

FALSIFIABILITY AND TRACTION IN THEORIES OF DIVINE ACTION

by Kile Jones

Abstract. One of the most focused research programs in the science-religion dialogue that has taken place up to the present is the series of volumes published jointly by the Vatican Observatory and the Center for Theology and the Natural Sciences. Originating with the encouragement of Pope John Paul II, this series has produced seven volumes focusing on how divine action can be understood in light of contemporary science. A retrospective volume published in 2008, *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, contains articles reviewing the series as a whole. In this article I analyze the series as a whole as well as some of the pivotal problems discussed throughout the series, such as the zero-sum game, scientific “traction,” falsifiability in theories of divine action, and locating special divine action in the physical world.

Keywords: counterfactual principle; critical realism; evolution; general divine action; laws of nature; noninterventionist objective divine action (NIODA); special divine action; traction; underdetermination

THE CHURCH AND SCIENCE FROM VATICAN I TO VATICAN II

It is safe to say that the Roman Catholic Church has come a long way since Vatican I (1869–70) and the beginnings of evolutionary theory laid out in Charles Darwin’s *The Origin of Species* (1859). The church, through time, has become more open and progressive in light of the challenges posed by modernity. But this is not to say that change has come easily. In fact, we may compare what has happened to the church to the various paradigm shifts or revolutions that have taken place within science itself. Change does not occur overnight. The church has spent a great many hours in

Kile Jones (www.kilejones.com) holds a Masters of Theological Studies and a Masters of Sacred Theology degree from Boston University, 45 Colborne Road Apt. B2, Brighton, MA 02135; email kbj@bu.edu.

[*Zygon*, vol. 45, no. 3 (September 2010)]

© 2010 by the Joint Publication Board of *Zygon*. ISSN 0591-2385

www.zygonjournal.org

dialectical readjustment, especially over the last two centuries, reacting to modernity, regulating its approach, and revising its former paradigm. Not that all previous ideas have been abandoned; the church also has solidified itself under tumultuous times, with many in the believing community still holding strongly to traditional orthodoxy (however they understand it).

Yet it is apparent that the church has gradually modified its doctrines in light of changes in the intellectual landscape. The bishops at the First Vatican Council saw fit to defend the church against advances made in natural science, declaring that “Christians are forbidden to defend as the legitimate conclusions of science those opinions which are known to be contrary to the doctrine of faith, particularly if they have been condemned by the Church” (Vatican I, session 3, chapter 4, point 9). Vatican II opened up, though with caution, to evolutionary theory under the leadership of Pius XII, who twelve years earlier in his *Humani Generis* had said that the church “does not forbid that . . . research and discussions . . . take place with regard to the doctrine of evolution” which must “be weighed and judged with necessary seriousness, moderation and measure” (Pius XII 1950, 36). This was also the time when famed Catholic theologian Pierre Teilhard de Chardin came forth with his *The Phenomenon of Man* (1955), which combined Catholic theology and a view of the universe evolutionarily progressing toward higher consciousness. Similarly, Vatican II had Karl Rahner, Hans Küng, and Henri de Lubac (the *Nouvelle Théologie*) guiding it in the spirit of progress and open dialogue. They were largely responsible for its radical character and influence. The church’s acceptance of evolutionary theory (as well as many other scientific theories) deepened even further under the influence of John Paul II.

THE ORIGINS OF THE VATICAN OBSERVATORY CONFERENCES

Pope John Paul II is considered by some to be one of the nicest, most humble, and, interestingly, progressive popes of the post-Copernican revolution era (Cohen 2005, ABC News). He went beyond Pius XII’s view that evolution was merely one hypothesis among others to affirm that “new findings lead us toward the recognition of evolution as more than an hypothesis” (quoted in Russell, Stoeger, and Ayala 1998, 4). Evolution had evolved in the life of the church. Many other scientific theories were to make their way into the mind of the church, including general and special relativity, quantum mechanics, chaos theory, and complexity studies. It was with the intention of bringing the natural sciences into closer dialogue with the church that John Paul II, commemorating the tercentenary of the publication of Isaac Newton’s *Principia*, asked George V. Coyne, then Director of the Vatican Observatory, to arrange a conference focused on the general theme of natural science and theology. The conference took the

shape of a Study Week in 1987, when twenty-one scholars with varied expertise in natural science, philosophy, and theology came together under the title “Our Knowledge of God and Nature: Physics, Philosophy, and Theology.” This conference sparked what would become a twenty-year project of interdisciplinary conferences and publications, now concluded, on various topics under the common subtitle “Scientific Perspectives on Divine Action.” With institutions such as the Center for Theology and the Natural Sciences (CTNS), and scholars/editors including Coyne, Robert John Russell (chairperson), William Stoeger, Nancy Murphy, C. J. Isham, Arthur Peacocke, Francisco J. Ayala, Kirk Wegter-McNelly, Philip Clayton, John Polkinghorne, Theo C. Meyering, and Michael A. Arbib, an interdisciplinary team of scientists, theologians, and philosophers produced seven volumes of research essays. The most recent volume related to the series, *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress* (Russell, Murphy, and Stoeger 2008), is a retrospective evaluation of the entire project and serves as my primary interlocutor as I review and assess the central questions posed by the larger series.

