metaphor, and myth, and poetic expression arising out of theology understood in light of scientific thought. If it is not dogmas that aim at certainty that convince, it may be that the creative work of the imagination will enchant the whole person to faith, haunting the contemporary person in an effective appeal to the heart rather than trying to compel with a conclusion. Dennis Nineham expresses the aim of such a theology in this way:

No one, I think, will deny that it is at the level of the imagination that contemporary Christianity is most weak. Men find it hard to believe in God because they do not have available to them any lively imaginative picture of the way a God and the world as they know it are related. What the need most is a story, a picture, a myth, that will capture their imagination, while meshing in with the rest of their sensibility in the way that messianic terms linked with the sensibility of philosophical-minded fourth-century Greeks. (Nineham 1977, 201–2)

Such an imaginative vision and picture of God's relation to the world needs to be based on the most adequate knowledge of creation that is possible, and that certainly includes scientific knowledge. But

scientific and discursive knowledge is not enough to bring knowledge and experience of God's activity in the world. An imaginative picture of God's relation to the world will use metaphors to give vision and will employ symbolic and poetic language to express to humans in the entire range of their sensibilities the realities of divine actions. It is only by such means that the transcendent order that shines through and in the universe can be seen beyond the suffering and tumult so evident in creation, so that the universe will not appear to be only a chance collection of bewildering events but a movement imbued with divine significance.

In the experience of the person of faith the Creator Spirit is known deep within as the source and action of being. It is certainly meaningful to assert that this action is also deep within the universe as a reality moving the created order to larger wholes of meaning and destiny not fully comprehended but blazing with deep hope. H. H. Farmer's classic discussion in *The World and God* of God's providence articulates a vision that rises in its suggestiveness to poetic eloquence. He says:

If we must form a picture, it might be along the lines suggested above, namely that God so uses His all-inclusive rapport with the ultimate entities which constitute the inner, creative, present reality of the natural order, that their various routine activities are not overridden, but used by redirecting them in relation to one another. Just as man brings about effects in nature which would not otherwise happen . . . so does God, except that God acts from inside, so to say, by inner rapport and not by external manipulation in the gross. Such rearranging and bringing together of different series of routine events would in the nature of the case not be observable by science. (Farmer 1935, 178)

The vision or picture presented here is not intended to say too much about just how God acts, but it does seem to be in harmony with the earlier attempts made in this discussion to express how the divine relates to creation in light of scientific knowledge.

Another picture of God's relation to the world is the one used for understanding top-down causation, the analogy of the mind's relation to the body. Austin Farrer uses this picture for modeling God's actions in the world by saying that God's mind lives in the world as my soul feels and lives in my whole body (Farrer 1966, 85). This is not to say that God *is* the soul of the world, but rather that God *acts as* the soul of the world. God is more than the world and is prior in his causality. On this model God enters completely into the subjectivity of every constituent in the world with an empathic rapport that is complete. Farrer's point is this: "If God's thought thinks the world into being, his mind cannot essentially be the soul of that world. But we may say that in making it, he acts as its Soul, by feeling (or knowing, rather) along every nerve of the world-process he creates"

(Farrer 1966, 86). It is here that modern information theory serves as a model for how the interaction of God and the world can be conceived. The knowing of God's mind works like a program in a computer or as the patterns on a TV screen are shaped, without interfering with the physical laws of the system. At the brain/mind level Sperry makes this clear.

Brain-cells excitation, in this view, no longer waits solely on biophysical forces, but also obeys a higher command, involving subjective feeling, wants, choice, intentions, moral values, and all other "things of the mind." The subjective events of mind and consciousness have their own dynamics and laws of causal progression. These transcend and control the events of brain physiology in an enveloping supervenient sense." (Sperry 1991, 244)

God can be seen as such a higher reality, and the Creator Spirit as the enveloping supervenient power who acts in and through creation. None of this is to be taken literally as an explanation of how God works or as a way to identify the "causal joint" between God and the world, which will ever be mysterious. But in varying degrees models such as these can appeal to the imagination to convince and make credible the meaning of the actions of God in creation. It remains to be seen how a theology of divine activity can be more fully developed, so that scientific knowledge and an imaginative vision can give coherence to an understanding and vision of God's relation to the world that will resonate with human sensibilities in the world as known.

REFERENCES

- Allen, Diogenes. 1989. *Christian Belief in a Postmodern World*. Louisville: Westminster/John Knox Press.
- Bonhoeffer, Dietrich. 1967. *Letters and Papers from Prison*. London: SCM Press.
- Calvin, John. [1536] 1960. *Institutes of the Christian Religion*. Vol. 1. Philadelphia: Westminster Press.
- Farmer, H. H. 1936. *The World and God*. London: Nisbet & Co.
- Farrer, Austin. 1966. *God Is Not Dead*. New York: Morehouse-Barlow.
- . 1967. *Faith and Speculation*. New York: New York Univ. Press.
- Hebblethwaite, Brian. 1978. "Providence and Divine Action." *Religious Studies* 14 (June): 223-36.
- Hick, John. 1977. *The Myth of God Incarnate*. Philadelphia: Westminster Press.
- MacKay, Donald. 1978. *Science, Chance and Providence*. Oxford: Oxford Univ. Press.
- Moore, James. 1979. *The Post-Darwinian Controversies*. Cambridge: Cambridge Univ. Press.
- Peacocke, A. R. 1990. *Theology for a Scientific Age*. Oxford: Basil Blackwell.
- Polkinghorne, John. [1989] 1990. *Science and Providence*. Boston: Shambhala.
- . 1990. "God's Action in the World." *CTNS Bulletin* 10 (Spring): 1-7.
- Sperry, R. W. 1991. "Search for Beliefs to Live By Consistent with Science." *Zygon: Journal of Religion and Science* 26 (June): 237-58.
- Thomas, Owen, ed. 1983. *God's Activity in the World*. Chico, Calif.: Scholars Press.
- Ward, Keith. 1990. *Divine Action*. London: Collins.
- White, Vernon. 1985. *The Fall of a Sparrow*. Exeter: Paternoster Press.
- Wiles, Maurice. 1986. *God's Action in the World*. London: SCM Press.