

## On the possibility of special divine action in a deterministic world

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**Abstract:** Is it possible for God both to create a deterministic world and to act specially, to realize his particular purposes within it? And if there can be such ‘particular providence’ or ‘special divine action’ (SDA) in a deterministic world, what form can it take? In this article I consider these questions, exploring a number of different models of SDA and discussing their consistency with the proposition that the world is deterministic; I also consider how the various consequences of each model accord with traditional theistic assumptions about God’s action in the world. I argue that, although SDA *is* possible in a deterministic world, none of the models that have been offered are entirely unproblematic, but accepting any of them commits one to certain consequences that may be found objectionable; thus the potential benefits of each model of SDA must be weighed against the costs of accepting such consequences.

### Introduction

Much ink has been spilled of late by theologians, philosophers, and scientists exploring how God might be active in the natural processes studied by modern science, from evolutionary biology and neurology to chaotic system, quantum physics, and cosmology. Most of this scholarship has focused, in particular, on *indeterministic* natural processes. While reasons are not always given for making such indeterministic processes, rather than deterministic ones, the object of attention and research, the basic idea seems to be this: indeterministic processes leave ‘gaps’ in the causal sequences of the world, which allow room for God to act, while deterministic processes do not; thus, while deterministic processes can provide us with some understanding of God’s *general* activity in the creation and sustenance of the world, only indeterministic processes can give us a window into God’s special, or providential, action within the world.

While I see nothing wrong with exploring the possibility of special divine action (hereafter ‘SDA’) in indeterministic processes, I think there are several reasons why an exploration is also needed of the possibility of SDA in *deterministic* processes. The first is that we may discover, through further scientific research, that all natural processes in fact *are* deterministic. Chaotic systems, for instance, are already widely thought to be deterministic, and quantum physics – on which indeterminism in other fields of science may be thought to depend – is also interpreted by some scientists deterministically, in terms of non-local hidden variables. Second, even if indeterministic processes *do* exist in the world, it does not follow that conceiving of SDA in terms of them is necessarily unproblematic. In fact, recent attempts to specify the exact locus of possible divine agency seem more fraught with difficulty than one might expect. Nicholas Saunders, for instance, surveys ‘the entire range of claims that can be made for quantum SDA in the orthodox [Copenhagen] interpretation of the measurement problem’ – including God’s manipulating the wave function of quantum theory, making his own measurements on a given system, altering the probability of obtaining a particular result, and determining the result of each measurement – as well as several ‘unorthodox’ interpretations, and concludes, ‘all the existing claims for quantum SDA in relation to current understandings of quantum theory fail’ (Saunders (2002), 149–170). Though several scholars have responded to such objections and continue to defend the viability of quantum SDA (Russell (2002); Tracy (2003); Plantinga (2008)), it still seems wise to seek at least a potential model of SDA in deterministic processes. That way, if we come to find that the world does not contain indeterministic processes, or that models of indeterministic processes do not really allow ‘room’ for God to act, such findings will not rule out the possibility of SDA altogether.

A third reason for exploring the possibility of SDA in a deterministic world is to take seriously the charge by more traditional theologians that conceiving of SDA in terms of indeterministic processes leads to a ‘domestication of transcendence’ (Placher (1996)), or treats God as a ‘stopgap’ for the incompleteness of our knowledge (Bonhoeffer (1971)). To unpack these suggestive charges: the first implies that when we look for SDA in indeterministic processes, where we suppose that there is ‘room’ for God to act, we presuppose that God’s action takes place at the level of ordinary natural causation – or, as Kirk Wegter-McNelly has put it, we presuppose ‘a competitive, or ‘zero-sum’, view of the relationship between divine and creaturely activity’ (Wegter-McNelly (2006), 163). But, such theologians argue, God is transcendent above all things, as is his causal agency. In addition, the second charge goes, we should not ‘use God’ – that is, refer to God’s activity – to fill in the holes that our current scientific theories leave open; for, as Bonhoeffer contends, as ‘the frontiers of knowledge are being pushed further and further back’, God will be ‘pushed back with them’. Now Bonhoeffer might be taken to mean only that we should not use God to explain what is *epistemically* uncertain,

since where there is real *ontic* indeterminacy, God presumably won't be able to be 'pushed back'. But Bonhoeffer's larger point would seem to apply even to a God of the 'ontic gaps', for he writes:

We are to find God in what we know, not in what we don't know; God wants us to realize his presence, not in unsolved problems, but in those that are solved . . . He must be recognized at the centre of life.

(Bonhoeffer (1971), 311–312)

If one thinks 'unsolved problems' include even those that are permanently unsolved – viz. events with no sufficient cause or possible explanation – then a God supposed to act in indeterministic processes must also be a stopgap. So the attempt to conceive of SDA in a deterministic world may be considered an effort to respect the transcendence of God and seek his activity 'at the centre of life'.

These, then, are my reasons for investigating the possibility of SDA in a deterministic world. It should be noted from the outset that not only philosophical considerations but also theological ones will inform my thinking on the matter. For the project of working out a coherent account of SDA is motivated by the theistic concern of attempting to recognize and respond to the actions of God in the world, and thus takes for granted certain facts: most obviously, that God exists, has created the world, and is active within it. Moreover, since I seek an account that is not only consistent with such basic theological assumptions, but also plausible for contemporary theists, I will consider how the different possible models of SDA 'measure up' to traditional theistic conceptions of God's action in the world. I will suggest that, although SDA is possible in a deterministic world, none of the models of it that have been offered are entirely unproblematic, but accepting any of them commits one to certain consequences that may be found objectionable; thus the potential benefits of each model must be weighed against the costs of accepting such consequences. Ultimately I recommend adopting an account that combines the strengths of multiple models while avoiding their weaknesses.

### Defining terms

Before considering the various ways one might conceive of God's special action in a deterministic world, it will be necessary to say what I mean by the terms 'determinism' as opposed to 'indeterminism', and 'special' as opposed to 'general'. The concept of determinism has been stated in various ways that seem roughly equivalent. As Carl Hoefer (2010) has put it, determinism is the thesis that 'every event is necessitated by antecedent events and conditions together with the laws of nature'. Peter van Inwagen, likewise, has defined determinism as the thesis that 'there is at any instant exactly one physically possible future', where the set of all physically possible worlds contains all and only those in which 'the laws of

nature are the actual laws' and 'the past is the actual past' (van Inwagen (1983), 3). Either of these definitions seems sufficient for the purposes of this article. However, it should be noted that in Hoefer's definition, what is being assumed is that the laws of nature remain constant.<sup>1</sup> This assumption is not, on the theist's account, a necessary truth. For, presumably, if God has the power to bring things into existence, he also has the power to take them out of existence; and if it is possible for God to annihilate the whole world at any moment, then no future state of the world is necessitated by any previous state, together with the laws of nature at that previous time. Thus, for the purposes of this article, Hoefer's definition of determinism must be taken to mean *every event is necessitated by antecedent events and conditions together with laws of nature, which remain constant until the end of the world*. Van Inwagen's definition, of course, already allows for the (logical) possibility of God's annihilation of the world, since he says that the set of all 'physically possible' worlds includes only those in which 'the laws of nature are the actual laws'.