When it came to planning the initial conference, it was up to Coyne and the Scientific Organizing Committee to decide which scholars could best engage the subject “Physics, Philosophy and Theology.” This decision was an important one, insofar as where one ends is intimately connected to where and how one begins. Would the conference be a primarily Roman Catholic affair with only Roman Catholic scholars? The project did begin with distinctively Catholic overtones. The project itself was hosted by the Vatican Observatory, several of the conferences were held at Castel Gandolfo (the papal summer residence), and the initial papal message was directed specifically to Coyne and “all who participated in the Study Week” (John Paul II 1988, m14). Yet an interesting and bold move on the part of Coyne and the Committee was their decision to make the Study Week a strongly ecumenical event. Both Catholic and Protestant scholars would be invited to participate in the scholarly work. One sees the result not only in *Physics, Philosophy, and Theology: A Common Quest for Understanding* (Russell, Stoeger, and Coyne 1988) but also in the subsequent volumes. A brief picture of the perspectives included in the volumes will suffice: Representing the Catholic perspective are such scholars as Coyne, Ernan McMullin, and Stoeger; representing the Protestant point of view are Anglicans such as Peacocke and Polkinghorne as well as mainstream theologians from other denominations including Russell (United Church of Christ), Murphy (Church of the Brethren), and Ted Peters (Lutheran).

FOUR KEY MOTIFS IN THE PUBLISHED VOLUMES

If one were to ask what particular theological perspective the volumes promote, the answer would be: Many. Even among the Catholic or Protestant

scholars there are significant theological differences. But what connects nearly all of the authors across all of the volumes is the desire to further the scope of the religion-science debate by promoting dialogue and integration (Barbour 1988). There is little enthusiasm for other approaches in the religion-science debate such as conflict and scientific materialism. In short, one could say that this was a *post-conflict* project, inasmuch as it regarded as all too simple and superficial the view that religion and science are primarily or necessarily in conflict. Many in the greater public are still given the easy picture of the conservative “religious” person who denies evolution along with many other advancements in modern science pitted against the strict materialist, someone like Jacques Monod, Richard Dawkins, or Daniel Dennett, who are pictured as the true representative of Darwin and the larger scientific community (Ellis 1996, 251–80). Such a view has been a favorite among the media, but this project and the science-religion field more generally has done a great deal of work to expose this view as a straw man. Basic commitment to dialogue and integration is the first of four features, in my opinion, that characterize the series as a whole.

A second feature of the series is its focus on the question of divine action. Most of the authors agree with the dictum of Timothy Gorrige (1990, 1) that “a non-engaged God is no God.” Even a tradition such as neo-Thomism, which stresses divine transcendence and makes a sharp distinction between primary and secondary causes, has to come to grips with what it means, in light of contemporary science, to say “God acts in the world.” When people say “God did this” or “God did that” they often tacitly assume an interventionist picture of divine action—a God who tinkers with, suspends, or even breaks the laws of nature in order to bring about something miraculous. But, as Wesley Wildman notes about those involved in the Divine Action Project, interventionist approaches to divine action “struck most members as dangerously close to outright contradiction” (Wildman 2008, 141). The “contradiction” would be in the internal logic of a God who is powerful and wise enough to have created this world and yet still chooses to (needs to?) fidget with the same world to bring about certain ends. Why would God who creates a structured world that runs stochastically then violate the integrity of such structures? It looks as if the only way out of this worry is through some form of deism, possibly similar to the view of Paul Davies (1996), that makes all of the outworkings of the cosmos “natural” or “independent” in the sense that all God had to do was create a pre-programmed universe, wind it up, and let it go. In such a view there is no need to speak of God’s intervention, providence, or even continuing creation. God does not need to act in a world already programmed to work and end in a certain fashion. Except for deism, most of the scholars in this series are working toward a robust view of what Russell has dubbed “non-interventionist objective divine action” (NIODA). They think that for Christian theology to stay true to its traditional roots as well

as maintain intellectual honesty it must be able to offer a noninterventionist account of divine action that is attuned to the scientific frameworks found in evolutionary theory, quantum mechanics, and so forth.

