Faith and Philosophy: Journal of the Society of Christian Philosophers

Volume 29 | Issue 3 Article 4

7-1-2012

Against Physicalism-Plus-God: How Creation Accounts for Divine Action in Nature's World

Lydia Jaeger

AGAINST PHYSICALISM-PLUS-GOD: HOW CREATION ACCOUNTS FOR DIVINE ACTION IN NATURE'S WORLD

Lydia Jaeger

It is often assumed that contemporary physics is more hospitable to divine action (and human freedom) than classical mechanics. The article criticizes this assumption on the grounds of both physics and theology. Most currently discussed models of divine action do not challenge the physicalist assumption that physics provides a true and complete description of nature's causal web. Thus they resemble physicalism-plus-God. Taking up suggestions from Herman Dooyeweerd and Henri Blocher, I propose an alternative framework for divine action in the world. It takes creation as the starting-point to understand the world and leads to a non-reductionist, multidimensional picture of reality.

1. Divine Action in the Contemporary Science-and-Theology Literature

The question of how God acts in the world receives wide interest in the current science-and-theology debate. Between 1990 and 2005, the Center for Theology and the Natural Sciences (Berkeley) and the Vatican Observatory co-sponsored a series of international research conferences on "scientific perspectives on divine action," leading to the publication of six major volumes with contributions from over fifty scientists, philosophers and theologians.[1] And this research project, though impressive, cannot claim any monopoly. There is a plethora of other significant contributions to the ongoing discussion on divine action in the world.[2]

[1]See in particular Robert J. Russell, Nancey Murphy, Arthur R. Peacocke, eds., *Chaos and Complexity: Scientific Perspectives on Divine Action* (Vatican/Berkeley: Vatican Observatory/CTNS, 1995); Robert J. Russell, Nancey Murphy, and C. J. Isham, eds., *Quantum Cosmology and the Laws of Nature: Scientific Perspectives on Divine Action* (Notre Dame, IN: Univ. of N.D. Press, 1996); Robert J. Russell, Nancey Murphy, Theo C. Meyering, and Michael A. Arbib, eds., *Neuroscience and the Person: Scientific Perspectives on Divine Action* (Vatican/Berkeley: Vatican Observatory/CTNS, 1999); Robert J. Russell, Philip Clayton, Kirk Wegter-McNelly, and John Polkinghorne, eds., *Quantum Mechanics: Scientific Perspectives on Divine Action* (Vatican City/Berkeley: Vatican Observatory/CTNS, 2001).

[2]See for example: Keith Ward, *Divine Action: Examining God's Role in an Open and Emergent Universe* (Philadelphia: Templeton Foundation Press, 2007); Ted Peters and Nathan Hallanger, eds., *God's Action In Nature's World: Essays in Honour of Robert John Russell* (Aldershot, UK: Ashgate, 2006).

Most accounts—and in particular those developed by scientist-theologians—strive to provide a model of divine action which is compatible with contemporary physics and which does not involve any violation of physical laws. Authors differ in what aspect of physics they focus on. But many seem to agree on the idea that indeterministic features of twentieth-century physical theories are important in this respect. At least, the belief that God acts in the world is thought of as being more easily accommodated with present-day physics than with Newtonian physics and its deterministic laws.

As my critique will rely only on general features of such accounts, it is sufficient here to mention two standard ways of "making space" for divine action through the indeterminacies of contemporary physics, without going into details. Firstly, ever since the probabilistic structure of the atomic world became clear, quantum mechanics has been used to provide room for divine (and also human) action. As the quantum mechanical laws specify only the statistics of measurement outcomes, some consider that God can choose to bring about a specific result without breaking physical laws. Occasionally, such a microscopic event can have macroscopic consequences and thereby influence the course of history. Robert Russell, founder and director of CTNS, is a prolific defender of this view in the current debate.[3] Ian Barbour, who is sometimes credited with having founded the science-and-theology dialogue in its current form,[4] takes advantage of another feature of quantum mechanics, "non-local, non-causal, instantaneous connections" as exhibited for example in the EPR-experiment, in order to account for God's involvement in nature.[5]

Secondly, other authors, for example John Polkinghorne, advocate chaos theory as a possible frame for understanding divine action in nature's world. There is, however, an important distinction to be made between quantum mechanical uncertainty and the impossibility to predict the future evolution of a chaotic system, due to its exponential sensitivity to boundary conditions. Probabilities in quantum theory are objective. The system is objectively undetermined before a measurement is carried out; considering it to be in a specific state beforehand (which we would simply ignore) would contradict standard quantum mechanics.[6] In contrast,

---

[3]For a detailed presentation of his view and how it has developed over time, cf. Kirk Wetger-McNelly, "Atoms May Be Small, But They're Everywhere: Robert Russell's Theological Engagement with the Quantum Revolution," in Peters and Hallanger, *God's Action in Nature's World*, 93–111, and John Polkinghorne, "Quantum Theology," ibid., 137–145.

[4]Ted Peters, "Robert John Russell's Contribution to the Theology and Science Dialogue," in Peters and Hallanger, *God's Action in Nature's World*, 5, considers Ian G. Barbour, *Issues in Science and Religion* (San Francisco: Harper, 1966), to have been "the Cambrian breakthrough" in this field.

[5]Ian G. Barbour, "Indeterminacy, Holism and God's Action," in Peters and Hallanger, *God's Action in Nature's World*, 118.