The distinction between special and general divine action is somewhat intuitive. By *general divine action* (GDA) I mean God's 'usual' activity in creating and sustaining the whole world. This category includes the establishment of the laws of nature as well as 'the maintenance of scientific regularity' (Saunders (2002), 21). By *special divine action* (SDA), I mean God's 'unusual' or particular providential activity within the world, especially as it affects the course of human history and the lives of individual persons. This category might include, to use some biblical examples, the protection or deliverance of a people from some dangerous situation; the healing of a disease or answering of a prayer, such as for the birth of a child; the giving of direction and guidance, or support and comfort during a difficult time; or the effecting of some religious experience, such as the sense of God's presence or awareness of God's power.<sup>2</sup> It is thus a broader category than 'miracle', which traditionally signified an event that inspires wonder and seems contrary to human knowledge of the natural order, and since the early modern period has been taken to mean at least an *apparent* violation of the laws of nature.

To put the distinction more precisely, I appeal to Saunders's definition of GDA as 'those actions of God that pertain to the whole of creation universally and simultaneously', and SDA as 'those actions of God that pertain to a particular time and place in creation as distinct from another'. 'Pertain to' here might be understood in two different ways: in terms of the *effects* of God's action in the world or the *intentions* lying behind God's action. Saunders prefers the former way of construing the distinction; he writes:

The approach adopted here . . . makes the distinction purely on the basis of the particularity of God's action. The most simple approach to delineating the different forms of action is to look at their . . . physical effect, rather than stepping behind the physical account and raising more complex notions of intention and purpose. (Saunders (2002), 20)

Although the scope of the actions' effects might be the simplest basis upon which to draw the distinction between GDA and SDA, however, I would argue that the scope of God's intentions in acting must be taken into account. For, as Michael Langford has suggested, since we think of God as a *personal* being, analogous in some ways to human persons, we should think of particular providence as in some way 'analogous to human decision' or human action (Saunders (2002), 20). But, we do not demarcate particular human decisions or actions solely on the basis of their effects, for the effects of one's action might 'radiate out' indefinitely. (Indeed, if the world is deterministic, then the effects of a single human action might persist until the end of time!) Rather, we demarcate the actions of personal agents at least in part on the basis of their intentions and purposes in acting - and so we should do the same with respect to the special acts of God. Thus I propose to distinguish GDA and SDA in the following way: if God's intention, in acting, regards 'the whole of creation universally and simultaneously' - e.g. that the laws of nature or cosmic processes be a certain way - then his action is general; if his intention is that a particular historical event occur, then his action is special.

#### **'Deistic providence' and the problem of God's temporal distance**

Of course, as Saunders points out, drawing the distinction between GDA and SDA in terms of the scope of God's intentions means that 'the results of [SDA] may be the same as those of GDA' (Saunders (2002), 20). For if, in creating the world, God designs the laws of nature and the initial state of the world in such a way as to ensure that some particular event occurs later, then God's act of creation would be an instance of *both* GDA *and* SDA. So there is at least this possibility for SDA in a deterministic world: God specially acts at the moment of creation to realize his particular purposes for the world. But we may ask: is such an account of SDA *enough*? Can it, by itself, do justice to the theistic view of God as living and active in the world?

Many have thought so; Thomas Tracy, for instance, entertains the view that, apart from the 'special cases' mentioned earlier (this article, n. 2), 'God's relation to the world as a creator, properly understood, provides the basis for an account of God's particular actions in history that is sufficiently theologically robust' (Tracy (2002), 38). And several writers have gone to great lengths to show that God's special activity 'in the beginning' can account not only for the general design and development of the universe, but also for the particular miraculous events that occur in human history. Kirk McDermid, for instance, offers a detailed description of how God might use certain features of statistical mechanics and chaotic systems to achieve unpredicted and even (humanly) unpredictable effects 'through the law-like progression of events'. By creating what initially appears to be a 'typical' macroscopic system but has an atypical microscopic arrangement, and by

establishing evolutionary processes which ‘depend quite sensitively’ on their exact present state, of which we ‘have only limited access to’ and ‘can only specify to finite precision’, McDermid shows how God might by ‘ordinary’ means bring about extraordinary events such as the parting of a sea and the turning of water into wine (McDermid (2008a), 131–134).

Such accounts, however, are not without their critics. Robert Larmer, for instance, questions the feasibility of such deterministic mechanisms bringing about the miraculous events McDermid describes. He writes, with respect to the first proposal, ‘It is far from clear that the degree to which the microstates of a system would have to be atypical in order to produce a miracle is consistent with the system appearing to be typical macroscopically’; and with respect to the second, ‘Although chaos may be ubiquitous in nature, it comes in degrees and typically shows up only in the background of an otherwise regular evolution of events’. Yet, while Larmer suggests that the achieving of miraculous events through such deterministic processes may be quite difficult, I do not think he shows them to be entirely impossible. His most serious criticism of McDermid’s models, however, is not scientific, but theological. He writes: ‘Rather than a model of miracle, we seem to be presented with a deistic model of divine providence’ (Larmer (2008), 155).

Now the charge that a model of providence is ‘deistic’ can mean different things. It sometimes suggests that God is unconcerned with human history, and has no special intentions that he realizes with respect to specific events in the world. But this cannot be what Larmer means, for he recognizes that on McDermid’s proposed model God may effect particular purposes through his creation of the world’s initial conditions and laws of nature. So what Larmer must mean, instead, is that such a model denies God’s present and active role in human history. Deism, as Larmer seems to understand it, implies that after creating the world God ‘took a step back’ and let his creation ‘run on its own’. So, while God might have providentially ordered things ‘in the beginning’, he is not *now* involved in the world’s unfolding. If Larmer is right, then this is a serious problem with the model of SDA proposed; for, quite evidently, a deistic model of providence is inconsistent with a central tenet of traditional theism: that God *is* active in the world today. Thus it will be necessary to consider possible responses to the ‘deistic charge’ and see whether the model can be expanded in such a way as to include some form of divine action in the present state of the world.

One possible response to the deistic charge open to the theist is to say that God is not just the creator of the world ‘in the beginning of time’ but also the sustainer of the world at every other moment. As Tracy writes:

God’s creative action includes the continuous ‘giving of being’ to the created world in its entirety. Creation is not a particular event, completed at some time in the distant past, which leaves behind (as it were) a world that gets along perfectly well on its own. . . . The mainstream of the theological tradition has held that created things do not possess a power

of continuing in existence on their own; rather, the existence of the created world depends absolutely at every moment upon God's creative action. (Tracy (2002), 233)

Granting such an assumption about the necessity of God's sustaining power, we can conceive of how God is universally active in every part of the world at every moment in history. For, as Thomas Aquinas reasoned, if created being is an effect of God's continuous action, then 'as long as a thing has being, so long must God be present to it. . . . But being is innermost in each thing. . . . Hence it must be that God is in all things, and innermost' (Aquinas (1993), I.8.1).

