

CHAPTER ELEVEN

Robert John Russell's Theology of God's Action

Wesley J. Wildman

This essay explains and analyzes Robert John Russell's theory of divine action. Russell's proposal has exercised significant influence on others working in the area of science and religion with interests in Christian systematic theology. It would be valuable to trace the lines of that influence, but I do not have space to do that here. I can testify to his influence in more personal terms, however. For years I was Bob's semi-regular passenger as he drove to work in his storied old green Volvo. We spent countless hours discussing theology and science, divine action, and every topic under the sun in that car; not even engine fires distracted us. He was then and continues to be a marvelous conversation partner. He sees deeply and broadly, registering connections across disciplines as easily as within them. It is in such conversations that I most appreciate his Gilbert-and-Sullivan ability to talk quickly: there is a lot to say when you see as much as he does all at once. I have always treasured his insight, support, and friendship, and I am honored to continue our conversations in this critical and appreciative reflection on his theory of divine action.

It would be possible to start in on Russell's network of theological ideas from any point and thereby contextualize his theory of divine action. I shall begin with his theory of special divine action and then work outward to his sensitive theodicy, his Trinitarian understanding of God, and his theological interpretation of history, including the creation and consummation of the universe, though I have space only to situate these later ideas. Along the way I will try to press Russell's personalist theological perspective from my own more mystical perspective of God as ground and power of being. I do not seek to convert him to my way of thinking because the spiritual resonances and intellectual structure of our two views are quite different and I know he likes his more. Nevertheless, I do intend to make a serious challenge to him. In particular, I want to invite him to give the ancient Greek heritage of Christian doctrine more weight in his theology, which seems to me too much in thrall to biblical portrayals of God as a divine person instead of to the unchanging God of the philosophers, to Jerusalem instead of to Athens. I would never expect him to follow me as far as I go toward Athens. I would be happy to know, however, that he was inspired by this latest of our conversations to contemplate adjusting the balance.

The main focus of my attention will be on Russell's contributions to the Divine Action Project, a series of research conferences and publications jointly sponsored by the Vatican Observatory and Russell's own organization, the

Center for Theology and the Natural Sciences in Berkeley, California.¹ These volumes are partly the result of Bob's organizational imagination and are an ongoing testimony to his determined fascination with the idea of divine action.²

Russell's Theory of Divine Action in Context

For the sake of placing Russell's theory of divine action in the broader context of theological discussions of divine action, consider the following division of theories of how God acts in created reality. On the one hand, we have the compatibilist theories. Their defenders assume that a theory of divine action can work as well in a causally closed universe – one with no ontological gaps in which we might imagine a divine being acting – as in an ontologically indeterministic universe. Compatibilist theories easily adapt to changing scientific descriptions of the world because they are not dependent on an incomplete scientific account of the causal web of nature, so the science and the theology pass by each other without much traction. For instance, it doesn't make much sense to speak of miraculous violation of the laws of nature on this view of divine action because God can do anything God wants in perfect consistency with the ordinary operations of nature, whatever they might be. It follows that compatibilist theories of divine action do not enjoy the concrete intelligibility of views that deliberately take up positions science could falsify. Yet they can harmonize with the natural sciences by means of large-scale consonance and detailed coverage of scientific topics. Thomas Aquinas articulated a compatibilist theory of divine action according to which God (as primary cause) acts through other events by upholding the actions of created agents (secondary causes). It is scientifically bulletproof in the sense that science can never contradict it, but theologians continue to debate whether that is a good strategy for theology. In our own time, Arthur Peacocke has developed a compatibilist theory of divine action that is as sensitive to the science of our day as Thomas was to the Aristotelian science of his.³

On the other hand, we have the incompatibilist theories. Their proponents believe that a case for special divine action in our world demands a demonstration that science has room for such a phenomenon, even though (most agree) science could never prove that it occurs. Whereas the compatibilist sees no contradiction in principle between scientific accounts of the causal web of reality and religious claims about divine action, the incompatibilist thinks the two realms can conflict with one another. Incompatibilist theories of divine action are of two basic sorts. Interventionist theories accept that the laws of nature reflect the deep ontological structure of reality as God created it and are happy to imagine that God might act in nature by ignoring or violating those laws of nature. This is the miracle approach to divine action and is implicit or explicit in much modern evangelical theology. Some theologians are bothered by the interventionist approach to an incompatibilist theory of divine action, however. They resist the idea of God creating the world one way and then having to set aside that arrangement in order to get specific things done in the world, seeing it as deeply inconsistent and reflecting poorly on God's

wisdom in the original act of creation. Thus, they seek a non-interventionist approach to the incompatibilist's challenge, which involves showing that science leaves ontological room for God to act in this world without breaking God's own rules for its operation.

The incompatibilist, non-interventionist family of divine action theories is quite diverse. Among them, I judge Russell's to be a rather theologically textured one. As such it is worthy of close attention and I shall try to do justice to it in this essay. The fact that I can even entertain describing Russell's theory in these terms also indicates his importance as an intellectual; it is no small achievement to elaborate a scientifically nuanced and theologically rich theory of divine action. I shall present evidence of these virtues as we follow Russell's theory across a wide range of theological doctrines, all of which he brings to bear on his theory of divine action.

We can consider the more precise classification of Russell's theory of divine action that he himself offers with the aid of a complex set of distinctions. This will also serve to introduce the basic terminology Russell uses in his theory.⁴

First, Russell makes a methodological distinction to clarify what he is doing in his theory of divine action. He calls his approach constructive theology and sometimes indicates that he is paying special attention to a constructive theology of nature. He contrasts this with natural theology and physico-theology and the design argument, all of which seek to argue for theological conclusions on the basis of the way nature is. This means that Russell's approach is essentially confessional, drawing his theological motivations and doctrines from his religious community and its theological traditions, and rational in the sense of *fides quaerens intellectum*, existing faith seeking rational understanding of itself in the deepest and richest way possible. A constructive theology that includes a theology of nature in following this approach in our time will necessarily have to engage the natural sciences. Because this is his approach to a theological understanding of divine action, Russell insists that he is not explaining *how* God acts⁵ and certainly not arguing *that* God acts, but only seeking to make the theological claim of divine action rationally intelligible and credible.

Second, Russell distinguishes between objective and subjective divine action (see *CC*, 10–12). Objective divine action affects the physical world in ways that are intelligible in principle, even in the absence of conscious interpreters to make sense of them. Subjective divine action refers to the hermeneutical achievement of discerning God's acts in history and nature, an act of conscious interpreters, and in principle independent of whether or not God actually acts objectively in the world. Russell associates subjective divine action with the miracle-as-life-changing-event view of some liberal Christian theologians and objective divine action with the miracle-as-objective-sign-and-violation-of-natural-laws view of some conservative Christian theologians, which he calls the 'traditional view' (*CC*, 10). He thinks that the subjective approach surrenders intelligibility crucial for the credibility of Christian faith claims, but also does not like the theological inconsistency of objective miracles, in the sense of violations of the laws of nature as created by God. Thus, he sees his non-interventionist proposal for objective divine action as a *tertium quid*,

transcending the impasse between liberal and conservative theologians, and making the Christian faith more credible at the same time. This distinction between objective and subjective recurs for Russell in the question of whether one needs religious presuppositions to discern non-interventionist objectively special divine action.