[6]See for example Peter Mittelstaedt, *The Interpretation of Quantum Mechanics and the Measurement Process* (Cambridge: Cambridge University Press, 1998), 84. It is safe to ignore in this context deterministic reformulations of the quantum mechanical formalism (making

chaotic unpredictability is manifested in classical systems, governed by completely deterministic laws (it is not clear if there is a quantum analogue to chaos; it might well be that quantum indeterminacy "smears" out chaotic effects). Although there is no way to predict the future evolution over a certain time span, the uncertainty is *epistemological* and expresses our ignorance. Thus Polkinghorne needs more than an appeal to a physical theory in order to allow for divine action in the places where nature's behavior is not completely determined by physical law. In fact, he brings in critical realism: we should

> 'give primacy in interpretation to the observed behavior.' From this Polkinghorne claims that *the observation that physical chaotic systems behave in a random-like manner* (i.e. that their behavior is indistinguishable-for-us from actually random-like behavior) *is an indication that such systems are random, i.e. indeterministic*.[7]

Once indeterminacies in chaotic systems are postulated, divine action can fix specific outcomes which are left open by the physical laws and thereby have an impact on the world, without "breaking the rules"—quite analogous to the quantum mechanical case.

2. The Unscientific Character of Scientist-Theologians' Models of Divine Action

Russell's, Barbour's, Polkinghorne's, and others' models for divine action are driven by the conviction that theologians should listen to science when speaking about the world and therefore articulate their doctrines in a form which makes sense in the light of our current scientific knowledge. I am sympathetic to the idea that theology should not be done in an ivory tower (or in a hermit's hut, to stay with religious imagery) and therefore should interact with our best-available scientific knowledge. Nevertheless, I am deeply unsatisfied with the currently discussed models in the science-and-theology literature. They can and should be criticized on scientific, philosophical and theological grounds.

Let us start with the scientific arguments as these get right to the heart of the motivation behind the pursued project. Accounts using quantum mechanics and chaos theory try to make space for divine action by appealing to what is seen as indeterminacies left open by physical theory. But in fact it is an illusion to think that quantum mechanics or chaos theory leave holes in the scientific description of a system, holes which can be filled in by divine action.

---

use of non-local hidden variables). If quantum mechanical probabilities are after all only apparent "macroscopic" epiphenomena arising from a deterministic subatomic world, there is even less hope that quantum theory will provide more room for divine action than deterministic Newtonian physics.

[7]Taede A. Smedes, *Chaos, Complexity, and God: Divine Action and Scientism* (Leuven: Peeters, 2004), 81–82, quoting John Polkinghorne, *Science and Theology: An Introduction* (London/Minnesota: SPCK/Fortress Press, 1998), 42. Smedes, *Chaos, Complexity, and God*, 33–105, provides a thorough presentation and careful critique of Polkinghorne's account.

Firstly, quantum mechanical probabilities do not stem from our ignorance, but are genuine features of the system. For example, if the position of a system is known, its momentum is undetermined. More generally, two complementary observables are jointly determined only above the limit indicated by Heisenberg's uncertainty relation. This indeterminacy is not *epistemological*, but *objective*. It is not only the case that we do not know the exact value, but even the hypothetical attribution of an exact value leads to a contradiction with the laws of quantum mechanics. Thus—as long as the laws of quantum mechanics are valid—not even an omniscient Being can know it, nor can an omnipotent Being (or anybody else) influence or change it. The indeterminacy is objective and does not provide any room for divine action, without violating the quantum mechanical laws.[8]

Nor is it possible to appeal to quantum mechanics' non-locality in order to give God a home in the world. Einstein, together with Podolsky and Rosen, proposed an experiment to prove the incompleteness of quantum mechanics (as a Spinozist, Einstein could not accept indeterminacy at a fundamental level). Through the conceptual work of Bell and the experiments done by Aspect, the EPR-experiment now serves to establish the non-local properties of microscopic systems, of which quantum mechanics offers a complete and objectively indeterministic description. EPR-correlations do *not* exhibit any incompleteness of the quantum mechanical description, which would allow for a theological add-on. It should also be remembered that they do not permit (as far as we know) the transmission of any information between distant points.[9] Thus it would be wrong to suggest that such non-local phenomena show the openness of physical reality to a higher rational level, be it a human or a divine mind.

Secondly, the situation in chaos theory is even clearer. Chaos arises, as far as we know, in deterministic systems. Thus in order to speak about God's action in a chaotic system, one needs to account for how God can act in a deterministic world; but why then appeal to chaos in the first place? Polkinghorne's move to bring in critical realism is very curious indeed. Not only does it rely on a particular philosophical view of science, it also uses a result derived from a deterministic model (the long-term unpredictability of complex dynamical systems) and tries to conclude from it that the model is only an approximation to reality, and that nature is after all not really deterministic but contains "an intrinsic openness."[10] But why first appeal to science, only to subsequently dismiss the ontological

[8]Peter Mittelstaedt, "On Possible Relations Between Physics and Theology," in *Proceedings of the 26th International Wittgenstein Symposium, "Knowledge and Belief"*, ed. W. Loeffler and P. Weingartner (Vienne, AU: Hölder, Pichler-Temsky, 2004), 333–334.

[9]Cf. Peter Mittelstaedt, "Can EPR-Correlations be Used for the Transmission of Superluminal Signals?," *Annalen der Physik* 7 (1998), 710–715, and "Quantum Holism, Superluminality, and Einstein Causality," *Physics and Philosophy*, Open Access Online Journal (2008), http://hdl.handle.net/2003/25801, 1–15.

[10]John Polkinghorne, *Science and Providence: God's Interaction with the World* (London: Templeton Foundation Press, 2005), 34–36.

picture that the scientific model provides? Smedes rightly complains that Polkinghorne's appeal to critical realism is ad hoc.[11]

But even if modern physical theories offered space for divine action, it would be far from clear that they provided sufficient leeway in order to allow for relevant action. As we have seen, the question does not even arise for chaos theory, as all the chaotic systems we know are deterministic and quantum chaos is today at best an interesting research program. But what about quantum mechanics and its genuine uncertainties? There have been quantum mechanical events which had an impact on history (take the atomic bomb over Hiroshima). But can God restrict himself to act inside quantum mechanical uncertainty and still accomplish all that he wants to accomplish? To answer this question, we would need to have a clear grasp of God's detailed projects for the world, which we don't. Thus it may be easier to answer the parallel question of whether quantum mechanical probabilities leave enough room for human action. In fact, the answer is most probably no: quantum mechanical effects are several magnitudes too small to play any role in neurochemical brain processes.[12] This confirms doubts about whether quantum mechanics can lead to a sufficiently robust notion of divine action.

