

DIVINE ACTION IN THE WORLD OF PHYSICS: RESPONSE TO NICHOLAS SAUNDERS

by Keith Ward

Abstract. Nicholas Saunders claims that, in my view, divine action requires and is confined to indeterminacies at the quantum level. I try to make clear that, in speaking of “gaps” in physical causality, I mean that the existence of intentions entails that determining law explanations alone cannot give a complete account of the natural world. By “indeterminacy” I mean a general (not quantum) lack of determining causality in the physical order. Construing physical causality in terms of dispositional properties variously realized in more or less creative ways in different contexts may be most helpful in developing an account of divine action.

Keywords: divine action; God of the gaps; indeterminacy; personal explanation; reductionism; A. N. Whitehead.

The problem of divine action remains a major puzzle for theologians, especially in a scientific context which is so widely disputed and rapidly changing. I have puzzled about it with no more than a modest degree of success, especially in my book, *Divine Action* (1990). I was naturally pleased to see that book referred to in this journal. But I was surprised to see that I was identified by Nicholas Saunders (2000) as someone who locates divine action in the world in the indeterminacies posited by the Copenhagen interpretation of quantum theory. I strenuously deny this, and I must point out that Saunders gratuitously inserts the word *quantum* into an otherwise correct quotation from my book to turn me into such a person. As a matter of fact I am quite skeptical of those who would use such a highly contested theory to found an account of divine action, and I agree

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with John Polkinghorne that it is unduly restrictive to confine divine activity to such subatomic goings-on.

GOD AND GAPS IN SCIENTIFIC EXPLANATIONS

I spend some time in the book asking what is objectionable about a "God of the gaps" (a phrase popularized, I think, by C. A. Coulson). If there is something that current scientific theory cannot explain but could in principle explain, it would be ill-advised simply to say that God is the explanation. It would be ill-advised for two reasons. First, appeal to God does not explain in the way that Newtonian mechanics or the Schrödinger equation explains. It provides no equations containing variables that can be precisely measured and that enable reliable and precise predictions to be made. There are no laws stating how God will regularly and predictably act.

So the introduction of God does not contribute to a properly scientific explanation. Second, the gap in question is one that could in principle be filled by some later properly scientific explanation, so that the introduction of God is at best a stopgap that one should attempt to render superfluous. That hardly seems a fitting role for God to play.

One main question about divine action is whether there is a sort of explanation that is not of the general covering-law sort common in the natural sciences, in which God could play a constitutive role. I think there clearly is, and the best analogy to it is found in the sort of personal explanations we give of human actions. If I say that John learned Greek in order to understand the New Testament better, I am explaining why he learned Greek. My explanation gives no equation by which I could correlate quantitatively someone's learning Greek with someone understanding the New Testament better, though in a rough-and-ready way it is clear that if a person learns Greek he or she should be able to understand the New Testament better.

Explanations in terms of divine action are similarly personal explanations. They give no applicable quantitative equations for predicting what God will do at a given time. But they explain the occurrence of specific events in terms of a purpose or intention of God. God speaks to Moses in order to teach the Israelites how to worship rightly. The occurrence of specific events in Moses' life is explained by saying that they are instances of God so speaking. Explanations that use the concept of God are explanations in terms of God's purposes.

Personal explanations are not reducible conceptually to the sorts of covering-law explanations that are normal in physics, say. Physical explanations do not mention purposes or goals at which processes are aimed. That sort of explanation was explicitly ruled out of consideration when an Aristotelian philosophy of nature was set aside. We do not use it in physical science. But we do still use it of human actions, and it is the normal sort of explanation where personal agents are involved in processes.

There are those who would like to reduce personal explanations to covering-law explanations, by saying either that one set of concepts reduces to the other or that at least the actual events involved are nonpurposive. My view is that both conceptual and ontological reductionism are blind alleys. There really are purposes in nature, and personal agents can intentionally direct processes to achieve desired goals.