Moreover, Tracy points out, if we accept Aquinas' distinction between primary and secondary causality, we can make sense of another way in which 'everything that happens can properly be described as God's act' - without attributing all causal agency to God, in the manner of occasionalism. For while, on the Thomistic view, created things have 'active and passive causal powers of their own' - that is, 'the capacity to affect other things and to be affected by them' - these powers are conferred on them by God; and so the events brought about by such secondary causes can be 'regarded as acts of God . . . insofar as they result from a series of causal intermediaries that God has established' (Tracy (2002), 240-241).

Thus it seems that within a deterministic framework, we can conceive of God's agency in the world in terms of both divine conservation (God's sustaining all things in existence) and primary causality (God's establishing the causal chain of events in the world and conferring causal powers on created things). Such a conception of divine providence cannot be described as 'deistic' in the sense denoted above, for in it God does not 'step back' from the world, once created, or let it 'run on its own'; indeed, he could not, without the world going out of existence. Yet, one might worry that such a conception is still a far cry from the traditional theistic view, because, while God's general activity of sustaining the world is ongoing, any *direct* special activity of God occurs only once, at the beginning of time. After that moment, the particular historical events that occur according to God's intentions must be understood as *indirect* SDA - that is, as events that God brings about by bringing about earlier events at the beginning of a long causal chain, stretching back to his initial creation of the world. But such a model seems to depict divine agency as too distant, temporally speaking, from the events of human history. As Tracy puts the problem, 'divine action programmed into the structure of nature from time immemorial is not what the faithful have in mind when they understand their lives to be lived as a responsive, interpersonal relationship with God' (Tracy (2002), 249). David Corner, likewise, explains, 'Theistic religious practice presumes God to be actively involved with the world - not just anticipating our needs from some time in the remote past, but responding to them in the present' (Corner (2007), 121). People's petitionary prayers, for instance, seem to assume the possibility of God's responding to them, and acting immediately and directly in the circumstances at hand to offer protection, provide direction, grant healing, and the like. They do not pray

'May you have caused it to be the case, when you created the world billions of years ago, that a miraculous event would occur today', but rather, 'May you presently effect a miracle'.

### **First proposed solution: divine eternity**

There are various ways in which one might try to respond to this problem of God's temporal distance. The first is to have recourse to a certain traditional view of one of God's attributes. Many theologians and philosophers, both classic and contemporary, have argued that we should not conceive of God as an *everlasting* being – i.e. one who exists within time but whose existence has no beginning or end – but rather, as an *eternal* being, i.e. one who exists outside of time completely, having 'neither temporal location nor temporal extension' (Craig (2009), 145). Accepting this doctrine of divine eternity for a variety of reasons, some have gone on to argue that it also solves the problem of God's temporal distance. For, if God's own being does not have temporal location, then neither do his actions, so that the effects God causes cannot be temporally *distant* from his act of causing them. Instead, God must be understood to embrace 'the whole of everlasting life' at once, as Boethius most famously said (Helm (2010)), such that the 'created world in [all] its temporal extension is immediately present to God' – as Tracy explains. Thus, Tracy, who is a proponent of this view, goes on to say:

When God takes a free human action into account in the overall design of the created world, this 'taking into account' does not occur either before or after the human action. The human action is explanatorily, but not *temporally* prior to the divine act of taking it into account, and the events that constitute God's response take place at the time proper to them in the causal history of the world. (Tracy (2002), 249)

Despite the apparent appeal of this response, however, I do not think it resolves unambiguously the problem of God's temporal distance. To see why, consider some event  $e$  – say, the birth of a child – which occurs after the initial act of creation – say, at time  $t_2$  – and which comes about in part because of a special intention of God – say, to respond to the prayer of a mother (as well, in part, because of God's general intentions about how the world will be). Now, if God indeed exists outside time, then we cannot say that 'in the beginning of time' God 'willed' or 'caused' this particular event to occur at  $t_2$  – for according to the doctrine of divine eternity, God wills and causes eternally, not temporally. But then consider  $t_1$ , the first moment in time, in which the initial state of the world was created and the laws of nature were established. If we, who are not eternal, but temporal, had full knowledge at  $t_1$  of this state of the world and the laws of nature set to govern it, as well as the sustaining activity of God that would continue in the future, then we could (as Laplace pointed out) predict every event that was to occur in the world – including event  $e$ . So, although we could not say that at  $t_1$  God 'determined' event  $e$  to occur at  $t_2$  (since God's being and actions are



in the eternal present), we could say that at  $t_1$ , event  $e$  'was determined to occur' at  $t_2$ , assuming God's continual act of conservation as well as his initial act of creation.

Now it should be evident why the doctrine of divine eternity does not offer us an unambiguous solution to the problem of God's temporal distance. For the initial worry was that 'divine action programmed into the structure of nature from time immemorial' is not what the faithful have in mind when they conceive of God as responding to their actions and the events of the world. But even if God exists outside of time, so that, *from God's (eternal) perspective*, none of his actions seem temporally distant from the events of the world – since the whole chain of temporal causes is immediately present and directly caused, all at once, by God – still, *from our (temporal) perspective* they do seem distant – for the world is temporally extended, and God's action set in motion billions of years ago the determining causes of events occurring today, such as the answers to our prayers.

Now, one might respond to my argument by pointing out that the temporal distance between God's act and the events of the world is only apparent from *our* perspective, not from God's. I am willing to concede this somewhat paradoxical point. After all, if the doctrine of divine eternity is, as even its proponents admit, 'an inevitably ungraspable idea' for humans (Tracy (2002), 249), then when we try to grasp it we will inevitably run into apparent problems and paradoxes. But if the doctrine of divine eternity is supposed to help *us humans* conceive of God's special action in the world, then, we might think, it would be better if it were not humanly inconceivable or apparently, from our perspective, incoherent.

### **Second proposed solution: top-down causation**

Thus it seems we should consider other ways of responding to the problem of God's temporal distance – ways that would not require recourse to any inherently mysterious divine attribute. We might begin by considering one view of SDA, proposed by Arthur Peacocke, among others, who makes use of the concepts of ontological 'levels' or 'layers' of reality, and of what has been variously called 'downward emergence', 'top-down causation', or 'whole-part constraint' to describe God's action in the world. Peacocke rejects quantum indeterministic models of SDA, arguing that the inherent unpredictability within an indeterministic system would be 'a limitation of the knowledge even an omniscient God could have of . . . the future trajectory . . . of the system', and so would prevent God from being able to act in the system 'to implement the divine will' (Peacocke (1997), 280–281).<sup>3</sup> Thus, he turns to consider natural processes which are, at bottom, deterministic, but which he describes as exhibiting 'top-down' causation – that is, in which, rather than the behaviour of constituent units of the system affecting the behaviour of the system as a whole ('bottom-up' causation), the opposite happens: the behaviour of the system as a whole affects the behaviour of

its constituent units. Peacocke offers one example of this phenomenon from the field of evolutionary biology, in which, he says, ‘the network of relationships that constitute the temporal evolutionary development and the behaviour pattern of the whole organism is determining what particular DNA sequence is present at the controlling point in its genetic material in the evolved organism’ (Peacocke (1997), 274). In a second example from the field of cognitive science, he explains how the conscious states of a person, such as his intention to raise his arm, may have an effect on the lower-level neurophysical states of the person, such as his brain activity and muscle contraction (Peacocke (1997), 275–276).

