

Miracles, physicalism, and the laws of nature

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Abstract: In his paper ‘Miracles: metaphysics, physics, and physicalism’,¹ Kirk McDermid appears to have two primary goals. The first is to demonstrate that my account of how God might produce a miracle without violating any laws of nature is radically flawed. The second is to suggest two alternative accounts, one suitable for a deterministic world, one suitable for an indeterministic world, which allow for the occurrence of a miracle without violation of the laws of nature, yet do not suffer from the defects of what McDermid terms the ‘Larmerian’ model. I briefly describe my model, reply to McDermid’s criticism of it, and evaluate his alternative accounts.

Miracles, laws of nature, and the principle of the conservation of energy

The view that an essential condition of an event being a miracle is that it violates the laws of nature arises from the assumption that divine intervention in the natural order necessarily involves violating the laws of nature.² That this common assumption is mistaken can be seen by reflecting on the fact that laws of nature do not, by themselves, allow the prediction or explanation of any event.³ The standard covering law theory of explanation makes reference not only to laws of nature, but also to conditions to which the laws apply. For example, it is impossible to predict what will happen on a billiard table simply by making reference to Newton’s laws of motion. One must also make reference to the number of balls on the table and their initial position. What this makes clear is that, although we often speak as though the laws of nature are, in themselves, sufficient to explain the occurrence of an event, this is not really so. The actual ‘stuff’ of nature whose behaviour is described by those laws, must also be taken into account.

If we keep in mind this basic distinction between the laws of nature and the ‘stuff’ – call it mass/energy – the behaviour of which they describe, it can be seen that, although a miracle is an event which would never have occurred without the overriding of nature, this in no way entails the claim that a miracle involves a

violation of the laws of nature. If a transcendent agent creates or annihilates a unit of mass/energy, or if He simply causes some of these units to occupy a different position than they did formerly, then He changes the material conditions to which the laws of nature apply. He thereby produces an event that nature on its own would not have produced, but He breaks no laws of nature. As an illustration, one would not violate or suspend the laws of motion if one were to introduce an extra billiard ball into a group of billiard balls on a billiard table, or alter the position of one of the balls already on the table, yet that action would override the outcome of what would otherwise be expected to happen. Similarly, if God were to create *ex nihilo* a fertilized egg in the body of a virgin, no laws of nature would be broken, yet the usual course of nature would have been overridden in such a way as to produce an event nature would not otherwise have produced.

It is sometimes objected that at least one law of nature must be broken on this account of miracle, since the creation, annihilation, or moving of material entities by a non-physical agent would involve the creation or destruction of energy and thus violate the principle of the conservation of energy. This objection fails, however, to take into consideration an important distinction between two forms of the principle. The principle is commonly stated either as: 'Energy can neither be created nor destroyed', or as: 'In an isolated system the total amount of energy remains constant'. The assumption is that these two statements are logically equivalent. This assumption is false, however. From the proposition, 'Energy can neither be created nor destroyed' we can deduce the proposition, 'In an isolated system the total amount of energy remains constant'. But from the proposition, 'In an isolated system the total amount of energy remains constant', we cannot deduce the proposition, 'Energy can neither be created nor destroyed'. The latter claim is considerably stronger, i.e. carries a greater ontological commitment, than the former.

The significance of this distinction is considerable. It is true that the account of miracle that has been described is inconsistent with the claim that energy can neither be created nor destroyed, but it bears emphasis that, independent of the issue of miracle, this form of the principle must be rejected by theists, since it rules out the possibility of creation *ex nihilo*. This account of miracle is, however, entirely compatible with the claim that energy is conserved in an isolated system. Those who accept this account reject not the well-evidenced claim that energy is conserved in a causally isolated system, but rather the metaphysical and far more speculative claim that the physical universe is an isolated system, in the sense that it is not open to the causal influence of God. They accept all the experimental evidence taken to support belief in the principle, since that evidence demonstrates only that energy is conserved in a causally isolated system. In short, they affirm the principle of the conservation of energy when it is formulated as a scientific law but not as a metaphysical claim that excludes the possibility of theism and functions as a defining postulate of physicalism.⁴

McDermid's criticism of Larmer's model

McDermid's criticism of what he terms the 'Larmerian' model is that, although it successfully demonstrates that miracles need not be viewed as violating the laws of nature, this success comes at too high a cost. The cost, he claims, is that such a model makes the laws of nature 'metaphysically toothless', obviates 'any requirement for subtlety or discretion in divine intervention', and implies that 'one can blatantly violate any natural law once [causal] closure [of the physical] is denied' (128).