Is such intentional direction compatible with an account of physical processes solely in terms of covering laws? This is a disputed issue, and the view I defend is that it is not. This entails that any covering-law account, which sets out to explain what occurs solely in terms of initial states and some set of laws of physics, will necessarily fail to explain completely the actual events that occur, wherever intentional actions are involved. If an agent intentionally directs a process, that process will be different in some ways than it would have been if laws of physics alone had determined what occurred.

On such an incompatibilist view, there will then be gaps in physical causality. That is, there will be events occurring that would not have occurred by laws of physics alone, and the occurrence of which those laws alone do not explain. These are not gaps that could in principle be filled by some explanation of the same type as physical explanation—quantitative, lawlike explanation that does not mention purpose. So introducing talk of a personal agent is not a stopgap that might later be rendered superfluous. It is a different type of explanation. There is nothing wrong or incomplete about the physical explanation on its own terms. It is only that there are factors that physical explanations do not even attempt to consider when personal agents are active in physical processes. The gap is not a gap within a physical explanation. It is a gap between any set of purely physical explanations and what is needed to explain the events that actually occur in a purposive process.

On my view, if God or human beings ever really act intentionally, then there must be events occurring that laws of physics alone do not explain. It is in that sense that any responsible action entails the existence of gaps in physical causality. The gaps allow for causal factors other than those of physical regularities to operate, but of course they are not detectable gaps within scientific laws. It is just that the laws do not completely explain all the events that actually occur—which is not surprising, because on the hypothesis, there are nonphysical factors present in the form of human or divine agents.

THE LAWS OF PHYSICS AND THE OPEN FUTURE

That is the first part of my argument, that there must be gaps in physical causality if God is ever to do anything (Ward 1990, 77). In the case of human agency, there are definite limits on the sorts of things human beings

can do, set by the sorts of dispositions they have and the sort of environment they inhabit.

Does the same hold true for God? It would seem not, if God is seen as omnipotent and omnipresent. But this at once raises the question of why God does not simply act to make the world much better, if God can do anything. It seems that there must be something that prevents God from improving the world by fiat. Nothing constrains God, but perhaps the constraints are God's own choice in order to permit a desirable degree of autonomy to the processes of nature.

It is not difficult to construct an argument to show that nature must operate in accordance with regular predictable laws if it is to be comprehensible by and sustaining of personal life forms. But it would seem that nature must also contain elements of openness and emergence if such life forms are to have free creative powers. By openness I mean that the physical universe might contain alternative futures at a number of points within its temporally developing history. I am not thinking here of Heisenberg-type indeterminacies but of the operation of ordinary scale laws, which may not sufficiently determine all outcomes (i.e., determine them in such a way that there is only one possible future to be realized at any time). Such openness may be defended in a number of different ways. For example, one may think of processes of nature not as determined by quasi-mathematical rules that inflexibly lay down one-option-only outcomes but as actualizing dispositional powers of objects or substances, which are themselves indeterminately diverse and actualized in differing ways as they come into different sorts of relationships with other objects. This could give rise to a more organic, holistic, or systemic view of physical processes and suggests a nonmechanical model of physical processes that allows for free creativity within a structure of law.

One might think, for example, of points within the evolution of organic life on a planet as points from which divergent futures might equipossibly arise. If one asks what determines such a future, the answer might be that nothing does. Nothing, that is, makes it necessarily the case that one and only one future is realized. As David Hume remarked, it is extremely difficult to make out a rational case for the existence of such necessity in nature. At best it is a dogma, a postulate of faith. But why should it be accepted? Might the full structure of scientific laws not permit alternative futures, particularly at key points in a process where critical phase changes become possible but not inevitable?

A. N. Whitehead is one philosopher who regards a degree of creativity as entering into every physical process, as actual events (or "occasions") incorporate elements of the past and integrate them into a new future. In the case of simple events or collections of events, the degree of creativity will be so small as to be negligible. But in complex integrated systems of events (say, in an organic body) a greater degree of creativity may be pos-

sible. Without commitment to the whole Whiteheadian metaphysical apparatus, one could think of the dispositional powers of objects as capable of being aroused in creative ways at key points of organized complexity. Nature would be open, permitting alternative, and to some degree creative, futures at such points.