3. Non-reductive Physicalism

We have so far examined accounts which try to make room for divine action by locating "holes" in the physical description of systems, building on what is seen to be indeterminate or incomplete causation at the microscopic level. As Polkinghorne writes:

> If holistic [top-down] causation is present it must be there as a genuine novelty, and the structure of the relationships between the bits and pieces must be open enough to afford it room for manoeuvre. In some sense there must be gaps in the bottom-up account which this top-down action fills in, but those gaps must be intrinsic and ontological in character and not just contingent ignorances of the details of bottom-up process. They must be "really there" if they are to provide the causal joint for which we are looking.[13]

But we have seen that neither quantum mechanics nor chaos theory lead to relevant gaps which could be filled in by divine action. Thus the proposals on offer are pseudo-solutions built on illusion. Modern physical theories do not provide more space for divine action in nature than did

---

[11]Smedes, *Chaos, Complexity, and God*, 88.

[12]Peter G. H. Clarke, "Determinism, Brain Function and Free Will," *Science and Christian Belief* 22 (2010), 141–148. Among other arguments, Clarke shows that the thermal energy of molecules in the warm, wet environment of the brain is several orders of magnitudes higher than relevant energy fluctuations due to Heisenbergian uncertainty. To function correctly, brain cells must be immune to such thermal noise. It is thus expected that they are affected even less by quantum fluctuations, which are much smaller.

[13]John Polkinghorne, *Belief in God in an Age of Science* (New Haven: Yale U.P., 2003), 59. The expression "causal joint" was brought into the discussion by Austin Farrer. Cf. Brian Hebblethwaite, Edward Henderson, eds., *Divine Action: Studies Inspired by the Philosophical Theology of Austin Farrer* (Edinburgh: T & T Clark, 1990).

Newtonian physics. If there is a problem of God acting in Newton's world (remember that Newton didn't think there was![14]), then there will be an analogous problem in Einstein's and Planck's world.

Many authors in the science-and-theology field are aware that contemporary physical theories are not incomplete in the sense that they would allow us to locate divine action in the indeterminacies they include. Therefore, some try to provide an account of divine action which still makes use of such concepts as emergence and top-down causation, but which does not build on any "gaps" at the microscopic level. Taede Smedes provides a detailed study of one of them, Arthur Peacocke's self-organizing universe.[15] There is no need to go into any details here as I will provide an argument which shows that the combination of top-down causation with a physically complete description at the microscopic level is at the best confused, at the worst contradictory.[16] I will run this argument for mental human action. Humans are part of the world, and it is thus easier to formulate the argument. If there cannot emerge any top-down causation in this more homely example, there is no hope that top-down causation could be of any help in understanding divine action in a physical world.

In philosophy of mind, the position which is of interest here is called "nonreductive physicalism." It affirms, on the one hand, that there are only physical objects in the world and that physics offers a complete description of them:

> The physicalist thesis is that as we go up the hierarchy of increasingly complex organisms, all of the other capacities once attributed to the soul will also turn out to be products of complex organization, rather than properties of a non-material entity.[17]

But at the same time, rational thought is held to be possible and even to exert a real influence in the world (typically through top-down causation). As attractive as this position may be, respecting both the physical image of the world and avoiding reductionism, it can be retained only if we have an idea of the way in which the complete physical description at the microscopic level can cohabit with mental top-down causality. For it is not enough to propose two postulates, even if both are desirable, if we have

---

[14]Cf. for example Edward B. Davis, "Newton's Rejection of the 'Newtonian World View': The Role of Divine Will in Newton's Natural Philosophy," *Science and Christian Belief* 3 (1991), 103–117. Cf. Alvin Plantinga, "What Is 'Intervention'?," *Theology and Science* 6 (2008), 369–401, for a contemporary defense of the idea that special divine action is not incompatible with science, be it classical or quantum.

[15]Smedes, *Chaos, Complexity, and God*, 107–171. In some sense, Barbour's account could also be put in this class, although he argues for emergence from one specific aspect of the quantum world, i.e., non-locality.

[16]The argument against non-reductive physicalism which follows is taken from Lydia Jaeger, "Les neurosciences face à la théologie," in *L'âme et le cerveau: l'enjeu des neurosciences*, ed. L. Jaeger (Vaux-sur-Seine/Charols: Édifac/Excelsis, 2009), 166–167.

[17]Nancey Murphy, *Bodies and Souls, or Spirited Bodies?* (Cambridge: Cambridge University Press, 2006), 57 (printed in italics).

not shown that they are compatible. The non-reductionist physicalist is therefore faced with the delicate task of providing details on the relationship between cerebral states and mental states to show that a complete physical description of the brain is effectively possible without having to renounce the existence of the mind. Clearly neither the relationship of identity nor the relationship of causality provides a satisfactory account. If mental states are identical to or directly caused by cerebral states, they are at best epiphenomena: no top-down causality can exist.