McDermid's alternative models

What is needed, McDermid asserts, is an approach that, unlike Larmer's, demonstrates that miracles 'have minimal or no conflict with laws [of nature], in spirit, not just with the letter' (128). This can be accomplished, he suggests, if the standard physicalist claim 'that every event which has a cause has a physical cause' [causal closure of the physical, CCP] is modified to 'no physical cause is pre-empted (thwarted, modified, undone) by a non-physical cause' [causal primacy of the physical, CPP] (128).

McDermid argues that adopting CPP rules out my 'open-system' approach. He takes me to be committed to the claim that any energy introduced into the physical universe by God's action 'was pre-existing in another system, and merely being transferred over to the physical universe' from some non-physical repository (129). Since conservation laws are derivative of physical dynamical law, 'extending conservation laws to encompass more than just the (physical) universe requires that other physical laws reach there as well' (129–130). My model would thus 'effectively make the formerly non-physical portion of the universe physical' with the result that 'supernatural causes cannot be used to transfer matter or energy between the universe and other parts of the closed system' (130).

McDermid argues that the adoption of CPP is, however, consistent with two other accounts of how miracles might be conceived to occur. First, on the assumption of a deterministic universe, McDermid suggests that God could specify its initial conditions so as to achieve the desired miraculous effect through the subsequent outworking of events. He argues that, unlike my view that God could alter material conditions subsequent to creation, this would not run foul of CPP, since at the inception of the universe no physical laws applied to anything because there was not yet anything for them to apply to. The occurrence of such miraculous events, although entirely determined by the initial conditions of the universe, cannot be rendered predictable by human observers. This is so for two reasons. First, statistical mechanics recognizes that the exact position of the microscopic particles making up the macroscopic world cannot be precisely

known. This raises the possibility of ‘systems that appear, macroscopically, to be typical thermodynamic systems, but – because of their atypical microscopic arrangement – will (lawfully) diverge from the (statistical) predictions of future behaviour’ (132). Second, chaos theory recognizes the existence of systems whose behaviour, although determined, is so sensitive to initial conditions that any precise prediction of their behaviour is impossible.

Second, on the assumption of an indeterministic universe, McDermid argues that God could conceivably influence the behaviour of physically indeterminate quantum events and that, given the existence of chaotic systems as a natural magnifying mechanism, this could produce a miracle at the macroscopic level.⁵ Such miracles, he asserts, would be consistent with CPP, since quantum events are not entirely determined by physical laws, thus leaving room for divine influence to operate without conflicting with natural causes.

Response to McDermid’s criticism of Larmer’s model

As has been noted, McDermid’s fundamental criticism of my [Larmer’s] model is that it renders the laws of nature ‘metaphysically toothless’, does away with ‘*any* requirement for subtlety or discretion in divine intervention’ and, in its ‘flat denial of CCP’, implies that ‘one can blatantly violate any natural law’ (128).

The charge that this model of miracle renders the laws of nature ‘metaphysically toothless’ seems ill-founded. It is compatible with a causal-dispositions theory which views the laws of nature as metaphysically necessary truths about the causal dispositions of physical things. As a result of these causal dispositions, certain propensities exist in nature and, in the absence of any intervening cause – be that cause natural or supernatural – allow us to predict the outcome of initial material conditions. Thus, for example, the law of gravity allows me to predict that, in the absence of any intervening causes, if I let go of the pen I am holding that the pen will move towards the earth’s surface. My knowledge of the law, however, tells me nothing concerning the likelihood of whether there are any intervening causes. If my son catches the pen as I let it fall and tosses it upwards it will move away from the earth’s surface, but I will scarcely regard such an event as implying that the law of gravity ceases to operate or is metaphysically toothless.

Neither is it true that this model of miracle does away with ‘*any* requirement for subtlety or discretion in divine intervention’. The occurrence of a miracle will depend on God’s plans and purposes, but God’s character is typically conceived as allowing for subtlety and discretion as regards when interventions take place. Miracles, if and when they occur, will be in accordance with God’s purposes, which are an expression of His character. They will not, therefore, be arbitrary chaotic intrusions on the normal operations of the physical universe, but rather

events which would not otherwise occur, which God, for good reason, produces in order to further His purposes. Thus, for example, Jesus feeds the multitude that followed him into the wilderness to hear him preach but who are now so famished that they will faint before they can return home, but he refuses to feed them a second time, when they are just in search of free food.⁶ Equally, the fact that the laws of nature remain operative implies that short of continuously intervening, the overall patterns of nature reassert themselves. C. S. Lewis makes this point very nicely when he writes:

If God annihilates or creates or deflects a unit of matter He has created a new situation at that point. Immediately all Nature domiciles this new situation, makes it at home in her realm, adapts all other events to it. ... The divine art of miracle is not an art of suspending the pattern to which events conform but of feeding new events into that pattern.⁷

Miraculous events, having once occurred, become part of the universe upon which the laws of nature operate. Miraculously produced loaves and fishes will grow stale and spoil in the same way as those which have a more ordinary genesis. Thus, in the absence of constant and unremitting intervention by God, it is clear that not 'anything goes' in terms of the behaviour of natural things.⁸

McDermid writes of my 'flat denial of CCP' and suggests that denying CCP implies that 'one can blatantly violate any natural law'. I find this puzzling on two counts. First, my claim is not that CCP can be flatly denied, but rather that simply assuming its truth begs the question of whether miracles can occur.⁹ Second, given that McDermid earlier admits that my model successfully reconciles laws and miracles, it seems very strange to raise the charge that my model implies that 'one can blatantly violate any natural law'. These mistaken charges seem to rest on McDermid's assumption that unless I endorse CPP or something like it, then I am committed to claiming there are no metaphysical constraints on what takes place in the physical universe. In an e-mail of 11 June 2007, he writes:

... my claim that his [Larmer's] treatment of laws makes them 'metaphysically toothless' derives simply from the idea that, without any sort of *sufficiency* conditions in one's account of laws, any law-metaphysic (including his causal dispositions theory) boils down to 'natural laws apply all the time, except when they don't'. (It's metaphysically possible that 'causal dispositions', though they exist, never have a determinative role in behaviour – something always intervenes in their proper operation.) And that seems clearly unacceptable, even for those rejecting a formal physicalist position. For, if he [Larmer] cannot give us any metaphysical constraints on the non-physical, then it really is 'anything goes' in terms of the behaviour of 'natural' things. Causal dispositions, or any other physical necessity, become empty.

As has already been noted, however, my denial of CPP does not commit me to the claim that there are no metaphysical constraints on the non-physical, but rather

to the claim that the metaphysical constraints are to be found in God's character rather than in the laws of nature.¹⁰

A little later in the paper, McDermid raises a further objection. It is that conservation laws are derivative of dynamical laws and this implies that what McDermid presumes to be my strategy of 'transporting material between the physical universe and a non-physical repository' as a means of producing a miracle cannot be maintained, since 'by allowing conservation laws into the non-physical, one must first let in dynamical laws', effectively making 'the formerly non-physical portion of the universe physical,' thus eliminating the possibility of God transferring matter or energy between the physical universe and the presumed non-physical parts of the universe (129–130).

This objection rests on a fundamental misunderstanding of my position. The model of miracle I develop does not assume there exists some non-physical repository of energy and matter that God either debits or credits in performing a miracle.¹¹ What it does assume is that God, as an immaterial cause, can act directly on units of matter to change their position or, more radically, can create (or annihilate) such units *ex nihilo*. Divine activity of this nature is inconsistent with the claim that energy can neither be created nor destroyed but is compatible with the claim that energy is conserved in an isolated system. Neither, it should be stressed, is such action inconsistent with dynamical laws.¹² Dynamical laws apply to the relations between physical objects. God, however, is not a physical object and the relation between God and that which He creates, annihilates or changes the position of, is not a physical relation.¹³

Criticism of McDermid's models of miracle

Before examining McDermid's alternative models, it is appropriate to comment on his goal and general strategy in developing these models. His goal is to show how miracles might be conceived as law-abiding and compatible with a moderate physicalism. A crucial element of his strategy for achieving this is to reject the standard physicalist claim that 'every event which has a cause has a physical cause [CCP]' in favour of the claim that 'no physical cause is pre-empted (thwarted, modified, undone) by a non-physical cause [CPP]' (128).

Daniel Stoljar, in *The Stanford Encyclopedia of Philosophy*, defines physicalism as 'the thesis that everything is physical or ... that everything supervenes on the physical',¹⁴ and McDermid defines physicalism as 'a spectrum of positions that, generally, deny the existence of non-material substances, and non-physical causal influences' (127). Leaving aside the suspicion that the term 'moderate physicalism' is no more meaningful than the term 'slightly pregnant', and the fact that McDermid's position which allows for God's *ex nihilo* creation of the physical universe seems scarcely a 'moderate' physicalism, it is difficult to see how embracing CPP leaves the truth of physicalism intact, even if one wants to

define physicalism 'moderately'. If, however, it be admitted that miracles are incompatible with the truth of physicalism, one is left wondering what is the motivation for accepting CPP, given that CPP is not a necessary condition for the occurrence of law-abiding miracles. Assuming one allows for the possibility of *ex nihilo* creation, it seems strange to disallow that God might perform small acts of *ex nihilo* creation during the course of the universe, especially in light of the point already made that God's character provides metaphysical constraints on when and whether such acts of creation occur.