A third thread within this series is the emphasis on change and novelty within the created order. Peacocke testifies to this, as do most of the other contributors to *Evolutionary and Molecular Biology* (1996). The harmony between stochastic natural laws and chaos provides the context for the emergence of novelty and complexity. Micro- and macroevolution are empirical evidence for the significance of this type of harmony. How can Christian concepts of creation and redemption fit into a radically dynamic world? Or, better, how does God relate to the novel emergence of complexity in the natural order? In such a situation, one's only option seems to be to radically reinterpret classical Christian doctrines, or, as Barbour has put it, to engage in doctrinal reformulation. This means giving traditional interpretations of the opening chapters of the book of Genesis a new spin. In this series there is no sign of conservative attempts to keep traditional doctrine at the cost of science. "Creation science" and "intelligent design" programs are not even considered as plausible alternatives; they are regarded as quasi-scientific attempts to promote conservative interpretations of the biblical text.

In light of the doctrinal-reformulation position, how does one interpret the church's historic confessions and the biblical teachings that seem to be in opposition to what modern science teaches? One of the first areas in need of change is that of theology proper (that is, the doctrine of God). The classical understandings of God's metaphysical attributes must be reinterpreted. The God presented in these volumes is in many cases not the omniscient and omnipotent God of the late Augustine, Boethius, Thomas Aquinas, and John Calvin. Polkinghorne insists that God cannot have knowledge of the future, "for the future is not yet there to be known" (1993, 439). Similarly, many authors insist that God does not coerce or determine the future of the world. If one had to choose a metaphysical position that best characterized the general view of the theological essays in this series it would be that of panentheism. Sometimes it comes close to process theology (see Murphy 1995; Polkinghorne 1995).

The fourth connection shared by most of the essays is the philosophical perspective of critical realism. Possible exceptions are Mary Hesse's article in *Physics, Philosophy, and Theology* (1988) and Willem Drees's in *Quantum Cosmology and the Laws of Nature* (1993). The assumption is that neither science nor theology is mere speculation; in both arenas, we form testable models of how various observable phenomena fit together and then "glue" them together into broader perspectives on the world. In other words, the world is not taken to be a construction or projection of our ego, as an idealist or solipsist might have it, but a genuinely real and ontologically independent "thing." Janet Soskice identifies critical realists as those "who

place a high value on models . . . because they view them as descriptive of states and relations which, while going beyond our powers of direct observation, nonetheless are important senses independent of the construction we put upon them" (1988, 176). Polkinghorne describes critical realism as the view that "epistemology models ontology" and the belief that "the totality of what we can know is a reliable guide to what is the case" (1995, 148). Although the current debates between scientific realism and scientific antirealism are not explicitly dealt with in this series, many of the articles within the series either assume or implicitly argue for critical realism.

These four themes—dialogue/integration, divine action, novelty, and critical realism—bear further scrutiny. I examine each in turn, in conversation with several of the essays from the retrospective *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*. The volume is broken up into four sections: (1) Critical Appraisals of the Series as a Whole; (2) Philosophical Analysis of the Specific Issues in the Series; (3) Theological Analysis of the Specific Issues in the Series; and (4) Resources for Further Research. In what follows I engage most directly the essays from sections 2 and 3, focusing specifically on their discussion of the central issue of NIODA.

CLAYTON, TRACTION, AND COUNTERFACTUALS

Clayton's article in the book, "Toward a Theory of Divine Action That Has Traction," offers a particularly insightful critique of the first five volumes of the *Scientific Perspectives* series. He claims that for a theory of divine action (TDA) to be scientifically compelling it must meet the criterion of "traction." Theological language, he says, "has 'traction' if and only if it makes claims that can be impacted, either positively or adversely, by the results of philosophical critique, historical-critical research, or scientific knowledge" (2008, 92). Clayton divides traction into three types:

- Traction 1: a given TDA is *derived from* science, history or philosophy
- Traction 2: a given TDA . . . is tested by science, history or philosophy. "Tested" means that something it says, or something that is entailed by it, faces a real possibility of being rationally counterindicated—"falsified" in this specific sense—by results in these fields.
- Traction 3: a given TDA is shown to be consistent with science (or historical criticism, or philosophy) as we know it. (2008, 93)

What Clayton is pointing to is that for a TDA to be rationally compelling it must be more than just consistent with present scientific data. This is partially because of the plurality of views on divine action throughout the world's religions and philosophies. If many of these divergent views are minimally consistent with science, why believe one over another? Something further must be added to make one position more rational than another, namely, traction 1 or 2.