Third, Russell distinguishes direct from indirect divine action, though affirming both. Direct divine action is caused by God's objective action, whereas indirect divine action refers to subsequent ramifications of direct divine acts. In Russell's view, God intends and plans for the providential results of divine action and direct divine acts are the means by which God brings about these results.⁶

Fourth, Russell distinguishes among three ways to deploy the idea of divine action (see *QM*, 294): in agential models closely related to scientific ideas of nature and causation, in agential models worked out in relation to elaborate metaphysical schemes (he gives process philosophy and neo-Thomism as examples), and in embodiment models (here he is thinking of proposals such as Grace Jantzen's on the world as God's body). Russell says that he follows the first approach, though he does not seem inimical to the alternatives.

Fifth, within the strategy that deploys the idea of divine action in agential models closely related to scientific ideas of nature and causation, Russell distinguishes three approaches: via top-down causality, whole-part constraint, and bottom-up causality (*QM*, 294). He thinks that a fully satisfying theological account of divine action would involve all three approaches but also asserts that a bottom-up component in any theory of divine action is indispensable (*QM*, 300). He develops his own proposal in relation to bottom-up causality.⁷

Finally, with virtually all theologians, Russell distinguishes between general and special divine action. By special divine action he seems to mean intentional acts of a personal divine being at particular places and times in our world (though sometimes he imagines that these events might be universal). Interestingly, Russell avoids the term 'general divine action', whereas he uses the term 'special' in relation to providence and divine action frequently. I think the reason for this is that, unlike many theologians, and to his credit, Russell sees the blending of the two forms of divine action, and this in three ways. First, on Russell's account, any action of God, including the general activity of ontologically sustaining the universe in being, is not an automatic or mechanistic operation of the divine being but involves deliberate intentions and divine awareness of the specifics of reality, all of which suggest that we might fruitfully think of general divine action as a universal form of special divine action. Second, whenever God acts in a particular place and time, this must be in harmony with so-called general activities such as sustaining the universe's being. Third, the very idea of *creatio continua*, or continual creation, though usually assigned to the 'general' category, could equally well be understood as special divine action toward a generally applicable end. Because of these considerations, the category of general divine action is more difficult to make out than we might expect. I have not seen a place where Russell walks

through this argument, but I think this explains why he uses the term special far more often than general in describing divine action.

These distinctions form the background for Russell's working classification of positions on divine action (presented in the introductions to *CC* and *QM*), which I reproduce here.

	Creation	Uniform Divine Action		Objectively Special Divine Action		
		Sustenance	Subjectively Special	Interventionist	Noninterventionist	
					Apparent with religious presuppositions	Apparent without religious presuppositions
Atheism						
Deism						
'Theism'	X					
'Liberal'	X	X				
'Traditional'	X	X	X	X		
Theology and Science:						
(1) Top-Down or Whole-Part (e.g., mind/brain)	X	X	X		X	?
(2) Bottom-Up (e.g., quantum indeterminacy)	X	X	X		X	?
(3) Lateral Amplification (e.g., chaos)	X	X	X		X	?
(4) Primary/Secondary	X	X	X		?	?

Figure 11.1

This diagram is both a neat representation of major options in the contemporary science-and-religion debate over divine action and a helpful summary of Russell's own way of thinking about the alternatives.⁸ Its defining characteristic is the nine views on the left, and the various columns of the diagram serve to distinguish most of those views from one another.⁹ In the terms of this diagram and the distinctions introduced above, Russell's contribution is an incompatibilist, non-interventionist theory of objectively special, direct, bottom-up, mediated divine action. He does affirm creation, of course, but I will not discuss the specifics of his view of creation here.¹⁰

Motivations for Russell's Approach to Special Divine Action

Having located Russell's theory of divine action in the wider debate, let us begin the exposition of his theory with the reasons that Russell prefers an incompatibilist, non-interventionist approach, and indeed why he defends special divine action at all. Precisely because there are several other significantly different strategies that he might have adopted, understanding why he chose the approach he did should illumine basic motivations for, and pervasive constraints on, his theological reflection. I think at least the following three considerations are relevant.

First, why speak of special divine action at all? Our theological era has been extraordinarily diverse on the question of special divine action in the sense of

intentional acts of a personal divine being at particular places and times (and not others) in our world. A small number of theologians, including Maurice Wiles, Robert Neville, and me, reject this kind of action. Wiles does so especially because of theodicy concerns. In my words: a God who can act in this way but does not in fact intervene to help and guide us in situations of massive injustice and evil is a God we have no reason to trust and every reason to resist, regardless of the futility of resistance. Neville rejects the personalist notion of God as incoherent; for him it is a mythological fiction that theologians accept, or hesitate to de-shroud, because of its prominence in the Bible and in personal religious piety. I reject special divine action for both reasons. Many more theologians allow vague talk of special divine action but refuse to explain what they really mean. Some probably have other theological interests and just never get around to analyzing theological language about God's acts. I suspect that a few secretly believe that they could never make sense of claims about divine action but can't bring themselves to say this openly because they believe that theology is supposed to be one of the religious activities of Christian churches. Still other theologians look at the range of world religions, several of which do not even mention God, let alone God acting in history and nature. To them, this confirms its mythological status and makes a theory of divine action seem like a culturally parochial artifact, a backward step in the theological quest for a cross-culturally viable interpretation of ultimate reality.

Against this range of alternatives, Russell presupposes that God is a personal being in the sense of responsive and intentional with the capacity to act, and that God does in fact act in history and nature, in conformity with the claims of the Bible and his understanding of the life of prayer. Whence this starting confidence? I think Russell takes divine action in this straightforward sense to be a central affirmation of his religious community, which is at once decidedly Protestant, generously ecumenical, intellectually liberal, biblically oriented, pietistically inspired, and a creative achievement through a lifetime of relationships with spiritually diverse companions. Moreover, for Russell, theology is a confessional, spiritual act on behalf of this community of fellow travelers. It is not everyone's cup of tea, which means that it must be someone's calling, and Russell is one of those who feel called to articulate in the most intellectually rigorous way the faith of a Christian community. Theology for him is simultaneously a work of spiritual self-exploration and arduous labor on behalf of a tradition he loves, a tradition fleshed out in lives of service and acts of worship and moments of prayer. The basic reason Russell advances a theory of divine action, then, is that his community believes this about God, his own spiritual journey inspires and justifies this belief, and his calling as a theologian demands that he give an account of his faith.

This much could be said of many planks in the faith platform of Russell's religious community. But why has he spent so much time and energy on the particular question of divine action rather than on other of the myriad issues theologians ponder? I think the motivation here is essentially evangelical. In an era and a culture skeptical of traditional claims about divine action – an era in which not only atheists but also some theologians surrender the idea of a God

who deliberately answers prayers – there is a crisis for traditional Christian faith. Russell has diagnosed this situation clearly and with equal clarity has seen that divine action must be a point of attack for the evangelical Christian committed to the intelligent, cutting-edge defense of traditional religious claims. This is evangelism in the classical sense of making the Christian vision of the world credible in the terms of the day. It is apologetics, but not in the sense of presenting just enough evidence with a strong enough personality to convince insecure adolescents that God is real and answers prayers. Rather, this is apologetics in the sense of ancient Christians such as Justin Martyr, who took on the cultural luminaries of their day rather than the easy targets for conversion, and who articulated Christianity in an intellectually robust way and made it credible even when it did not produce conversions. This evangelical impulse runs as deep in Russell's formation as a Christian intellectual as his confessional commitment to pursue a theological calling on behalf of his religious community.