After describing such purported cases of top-down causation in the natural world, in which ‘real features of the total system-as-a-whole are constraints upon events happening within the sub-systems at lower levels’, Peacocke goes on to suggest that ‘we can properly regard the world-as-a-whole as a total system so that its general state can be a holistic constraint upon what goes on at the myriad levels that comprise it’. He then considers the possibility that the natural cases of top-down causation within the world might ‘provide a new resource for thinking about how God acts with the world-as-a-whole’. Thus he writes:

If God interacts with the ‘world’ at a supervenient level of totality, then God, by affecting the state of the world-as-a-whole, could, on the model of whole-part constraint relationships in complex systems, be envisaged as able to exercise constraints upon events in the myriad sub-levels of existence that constitute that ‘world’ without abrogating the laws and regularities that specifically pertain to them – and this without ‘intervening’ within the unpredictabilities we have noted [e.g. quantum indeterminacies].

Peacocke concludes by suggesting that this model can be used to conceive of God’s causing ‘*particular* events’, which realize the ‘*particular* intentions of God’ – or what ‘is usually regarded as God’s ‘providential action’ (Peacocke (1997), 283).

Peacocke’s suggested model of particular providence, or SDA, may seem promising for our purposes, since it offers a way in which God may act, in time, to affect deterministic processes – all without ‘abrogating the laws . . . that pertain to them’. Yet his approach faces a number of difficulties. The first and most obvious is that, with respect to the natural cases of top-down causation which are to serve as a model for SDA, the higher-level cause or constraint which affects lower-level events is, as he puts it, the ‘total system-as-a-whole’ – and so, seems to be constituted by, or at least dependent upon, the lower-level subsystems. For instance, the evolutionary development of a species seems to be constituted by a set of biochemical processes involving single organisms; and mental states seem to depend upon the neurophysiological states on which they supervene. But, given Peacocke’s use of analogies, this would seem to mean that God is constituted by the ‘world-as-a-whole’, or that God’s being depends on his creation – which clearly contradicts traditional theistic doctrine. Peacocke anticipates such an objection, and responds: ‘I am not postulating that the world *is*, as it were,

'God's body' . . . The world-as-a-whole, the total world system, may be regarded as 'in God', though ontologically distinct from God' (Peacocke (1997), 282). But waiving the question of whether such a 'panentheistic' view (as Peacocke calls it) is really consistent with traditional theism, we are still left wondering how Peacocke's analogies to the natural processes of evolutionary biology and neuroscience are supposed to shed light on God's interaction with the world. For the higher levels of these natural processes are in fact dependent upon the lower levels; but even according to the panentheistic view that Peacocke has proposed, God is ontologically independent of the world; in fact, the world depends ontologically on God.

Even if this problem could somehow be sorted out, Peacocke's model of SDA faces another problem; for the examples of supposed 'top-down causation' in the natural world – on which his model of divine causation depends – do not seem to allow for the sort of downward determination that Peacocke desires. Take the example from cognitive science. Peacocke quotes John Searle, saying:

At the higher level of description, the intention to raise my arm causes the movement of the arm. At the lower level of description, a series of neuron firings starts a chain of events that results in the contraction of the muscles . . . the same sequence of events has two levels of description. *Both of them are causally real*, and the higher level causal features are both caused by and realized in the structure of the lower level. (Peacocke (1997), 275)

Peacocke thus suggests that the higher- and lower-level sequences of events are both 'causally real', in that the higher-level events, such as the intention to raise my arm, have real causal power to effect other higher-level events, such as the raising of my arm, while the lower-level events, such as my neurons firing, have real causal power to effect other lower-level events, such as my muscles contracting. But Peacocke's view of top-down causation requires that some *higher-level* events also have real causal power to effect *lower-level* events – for instance, that my intention to raise my arm causes my muscle contractions. Yet if indeterminism at the lower level is ruled out – as it is on his view – so that all lower-level events already have a sufficient cause in other lower-level events, then every case of top-down causation must be a case of overdetermination. Now before we consider whether overdetermination is a problem in itself, it should be noted that Peacocke is unwilling to admit such overdetermination in the case of divine causation. He writes: 'What is being . . . suggested here is that we have to envisage God . . . being able to exert constraints upon the world-as-a-whole, so that particular events and patterns of events can occur, *which otherwise would not have done so*' (Peacocke (1997), 283, italics added). But if God's higher-level causation overdetermines events at the lower level, then those events *would have occurred otherwise*, without such higher-level causation.

Peacocke thinks that his model of top-down deterministic causation avoids such overdetermination since the lower-level causal sequences on which he is focused are so complex as to be practically incomprehensible by humans. Regarding the

case of cognitive science, he writes, 'Descriptions of the total brain state in purely neurological terms would be exceedingly complex and, indeed, considering the complexity of the brain, may never be forthcoming'. Thus, since 'the actual succession of states of the brain may prove in practice not describable' in terms of 'lower-level' (physical) concepts, he concludes that there is 'need for some higher-level [mental] concepts... to denote and explicate sequences of events in the brain' (Peacocke (1997), 276). But while Peacocke may be right, that we cannot do without mental concepts, and so perhaps also without the concepts of higher-level and even top-down causation, this is an epistemic point, and does not change the fact that if we are assuming determinism 'deep down' at the lowest levels of causality, then postulating such 'epistemologically non-reducible features of reality' (Peacocke (1997), 173) as metaphysically real would commit us to a kind of pervasive overdetermination of causes.

Having seen that such a model of top-down causation in a deterministic world thus implies overdetermination, one might try to respond in two ways. First, one might suggest that divine causation is so unlike natural causation that the former cannot lead to overdetermination, as the latter can. Alternatively, one might point to apparently unproblematic cases of natural overdetermination, and suggest that divine overdetermination is likewise unproblematic. With respect to the first alternative, one might make use of the distinction between primary and secondary causality mentioned above to offer an account of how divine and natural agents are both necessary, and so only jointly sufficient, for the occurrence of an event, such that taken together they do not constitute a case of overdetermination. One might argue, for instance, that there are certain things that God cannot do without material objects and their causal powers and capacities: he cannot, without the power of fire to heat things, and the capacity of water to be heated, bring the pot of water on the stove to boil. (Or, even if God *can* do such things by himself, one might argue that he *does* not, but chooses to make use of the causal powers and capacities of material objects.)<sup>4</sup> Thus it is only through the conjunction of God's primary causality and material objects' secondary causality that events in the world occur, so that their occurrence is not overdetermined by divine and natural causes.