The problem with the *Scientific Perspectives* series, according to Clayton, is that those who were part of it proposed TDAs with insufficient traction. This is like playing tennis without a net. For instance, neo-Thomism escapes falsifiability by making a sharp conceptual distinction between primary and secondary causes, and views like Karl Barth's emphasize the transcendence and otherness of God to the extent that God's existence or action cannot be confirmed or disconfirmed by science, history, or philosophy. Another TDA with insufficient traction is what Clayton calls the "fall-back" position: "history as a whole as a single act of God" (p. 86). These accounts of divine action face the dual problem of derivability and testability. They attempt to construct a TDA that honors both divine and human action yet fail to bring such a theory to the level of being tested. TDAs that Clayton finds (in principle) testable, and so holding traction 2, are views such as the traditional belief in Christian miracles and the resurrection of Jesus Christ, some positions in the intelligent-design movement, and arguments that noninterventionist objectively special divine action occurs at the level of quantum indeterminacy (pp. 94–95). These positions can be tested by science, history, or philosophy.

Besides traction, Clayton uses another criterion in assessing any TDA, which he names the *counterfactual principle* (see Lewis 1979). He defines this principle as the assertion that "*had God not acted* in helping to produce some effect, the effect *would not have been identical* to the state of affairs we in fact observe" (Clayton 2008, 104). In theology the counterfactual principle can also be put as the maxim *If God is not a productive or contributing cause to some event, God is not needed to explain that event because God is not in causal relationship to it*. If one assumes this principle—and Clayton is quick to note that many in this series do not—it becomes clear why TDAs such as neo-Thomism and Barthianism are largely immune to critique. Clayton mentions the famed debate between R. M. Hare and Antony Flew in which Flew ends his statement by quoting from John Wisdom's metaphor of the elusive gardener: "At last the Sceptic despairs, 'But what remains of your original assertion? Just how does what you call an invisible, intangible, eternally elusive gardener differ from an imaginary gardener or even from no gardener at all?'" (Flew 1984, 72; also see Clayton 2008, 104) Where does the God of neo-Thomism actually "show up" in the empirical world?

In my opinion, G. J. Warnock presented a better version of the falsifiability argument:

For if *S* [*S* is the Law of Causality, that is. every effect has a cause] can be affirmed whatever the course of events, it says nothing of what the course of events in fact is. It does not tell us what we shall find in our experience, for whatever we find may assert it without fear of mistake. This is not to say, what I think is plainly untrue, that *S* is tautologous or analytic. It resembles a tautology in being compatible with any and every state of affairs; but it escapes the possibility of falsification not because it is necessary, but rather because it is vacuous. It is more like the

assertion that there are invisible, intangible, odorless, soundless, and otherwise undetectable tigers in the garden (Warnock 1965, 325).

Some TDAs, like the law of causality, end up only proposing an undetectable tiger or an elusive gardener. This means that the counterfactual principle, if it holds water, provides the necessary criterion for assessing certain TDAs that cannot be tested by other (empirical) methods. Philosophical and logical critiques of causation, such as Flew's and Warnock's, should make one apprehensive toward TDAs that escape falsifiability.

Although I mostly agree with Clayton, I still find a few problems with his assessment of the series. He has an expectation that scholars in the series should have reached a general consensus of views in order to have accomplished anything worthwhile. He notes that many of the scholars within the series disagree on important issues and that numerous research programs are actually occurring under a singular title. Clayton knows how difficult unified projects on religion-and-science are, specifically those focused on metaphysical debates, but he says that if projects like this do not "attempt to formulate a shared position" they "risk futility and guarantee equivocation" (2008, 96). Can we expect such a consensus in metaphysics and theology, specifically as it relates to the science-religion debate? I would agree that unity is a good thing, but consensus in projects such as this one is an unrealizable (though not unworthy) ideal.

NIELS GREGERSEN, GOD AS CAUSE, AND THE LAWS OF NATURE

I agree with Niels Henrik Gregersen that one's view of the Vatican Observatory/CTNS series as a research program depends entirely on how one defines the goals of such a program (2008, 181). We may hold a tight picture of such a program, judging its value based on unity and consensus, or a looser picture that values difference of opinion. If we hold the former, we will be disappointed by the series; if the latter, we may be pleasantly surprised. Clayton does not seem to realize (at least in this article) that if the counterfactual principle is assumed, many of the TDAs proposed in this series can be judged as more or less rationally compelling, even if they are escapist. As was shown earlier, critiques such as Warnock's and Flew's apply to escapist TDAs by providing a criterion (falsifiability) that shows them to be more or less rationally compelling.