The favored term in contemporary philosophy of mind (since its introduction into the field by Donald Davidson in 1970) is that of "supervenience": it is believed that in this way a relationship between brain states and mental states has been found that allows for both a complete physical description and for freedom of thought. The fundamental idea of supervenience is easy to grasp: "No difference of one kind without a difference of another kind."[18] Nancey Murphy proposes the following definition:

> Property *S* is supervenient on property *B* if and only if something instantiates *S* in virtue of (as a non-causal consequence of) its instantiating *B* under circumstance *c*.[19]

But let's be honest: this definition, despite its technical allure, is no more precise than the simple slogan "no difference of one kind without a difference of another kind." The key point is the relationship between the basic properties *B* (cerebral states, in this case) and the properties *S* that supervene (mental states). Designating it by the vague expression "in virtue of" hardly gets us anywhere, and the same is true of the negative statement that it is a non-causal relationship.

Philosophers of mind have discussed at great length the concept of supervenience during the last forty years. These discussions have not produced any satisfactory results. First, one must differentiate between several kinds of supervenience.[20] More serious is the observation that the assertions of supervenience, by their very construction, have no well-defined content. For, in contrast to the more standard reductionist programs, the approaches which rely on supervenience abandon the necessity of providing an explicit description of the supervening domain in terms of the domain considered to be "fundamental." Supervenience as used in recent discussions, therefore, is parallel to the scheme outlined by Leibniz

---

[18]Jaegwon Kim, "Supervenience as a Philosophical Concept," in *Supervenience and Mind: Selected Philosophical Essays*, ed. Ernest Sosa (Cambridge: Cambridge University Press, 1993), 155.

[19]Nancy Murphy, "Nonreductive Physicalism: Philosophical Issues," in *Whatever Happened to the Soul?*, ed. Warren S. Brown, Nancey Murphy, and H. Newton Malony (Minneapolis: Fortress Press, 1998), 134.

[20]Cf. Paul Teller, "Supervenience," in *A Companion to Metaphysics*, ed. J. Kim and E. Sosa (Oxford: Blackwell, 1995), 484–485. Nancey Murphy, "The Problem of Mental Causation: How Does the Reason Get its Grip on the Brain?," *Science and Christian Belief* 14 (2002), 145, affirms that the "controversy over an exact definition of 'supervenience'" has no importance for her use of the concept but she does not provide any argument for why that is the case.

in his treatment of contingency. For him, events appear contingent when we, finite beings, cannot deduce them from the essence of things. However, from God's point of view, everything is necessary. According to the analysis of philosopher of science Bas van Fraassen:

> To have supervenience without reduction means to have no translation sentence by sentence or paragraph by paragraph or even definable set by definable set . . . but there is still a perfect description "at the far edge of infinity."[21] The supervenience claim then still entails only that there is, so to speak, a reduction for God or for the angels, just not for finite beings like us.
>
> *This is obviously a position designed to be irrefutable*. What are the benefits of believing in such a relation of persons to physical objects? The mere assurance of consistency? Cold comfort! Add to this that no such ideal "physicalist" language exists, or is likely ever to be had. . . . Why play these games?[22]

Note that the above argument does not rely on the deterministic or indeterministic character of physical law. Quantum mechanics introduces chance in the physical picture, but chance is as far from intentional action as deterministic Newtonian physics. The question is not about any specific feature of physical law; mind is of a different category than natural law. The point has often been argued,[23] and convincingly in my opinion, so that I don't feel the need to defend the case beyond the rebuttal of nonreductive physicalism. That it is often forgotten does not say anything against the quality of the argument, but about the force of received ideas. The assumption that science will eventually explain everything is one of the idols of our time. The failure of nonreductive physicalism in recent philosophy of mind just adds another incident to show how easily the promises of this idol are believed—and how misleading they turn out to be, once closely examined.

4. Against "Scientifically Correct" Models of Divine (and Human) Action

What can we learn from the failure of nonreductive physicalism for the topic of divine action? There are some accounts (in the vicinity of process theology and panentheism) which come close to assimilating the divine to emergent properties of the universe.[24] But if there is no physicalist account

---

[21]Expression inspired by Blaise Pascal, *Pensées* (1670), ed. L. Brunschvicg, nº 233 (Paris: Flammarion, 1976), 114.

[22]Bas Van Fraassen, "Transcendence of the Ego (*The Non-existent Knight*)," *Ratio* 17 (2004), 474. Bas van Fraassen proposed the comparison with Leibniz at a conference on February 10, 2004, at the CRÉA, Paris.

[23]One thinks immediately of Descartes. For a brilliant twentieth-century defense, see: C. S. Lewis, *Miracles: A Preliminary Study* (London: Centenary Press, 1947), chaps. 3 and 4, and in a revised form (following criticisms by G. E. M Anscombe) in the 1960 edition. It is interesting to note that Thomas Nagel, while resisting theism—"I don't want there to be a God; I don't want the universe to be like that" (*The Last Word* [New York: Oxford University Press, 1997], 130)—fully accepts the point that there is no physicalist explanation available for reason (ibid., 70–76, 115, 130–132, and passim).

[24]I am thinking here of accounts like Ian Barbour's ("Indeterminacy, Holism and God's Action") and Philip Clayton's (*Mind and Emergence* [Oxford, Oxford University Press,

available for human rationality and voluntary action, then the prospects of finding such an account for God's action are more than dim.

Is the situation any better for those who maintain a fully transcendent deity? For them, it is clearly insufficient to consider the divine as an emergent property of the world. Nor does it supervene on physical objects. Thus our critique does not apply directly. Nonetheless, even such accounts start from the description of nature offered by today's physics and try to see how divine action fits into this picture. The alleged openness of the physical level to higher emergent levels, via top-down causation, is a crucial element in those pictures as well, and God's action is typically described as top-down influence, in analogy to causality exerted by higher levels of existence on lower levels. As they strive to provide an account of divine action without "intervention," the openness of lower levels to higher levels is important in order to justify the belief that God can somehow act on the physical world. It might not be possible to be more specific about the "somehow," to pin down the exact nature of the "causal joint" through which God acts.[25] Nevertheless, the emergent properties inside the natural realm are supposed to provide an analogue which proves that the openness of the world to God's action is not an ad hoc assumption.