Such an argument does seem to explain away the appearance of overdetermination in the case of primary causality, or what I have described as God's general action in creating and sustaining the causal powers of natural objects. But the situation seems different in the case of God's special action in bringing about particular events within the world's history. For in this latter case the apparent overdetermination is not between a divine and a natural cause, but between two different divine causes. To see why, note that if the 'top-down causality' theorists want to resolve the problem of God's temporal distance without appealing to divine eternity (which we have already seen is not a good solution), they must maintain that God has *presently existing* intentions that he

realizes by acting *in the present moment*. So then, to take the case of water being brought to boil at time  $t_2$ , God's 'higher-level' intention realized in action at  $t_2$  in conjunction with certain material objects' 'lower-level' causal powers is sufficient to cause the water to boil. But then, if this event brought about at  $t_2$  is part of a deterministic causal sequence, stretching back to  $t_1$ , the beginning of the world, we can assume that God also had a special intention at  $t_1$  to bring about this event; and so we can conclude that God's action to realize that intention at  $t_1$  in conjunction with the causal powers of the subsequently created material objects was *also* sufficient to bring about the event. So then, it seems that the event was overdetermined by two special divine intentions and their realization in two special divine actions. So there does seem to be real overdetermination in the case of top-down causation, in terms of a multiplicity of SDA.

But then it might be argued, to turn to the second alternative, that we should not reject such divine overdetermination out of hand – for overdetermination, even among two of the same sort of causes, is not always a problematic feature of causal explanations. Indeed, we sometimes have reason to posit two sufficient natural causes of an event. We might observe, for instance, that a person died shortly after having been both poisoned and shot, and so we might justifiably conclude that his death was overdetermined by two distinct actions of an overambitious assassin.<sup>5</sup> And so we might have similar reason to postulate two distinct divine actions, each sufficient (together with natural causes) for the occurrence of an event.

But what would such a reason be, to conceive of God both acting in the beginning of time to cause some future event, and then acting *again*, at the time of the event, to overdetermine its occurrence? I cannot think of any reason except the obvious: that such a conception of divine action would solve the problem of God's temporal distance. But though it would indeed solve this problem, such a solution would be wholly *ad hoc*, and would seem to raise troubling questions about the rationality of divine action. For what sort of agent, we might wonder, would overdetermine each and every event that he specially intended? One, it would seem, who either lacked knowledge about his own ability to affect outcomes, or lacked an appreciation of efficiency in action. The first possibility would seem to contradict the doctrine of divine omniscience: for surely if God knows everything, then he knows that he is omnipotent and that the events he intends to bring about really will occur. And the second possibility would seem to conflict with our common understanding of rational agents: that they act for intended purposes and do not multiply their actions purposelessly.

Thus the models of top-down or whole-part causation proposed to resolve the problem of God's temporal distance seem to have problems of their own, since they entail that events specially caused by God are overdetermined by God's own actions, and such overdetermination calls God's rationality into question, requiring him to act without apparent reason. Of course, God might have some

reason for acting twice which is unknown to us; but without any idea what such a reason might be, this 'resolution' to the problem again seems to be more an appeal to divine mystery than a satisfying philosophical response.

### **Third proposed solution: interventionist determinism**

I have now considered various possible models of SDA that would be consistent with the conception of determinism offered above. One final model of SDA that I will now consider requires a revision of this conception, making God's action an exception to deterministic constraints. To see what such a revision would look like, recall van Inwagen's definition of determinism: it is the thesis that there is only one possible future, given the laws of nature and the past state of the world. As we have seen, this definition allows for GDA but not SDA, except as it occurs at the beginning of time, or outside time, or, if within time, in a way that overdetermines the effects of God's actions. Thus, to allow SDA to make a difference in the course of the world's history once that history is underway, a revision would be required to say: there is only one possible future given the laws of nature, the past state of the world, and the absence of God's special activity. Let us call the first version of determinism 'conservationist' (since, after the initial act of creation, it allows only for the conserving activity of God within time), and the second 'interventionist'.

Now, it might seem that this 'interventionist' revision completely empties the thesis of meaning, retaining nothing of the original intuition that the world is deterministic. But this is not so, since interventionist determinism still rules out what seem to be paradigmatic cases of indeterminism – such as, for instance, radioactive decay (assuming that this is, indeed, a stochastic and not simply a chaotic process). For, presumably, radioactive decay is a process wholly 'natural' to the world, created and sustained only by the general activity of God, and governed only by probabilistic laws that leave open multiple possible futures. To put it in Hofer's terms, the decaying of an atom at a certain time is not necessitated by the antecedent conditions of the world and the laws of nature, and the absence of SDA; for, given these three things, the atom could just as well have decayed at a different time. On this revision of the thesis of determinism, then, the future of the world is fixed by the natural processes God created 'in the beginning', *unless* God disengages from his 'usual' activity of sustaining the world (and so, annihilates it), *or* engages in some 'unusual' activity of altering the course of history.

But, we might ask, what form could SDA possibly take, in an interventionist-deterministic world? Three possibilities suggest themselves: first, God might simply violate the laws of nature; second, he might alter the state of the world to which the laws apply; or third, he might exploit some sort of 'exemption clause' built into the laws. I will consider these three possibilities in turn.

The first conception of SDA, as a violation of the laws of nature, corresponds to Hume's definition of miracles. This would seem to be a natural way of making sense of the historic claims that certain miracles were 'contrary to the natural course of things' (Driscoll (1911)). Yet, setting aside Hume's epistemic argument against justified belief in miracles,<sup>6</sup> there seem to be at least two problems with such a conception of SDA. The first is theological: if we think of the creation and maintenance of the laws of nature as a form of GDA, and GDA as the realization of God's general intentions for the world, then in any case of law-violating SDA, God's special intentions will contradict his general intentions. But such contradictions would call into question the rationality of God's intentions, as did the account of divine overdetermination considered earlier.

Even if this apparent problem of divine irrationality could be resolved, however, the conception of SDA as a violation of the laws of nature raises troubling questions about the nature of the laws of nature themselves. For it may be asked, in virtue of what are the laws of nature true? If, as many philosophers of science have argued, the laws describe the basic properties of the stuff of the world, and so are true in virtue of the essences of natural objects, then to violate a law of nature would be to alter the very essence of a thing. But, of course, the essence of a thing cannot be altered, if the thing is to retain its identity. Thus, if the powers and capacities of natural-kind objects are essential to their identity, then God cannot violate the laws governing them; the closest he can do is annihilate such objects, and create similar ones with different essential properties.