In his article "Special Divine Action and the Quilt of Laws" Gregersen argues that the distinction between *special* divine action (SDA) and *general* divine action (GDA) cannot be maintained. SDA is the idea of an action committed by God that brings about specific and unique physical consequences. GDA is closer to what Clayton referred to as the fall-back position—history as a whole as a single act of God. Gregersen thinks this distinction cannot be maintained because "*any* divine action must be treated as both special and yet as falling within the over-all pattern of divine self-

consistency” (2008, 179). Gregersen regards the concept of *special* divine action as “useful” but notes that it has two notorious problems:

1. This concept presupposes that we have a clear idea of *what would have happened had God not acted in this special way*.
2. This concept presupposes a strong ontological view of the laws of nature.

I am of the opinion that these two problems are not as severe as others in constructing an adequate notion of SDA. First, I think that the past is a reliable guide to the future (the uniformity of nature, in a soft sense), and so having a good idea of what would have been the case had God not acted is not that difficult to imagine, predict, and even know (just think of statistical regularities). Second, the reason a divine act would be called *special* is that it appeared in contrast to the general or normal way the universe runs. Some take this “normal” way as exhibiting “lawlikeness” to the extent that these “laws of nature” *prescribe* the way nature *has to* behave—that is, the laws of nature operate without exception (they are necessary). This necessitarian view of the laws of nature comes close to a strong ontological view because if these laws *govern* the behavior of entities it seems that they must have a distinct ontological position from which to operate. This view is often regarded as undesirable because it commits one to asserting the independent ontological existence of such laws, which comes close to Platonism.

However, we may understand the laws of nature as *descriptive*, in that they merely describe the way in which the universe behaves—not according to necessity but according to regularity. The lighting of a match shows that fire regularly occurs (not *has to* occur) when one strikes a match. Given this weaker regularity and less-than-ontological view of laws, it does not seem that SDA has to presuppose a strong ontological view of the laws of nature, because a special act can still be juxtaposed against the descriptive, regular behavior of the universe. It is true that this contrastive relationship would be stronger if the laws of nature were prescriptive, but it does not mean that such a contrast would not be there if the laws of nature were merely descriptive.

I think that Gregersen is centrally concerned with the view that we can distinguish SDA from GDA *epistemically* on the basis that we have good grounds for believing this distinction to hold *ontologically*. In God, Gregersen might insist, there is no distinction between SDA and GDA, because “God’s activity is always one and undivided [GDA], and yet complex and multifaceted [SDA] in its manifestations” (2008, 192). Similarly, according to Gregersen, God works “from within the world of creation” (as prime cause) and yet cannot be conceived of as “one factor among others at the level of secondary causes.” This means that “we can probably never disentangle what is divine from what is natural in an event” and that “there is *no causal*

joint . . . nor any possibility of tracking the route from God to world” (p. 195). Here Gregersen (a Lutheran) curiously ends up proposing a more or less neo-Thomist TDA. In this picture, SDA is not so special after all. It escapes the problem of the causal joint or causal nexus by retreating to God’s otherness as universal cause.

I can appreciate not wanting to bring God down to the level of other causes, but by not doing so we preclude the possibility of ever understanding any specific and unique act of God in world history up to the present because we can never distinguish between divine and natural events. And yet Gregersen does not want SDA to collapse into GDA! To so divinize nature and naturalize divinity on the level of second causes blurs the line and runs contrary to any attempt at locating God’s actions. This does not help the issue but rather further postpones any possibility of locating special divine acts in the natural world.

THOMAS TRACY, THE ZERO-SUM GAME,
AND UNDERDETERMINATION

What many in this program seem to desire (including Gregersen, Stephen Happel, and Stoeger) is to revise the way in which we speak about God *as a cause*. If God is one cause among many, God is in some way limited or brought down to the level of finite causes. If God is transcendent, above and beyond, or more than the world, God cannot be just *a* cause because God is *the* cause. Divine and human causation cannot be juxtaposed because we are speaking of different levels, kinds, or modes of causation. This is the “theological requirement” mentioned by Stoeger (2008, 227) that “God not be identified as simply another secondary cause.” Yet, if we cannot speak of God as acting within creation, we can never locate any truly special act of God in the natural world because we would never know if this act were not simply a natural occurrence.