This worldview is basically nonreductive physicalism-plus-God, adding God to what is considered to be a physical world with emergent properties. But given the failure of nonreductive physicalism, such accounts are simply incoherent. If there is no place for human mind and action in a physicalist world, why then go on and try to find divine action in it? If we cannot make sense of top-down causation for human action, starting out with physical objects, why expect it to be a useful notion for divine action? A more radical revision is necessary in order to account for divine action in the world.

Smedes accuses scientist-theologians of "scientism" (his study examines in close detail Polkinghorne and Peacocke). It could seem paradoxical to thus label authors who have given great labor to showing how a religious worldview is still possible for scientifically minded persons. It is not surprising that both Polkinghorne and Peacocke vigorously rejected this characterization of their positions.[26] Nevertheless, I think that Smedes is basically right. If one looks for accounts of divine action which are scientifically acceptable, one has de facto reduced God to a causal factor, entering into the same level of description as natural causes and therefore competing with them—in spite of all the well-meant talk about openness, emergence and top-down causation. That most scientist-theologians look to physics in order to provide this scientific description shows not only

---

2004]). It is true that they put up safeguards in order to protect divine transcendence. Without going into details, may I just state that I consider them to be insufficient.

[25]Smedes, *Chaos, Complexity, and God*, 134–135, complains that Peacocke has nothing precise to offer on the nature of this causal joint (nor has Polkinghorne).

[26]Smedes, *Chaos, Complexity, and God*, 207ff.

that they adopt a reductionist view of divine action (probably for most of them, against their better intentions), but also that they have bought into a reductionist picture of the world itself.

5. Creation as the Starting-point of Theistic Thinking about the World

How then can we hope to make any progress in what has been a long-standing though, in my opinion, sterile project? Nothing less than a radical change will do, that is a change going down right to the roots of the discussion. There is one unchallenged presupposition in most current models of divine action: it has to comply with the picture which science, and more specifically physics (perhaps suitably perfected in the future), offers us of the world. Against the intentions of most of those who defend such models, this comes down to an idolization of physics. Smedes is justified in calling them scientistic. No theologically satisfactory account of God's action can be found along these lines.

Instead of starting from physics in order to construct a scientifically acceptable view of divine action in the world, I suggest that we take as our starting-point creation. If God is the Creator of the universe, his action in it is not a problem to be figured out, but a reality to be acknowledged and the very foundation of whatever we can say about the world. Thus it is not so much God's action which we need to account for, but the existence of physics (and of other natural sciences) in a created world. The title chosen for the Festschrift for the twenty-fifth anniversary of the CTNS is very telling in this regard. The authors look for *God's Action in Nature's World*.[27] But from the standpoint of creation, nature is God's world; thus we have to look for God's action in *God's* world—which leads to a very different perspective, as we will see.

Should this move be criticized as being fideistic, simply affirming what we set out to explain? But note that it does not come down to replacing metaphysically neutral, theologically disengaged thought with a theological mindset. Both frameworks of explanation start from unproven presuppositions. The first considers that there is an all-embracing notion of being providing a frame in which to account for God's action on the level of natural occurrences; the other is founded on the radical duality of the Creator and creation. But "the acceptance of the ultimacy of being is a *petitio principii*; it mistakes a problem for a solution. The supreme and ultimate issue is not *being* but the *mystery* of being."[28] As Henri Blocher affirms:

> Instead of the natural world, theology finds its starting-point in God, the *semper agens*; it tells of his acts, before asking about being. . . . *The starting-point, taught by Scripture, is the Creator-creature pattern*. We cannot raise ourselves higher and dominate the constitutive structure, we cannot subsume it under

[27]Peters and Hallanger, *God's Action in Nature's World*.

[28]Abraham J. Heschel, *The Prophets II* (New York: Harper, 1975), 43, quoted by Henri Blocher, "Divine Immutability," in *The Power and Weakness of God: Impassibility and Orthodoxy*, ed. N. M. de S. Cameron (Edinburgh: Rutherford House, 1990), 15.

> an all-embracing notion of being. It involves a real duality, non-symmetrical: absolute independence on one side, total dependence on the other.[29]

Once we agree to reform our thinking, so that the Creator-creation duality becomes the basic pattern for understanding reality, the problem of God's action in the world is not so much solved as dissolved. Instead of being provided with an answer, we discover that the question was badly framed. As the world is totally and utterly dependent on God, it can exist only if God continuously upholds it in existence. Thus, far from offering any resistance to divine action, it owes its very existence to God's continued active involvement.

Natural sciences fit nicely into the picture. In fact, there is solid evidence for the historical role that the idea of creation played in the scientific revolution. Several of the fundamental presuppositions of modern scientific method are natural consequences of theism: God—being both omnipotent and rational—institutes and upholds an ordered creation. This creation is at least partially accessible to our investigation, as humanity is created in the image of God. Studying the material world is as noble an occupation as "spiritual" subjects, as it is created by God and entrusted to human stewardship. The order of natural law, which is necessary for the systematic study of natural causes undertaken by science, is guaranteed both by God's rationality and his faithfulness.

But even if there is no conflict between affirming God as primary cause and the scientific description of a process, do we not struggle with causal overdetermination due to the dual agency of God and natural causes? It has to be kept in mind that these agencies are not on the same level; thus, they do not compete with each other. In the framework of creation, no secondary cause can exert its influence unless sustained by the Creator. An anti-theist could still complain that postulating God's providential conservation is an unnecessary metaphysical add-on to natural agency. But it is only unnecessary from the anti-theistic point of view. Seen in the context of creation, God's agency is the very foundation of any natural event.