Now it seems there are two ways one could respond to such an argument. The first would be to accept that a violation of the laws of nature would require a change in a thing's essence, which is impossible, and so to conceive of SDA in terms of the annihilation or creation of objects, rather than of law violations. This is the route that Robert Larmer takes, arguing that such 'annihilation/creation miracles' would not require any law violation at all:

Although we may often speak as though the laws of nature are, in themselves, sufficient to explain the occurrence of an event, this is not really so . . . A scientific explanation must make reference not only to the laws of nature, but also to initial conditions, the actual 'stuff of nature. . . .

If we keep in mind this basic distinction between laws of nature and initial conditions, it can be seen that . . . [a miracle is not necessarily] a violation of, suspension of, or exception to, the laws of nature. If God creates or annihilates a unit of mass/energy, he changes the material conditions to which the laws of nature apply. He thereby produces an event that nature on its own would not have produced, a miracle, in short, but he breaks no law of nature. (Larmer (1996), 41-42)

Thus, Larmer contends, God could effect a miracle by changing the state of the world, without violating any of the laws that govern it.

In claiming that no laws would be broken by the annihilation or creation of some unit of mass/energy, however, Larmer evidently refuses to recognize that

conservation laws, which assume the causal closure of the natural systems to which they apply, are themselves laws of nature. This has opened his view up to some criticism. Kirk McDermid, for instance, has argued on the basis of Noether's theorem that conservative and dynamic laws have a necessary relation, such that a violation of one constitutes a violation of the other (McDermid (2008a), 129); likewise, Neil MacGill has contended that 'conservation of the "stuff" of mass/energy is fundamental to law operation, and thus that Larmer's account is just as fundamentally challenging to existing scientific theory as law violation' (Saunders (2002), 75).

Besides such apparent scientific problems with Larmer's conception of annihilation/creation miracles, there would also seem to be something theologically troubling about it. For using Larmer's conception of miracles as a model for all SDA would require saying that when God specially acted in the world, he was annihilating bits of the world. But this would seem to be a very *destructive* way for a Creator to treat his creation; and such destructive treatment would seem to contradict the traditional theistic assumption that all of creation is good – and so, one would think, ought to be conserved.

Given such apparent problems with the annihilation/creation model of SDA, we might try to respond to the argument against the possibility of law-violations another way: instead of conceiving of God as violating the laws of nature, whether dynamic or conservative, we might conceive of the laws as leaving room for him to act. Of course, by 'room' we cannot mean some sort of ontological indeterminism, such that God chooses to actualize one of several possible alternatives left open by natural processes – for this contradicts our initial assumption of determinism. Rather, we must mean that the 'alternative' God may realize is beyond what is naturally possible, but allowed for by some sort of 'exemption clause' built into the laws of nature. If, again, we conceive of the creation and maintenance of the laws of nature as a form of GDA, then on this view of SDA, God may be thought of as incorporating exceptions into his general plans in order to realize his special intentions.

Now some would argue that the laws of nature are already recognized to have such 'exemption' or *ceteris paribus* clauses. Thus William Alston writes:

If we suppose that divine intervention in a physical process would involve a violation of a physical law, it is because we are thinking of physical laws (of a deterministic form) as specifying *unqualifiedly* sufficient conditions for an outcome. . . . But we are never justified in accepting laws like this. The most we are ever justified in accepting is a law that specifies what will be the outcome of certain conditions *in the absence of any relevant factors other than those specified in the law*. . . . None of our laws take into account all possible influences.

So, for instance, one might think of a law of hydrostatics as specifying 'as an unqualifiedly sufficient condition for a body sinking in still water . . . that the body be of a density greater than the water', such that a person standing on the surface of a lake would be in violation of that law. But, Alston points out, such a law has all



sorts of qualifications: 'A man standing upright on the surface of a lake will sink, *unless* he is being supported by a device dangling from a helicopter, or *unless* he is being drawn by a motor boat, or . . .' – the list could go on indefinitely. Thus, 'since the laws we have reason to accept make provision for interference by outside forces unanticipated by the law', Alston concludes, 'it can hardly be claimed that such a law will be violated if a divine outside force intervenes' (Alston, (1993), 189–190).

While such a conception of the laws of nature would indeed allow room for SDA, however, one might think it allows too much, so as to render practically meaningless the whole idea of law. McDermid, for instance, says that on such an 'exemption' model as Alston's, as well as on an 'open-system' model such as Larmer's, 'it appears that almost anything goes! One need not restrict oneself to carefully-worded *ceteris paribus* clauses – one can blatantly violate any natural law'. Thus, McDermid concludes, though such models were proposed to '[minimize] interference with the lawful progression of physical events', they end up rendering the laws of nature 'metaphysically toothless' (McDermid (2008a), 129). Clarifying what he means by 'metaphysically toothless', McDermid writes:

without any sort of *sufficiency* conditions in one's account of laws, any law-metaphysic . . . boils down to 'natural laws apply all the time, except when they don't'. . . For if [such an account] cannot give us any metaphysical constraints on the non-physical, then it is really 'anything goes' in terms of the behavior of 'natural' things. Causal dispositions, or any other physical necessity, become empty. (Larmer (2008), 153)

In another article, McDermid clarifies further what he means by saying that such accounts lack sufficiency conditions: they are committed to the claim that 'the natural is *never* sufficient to determine the natural' (McDermid (2008b), 161). What McDermid thus seems to be assuming is the following: that some natural event  $e_1$  cannot be sufficient for some other natural event  $e_2$  if it is nomologically possible – that is, logically possible, given the laws of nature – that  $e_1$  occur and  $e_2$  not occur; and since such sufficiency is essential to any law regarding the causal dispositions of things (e.g.  $e_1$ 's disposition to cause  $e_2$ ), it follows that such laws cannot have 'exemption clauses' for divine intervention.

McDermid is, of course, right that  $e_1$  is not sufficient for  $e_2$ , in the sense of sufficiency described above, if there is a possible case in which  $e_1$  occurs and  $e_2$  does not – even if this is a case in which God intervenes. But it does not seem that such a strict sufficiency condition must be met in order for causal laws to have any 'bite'. For one might distinguish between such 'nomological sufficiency' – where  $e_1$  is nomologically sufficient for  $e_2$  only if in every possible case in which  $e_1$  occurs, and the laws of nature are the actual laws,  $e_2$  occurs – and 'natural sufficiency', – where  $e_1$  is naturally sufficient for  $e_2$  if in every possible case in which  $e_1$  occurs and the laws of nature are the actual laws, *and only natural causes are involved*,  $e_2$  occurs. Natural sufficiency seems all that is needed for the laws of nature to have explanatory and predictive power, at least if cases involving interventionist SDA

are relatively rare; but such laws would not rule out the possibility of God intervening, on occasion, to affect the course of things. God's intervention, though 'naturally impossible' (where natural possibility is defined in terms of what natural causes can bring about on their own), would be 'nomologically possible' (where nomological possibility would include all that the laws of nature allow); and such nomological possibility is all that seems required to provide 'room' for God to act.<sup>7</sup>

Thus it seems that an 'exemption' account of the laws of nature, according to which the laws have *ceteris paribus* clauses that allow for God's intervention, could provide room for SDA; and such action, moreover, need not be temporally distant from the events it brings about. Yet various other objections might be raised to this account. First, one might argue that it is an entirely *ad hoc* solution to the problem of God's temporal distance, as I suggested above that the postulation of divine overdetermination is. It seems to me that the postulation of exemption clauses is different, though, since we seem to have independent reason to expect such flexibility in the laws of nature. After all, if God is the creator of the world, it seems reasonable to suppose that he designed the laws governing the world in such a way as not to prevent him from acting in any 'lawful' way within it. As Nancey Murphy points out, it is 'an ironic bit of history' that 'the laws that once served as an account of God's universal governance of nature' have come to be understood as 'a competing force, constraining the action of their very creator' (Murphy (2009), 264). If we understand the laws of nature as 'an expression of God's will' for creation, instead of a constraint on his action, then the hypothesis that the laws have exemption clauses which allow for God's special activity no longer seems arbitrary or *ad hoc*; for, according to traditional theism, it is part of God's will for creation that he be able to act within it.