Thomas Tracy points out this dilemma in his article “Special Divine Action and the Laws of Nature,” referring to what is known as the zero-sum problem: “The basic idea here is that God’s activity and that of created things stand as contrasting alternatives” (2008, 254). To say “God caused this” as opposed to “nature caused that” is to place God and nature in a contrasting relationship: *either* God acted *or* nature did. Yet something is obviously wrong with this picture. God’s acts cannot be thought to occur in the same way as natural occurrences because God is different, beyond, other than the natural world. To answer this by saying that we can never differentiate between divine and human action, however, is to neglect the divinely given gift of natural/human self-determination, autonomy, or freedom whereby we can point to specific causes and say “nature” or “humans” *caused this to occur*. As Tracy notes, “the non-contrastive creative relationship . . . does not rule out all trade-offs between divine and created agency; whether God’s activity ever stands in partial contrast to that of

creatures will depend on the capacities for action that God grants to creatures and on how God acts in relation to these created agencies" (p. 255).

Tracy's article is an attempt to formulate a way in which we could locate God's special acts in the world based on physical underdetermination. Tracy is quick to note the reductive and deterministic model of nature found throughout the sciences where "every event will have sufficient causal conditions in the events that precede it" (p. 251). This classical Newtonian picture of nature leaves no room for God's special acts, because all events are sufficiently determined by prior ones. If we do not hold to this picture of nature, there may be room for God to act. "Perhaps God has created a world that includes events with necessary but not sufficient causal conditions in nature. . . . God might also continuously shape the unfolding course of events in such a world by determining some or all of what is left underdetermined within the order of created causes" (p. 252; see Russell 2001, 295). Tracy acknowledges that this may be a useful picture of special divine action (without intervention) but only if it finds "traction" with the sciences by finding a scientific theory that would (1) permit an indeterministic interpretation, (2) describe a natural system in which these underdetermined events can make the right sort of difference in subsequent causal processes, and (3) locate underdetermined events within an intelligible natural structure. If there were a scientific theory that met this criterion, Tracy thinks "we would have a promising candidate for theological interpretation of the sort we have sketched" (p. 253).

What Tracy and others are looking for is causal openness in the structures of nature. If God is going to act by determining what is underdetermined, by providing sufficient cause for what otherwise has only necessary conditions, there needs to be causal openness in nature so that God can actually bring about, in the physical world, what would not have occurred had God not been the sufficient cause in determining it. Tracy is (rightly) hesitant in this quest for causal openness. He wants not to use scientific theories such as chaos theory, quantum mechanics, and developments in neuroscience as quick leverage for causal openness because causal openness comes only as an interpretation or extrapolation of these theories. The problem is that of going from physics to metaphysics, from scientific theories to worldviews, and from the particular to the universal, via induction. Tracy warns against doing this haphazardly: "our metaphysical claims cannot appeal simply to science for their justification" (p. 267). This does not mean that someone cannot interpret scientific theories as pointing toward causal openness, just that one ought not to move too quickly from a scientific theory to a metaphysic. Conversely, someone who assumes a metaphysic of causal openness (as in process theology) should be careful not to offer overly facile interpretations of scientific theories, because there usually are deterministic interpretations of the same theory (such as the Bohmian interpretation of quantum mechanics) that must be taken into account.

WEGTER-McNELLY, GOD'S ACTION, AND THE
IN/COMPATIBILITY DEBATE

Wegter-McNelly's article "Does God Need Room to Act?" (2008) takes up the issue of whether or not NIODA should be framed in indeterministic or deterministic models of physical causation. Contra Tracy's TDA, Wegter-McNelly's proposal is that future research in the science-religion dialogue should be put in terms of what he calls "theo-physical compatibilism." This is the idea that "God's objectively special activity is neither interventionist nor incompatible with physical determinism" (p. 299). Theo-physical *incompatibilism* is the view that sees causal openness and physical indeterminism as essential to an adequate account of NIODA. Wegter-McNelly argues (along with Gregersen and others) that such incompatibilism construes divine and creaturely action as a zero-sum game that lowers God's causation to the same level as creaturely causation, and this is wrong because God's causation and creaturely causation are "radically different things." The incompatibilist is thus led "down the wrong alley of parsing out which acts are 'human' and which are 'divine'" (p. 307).

The point is well taken. But, in order to move the science-religion dialogue in the direction of theo-physical compatibilism, Wegter-McNelly would have to show how divine and creaturely activity are compatible as well as explain the method in which this compatibilism may be shown. After all, it seems that modernity has shifted the burden of proof from incompatibilism to compatibilism. If this were done, the next step would be to uncover a language that could describe God's SDA as well as human action without the either/or terminology of the zero-sum game. This would be no easy feat. Although I disagree with compatibilism philosophically, Wegter-McNelly "has room" to speak about compatibilism within this series, because many within it (including Gregersen, Happel, and Stoeger) would agree with him.