In addition, there are substantial advantages of the theistic account compared to the anti-theistic account of natural agency. As we have seen briefly, creation provides grounds for several important presuppositions of the modern scientific method.[30] In addition, it allows for miracles and it leads naturally to a multidimensional, non-reductionist view of the world. The anti-theist might accept the last point as a real advantage of creation, but will most probably not appreciate the leeway for miracles. But if there are historically reliable reports of miracles, it is an objective

---

[29]Blocher, "Divine Immutability," 16.

[30]Cf. for a more detailed exposition: Lydia Jaeger, *Pour une philosophie chrétienne des sciences* (Nogent-sur-Marne/Cléon d'Andran: Éditions de l'Institut Biblique/Excelsis, 2006), chap. 3 (German translation: *Wissenschaft ohne Gott? Zum Verhältnis zwischen christlichem Glauben und Wissenschaft* [Bonn: Verlag für Kultur und Wissenschaft, 2007; Spanish translation: *Hacia una filosofía cristiana de la ciencia* [Grand Rapids, MI: Libros Desafío, 2011]).

advantage that creation does make room for them. Let us now examine these two ideas.

6. Miracles

Conservatio ("conservation, sustenance") is only one aspect of God's action in the world, albeit a fundamental one. Going beyond providential upholding of natural workings, the biblical Scriptures also witness to a more direct divine involvement in history. God not only sustains the general course of nature, he also brings about singular events and pursues specific goals. C. John Collins has provided a very careful exegetical study which reveals numerous examples of what he calls "*qualitatively* special divine action," that is, events which are carried out by a mode that "goes beyond the natural causal powers of the parties involved."[31] Although more cumbersome than the common term "intervention," the term he uses is more precise in that it avoids the idea of a divine intrusion into the world. In a theistic framework, all events are in some sense related to divine action. Collins presents an impressive list of texts which explicitly contrast God's action in specific cases with that which natural causes alone would have been able to accomplish: for example the interpretation of Pharaoh's and Nebuchadnezzar's dreams beyond any human power (Genesis 40:8; 41:16; Daniel 2:27–28), the conception of Jesus by the power of the Holy Spirit (Luke 1:34–35; Matthew 1:18–20), Jesus's and the apostles' miracles attesting their divine mission (John 3:2; Acts 3:12), Christ's resurrection (Acts 17:31; Romans 1:4), the recognition of Jesus's Lordship by sinful humans (1 Corinthians 12:3), and the resurrection of the flesh at the end of time (1 Corinthians 15:44, contrasting the actual body, called "natural," Greek "*psychikon*," and the future spiritual body, "*pneumatikon*"). The Philistines even designed an experiment in order to decide between a natural and a divine explanation of the plagues which had befallen them after they had captured the Israelite ark of the covenant (1 Samuel 6:7–9).[32]

Most, if not all, of the examples listed above would commonly be designated as miracles. There are divergent opinions about the exact definition of miracles. There are also quarrels about the question of whether God could and would perform miracles and if he did, whether we would be able to identify an event as miraculous. And doubts remain about the historical reliability of the biblical miracle accounts. Without opening the debate, which is beyond the scope of my paper, may I just say that the traditional definition of a miracle as an event which is brought about by God without, above, or against natural means[33] seems to me perfectly workable. I also consider that the objections which are brought forth against the possibility,

---

[31]C. John Collins, *The God of Miracles: An Exegetical Examination of God's Action in the World* (Wheaton, IL: Crossway, 2000), 87.

[32]Ibid., chap. 6; on the last example, see 97.

[33]Cf. the *Westminster Confession of Faith* 5:3: "God, in his ordinary providence, maketh use of means, yet is free to work without, above, and against them, at his pleasure."

the appropriateness, the recognizability and the historical occurrence of the biblical miracles, in particular those linked to Jesus himself, can be and have been successfully answered. Among others, the collective volume *In Defence of Miracles: A Comprehensive Case for God's Action in the World*, edited by R. D. Geivett and G. R. Habermas, provides a very complete rebuttal, thoroughly answering philosophical, theological and historical concerns.[34] C. S. Lewis's book on *Miracles* is a classic in the field, providing much ongoing inspiration for anybody interested in the subject.

By definition, a miracle escapes any scientific account. Thus (as long as theism is an option), the question of how to imagine such an event given what we know scientifically about the world does not arise here—quite analogously to the case of what one may call general providence, but for the opposite reason. In "general" providence, God works through and in natural means; thus, the outcomes of his actions are identical to what we expect from the scientific description (as long as our theories get it at least reasonably right). With miracles, the scientific predictions are superseded by a greater power. As long as one keeps firmly to creation as the starting-point of thought, God's action and scientific description can be jointly upheld in both cases. In the first, the divine primary cause sustains the natural means so that the laws of nature are observed. Thus the result conforms to (correct) scientific models. In the second case, an event contrary to scientific theory occurs. There is thus no need to strive for a scientific rendering of such an event. The very fact that it does not comply with a scientific description provides evidence for its special status as a miracle.

7. Beyond Physicalism-plus-Miracles

We have by now arrived at a bipolar image of God's action in the world: either working in line with the ordinary course of nature and thus in accordance with scientific models, or superseding natural means in miraculous action and thus going against what we would expect from our scientific theories. Can we go any further or do we have to content ourselves with accepting these as two rather unconnected modes of divine action? Scientist-theologians consider that non-reductive features of the world provide an important clue to understanding divine action in the world. Although we have seen that they do not succeed in establishing a robust non-reductive view of the world, I consider that their basic intuition in this regard is right. They err in how they argue for non-reductionism. Nevertheless we really live in a nonreductive world, and this fact is important in that it proves the failure of scientism. It also provides, inside the natural realm, an analogue for the openness of the world to God's action. It allows us to see that providential upholding of nature and miraculous action are not two opposites, but that they are two modes (perhaps one can even speak of limiting cases on a continuum) of how the one Creator is present and active in his own

[34]R. Douglas Geivett and Gary R. Habermas, eds., *In Defence of Miracles: A Comprehensive Case for God's Action in the World* (Leicester: Apollos, 1997).

world. But instead of starting from a world inhabited by physical objects, it is essential to take seriously the created character of the world from the outset. Only thus can we arrive at a truly non-reductionistic image of the world.[35] The good fit between a non-reductive view of the world and theism can even count as an argument in favor of theism, as many strive to resist reductionism, but do not always succeed in offering a convincing model, as we have seen for example with nonreductive physicalism.