When I suggested such a view in *Divine Action*, I was not thinking of quantum events particularly in this respect, although I appealed to the fact that many physicists apparently can accept indeterminacy as part of the structure of nature in quantum mechanics. The point of the appeal was to suggest that indeterminacy might also exist at macrocosmic levels, in the sense of insufficiently determined processes that contain systems of organized complexity. I then suggested that God might influence how such processes develop. A sort of hidden divine determination might occur at crucial points of the physical process in order to ensure that the divine purposes for the cosmos are realized. But it could not occur to the degree that it undermines the possibility of developing a genuinely free creativity in nature—so actual divine determination would presumably be relatively rare.

I am also attracted to the idea that God, as everlasting and omnipresent, might in a more continuous way exercise a nondetermining influence on physical process. This would cause objects to have what Karl Popper and Arthur Peacocke call *propensities* to develop, for instance, toward consciousness and intelligence, propensities for which there is no obvious physical basis. And I also think that, in a third form of divine action, God sometimes directly acts in ways that transcend all the natural powers and dispositions of objects—miracles do occur.

It is not for a theologian to tell scientists what laws of nature are. My argument proceeds from the postulation of a creator God with a purpose for the universe to the inference that God will act in particular ways to ensure the realization of that purpose. On a mechanistic, deterministic conception of physical laws, God will have to interfere with those laws in order to act in a way that causes things to happen which otherwise would not have happened.

If one can think of laws as trying to capture dispositional powers possessed by objects that are realized in different ways according to the degree of complexity and organization of those objects, then one can think of physical processes as not exactly captured by any finite storable set of universal physical laws. Such laws give abstract models of what would happen if no emergent, personal, or holistic factors were present. But they very often are. If such a view of nature were adopted, it would give a concept of divine action that would not necessitate interferences with nature and that might explain why God cannot just act at any time and in any way if nature is to remain an intelligible cosmos.

How exactly that is to be conceived is a matter for science to discover.

Hints may be found in the idea of whole-part causation canvassed by Arthur Peacocke, in something analogous to David Bohm's pilot-wave theory, which posits a pure informational component to physical explanation, or perhaps in some combination of quantum indeterminacy and chaos theory, inflating small changes into large consequential differences of state. I am inclined to regard as more important than any of these a reconstrual of physical interactions as actualizations of dispositional properties that are system- and context-dependent, so that the laws of physics are formulations of regularities or parameters that obtain in contexts of relative isolation or abstraction from the complexity and integrated context of real-life natural processes. That is a research program I would like to explore, and to see explored, further.

As a theologian, however, my concern is mainly to say that a God-created universe might be expected to both be intelligible and thus lawlike and also allow for creative and responsible personal relationships and thus be to some degree open in structure. There are in contemporary science a number of suggestions as to how this might be so, though we have to accept that fully deterministic views are also widely held. Quantum indeterminacy is only one such suggestion, and it is not one on which I myself have primarily focused. It is a question of some importance to conceptions of divine creativity and providence whether science insists on sufficiently determining physical causes for all events or not. There are reasons for thinking that this question is experimentally unresolvable, due to the inability of human beings to establish the initial state conditions of complex processes with a great enough degree of precision, or to ensure that there are no remote physical factors exercising an influence that one has simply not taken into account. In the light of that epistemic uncertainty, I conclude that scientific explanations are not in principle committed to the truth of metaphysical determinism. The theologian is free to propose an interpretation of general divine action that presupposes some lack of sufficient causality in nature yet remains consistent with at least one main interpretation of the scientific worldview. It is a view that in one sense insists on gaps in purely physicalist accounts of nature and on a degree of openness in the structure of physical law. But it does not rely on the Copenhagen interpretation of quantum mechanics, regarding that as only a possible pointer to wider areas of openness in the processes of physical reality. That is the sort of view I tried to develop in the book mentioned by Saunders, and I hope it is clear that I largely agree with his strictures on the rather different view he wrongly attributes to me.

REFERENCES

- Saunders, Nicholas T. 2000. "Does God Cheat at Dice? Divine Action and Quantum Possibilities." *Zygon: Journal of Religion and Science* 35 (September): 517-44.
- Ward, Keith. 1990. *Divine Action*. London: Collins.