With our second consideration, we move from Russell's motivation for defending the idea of special divine action to the reasons he adopts his incompatibilist, non-interventionist strategy. I think he chooses this particular approach to special divine action in part because he believes that it will maximize in his theological assertions the characteristic of concrete intelligibility, which he takes to be a great virtue in theological work. He shares with most scientists an appreciation for propositions that are robust in the sense of specific enough to be falsifiable. In most forms of scientific activity, a proposition does not pass muster unless it has this sort of robustness: we know a proposition means something when we know what would falsify it. Logical positivists such as A. J. Ayer were right about this even if they went too far in tying the meaning of assertions exclusively to their falsifiability principle.¹¹ The emphasis on intelligibility through falsification-in-principle has been a consistent emphasis of subsequent philosophy of science, albeit in a wide variety of ways. Theology rarely displays this degree of concrete intelligibility and some theological propositions are so vague that they are consistent with virtually any state of affairs in the world. Indeed, some theologians regard this opposite strategy as theoretically virtuous.¹² Compatibilist theories of divine action, for example, are by definition compatible with science, whatever science may say, which makes them less concretely intelligible than Russell would like. We can say the same for miracles understood as violations of natural laws: though more immediately intelligible than compatibilist theories, interventionist theories easily set aside the limitations of nature, spurning the intelligibility they bring to theological claims. To maximize the virtue of concrete intelligibility, therefore, we would have to develop a theory of divine action within the constraints furnished by an incompatibilist strategy and the refusal of miraculous exceptions to the laws of nature. This is precisely what Russell does.

I think the attractiveness of concrete intelligibility for Russell derives especially from his training as a physicist. Of course, other scientists, including physicists such as Russell's friend William Stoeger, have adopted compatibilist approaches to divine action. Yet the virtue of striving to make theology

compatible with anything the sciences could ever possibly discover about reality seems almost alien to Russell, so his original training as a scientist is insufficient as an explanation for his love of maximal traction between theology and the natural sciences. It may come down to the specifics of professional training and spiritual formation. Stoeger is a Jesuit deeply imbued with the compatibilist approach to God and divine action developed by Thomas Aquinas, as the great doctor sought to adapt Aristotle's philosophy to his own Christian purposes. Stoeger is also a theoretically oriented astronomer. Russell is a Protestant Christian with less tolerance than most Roman Catholics for elusiveness in theology, and an experimental physicist trained to maximize traction between theory and experiment. Whatever the explanation, there is no question that Russell has sought long and hard for a satisfying incompatibilist, non-interventionist theory of special divine action.

A third motivational consideration bears on another intellectual virtue in Russell's theory of divine action: he wants to maximize consistency with a theology of nature that integrates all aspects of contemporary knowledge. The background intellectual affinities here are with ontological realism, a critical attitude to human knowledge that retains confidence in human rationality to discover the way nature is, trust in the feedback mechanism of nature that we rely on to correct our hypotheses about it, faith in the value of testing and debating theories about reality in the broadest possible interdisciplinary contexts, and the abiding belief that God created one world that demands an integrated theoretical interpretation. I have no space here to dwell on the epistemological and ontological commitments that constitute Russell's working theory of inquiry. I am content here to point out the effect of these commitments on his theory of divine action.

These epistemological and ontological commitments entail that Russell's conversation partners for theological theorizing will include scientists of every stripe as well as philosophers and theologians. The published volumes of the Divine Action Project bear this out. Each is the result of a dialogue over the constraints on and possibilities for special divine action in relation to a particular domain of scientific inquiry, from physics and cosmology to quantum mechanics, and from chaos theory and complexity theory to evolutionary biology and neuroscience. For Russell, any adequate theory of special divine action needs to take its bearings eventually from all of these disciplines (and others) simultaneously, as well as from traditional theological resources. There is one world, created by God, so only the deepest and most unified account of this world can serve as the environment for constructing an optimal theory of divine action. It is precisely because all treatments of divine action since that of Thomas Aquinas have fallen short of this vision of comprehensive inquiry that Russell has worked so hard with the Vatican Observatory to create the Divine Action Project.

Russell's Theory of Special Divine Action

With this discussion of motivations for Russell's incompatibilist, non-interventionist, interdisciplinary approach to special divine action in place, we can proceed to the theory itself. I will make every effort to explain Russell's approach clearly, fully, and as generously as possible. I will also analyze it to some extent as I go, placing it in what I think is its strongest philosophical, theological, and scientific light, which at times includes speculative extrapolations of Russell's proposal that he himself does not broach but that seem entailed by what he does say.

Like other theories of the incompatibilist, non-interventionist, objective, bottom-up type, Russell's method is to locate ontological openness in nature, realms within which God might work without violating natural laws, understood as mathematical descriptions of ontologically basic structures of reality. Neither a compatibilist approach nor an interventionist approach would require ontological openness in nature, but Russell's strategy must locate God's action in ontologically indeterminate regimes of nature if it is to maximize traction with the sciences in the way needed to realize the theoretical virtues discussed above.

Newtonian physics offered more possibilities for ontological indeterminism than many realized at the time. All of these possibilities turn on imagining that Newton's laws of motion were very close but not infinitely accurate approximations to the ontologically basic laws of nature. It is testimony to the excitement surrounding Newton's mathematical model of mechanical and dynamical motion both that so few pointed out this possibility and that a kind of positivistic reductionism came to rule the imaginations of philosophers and theologians of that era. 'Approximate laws' is not a far-fetched idea. People in the seventeenth century were quite used to approximations in a host of realms of life. Moreover, the actually demonstrated predictive power of the Newtonian mechanics was unimpressive, owing to the lack of computers, precise measuring equipment, and the gross approximations involved in rendering extended objects as point masses. No one had used it to land people on the moon, or to deliver intercontinental ballistic missiles to their intended targets, let alone to model truly complex natural systems. The discovery of chaotic dynamical systems in mathematics promised to extend the explanatory potential of Newton's mechanics, but modeling complex systems in nature using mathematical chaotic systems can never work well in principle because the eventual unpredictability of chaotic systems blocks testing of models.¹³ So the advent of chaos theory actually does little to shift the debate between determinism and indeterminism one way or the other.

The vision of God acting freely in the indeterministic (albeit constrained) reality beneath our approximations to the laws governing the deep structure of nature is an appealing one. This is essentially Sir John Polkinghorne's proposal for special divine action,¹⁴ and he is quite correct to defend it both as a logical possibility and as a feasible interpretation of the incompatibilist, non-interventionist type. Russell also acknowledges that our best physics, whatever

its state of development, might only yield approximations to the ontological deep structure of nature. Being unconvinced by Polkinghorne's chaos-oriented proposal for the causal joint of divine action, however, Russell turns to quantum mechanics, intending to articulate a *possibility* for a causal joint between God and the world as precisely as current physics allows, while accepting that physics may eventually leave his speculations about causal joints far behind.

To that end, Russell investigates the quantum realm for signs of ontological indeterminacy. Always a conscientious interpreter of science, Russell is careful to point out that quantum mechanics is an overwhelmingly deterministic theory. Both the Schrödinger equation and its relativistic equivalent, the Dirac equation, are time-reversible, deterministic equations that, given initial conditions, predict the development of wavefunctions forward and backward in time with infinite precision. There are no incompatibilist, non-interventionist possibilities for God to manipulate wavefunctions, unless we relax the status of these wave equations as ontologically basic laws of nature. As I have said, Russell is willing to entertain this but, for the sake of the concrete intelligibility of his theory of special divine action, he also wants to explore causal joints on the hypothesis that the laws of nature really are the way the wave equation describes them. Thus he rejects divine manipulation of wavefunctions as a serious option for a non-interventionist theory of God's action (see *CC*, 296).