Creation affirms the duality between God and the world. This alone shatters any hope that science would offer an understanding of everything that exists. The traditional doctrine of divine incomprehensibility implies that no description of God in purely scientific terms can be achieved. This fundamental limit of science finds an echo inside creation: just as some medieval artists represented themselves in their stained-glass windows or paintings, human beings, as the image of God, are a reminder that the Person transcends the objectifying methodology of the scientific approach. The traditional doctrine of the duality of human nature—a being composed of both body and spirit—expresses the twin truths that we are part of the visible creation yet have a special relationship with our Creator, overriding to a certain extent the natural order: with our body, we are plunged into creation; with our spirit, we lift our eyes to the Creator and dominate nature. Our intellectual creativity, ability to love, and moral responsibility cannot be exhaustively described in physical or chemical terms, the latter being appropriate for describing non-human creation.

Once this aspect of differentiation is acknowledged at the heart of creation, it becomes probable that the human realm is not the only one to escape the imperialism of physics, but that the created reality is multi-faceted. The first chapter of Genesis contains several indications that imply the plurality of domains in the created order. One of the key ways of presenting creation is the theme of separation: separation of light from darkness, of day from night, of the waters above from the waters below the "firmament," of the sea from the dry land. Furthermore, plants and animals are created "according to their kinds." The magisterial architecture of the account structures the work of creation in six days and thereby suggests a multi-faceted reality.[36]

Thus ensues a non-reductionist vision of the created order: different aspects of reality have their own structuring principles. The (relative) autonomy of the different spheres is necessarily reflected by distinct methods of investigation, such that no approach to reality should claim superiority over another. Of course, the number and the boundaries of the different

---

[35]The rest of this section is adapted from Lydia Jaeger, *Ce que les cieux racontent: la science à la lumière de la création* (Nogent-sur-Marne/Charols: Éditions de l'Institut Biblique/Excelsis, 2008), 111–113, 117–118, and Jaeger, "Les neurosciences face à la théologie," 170.

[36]Al Wolters, "Creation as Separation: A Proposed Link between Bible and Theory," in *Facets of Faith and Science*, ed. J. M. Van Der Meer (Lanham, MD: University Press of America, 1996), vol. 4, 347–352, particularly drawing on Paul Beauchamp, *Création et séparation:* étude éxégètique *du chapitre premier de la Genèse* (Paris: Desclée de Brouwer, 1969).

facets of existence are not determined by theological considerations alone; one cannot avoid an empirical examination of reality. Nevertheless, the doctrine of creation opposes any pretension of hegemony claimed by a particular science; in particular, physicalism is incompatible with a multidimensional vision of reality.

Opposition to reductionism is a flagship theme of neo-Calvinism. Abraham Kupyer distinguished different "spheres" of creation. Each is autonomous, in the sense that the other spheres should not interfere and impose their own, foreign laws.[37] Herman Dooyeweerd spoke, for his part, of "modal aspects, [which] delimit . . . the special viewpoints under which the different branches of empirical science examine the empirical world." They are not distinctive domains of reality, but arise inside the temporal horizon of human experience. He sees the *ego* as "a supra-temporal, central unity," but human experience "is refracted in the order of time into a rich diversity of modi, or modalities of meaning, just as sunlight is refracted by a prism in a rich diversity of colors."[38] The concrete phenomena of empirical reality function, in principle, in all of these aspects. Dooyeweerd lists fifteen modal aspects—quantitative, spatial, kinematic, physical, biotic, sensory, logical, historical, linguistic, social, economic, aesthetic, justitial, ethical, fiduciary—arranged in a hierarchy of modes of experience. Depending on the context, one or other modal aspect becomes predominant, although the others will never be completely absent.[39] For the modal aspects are abstractions arising from the distinct methodologies of particular sciences, such that every object already exists in the totality of these spheres. But in certain spheres, it has only passive capacities, while in others it has active and passive capacities. Take a stone, for example. It can move and be moved; so as far as kinetics is concerned, it has active and passive capacities. But in terms of linguistics, it only has passive capacities, since a stone cannot speak; it can, however, be spoken of. Similarly, it has passive economic capacities because it can be a currency for trade, i.e., be considered a "precious" stone. In this sense, a stone exists in all the spheres, even if only passively. One should not, therefore, ask how a purely physical reality could acquire the other modal aspects; rather, reality is by constitution multidimensional.

Thus, instead of starting with a physical description of reality, in which one tries to fit in the higher levels (in particular human freedom, rationality and God's action), we set out with a frank recognition of the multiple dimensions of reality. In fact, to ask how God—and humans—can act in a world described by physics is to ask the question the wrong way round:

---

[37]A. Kuyper, "Sphere Sovereignty" (1880), in *Abraham Kuyper: A Centennial Reader*, ed. James Bratt (Grand Rapids, MI: Eerdmans, 1998), 461–490; cf. A. Kuyper, *Stone Lectures on Calvinism* (1898) (Grand Rapids, MI: Eerdmans, 2002), 29.

[38]Herman Dooyeweerd, *In the Twilight of Western Thought: Studies in the Pretended Autonomy of Philosophical Thought* (Nutley, NJ: Craig Press, 1975), 7–8.