Wegter-McNelly's trajectory has been defended in William Placher's seminal work *The Domestication of Transcendence* (1996). Wildman's distinction between the compatibilist and the incompatibilist methods also speaks to this issue:

Incompatibilist proposals [à la Tracy] seek traction as consistency, which is to say they achieve intelligibility by exposing theological propositions about SDA to direct potential contradiction by physical propositions about the world's causal nexus of events. By contrast, compatibilist proposals [à la Stoeger] seek traction as consonance, which is to say that their theological propositions about SDA are immune from direct conflict with physical propositions about the world's causal nexus of events but can still achieve intelligibility by richly registering the scientific portrayal of physical reality. (2008, 143)

I agree that "finding room for God to act" has its roots in explicitly "modern" approaches to the philosophy of science, approaches that cannot tolerate overdeterminism and are thoroughly incompatibilist, but that does

not necessarily invalidate this point of view. To say that God's agency/action/causation is radically different does not mean that its manifestation in the physical world cannot be measured in the same way as other physical phenomena. If and when God meets the world, it is presumably on the world's terms. This is because God has bestowed on the world a certain integrity and autonomy. Our alluding to God's actions as "mysterious," "transcendent," or "other" does not mean that, if God were to act in the world in a special and objective way, this action could not be (in principle) measurable. Even if God is causing via the whole/part or top-down models (*à la* Peacocke), we must ask: Where is the act physically manifested? The point can also be put as follows: How can we describe NIODA, or any of God's acts in the physical world, without using the logic of the zero-sum picture? We may accept the neo-Thomist categories, the Barthian "otherness" of God, or overdetermination, but such perspectives face a potentially insuperable difficulty in trying to locate and describe God's special actions in the world without the logic and language of the zero-sum game.

CONCLUSION

My sense of this series is that its primary difficulty lies in locating NIODA in the physical world. Even if one accepted Russell's proposal that God could act in quantum indeterminacies, we would still have to ask how this act manifests itself macroscopically. Tracy notes how in quantum TDAs "a condition must be met, namely, that quantum chance at least sometimes make a difference in the course of macroscopic events." Otherwise they may "disappear into classical, deterministic regularities," which would render them "largely irrelevant to the theologian's interest in special divine action in the world" (2008, 255). If God acted at the quantum level, and this act made a difference macroscopically, we could easily say that this act is measurable. One of the only proposals that appears to escape the problem of locating divine acts is Peacocke's, in which God influences the world by guiding and directing its course in a manner that may be compared to the process picture of God as a divine "lure." We would be able to locate such acts only in retrospect; we would look at the past and see where God has lured us thus far. But this idea of divine action cannot be tested, philosophically or scientifically, so it is confronted by Clayton's critique of traction for its lack of derivability and testability.

The various TDAs put forth throughout this series are unique and intellectually stimulating, but they all face the problem of traction with the sciences. If we are to accept that there are NIODAs, we need to locate them within the physical world. If they cannot be located, they may remain on par with the elusive gardener and the undetectable tiger. Similarly, the problem of the relation between special and general divine acts plays an important role throughout this series. To have a special act of God runs very close to interventionism, but to retreat from this leaves one with a

view in which general acts “swallow up” special acts. If any theory of divine action is to be scientifically viable, these and many more problems must be addressed. This series is one of the most sustained attempts at doing so, and it will surely go down in history as one of the finest research projects to take place within the progressing field of science and religion.

NOTE

I thank Dr. Kirk Wegter-McNelly for his comments on this essay and for his overall academic support.