Like other thinkers exploring incompatibilist, non-interventionist theories of special divine action in the quantum realm, therefore, Russell turns his attention to quantum measurement events in search of ontological indeterminacy. He works basically from the standard interpretation, which is one of many feasible and experimentally indistinguishable ontological interpretations of the highly successful quantum formalism. The standard interpretation asserts: (1) that 'interactions' trigger quantum measurement events (while remaining vague about precisely what sort of interactions will do this, which is a huge problem in the interpretation of quantum mechanics); (2) that measurement events trigger the wavefunction's non-reversible collapse from its initial state onto one and only one of the (measurement-dependent) basic states that exist in superposition within the initial state (this is the projection postulate), and also (3) that the final state resulting from the measurement event is not caused by any deterministic mechanism but rather is wholly a matter of chance, constrained only by statistics flowing from the projection postulate, in which the probability of any final state is related to the weighting that state has in the superposition of states that is the initial wavefunction immediately prior to the measurement event. Within this hypothetical framework, Russell's search for ontological openness that might provide ontological room for God to act without violating laws of nature leads in two directions.

First, with others such as Thomas Tracy¹⁵ and Nancey Murphy,¹⁶ Russell speculates that God might step in where chance plays its role in determining the final state of a quantum measurement event. This involves assuming both that God collapses the initial, pre-measurement state onto one basic state of the operator corresponding to the measurement being made, and that God can

select outcome states in such a way as to promote divinely providential ends. Russell rejects the possibility that God changes the probability of outcome states, thereby allowing chance to settle the measurement question with divinely weighted dice, as it were (see *QM*, 296).¹⁷ This would violate the statistical laws governing ensembles of measurement events and Russell is not prepared to sacrifice an ontologically robust interpretation of the laws of nature – even of stochastic laws – because of the theoretical virtues he nurtures: concrete intelligibility and traction with the natural sciences. Rather, he speculates that God may act in the ontological openness furnished by the operation of chance in determining outcome states by divinely selecting one particular outcome state, or perhaps limiting the range of outcome states and allowing chance to finish the selection within the narrower parameters.

Russell assumes that God can do this without manipulating measurement probabilities. How is this possible? Though I have seen no detailed discussion of this issue, Russell's view probably has to construe statistical laws governing quantum events in a particular way. Quantum statistics govern the outcomes of repeated measurement events of the same type, and Russell accepts that those statistical laws reflect underlying ontological structures of reality. But which structures? Laws governing the statistics of quantum measurement are ontologically basic in the sense that, without God's influence, chance would determine the outcome of measurement events in conformity with those laws. Yet they are not as ontologically constraining as the wave equation because it really is chance that settles measurement outcomes when God is not involved. There is neither determinism nor unconstrained randomness but chance operating within constraints. The best and only way we have to express both the role of chance in measurement events and the patterns of constraint on the operations of chance, is by means of statistical laws. It is logically impossible to break laws that express constraints on the operation of chance so long as God selects from among permissible states that have a non-zero probability of resulting from the measurement in question, and the laws are understood as constraining ensembles of measurement events rather than individual measurement events. Adjusting probabilities is fiddling with the constraints, and thus is interventionist and unacceptable to Russell. Acting in place of chance respects constraints and thus is a non-interventionist mode of divine action. (It is worth restating here that Russell's proposal assumes philosophical interpretations of the quantum formalism that affirm ontological openness and a role for chance.)

Russell's hypothesis, therefore, is that God acts in the ontological indeterminacy of quantum measurement events while respecting the constraints on that ontological indeterminacy, and thus not violating laws of nature, stochastic or otherwise. This view may be credible in the context of individual measurement events, but how does it translate in the situation of scientists running experiments to gather quantum statistics? We can only ever test statistical laws in the context of large ensembles of particles, in which the same sort of measurement is made repeatedly. So only in such experimental situations can statistical laws ever meaningfully contradict a non-interventionist theory of divine action at the quantum level. Russell's view appears to

require that God must pay particular attention to situations where scientists are actually running experiments to test quantum statistics, and make sure that the numbers come out close enough to predictions that quantum theory can have the status it enjoys (thanks especially to quantum electrodynamics) as the most accurate theory in the history of physics.

This piece of contrivance risks the awkward theological specter of a God whose activities are limited not only by divinely created laws of nature, which any non-interventionist theory counts as a virtue, but also by human decisions about when to run experiments to gather quantum statistics. In those situations, God must rig things in just the right way or else just leave the events being measured completely alone. Of course, it is possible to argue that God could not possibly have any reason to be fiddling with quantum events of the trivial sort that quantum statistics measure, anyway. In fact, this argument could be strengthened to the claim that quantum statistics could never be gathered on any quantum events that are of providential interest to God. This last piece of speculation sets up a principled and sharp distinction between two non-overlapping realms of reality: the realms where God acts at the quantum level and the realms where we could never in principle gather quantum statistics. But the principle behind the distinction is not truly theologically satisfying and still seems to leave the impression that God is just lucky that experiments don't cramp the divine style.

Another principle that we might invoke to justify this otherwise bizarre divine behavior – and a thoroughly Russellian one – is God's loving desire for human beings to discover the regularities and the deep structures of nature whenever they set about looking for them. To that end, we might imagine that God refrains from messing with the quantum statistics in experiments in order not to trick or confuse creatures whose enlightenment God prizes. Yet again, we might speculate that God acts regardless of whether anyone is gathering quantum statistics from experiments, and that experimenters disregard the effects as noise, as statistical aberrations, or as within the error limits of the apparatus. This scenario suggests an experiment for detecting special divine action, by gathering quantum statistics in an experimental setup focused on something of importance to God's providential plans. But it is difficult to imagine a practical design for such an experiment.

The second way in which Russell imagines non-interventionist divine action at the quantum level is more controversial and has a more complex history within Russell's thought. In *PPT* and *EMB*, Russell entertains the possibility that God might initiate quantum measurement events. He even preserves this language in the latest summary of his proposal, at a number of places. For example, in the first paragraph of the *QM* statement, Russell writes,

[I]f quantum mechanics is interpreted philosophically in terms of ontological indeterminism . . . , one can construct a bottom-up, non-interventionist, objective approach to mediated direct divine action in which God's indirect acts of general and special providence at the macroscopic level arise in part, at least, from God's objective direct action at the quantum level both in sustaining the time-development of elementary

processes as governed by the Schrödinger equation and in acting with nature to bring about irreversible interactions referred to as 'quantum events'. (*QM*, 293)

God acting to 'bring about irreversible interactions' certainly suggests what is also evident in other passages and in other essays, that Russell entertains the possibility that God triggers measurement events. It is puzzling, therefore, to find an explicit rejection of this possibility in the same summary essay from *QM*, where Russell denies the idea 'that God . . . makes measurements on a given system' (296). This last-quoted statement is so clear that there can be no question about Russell's most recent official view on the matter. He may have changed his mind or clarified an obscurity in earlier formulations. Either way, I think there is some justification in pausing to consider whether the possibility of divine initiation of measurement events has a credible non-interventionist formulation.