[39]Roy A. Clouser, "A Sketch of Dooyeweerd's Philosophy of Science," in *Facets of Faith and Science*, ed. J. M. Van der Meer, vol. 2, 83–86.

instead of taking multidimensional reality as the starting point, we limit ourselves to one abstraction (physics) that chooses a single facet of reality, and ask how we can find the other aspects from this perspective. This approach is obviously doomed to failure.

8. Physicalism Again

But is such a multidimensional perspective really acceptable for somebody who fully acknowledges the far-reaching triumphs of natural sciences, and in particular of physics, over the last centuries? In fact I would suggest, quite to the contrary, that taking such a non-reductionist view is the only viable option for somebody fully aware of the scientific method. For modern science defined itself, at its inception, by a turning away from the ambitions of ancient Greek science, that aimed to understand the *essence* of things. This science only knew one possible description of a being; it sought to formulate *the* true definition:

> Ancient sciences aimed at an unlimited objective. They defined their aims by asking questions like: 'What is Nature?' 'What is Man?' 'What is Justice?' 'What is Virtue?' . . .
>
> The form of the question: 'What is *x*?' demands an answer telling you the essence of *x*; telling you everything you need know about *x* in order to work out a complete science of it. The idea of a science, for an ancient Greek, was not only the idea of a science of *x* but the idea of the complete science of *x*. There could be only one science of a given thing: for unless it grasped the essence of the thing it was not a science of it, and one thing had only one essence. When that was discovered, all the 'properties' of the thing could be deduced.[40]

Modern science, since its origins, has shown itself to be more humble and has set itself a more limited goal: to describe certain "affections" of objects, by adopting a specific point of view (for example kinetic, in Galileo's famous inclined plane experiments). Thus it would be paradoxical to extrapolate scientific results obtained by a strict limitation to specific perspectives and transform them into global all-embracing statements. Evandro Agazzi even speaks of "reductionism as negation of the scientific spirit."[41]

Why, in our day, are many scientists and philosophers so fascinated with reductionism in its physicalist form? To answer this question, one must first recognize the pragmatic advantages of reductionist programs: our intellectual understanding and our means of technical control increase with every successful reduction. Nevertheless, it hardly seems

---

[40]Robin G. Collingwood, *The New Leviathan: Or Man, Society, Civilization and Barbarism* (Oxford: Clarendon, 1942), 253.

[41]Evandro Agazzi, "Reductionism as Negation of the Scientific Spirit," in *The Problem of Reductionism in Science*, ed. E. Agazzi (Dordrecht, Kluwer, 1991), 1–29. On the self-consciously limited character of modern science: ibid., 5, 7; and Karl R. Popper , *The Open Universe: An Argument for Indeterminism*, ed. W. W. Bartley (London, Routledge, 1988), passim, in particular the three addenda: "Indeterminism is Not Enough: An Afterword," "Scientific Reduction and the Incompleteness of All Science," "Further Remarks on Reduction," 113–175.

sufficient to stop at such utilitarian considerations, because reductionism, as an absolutization of an area of knowledge, is more than a harmless generalization of a process that has born (partial) fruit in the past. It corresponds to a recurring answer that human thinking has formulated when faced with multiplicity: in the search for unity, it is tempting to reduce the many to the One, by eliminating the difference. We can detect in this the search for an immanent *ersatz* of the unity founded in the Creator. Even if multiplicity's transcendent origin has been lost from view, the nostalgia for unity remains. Rather than seeking it in God, we have turned to reality, which we no longer know to be created, and have established a unifying principle within it. In this way, "the innate religious impulse of the human ego [is diverted] from its true origin and direct[ed] . . . upon the temporal horizon of experience with its diversity of modal aspects. By seeking itself and its absolute origin in one of these aspects, the thinking *I* turns to the absolutization of the relative."[42] By contrast, those who find multiplicity's unity not in the creation but in the Creator are able to embrace the manifold richness of reality without imposing a reductionist perspective on it.

Conclusion

Let us recapitulate how far we have come in accounting for God's action in the world by taking creation as our starting-point. We have not come up with a description couched in scientific language on how God acts in nature. Thus, strictly speaking, this paper does not offer an alternative to the scientist-theologians' endeavors. In fact, it would contradict the very idea of creation if any such description were possible, as the Creator's transcendence is fundamental to this understanding of reality. But we have achieved a picture of the world which provides good foundations for the modern scientific method, which makes room for miracles and which leads to a multidimensional, non-reductionist understanding of the sciences. In addition, it even explains the illusionary attraction of reductionism, as a nostalgic yearning for the lost unity of reality, once the unique divine origin of the world is set aside.

Thus creation both grounds scientific inquiry and highlights its limits. It both affirms its value and safeguards against its idolization. Opposing scientism and the hegemony of physics, it makes room for complementary perspectives offered by the different special sciences. Non-reductionism, and in particular the irreducibility of mind to matter, provides an inner-worldly analogue for the openness of the world to God's action. It shows that science cannot be called in to "secure" us against God acting in this world. In fact, science—concerning its object of study and its method, both in its unity and in its diversity—owes its very existence to God's active presence in the world. In case we were tempted to forget it, we should just look at ourselves:

[42]Herman Dooyeweerd, *In the Twilight of Western Thought*, 27.

> The Christian doctrine would be fantastic only if the present frontier-situation between spirit and Nature in each human being were so intelligible and self explanatory that we just 'saw' it to be the only one that could ever have existed. But is it?
>
> In reality the frontier situation is so odd that nothing but custom could make it seem natural, and nothing but the Christian doctrine can make it fully intelligible.[43]

Institut Biblique de Nogent-sur-Marne (France)

[43]Lewis, *Miracles*, 153.

This text was written for the Logos Workshop "Divine Action—God, Chance and Causation," held on May 13–15, 2010, at Rutgers University. I thank Michael Rea and Dean Zimmerman for inviting me, all participants for stimulating discussions, and two anonymous referees for their comments."