REFERENCES

- Barbour, Ian. 1988. “Ways of Relating Science and Theology.” In *Physics, Philosophy, and Theology: A Common Quest for Understanding*, ed. Robert John Russell, William R. Stoeger, and George V. Coyne, S.J., 21–48. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Clayton, Philip. 2008. “Towards a Theory of Divine Action That Has Traction.” In *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, ed. Robert John Russell, Nancy Murphy, and William R. Stoeger, S.J., 85–110. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Cohen, Jon. 2005. “Poll: Pope John Paul II Is Broadly Popular.” <http://abcnews.go.com/International/PollVault/story?id=596695&page=1>.
- Davies, Paul. 1996. “Teleology without Teleology: Purpose through Emergent Complexity.” In *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*, ed. Robert John Russell, William R. Stoeger, S.J., and Francisco J. Ayala, 151–62. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Drees, Willem. 1993. “A Case Against Temporal Critical Realism? Consequences of Quantum Cosmology for Theology.” In *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action*, ed. Robert John Russell, Nancy Murphy, and C. J. Isham, 327–62. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Ellis, George. 1996. “The Thinking Underlying the New ‘Scientific’ World-views.” In *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*, ed. Robert John Russell, William R. Stoeger, S.J., and Francisco J. Ayala, 251–80. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Flew, Antony. 1984. “Theology and Falsification.” In *God, Freedom, and Immortality: A Critical Analysis*. Buffalo: Prometheus Books.
- Gorringe, Timothy. 1990. *Discerning Spirit: A Theology of Revelation*. Exeter, U.K.: SCM Press.
- Gregersen, Niels Henrik. 2008. “Special Divine Action and the Quilt of Laws: Why the Distinction between Special and General Divine Action Cannot Be Maintained.” In *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, ed. Robert John Russell, Nancy Murphy, and William R. Stoeger, S.J., 179–99. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Hesse, Mary. 1988. “Physics, Philosophy, and Myth.” In *Physics, Philosophy, and Theology: A Common Quest for Understanding*, ed. Robert John Russell, William R. Stoeger, and George V. Coyne, S.J., 122–40. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- John Paul II. 1988. “Message of His Holiness Pope John Paul II.” In *Physics, Philosophy, and Theology: A Common Quest for Understanding*, ed. Robert John Russell, William R. Stoeger, and George V. Coyne, S.J., m1–14. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Lewis, David. 1979. *Counterfactuals*. Malden, Mass.: Blackwell.

- Murphy, Nancy. 1995. "Divine Action in the Natural Order: Buridan's Ass and Schrödinger's Cat." In *Chaos and Complexity: Scientific Perspectives on Divine Action*, ed. Robert John Russell, Nancy Murphy, and Arthur R. Peacocke, 325–58. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Pius XII. 1950. *Human Generis: On Evolution and Other Modern Errors*. 21. Kansas City, Mo.: Angelus.
- Placher, William. 1996. *The Domestication of Transcendence*. Louisville, Ky.: Westminster John Knox.
- Polkinghorne, John. 1993. "The Laws of Nature and the Laws of Physics." In *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action*, ed. Robert John Russell, Nancy Murphy, and C. J. Isham, 429–40. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- . 1995. "The Metaphysics of Divine Action." In *Chaos and Complexity: Scientific Perspectives on Divine Action*, ed. Robert John Russell, Nancy Murphy, and Arthur R. Peacocke, 147–56. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Russell, Robert John. 2001. "Divine Action and Quantum Mechanics: A Fresh Assessment." In *Quantum Mechanics: Scientific Perspectives on Divine Action*, ed. Robert John Russell, Philip Clayton, Kirk Wegter-McNelly, and John Polkinghorne, 293–328. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Russell, Robert John, Nancy Murphy, and William R. Stoeger, S.J., eds. 2008. *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Russell, Robert John, William R. Stoeger, S.J., and Francisco J. Ayala, eds. 1998. *Evolutionary and Molecular Biology: Scientific Perspectives on Divine Action*, Vol. III. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Russell, Robert John, William R. Stoeger, S.J., and George V. Coyne, S.J., eds. 1988. *Physics, Philosophy, and Theology: A Common Quest for Understanding*. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Soskice, Janet. 1988. "Knowledge and Experience in Science and Religion." In *Physics, Philosophy, and Theology: A Common Quest for Understanding*, ed. Robert J. Russell, William R. Stoeger, S.J., and George V. Coyne, S.J., 171–84. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Stoeger, William R. 2008. "Conceiving Divine Action in a Dynamic Universe." In *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, ed. Robert John Russell, Nancy Murphy, and William R. Stoeger, S.J., 225–47. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Teilhard de Chardin, Pierre. 1955. *The Phenomenon of Man*. New York: Harper and Row.
- Tracy, Thomas. 2008. "Special Divine Action and the Laws of Nature." In *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, ed. Robert John Russell, Nancy Murphy, and William R. Stoeger, S.J., 249–83. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Warnock, G. J. 1965. "Every Event Has a Cause." In *Logic and Language*, ed. Antony Flew, 312–29. Oxford: Blackwell.
- Wegter-McNelly, Kirk. 2008. "Does God Need Room to Act? Theo-Physical In/Compatibilism in Noninterventionist Theories of Objectively Special Divine Action." In *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, ed. Robert John Russell, Nancy Murphy, and William R. Stoeger, S.J., 299–314. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.
- Wildman, Wesley. 2008. "The Divine Action Project, 1988–2003." In *Scientific Perspectives on Divine Action: Twenty Years of Challenge and Progress*, ed. Robert John Russell, Nancy Murphy, and William R. Stoeger, S.J., 133–76. Vatican City State: Vatican Observatory, and Berkeley, Calif.: Center for Theology and the Natural Sciences.