Non-interventionist divine triggering of quantum events would require at least some possibility of indeterminism associated with the initiation of measurement events. There is almost as much disagreement over what counts as a measurement event and what triggers measurement events as there is conflict over the best ontological interpretation of the quantum formalism, so there appear to be real chances for stabilizing some sense in which the trigger might be indeterministic. For example, Ghirardi, Rimini, and Weber have proposed adding a stochastic element to the Schrödinger equation to steer around the problem of quantum measurement. These continuous spontaneous localization theories explicitly posit a probabilistic trigger for measurement events, related to the complexity of the associated quantum interactions. These theories have problems deriving from the fact that they are not in perfect agreement with the projection postulate. The projection postulate itself may be an approximation, but it is strange that so weirdly beautiful a concept as the projection postulate should be involved at all if it is not an exact law. Well, even if this approach to finding indeterminacy in the triggering of measurement events fails, other possibilities may exist.

If it proves intelligible to posit an element of chance in the triggering of measurement events, then it is feasible to imagine that God could trigger measurement events without violating laws of nature. The same argument about statistical laws of nature would apply in this case as that we referred to in explaining Russell's conjecture that God may act in determining the outcomes of quantum measurement events. The downside is similarly perplexing: whatever statistical laws govern the triggering of measurement events would have to be sustained whenever anyone is gathering statistics from experiments. While it seems that Russell is no longer interested in exploring this possibility for non-interventionist divine action, I cannot quite see why he does not affirm it, at least until we arrive at a more compelling understanding of quantum measurement events than we have presently.

Having laid out the basics of Russell's theory of divine action, it is important to stress that he never imagines that God might act exclusively in the quantum realm, nor is he averse to imagining that our present laws of nature may be

mere approximations to the ontological deep structure of reality. But Russell also explores his speculative proposal within the hypothetical framework of existing science for the sake of bringing concrete intelligibility to his theory of divine action, even while remembering that the whole speculative enterprise is contingent on and relative to the contemporary state of science.

The final step in Russell's theory of divine action concerns an innovative approach to the question of the scope of divine action, and this in two senses. The first concerns whether God acts in all measurement events or just some. Murphy has defended a view of special divine action in every quantum measurement event, and imagines that God is an essential or constitutive part of each measurement event. Tracy has expressed a preference for special divine action in only some measurement events, arguing that this is more consistent with a robust interpretation of the laws of nature as reflecting the ontological deep structure of nature. Contrary to both of these alternatives, Russell has a hybrid view. He pictures God potentially acting in every event, but never in a constitutive fashion, in the sense that God would not have to act in order for nature to function independently of special divine action. Moreover, Russell's assertion that God acts in every event is subject to the principle that God acts everywhere and at all times in creation to draw forth its full potentiality, including by sustaining the wondrous regularities of nature. Because this overriding purpose for God's action determines whether God will act, rather than any requirement of the operations of nature itself, God may not act in events that do not serve divine ends. Thus, if God does act in all 'events', then it is a case of universal but contingent action, rather than action necessary for the operations of nature.

The second scope issue relates to human freedom. For Russell, it would be inconsistent for God to act in such a way as to override human freedom or undermine moral responsibility, qualities that God worked presumably long and hard to draw forth from nature. To act in a way that interferes with human freedom would be contrary to God's providential love. Thus, Russell proposes a contraction of the divine sphere of influence in domains of free, moral, and spiritual creatures, such as human beings and, perhaps much earlier in the evolutionary process, those with any degree of consciousness. This move is unique among the prominent theories of divine action and indicative of Russell's sensitivity to the broad range of factors – both theological and scientific – that must condition any adequate theory of special divine action.

We could try to express Russell's theory of special divine action without reference to causal joints so as to bring out the overall theological and cosmological import of his proposal. Many theologians, from Plato and Aristotle¹⁸ to Alfred North Whitehead¹⁹ and Pierre Teilhard de Chardin,²⁰ have conceived of God acting universally as the principle that knits all of reality together or as the visionary that draws forth from reality its full potential. Russell does the same, though the particular way he renders this ongoing divine design project is quite unusual. To begin with, he emphasizes the personal and concretely intentional character of God, which none of those just mentioned entertained in anything like the same way. He also stresses the contingent character of God's action, which also expresses specific, tailored

divine intentions, whereas each of these four philosophical theologians imagined that God's action was reflexively immediate, automatic, necessary, and eternal, even when it is also free, as it is especially in Whitehead. In common with them, however, Russell envisages God as a vital aspect of the universe's development, without which it might function, but in less interesting ways. He pictures God as creating and sustaining a universe with an ongoing role for God to draw forth from nature the full richness of its created potential. Whereas Aristotle imagines this in an organic, systematic way, Russell thinks in the dynamic terms of cosmic and biological evolution. And whereas Whitehead imagines that God is not an omnipotent creator but merely the creative performer of a vital function within the vast eternal organism of reality, Russell pictures God as a creator who designs creation with ontological openness suitable for ongoing providential and creative activity.

This is a grand vision indeed, and deserves to be compared with the other world pictures I have mentioned. It is also extremely bold. For example, Russell's view predicts that God acts to enhance the efficiency of the evolutionary process, as measured by the standards of God's creative and providential will. This entails that, if standard naturalistic evolutionary assumptions prove sufficient for explaining the world as we encounter it (and we may never decide this question), then Russell's view of special divine action will be in trouble and his theological vision in need of recasting. But such an outcome would be possible only because of the traction that Russell seeks to create between his theological claims and the natural sciences. It is the flip side of the virtue of concrete intelligibility and precisely what Russell tries to build into his theological proposals.

Evaluating Russell's Theory of Special Divine Action

Russell's theory of special divine action has its critics. The most aggressive, though also an appreciative, critic has been Nicholas Saunders, whose strident criticism of all incompatibilist, non-interventionist theories of special divine action applies squarely to Russell's contribution.²¹ Other critics of quantum-level proposals for God-world causal joints point out that the notion of quantum event is highly problematic and, in consequence, argue that speculative work on causal joints is getting too far ahead of known science.²² Related criticisms are that quantum-level divine joints are incapable of having providentially relevant macroscopic effects and that quantum measurement events are too infrequent to allow God enough opportunities for providentially relevant action.

Russell has gone to great lengths to answer many of his critics. He has given examples of macroscopic effects of quantum events, particularly in the evolutionary process, and he has argued that macroscopic effects are also possible through the accumulation and amplification of quantum events to the macroscopic level.²³ He has urged that the quantum measurement events familiar from laboratory experiments occur all the time in ordinary interactions in nature, thereby allowing sufficient opportunities for providen-

tially relevant divine action.²⁴ And he has argued (prior to Saunders's later critique) that his view of God's acting in quantum indeterminacies is not interventionist.²⁵

I consider Russell's replies to these criticisms adequate, but there are four other challenging issues that go beyond mere questions of consistency or formulation. They concern the futility of quests for causal joints, the opacity of religious language, the problem of theodicy, and the nature of God. I shall present these questions in what follows and discuss Russell's approach to them, where one exists.