Another objection that one might raise to this interventionist-deterministic model of SDA is that it would be vulnerable to the same problems that face indeterministic models of SDA, some of which I mentioned at the beginning of this article – for instance, that it may be discovered that there *are* no indeterministic processes in the natural world. However, I think this interventionist-deterministic model is sufficiently different from an indeterministic one to be able to avoid this problem. For, while further scientific research could conceivably disclose some previously 'hidden variable' that allows scientists to reinterpret what seemed to be indeterministic processes in terms of deterministic equations, there do not seem to be any scientific discoveries that could rule out the possibility of *ceteris paribus* clauses to the laws of nature that would allow for the occasional instance of SDA.

Yet another problem with indeterministic accounts of SDA which I mentioned earlier, that they 'domesticate transcendence', or bring God 'down' to the level of ordinary natural causes, might seem to have some force against an interventionist-deterministic account as well. To see why, consider Alston's explanation of

why he avoids using the term 'intervention' to describe his own understanding of SDA:

Though this terminology may be, strictly speaking, accurate, in that I am thinking of God as providing a causal input that alters how things would have gone had only natural forces been operative, still it has the unfortunate implication that the normal procedure is the purely natural one and that divine action involves a departure from the norm. From the point of view of the Christian tradition, it is much better to think of the normal as God's usual way of dealing with His creation, which involves both purely natural causation, much of the time, and special divine causal inputs some of the time. One is no more untoward or . . . 'interventionist' than another. After all, this is God's creation. (Alston (1994), 45)

Alston seems right, that God's status as creator of all things means that he has a 'right' to act in any way he wants, so that his actions which I have labelled 'interventionist' are no more 'untoward' than those which I have labelled 'conservationist'. Yet it seems that the only way to make sense of SDA in terms of the exemption clauses to the laws of nature is by conceiving of God as changing the conditions to which the laws apply – not, as I have argued, by creating/annihilating bits of matter, but by entering the scene, so to speak, and becoming an agent not accounted for in the previous description of the total state of the world. This seems to be what Alston has in mind, too, when he speaks of 'special divine causal inputs': that God is some sort of 'supernatural force' in the world, similar to the natural forces studied by science. However, God would also be different from other agents in at least two significant respects. First, while their actions would be necessitated by the laws of nature together with antecedent events and conditions of the world, his would be exceptions to those laws. And second, God would still be the 'sustaining ground' of all other causes.<sup>8</sup>

Yet another apparent difficulty with the interventionist-deterministic account of SDA is that it would seem to be a more appropriate model for miracles, in the sense of an event that seems contrary to human knowledge of the natural order, than for special divine action, more broadly construed. For such exemptions to the laws of nature, even though they would not actually be law-violations, would appear *to us* to be; for they would contradict our expectations and exceed our ability to explain them in terms of natural causes. But though such incomprehensibility would certainly be appropriate to instances of SDA such as the parting of a sea or the turning of water into wine, it would seem less appropriate to an account of more 'mundane' instances of SDA, such as the providing of a person with guidance or support, which might take the form of an insight gained during prayer, or the offer of help from a friend. These latter instances of SDA might very well be attributable to the particular providence of God without seeming to contradict any laws of nature. Moreover, as I suggested above, any exemptions to the laws of nature must be rare, in order for our scientific laws not to lose their

proverbial teeth; but the more ‘mundane’ instances of SDA that I have described are presumed to occur quite often in human history.

### **Conclusion: a two-pronged approach**

In conclusion, then, a two-pronged approach to conceiving of special divine action in a deterministic world might be most promising, though not entirely without difficulties. On the one hand, some of God’s special intentions – in particular, those for more ‘mundane’ events – might be ‘built into’ the world at its inception and realized in the unfolding of the world’s natural processes. I have argued that this is not a ‘deistic model of divine providence’, since God is not only the first cause of all natural processes, but also their continued sustainer. Yet, it does imply that God’s direct action to bring about particular events in the world is temporally distant from the occurrence of those events, and that such temporal distance cannot easily be explained away by appeal to the divine attribute of eternality, or to the concept of top-down causation – for one seems to be a humanly unintelligible idea, and the other implies that SDA is overdetermining in a way that makes God appear irrational. However, though SDA ‘programmed into the structure of nature’ is not what *most* of the faithful have in mind when they understand their lives to be ‘lived as a responsive, interpersonal relationship with God’, such a possibility is not entirely ruled out by traditional theism. Indeed, some of the pillars of the Christian tradition have suggested just such a view, saying that the purpose of petitionary prayer is to align one’s desires with the determining will of God, rather than to request that God change the course of history.<sup>9</sup>

Yet, on the other hand, if we think that any of God’s post-creation special activity *is* temporally proximate and directly related to the events he causes, then we must conceive of SDA as a sort of exception to the constraints of determinism, commonly understood. I have argued that the best way to make sense of this exception is not in terms of law-violations, or alterations of the state of the world through the annihilation or creation of matter, but in terms of exemption clauses built into the laws of nature themselves. Such acts of God, if relatively rare, would not render scientific laws ‘metaphysically toothless’; nor would they empty the thesis of determinism of all its meaning. Yet, I have suggested that such an account of divine activity would seem to portray God as a supernatural force in the world in some ways similar to natural forces, and that it would be a more appropriate account of extraordinary or miraculous acts of God than of other, more ‘mundane’ instances of particular providence. An interventionist-deterministic model of SDA, then, might be used simply to supplement a conservationist-deterministic one, in order to account for seemingly unnatural effects of God’s activity in the world, and to allow for the occurrence of direct special divine activity that is temporally proximate to events of the present time.