First, centuries of philosophical discussion have shown that causal joints for human action are elusive. We can argue that they must exist, point vaguely to them, and even adduce constraints on what we can say about them, but the joint itself typically remains conceptually intangible. Why is this? Immanuel Kant's answer was that it is because of an apparently unavoidable disjunction between categories of freedom and categories of causality in any rational analysis of action. Following David Hume's reflections on this subject, Kant developed his critique of pure reason to account for this strange incapacity of human reason to argue soundly from causal features of the world to a metaphysical theory of freedom. Kant readily admitted that freedom is a transcendental condition of human moral life, but thought it had to be postulated because it could not be demonstrated within a causal account of the world. In other words, we can never isolate causal joints for free moral agents. Although Kant could not have put it the following way, this incapacity of human reason to reconcile categories of causation and freedom is as significant as our inability to harmonize the familiar determinism of the Schrödinger equation and the weird world of quantum measurement, with its tantalizing suggestions of indeterminism. It is a mistake, therefore, to expect too much in the way of specification of causal joints, either for human action (Kant's concern) or for divine action (Russell's concern). More precisely, we must be attentive to this issue when we try to decide exactly how much we can reasonably expect from debates about causal joints and speculative proposals for causal joints such as Russell's.

Russell's theory of special divine action reflects this complex philosophical debate in two ways, each a sign of good philosophical judgment. First, he tries to be as precise about causal joints for special divine action as existing scientific interpretations of the causal nexus of nature permit, but then he also refuses to stipulate that God can only act in the specified way. Second, his speculations about God-world causal joints do not pretend to be infinitely precise or conceptually fully satisfying. We have statistical laws governing quantum measurement events, for example, so even on the standard interpretation of the quantum formalism, the ontological openness that Russell's theory depends on is heavily constrained. On the one hand, to avoid a conflict with quantum statistics, Russell has to choose between weakening their status as natural laws or contriving to have God make sure quantum measurement statistics always come out right whenever a scientist performs a relevant experiment – neither is a desirable outcome. On the other hand, if Russell merely alludes to an incompatibilist, non-interventionist causal joint for special divine action, then

he sacrifices the prized virtue of concrete intelligibility in theology, all because he anticipates the eventual futility of specifying how divine freedom operates within the causal nexus of nature.²⁶

I am confident that Russell would say that he has judiciously and perhaps optimally balanced the difficulties that accrue as one pushes toward precision in speculative theorizing about God–world causal joints. I am not so sure. From my point of view, we distort the problem of divine action when we fail to acknowledge the limitations on any causal joint speculations. It is far clearer to acknowledge that all of our causal joint speculations are no more than gestures toward the indecipherable than to speculate away and merely append caveats about this not being the only way God might act. Without explicit and regular reminders of the ultimate futility of the task – such as we read in Austin Farrer's impeccably restrained reflections on divine action²⁷ – causal joint speculations risk promising more in the way of theological intelligibility than they have any right to promise. They also risk representing God as far more an actor alongside other created actors than is theologically prudent, given that God is supposed to be the all-surpassing creator. We are all in this boat together as theologians, of course, but I suspect that clearer acknowledgement of the rational limits of causal joint speculation would enhance rather than detract from Russell's theory of special divine action, making it more plausible, and rendering its attempt at concrete intelligibility less strained.

Second, while the limitations of human reason appear in a peculiar way in causal joint speculations, they also show themselves in more generic ways throughout the range of human efforts to speak about ultimate reality. The problems of theological language are well known among theologians as well as their detractors and they have been much debated on all sides. My question in this case pertains less to solving the problem than to clear recognition of it. Has Russell sufficiently acknowledged the difficulty of speaking of God's intentional activity in his theory of special divine action? The Bible speaks freely of God's activity, and surely it is this biblical testimony that most powerfully inspires Christian intellectuals to find a way to make spiritual and theological sense of the idea of divine action. It is worth remembering, however, that the anthropomorphic pattern of biblical speech about God is also periodically disrupted in theophanies and impenetrable events that leave God's will and even the divine character obscured in darkness. The world of the Bible is not utterly familiar, after all, but strange and new, as Karl Barth reminded us.

In theological terms, the problem is how to speak of what we do not know – God's action and God's nature – when we have at our disposal only human words and ideas as the building blocks for our extraordinary, and frequently overactive, imaginations. Russell rejects exhaustive reliance on revelation, for such a path thinks very poorly of causal joint speculations and more generally of seeking to establish the concrete intelligibility of theological claims in relation to the plausibility conditions of contemporary scientific knowledge. Likewise, he rejects the path of natural theology, being convinced that natural reason cannot reproduce in its own terms the historic importance of concrete revelatory events. Operating between these extremes, Russell's *fides quaerens*

intellectum approach is essentially confessional in its starting-point and subsequently seeks to understand rationally what is believed and lived out in Christian communities of faith. On this path, the theologian receives words and ideas, events and histories, stories and doctrines, all filled with a variety of meanings, and all in their various ways pointing beyond themselves to an ultimate reality that passes full understanding. Or does it? Perhaps, as Charles Hartshorne argued, we can speak literally of God and God's actions and goals, because God is a being, enough like us to make our concepts serviceable for the task. All we need is the right metaphysics. But Russell does not hold this; he walks the wide middle path of Christian theology that both affirms the infinite transcendence of God while accepting biblical testimony to God's self-revelation.

Perhaps Russell will turn his hand to this problem and develop an analogical theory of God language that can make sense out of the exercise of seeking a God–world causal joint. He needs to, I think, because the entire venture would seem ill-conceived if we were to conclude (as I do) that our extremely useful language about divine action cannot be taken as referring to a divine being with intentions and the power to act on them. But Russell cannot accept such literal reference either, neither on revealed (for example, biblical) nor on rational (for example, Hartshorne's metaphysical) grounds, so he is in need of a theory of religious language that justifies taking the idea of God as intentional actor so literally as to make questing for a causal joint a meaningful task.

Third, Russell has been uniquely clear among exponents of theories of special divine action about the way such theories worsen the problem of theodicy. In a memorable sentence, he writes, 'I believe the problem of theodicy is stunningly exacerbated by all the proposals, including my own.'²⁸ He is quite correct, of course, because a God who is aware of what goes on in our world, who can form intentions to act relative to envisaged values and goals, and who has the power to act is also clearly able to act to relieve suffering even when this does not appear to happen. All theodicies run aground on this problem. Theologians such as Jürgen Moltmann have pointed out that the keel really digs into the reef with the Shoah: if God did not act to prevent the Holocaust, then God does not possess the power decisively to stop evil in any situation. Moltmann explores his own version of process theology, as a result, but strikingly Russell does not follow him. He also does not follow the kenotic evacuation of divine power commended to us by John Polkinghorne, George Ellis, and Nancey Murphy in their theories of special divine action. While I understand the kenotic impulse, I concur with Russell's avoidance of it, because kenosis in these cases merely restates the problem: it is God's arbitrary self-restriction that could be lifted at any moment. Such a God is not to be trusted, for we human beings are not wise and we need more education than we are getting, while God politely refuses the task on the grounds of some self-imposed and utterly arbitrary metaphysical principle. I would rather have God's love in the form of guidance and protection, in the way I try to guide and protect my children, even if it means blunt intervention when ignorance threatens to lead to destruction of self or others. Russell also refuses to rely too much on the Stoic theodicy that God knows what is best, a desperately weak

move that shores up trust in God at the expense of human moral intuition and power.