## References

- ALSTON, WILLIAM (1993) 'Divine action, human freedom, and the laws of nature', in Robert John Russell, Nancey Murphy, and C. J. Isham (eds) *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action* (Vatican City: Vatican Observatory Publications), 185–207.
- (1994) 'Divine action: shadow or substance?', in Thomas Tracy (ed.) *The God Who Acts: Philosophical and Theological Explorations* (University Park PA: Pennsylvania State University Press), 41–62.
- AQUINAS, THOMAS (1993) *Summa Theologica*, in *Basic Writings of Saint Thomas Aquinas I: God and the Order of Creation*, trans. Anton C. Pegis (Indianapolis IN: Hackett Publishing).
- BONHOEFFER, DIETRICH (1971) *Letters and Papers from Prison*, ed. Eberhard Bethge (New York: Touchstone).
- CORNER, DAVID (2007) *The Philosophy of Miracles* (New York: Continuum).
- CRAIG, WILLIAM LANE (2009) 'Divine eternity', in Thomas Flint and Michael Rea (eds) *The Oxford Handbook of Philosophical Theology* (New York: Oxford University Press), 145–156.
- CRUMP, DAVID (2006) *Knocking on Heaven's Door: A New Testament Theology of Petitionary Prayer* (Grand Rapids MI: Baker Academic).
- DRISCOLL, JOHN (1911) 'Miracle', in *The Catholic Encyclopedia X* (New York: Robert Appleton Company), 9 Mar. 2010 <<http://www.newadvent.org/cathen/10338a.htm>>.
- FLINT, THOMAS (1998) *Divine Providence: A Molinist Account* (Ithaca NY: Cornell University Press).
- FREDDOSO, ALFRED (1998) 'Introduction' to Luis de Molina, *On Divine Foreknowledge*, trans. Alfred J Freddoso (Ithaca NY: Cornell University Press).
- HELM, PAUL (2010) 'Eternity', in Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy (Spring 2010 Edition)*, <<http://plato.stanford.edu/archives/spr2010/entries/eternity/>>.
- HOEFER, CARL (2010) 'Causal determinism', in Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy (Spring 2010 Edition)*, <<http://plato.stanford.edu/archives/spr2010/entries/determinism-causal/>>.
- LARMER, ROBERT (1996) 'Miracles and the laws of nature', in Robert Larmer (ed.) *Questions of Miracle* (Toronto: McGill-Queen's University Press), 40–49.
- (2008) 'Miracles, physicalism, and the laws of nature', *Religious Studies* 44, 149–159.
- LECKEY, MARTIN (1999) 'The naturalness theory of laws', in Howard Sankey (ed.) *Causation and the Laws of Nature* (Boston MA: Kluwer Academic Publishers), 77–82.
- McDERMID, KIRK (2008a) 'Miracles: metaphysics, physics, and physicalism', *Religious Studies* 44, 125–147.
- (2008b) 'A reply to Robert Larmer', *Religious Studies* 44, 161–164.
- MURPHY, NANCEY (2009) 'Divine action in the natural order', in F. Leron Shults, Nancey Murphy, and Robert John Russell (eds) *Philosophy, Science, and Divine Action* (Koninklijke Brill NV: Leiden, The Netherlands), 325–357.
- PEACOCKE, ARTHUR (1997) 'God's interaction with the world', in Robert John Russell, Arthur Peacocke, and Nancey Murphy (eds) *Chaos and Complexity: Scientific Perspectives on Divine Action* (Vatican City: Vatican Observatory Publications), 263–288.
- PLACHER, WILLIAM (1996) *The Domestication of Transcendence: How Modern Thinking about God Went Wrong* (Louisville KY: Westminster John Knox Press).
- PLANTINGA, ALVIN (2008) 'What is "intervention"?', *Theology and Science* 6, 369–401.
- RUSSELL, ROBERT JOHN (2002) 'Divine action and quantum mechanics: a fresh assessment', in Robert John Russell, Philip Clayton, Kirk Wegter-McNelly, and John Polkinghorne (eds) *Quantum Physics: Scientific Perspectives on Divine Action* (Vatican City: Vatican Observatory Publications), 293–328.
- SAUNDERS, NICHOLAS (2002) *Divine Action and Modern Science* (Cambridge: Cambridge University Press).
- TRACY, THOMAS (2002) 'Creation, providence, and quantum chance', in Robert John Russell, Philip Clayton, Kirk Wegter-McNelly, and John Polkinghorne (eds) *Quantum Physics: Scientific Perspectives on Divine Action* (Vatican City: Vatican Observatory Publications), 235–258.
- (2003) 'Review of Nicholas Saunders: *Divine Action and Modern Science*', in *Notre Dame Philosophical Reviews*.
- VAN INWAGEN, PETER (1983) *An Essay on Free Will* (New York: Oxford University Press).
- WEGTER-MCNELLY, KIRK (2006) 'Fundamental Physics and Religion', in Philip Clayton and Zachary Simpson (eds) *The Oxford Handbook of Religion and Science* (New York: Oxford University Press), 156–171.

### Notes

- 1 Hoefer (2010) explicitly states this assumption later: ‘Determinism requires . . . [that] the laws of nature . . . are true at all places and times’.
- 2 What I do not intend to discuss in this article are the ‘special cases’ of SDA involving the life, death, and resurrection of Jesus of Nazareth. As several authors have noted, such cases would seem to require an entirely different model of divine action than the other instances I have described. See, for instance, Tracy (2002), n. 30.
- 3 It seems to me a rather dubious assumption that ‘there is no fact of the matter’ for an omniscient being to know about causally undetermined events until the time at which they occur. I will not consider this assumption here, though, since what is of interest to me is Peacocke’s view of deterministic causation.
- 4 This is my best attempt to interpret what Freddoso means when he writes:
 

when the gas flame makes the water boil, the fact that the effect is the boiling of water . . . is due not to God’s causal contribution (which might just as well have contributed to the water’s freezing, had other conditions obtained), but rather to the specific natures of the secondary causes (gas, water, and the like). God’s general concurrence is, so to speak, a determinable that has to be particularized by the secondary causes.

(Freddoso (1998), 17)
- 5 This example was suggested to me by Elliott Sober, personal communication, February 2010.
- 6 I set this argument aside since I am concerned not with giving an account of SDA such that particular instances of it may provide grounds for justified belief, but with working out a coherent metaphysical account of what SDA might actually be like.
- 7 Another view of ‘natural possibility’ has been put forth by Leckey (1999). Leckey thinks of the laws of nature not as necessarily true, grounded in the essential properties of material objects, but as contingent, grounded in an additional property of ‘naturalness’, which is ‘shared . . . by all and only those things which are in a “natural” state’ (Leckey (1999), 78). The problem with this view, it seems to me, is that the property of ‘naturalness’ as defined by Leckey is wholly mysterious, and, as I have suggested above, at odds with the current scientific view of laws.
- 8 This latter point was made by an anonymous reviewer.
- 9 Augustine wrote: ‘God does not need to have our will made known to him - he cannot but know it - but he wishes our desire to be exercised in prayer that we may be able to receive what he is preparing to give’ (Crump (2006), 297). Aquinas, likewise, wrote: ‘We do not pray in order to change the decree of divine providence, rather we pray in order to impenetrate those things which God has determined would be obtained only through our prayers’ (Flint (1998), 212).