In contrast to these approaches, Russell's response to the 'stunningly exacerbated' problem of theodicy is a sustained attempt to make sense of God's goodness through the Cross. In a grand vision of history and nature, Russell conjoins the events of the crucifixion and resurrection of Jesus with a robust doctrine of the Trinity to frame and empower an aggressively optimistic view of history, both as theistic evolution (looking backward), as eschatological consummation (looking forward), and as faithful waiting and witness in the present, with the crucifixion deeply entangling the Holy Trinity in the suffering of the created world. I respect the orthodoxy of Russell's approach to the problem of theodicy enormously, as well as this vision of the meaningfulness of creation and history that some forms of Christianity commend to the rest of the world. It was one of the luminous moves of early Christian theologians and preachers to vest in the rationally and morally impenetrable crucifixion all the surds of history and nature, promising ultimate meaningfulness as incipiently present in the blood-streaked waters of history and (somehow, through the Cross and resurrection) yielding eventually to consummation of every potential, the wiping away of all tears, the righting of all wrongs, and the resolution of all confusions. It is not easy to know how this is all supposed to happen, as the struggles within theological interpretation of the key elements of this vision have shown, but it is breathtaking nonetheless. And it is a narrative of consummate power, rivaling the samsaric visions of South Asian religions.

I do not begrudge Russell this approach to the problem of theodicy. Rather I commend him for acknowledging that a theory of special divine action demands a response of just such bold proportions. Moltmann was driven by his sensitivity to the Shoah decisively to abandon key elements of this picture of reality, however, and process theologians are numerous in our time for similar reasons. So my question to Russell in this case is as deep as the tears of suffering, unendingly sympathetic, strained with moral self-doubt, and deeply personal for both of us: can he really surrender himself to this vision? Is not such surrender to wrap oneself in delusion for the sake of self-comfort and communal belonging in face of vast moral aporia and cosmic anomia? Might not another strand of theology – for example, process theology, mystical theology's God who passes moral comprehension, or even Christian atheism or a Christian form of religious naturalism – have better resources for a morally effective and intellectually compelling response to the problem? We all share this problem in one way or another, in the form of a problem of suffering if not a problem of theodicy. Since none escapes, none should gloat. Yet, like Moltmann, one can despair of waiting, and rewrite God's nature, or else, like me, re-evaluate divine morality so as to render divine neglect as the automatic operation of partly life-giving natural principles, and to reconstruct human morality as the responsibility to make our own moral choices, to create a loving and just world that is possible because we can imagine it, even if it is not divinely envisaged or ordained or encouraged. This question, then, is an infinitely gentle one, a cry from heart to heart.

Finally, there is the question of God's nature. Russell's personalistic theism is of the distinctively modern kind, which sprang up when the seeds of the Hebrew Bible's anthropomorphism germinated in the fertile soil of an increasingly literate culture filled with bibles from the newly invented printing press. It is a distinctively Protestant deviation from the mainstream Christian view, preferring the Jerusalem to the Athens side of the famous tension that has dominated Christian theology from the beginning. I freely confess to favoring the Athens side of the balance, but my own bias will not stop me from calling Russell back to the center, and pressing on him the question that knits together the previous three questions: should not the classical traditions of Christian theology be allowed greater authority in his view of God? Of course, Russell is a Trinitarian theologian, but his God is also a being among other beings, whose action in the world is properly subject to the quest for its mechanism, the causal joint that links the divine intentions to the created world. What happened to the classical doctrines of aseity and immutability, the affirmations that God is self-contained and does not change through acting or feeling? What happened to God as the ground of being or being itself, as pure act and first cause? How does Russell deflect the classical intuition that God as a being can be no God at all but merely an idol of the human imagination?²⁹

I admit that a call to centrist classical Christian orthodoxy from an unregenerate Athens-style philosophical theologian such as myself is a move in bad faith. But such a call has two saving graces. On the one hand, it is fun to remind other theologians of where the Christian theological traditions' centerlines run, especially when one does not walk upon it oneself. On the other hand, and far more seriously, personalist theism is as weak philosophically as it is biblically congenial, and so it is not for nothing that the mainstream of Christian theology has maintained a greater tension between Athens and Jerusalem than Russell does.

Notes

- 1 The volumes of what I am calling the Divine Action Project are as follows (with a volume from the Capstone conference in 2003 yet to appear): Robert John Russell, William R. Stoeger, SJ, and George V. Coyne, SJ (eds), *Physics, Philosophy, and Theology: A Common Quest for Understanding* (Vatican City State: Vatican Observatory Publications, 1988) (referred to as 'PPT' in this essay); Russell, Nancy Murphy, and Chris J. Isham (eds), *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action*, vol. I (Vatican City State and Berkeley, CA: Vatican Observatory and Center for Theology and the Natural Sciences, 1993); Russell, Nancy C. Murphy, and Arthur R. Peacocke (eds), *Chaos and Complexity: Scientific Perspectives on Divine Action*, vol. II (Vatican City State and Berkeley, CA: Vatican Observatory and Center for Theology and the Natural Sciences, 1995) ('CC'); Russell, William R. Stoeger, SJ, and Francisco J. Ayala (eds), *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*, vol. III (Vatican City State and Berkeley, CA: Vatican Observatory and Center for Theology and the Natural Sciences, 1998) ('EMB'); Russell, Nancy Murphy, Theo C. Meyering, and Michael A. Arbib (eds), *Neuroscience and the Person: Scientific Perspectives on Divine Action*, vol. IV (Vatican City State and Berkeley, CA: Vatican Observatory and Center for Theology and the Natural Sciences, 1999); and Russell, Philip

- Clayton, Kirk Wegter-McNelly, and John Polkinghorne (eds), *Quantum Mechanics: Scientific Perspectives on Divine Action*, vol. V (Vatican City State and Berkeley, CA: Vatican Observatory and Center for Theology and the Natural Sciences, 2001) ('QM').
- 2 I will pay most attention to Russell's most recent work on the topic of special divine action at the quantum level. See 'Divine Action and Quantum Mechanics: A Fresh Assessment', in *Quantum Mechanics*, 293–328. Other relevant essays are 'Quantum Physics in Philosophical and Theological Perspective', in *Physics, Philosophy, and Theology*, 343–74; the introduction to *Chaos and Complexity*, especially because Russell had a hand in, and often refers to, the typology presented there (this typology also appears in the introduction to *Quantum Mechanics*); his essay with me entitled 'Chaos: A Mathematical Introduction with Philosophical Reflections', in *Chaos and Complexity*, 49–90; and his essay entitled 'Special Providence and Genetic Mutation: A New Defense of Theistic Evolution', in *Evolutionary and Molecular Biology*, 191–223. As far as his work on general divine action is concerned, the definitive expression to date is 'Finite Creation without a Beginning: The Doctrine of Creation in Relation to Big Bang and Quantum Cosmologies', in *Quantum Cosmology and the Laws of Nature*, 293–329.
 - 3 Arthur Peacocke, *Theology for a Scientific Age*, 2nd enlarged edition (London: SCM Press, 1993), especially Chapter 9.
 - 4 Of the two basic distinctions introduced above, Russell uses that between interventionist and non-interventionist accounts of divine action but not that between compatibilist and incompatibilist approaches. This latter distinction has proved crucial in the philosophical analysis of human action and freedom and I think that it can play the same clarifying role in debates over divine action. Russell should incorporate it into his already large set of working distinctions accordingly. See Wesley J. Wildman, 'The Divine Action Project, 1988–2003', *Theology and Science*, 2:1 (April 2004): 31–75.
 - 5 This claim seems odd, at first glance, because Russell certainly does seem to explain the 'how' of at least one way that God acts. But I think it makes sense, and in two ways. On the one hand, Russell does not explain *exhaustively* how God acts with his theory of divine action, and freely allows that God may act in ways other than those he discusses. On the other hand, Russell seems to be denying that he is identifying precisely the causal joint or mechanism of divine action, but rather only positing a location for that mechanism in nature.
 - 6 A closely related distinction is that between mediated and unmediated divine action (see *Quantum Mechanics*, 296, note 12). Mediated divine action is 'in, through, and together with the processes of nature' and thus in harmony with the order of nature as God created it, and Russell affirms this side of the distinction. By contrast, he rejects unmediated divine action, which he describes as unilateral and occasionalist, which means that God's action is really what keeps nature going in its orderly fashion, despite the appearance of natural causes and the usefulness of mathematics and science for describing causal regularities. I am not sure that this distinction is stable because 'unmediated' divine action seems reducible to interventionism far more obviously than to occasionalism, and existing distinctions take account of both ideas.
 - 7 This distinction begs complicated questions about the ontological status of top-down and bottom-up causation. Are they ontologically distinct forms of causation or rather merely convenient ways of describing the ways that complex systems mediate ordinary causes and their effects up and down levels of organization in complex systems? I think the latter is the right way to understand the way nature works – this is the mono-causal hypothesis in conjunction with a theory of complex systems that can constrain and coordinate ordinary causation at a variety of levels. Russell at places appears to entertain an ontological interpretation of the distinction between top-down and bottom-up causality, however, particularly when thinking of the causal powers of conscious creatures such as human beings. See *Quantum Mechanics*, 300–301, for example, where Russell asks what top-down causation could mean prior to the evolution of conscious creatures.

- 8 I know others worked with Russell in creating this diagram, but I do not know the details. In *Chaos and Complexity*, Russell does say the following: 'Since its inception in 1991, the typology has been developed further through conversations with a number of scholars including Nancey Murphy and Thomas Tracy' (9).
- 9 Its disadvantages are that it leaves out bona fide theories of divine action (not discussed here), that it obscures different assumptions that these various views make about the divine nature, that it conceives everything in theistic terms (even atheism) and so is insensitive to other theological and philosophical alternatives (from Neoplatonism to religious naturalism), that its handling of the primary–secondary causation models is awkward (due in part, I think, to neglect of the compatibilist versus incompatibilist distinction), that it contrives to treat subjectively special divine action under the category of uniform divine action, and that it renders the chaos option as lateral amplification (which is misleading, convening only the role of chaos theory in imagining how quantum events may produce macro effects, and neglecting the way some, such as John Polkinghorne, use chaos theory to articulate an alternative view of ontological openness in nature). For these reasons, I prefer another approach to classifying theories of divine action, which I presented in 'The Divine Action Project'.
- 10 See Russell, 'Finite Creation without a Beginning'.
- 11 See A. J. Ayer, *Language, Truth, and Logic* (London: Gollancz, 1936; 2nd edn, 1946).
- 12 Robert Neville, for example, intends his doctrines of God and creation to be consistent in principle with anything the natural sciences could ever possibly discover about reality. He takes this to be the very meaning of metaphysics: propositions that would be true in any possible world. See *God the Creator* (Chicago: University of Chicago Press, 1968).
- 13 For an explanation of this, see Wildman and Russell, 'Chaos', especially 73–4, 80–82.
- 14 See John Polkinghorne, 'The Metaphysics of Divine Action', in *Chaos and Complexity*, 147–56.
- 15 See Thomas F. Tracy, *The God Who Acts: Philosophical and Theological Explorations* (University Park, PA: Pennsylvania State University, 1994). See also Tracy's contributions to the Divine Action Project: 'Particular Providence and the God of the Gaps', in *Chaos and Complexity*, 289–324; 'Evolution, Divine Action, and the Problem of Evil', in *Evolutionary and Molecular Biology*, 511–30; and 'Creation, Providence, and Quantum Chance', in *Quantum Mechanics*, 235–58.
- 16 Nancey Murphy's key essay on divine action is 'Divine Action in the Natural Order: Buridan's Ass and Schrödinger's Cat', in *Chaos and Complexity*, 338–44.
- 17 Importantly, Russell must hold that stochastic laws governing quantum measurement events – however understood – constrain ensembles of events, not individual events. Otherwise, God's action in the indeterminacy of measurement events would amount to intervening in probabilistic laws of nature, and this would defeat Russell's goals. This question – whether stochastic laws governing quantum measurement events constrain individual events or only ensembles of events – is one of the key controversies in theories of divine action; see Wildman, 'The Divine Action Project', 54–5.
- 18 See, among many other works, Plato's *Republic* and Aristotle's *Metaphysics*.
- 19 See, among many other works, Alfred North Whitehead, *Process and Reality*, corrected edn, ed. by David Ray Griffin and Donald W. Sherbourne (New York and London: Free Press and Collier Macmillan Publishers, 1978; 1st edn, 1929).
- 20 See, among many other works, Pierre Teilhard de Chardin, *The Phenomenon of Man* (1959), *The Divine Milieu* (1960), and *Hymn of the Universe* (1965).
- 21 See Nicholas Saunders, *Divine Action and Modern Science* (Cambridge: Cambridge University Press, 2002), especially Chapter 6, 'Does God Cheat at Dice?' Saunders develops criticisms expressed by John Polkinghorne in 'The Metaphysics of Divine Action', in *Chaos and Complexity*. I discussed Saunders's criticisms in 'The Divine Action Project'.

- 22 See especially the dissertation of Christoph Lameter, 'Divine Action in the Framework of Scientific Thinking: From Quantum Theory to Divine Action' (Ph.D. diss., Fuller Theological Seminary, 2004).
- 23 See Russell, 'Special Providence and Genetic Mutation'.
- 24 See Russell, 'Divine Action and Quantum Mechanics'.
- 25 See *ibid.*
- 26 Critiques of special divine action sometimes take advantage of this difficulty with specifying causal joints. Saunders, for example, ventured a round-house attack on all existing proposals for the causal joint of special divine action that crucially depends on the expectation that the goals of the incompatibilist, non-interventionist program should include unlimited precision in the specification of the causal joint. Because this is not possible, in principle, it is unsurprising that all existing proposals in one way or another fail to reach Saunders's high standards for them. Saunders argues that all theories presenting non-interventionist accounts of a causal joint for special divine action fail because they arbitrarily massage the interpretation of natural laws to enable the proposed causal joint to avoid conflict with the laws of nature, interpreted in a robust ontological way. But the only vision we can get with the laws of nature is a causal one, and the more comprehensive our theories become, the closer we will approach a causally closed picture of nature. In order to make good on the promise for divine action of ontological indeterminism within nature, even within the quantum realm, it will be necessary either to accept vagueness in the formulation of the causal joint or to adjust conveniently our interpretation of the laws of nature. Since facing this choice is unavoidable, its occurrence cannot be a sign of theoretical failure.
- 27 See, among many other works, Austin Farrer, *Finite and Infinite* (Westminster: A. & C. Black, Dacre Press, 1943; 2nd edn, 1949; reissued New York: Seabury Press, 1979).
- 28 Russell, 'Special Providence and Genetic Mutation', 216.
- 29 On all of these questions, see the remarkable work by Thomas G. Weinandy, *Does God Change? The World's Becoming in the Incarnation*, Studies in Historical Theology, vol. IV (Still River, MA: St Bede's Publications, 1985), which deserves far wider distribution. Weinandy's approach seems roughly compatible with Russell's theological instincts.