Criticism of McDermid's deterministic model of miracle

McDermid argues that, on the assumption of a deterministic universe, God could specify its initial conditions so as to achieve the desired miraculous effects through the subsequent outworking of events. He suggests that such a model is superior to the 'Larmerian' model which posits divine interventions at specific points in the history of the universe. At least three criticisms are relevant.

First, it is far from clear that McDermid provides us with a model of miracle in this account. He appears to accept that part of the definition of a miracle is that it is a divine intervention (131). His model, however, rules out interventions, since God creates the initial conditions of the universe in such a way as to render interventions unnecessary in achieving divine purposes. Rather than a model of miracle, we seem to be presented with a deistic model of divine providence.

Second, McDermid's model requires either that apparently typical microstates are in fact radically atypical or that chaotic systems can act in such a way as to amplify insignificantly atypical microstates in such a way as to produce a macroscopic effect that would be described as a miracle. Either alternative presents problems.

With regard to the proposed mechanism of atypical microstates as a means of producing a miracle, although it is true that the exact behaviour of the microscopic objects cannot be known with utter precision, it has been well said that the fact that there is twilight should not persuade one there is not day or night. It is far from clear that the degree to which the microstates of a system would have to be atypical in order to produce a miracle is consistent with the system appearing to be typical macroscopically.¹⁵

It is tempting to suggest that chaotic systems could be used to amplify the effects of atypical microstates. This is to ignore the fact that, although chaos may be ubiquitous in nature, it comes in degrees and typically shows up only in the background of an otherwise regular evolution of events. Thus, to use Jeffrey Koperski's vivid example, utilizing chaotic systems might allow God to 'alter the arrangement of bubbles in the crest of a tsunami but not redirect its course'.¹⁶

Third, McDermid's model is incompatible with the existence of libertarian free will, which, as McDermid acknowledges, is a cornerstone of many theologies. It is important to realize that the claim that physical objects are determined in the sense that their behaviour is completely the result of the causes which act on them, does not preclude the existence of embodied souls capable of exercising libertarian free will through the instrumentality of the soul acting on the human brain.¹⁷ On this view, persons through the exercise of their free will change what would otherwise happen in the physical universe. Larmer's model, which allows both that physical objects are determined in the sense that their behaviour is completely the result of the causes which act on them, and for God's miraculous intervention during the ongoing course of the universe, is compatible with persons conceived as possessing free will, whereas McDermid's is not.¹⁸ His claim therefore that his model is superior to Larmer's seems dubious.

Criticism of McDermid's indeterministic model of miracle

McDermid argues that, on the assumption of an indeterministic universe, God could conceivably influence the behaviour of physically indeterminate quantum events and, given the existence of chaotic systems as a natural magnifying mechanism, this could produce a miracle at the macroscopic level. Again, at least three criticisms are relevant.

First, it is far from clear how quantum processes at the micro-level relate to events at the macro-level. McDermid seems a critical realist in his epistemology, yet the standard Copenhagen interpretation of quantum mechanics is usually linked to an extreme instrumentalism. On the Copenhagen interpretation,

... the probabilities generated by the Schrödinger wave equation do not correspond to any physical reality. There simply is no reality to be described until an act of measurement collapses the wave function. Quantum mechanics is merely a useful calculating device for predicting the possible outcomes of such acts of measurement.¹⁹

It is difficult to see how McDermid's suggestion that God acts on microphysical entities in such a manner that one quantum state rather than another is realized, can be made consistent with an interpretation of quantum physics which holds that prior to an act of measurement such entities do not exist. John Polkinghorne thus seems correct in his judgment that,

... the continuing perplexities about the quantum measurement problem remind us that we do not fully understand how the levels of the microworld and the macroworld interlock with each other. It does not seem that the proponents of divine action through quantum events have been able to articulate a clear account of how this could actually be conceived as the effective locus of providential interaction.²⁰

Second, even if we ignore the problem just mentioned, it seems clear that quantum indeterminacies at the micro-level 'dampen out' to deterministic

regularities at the macro-level. In order for quantum indeterminacy to make a difference to how events unfold in the world, there must exist some means of amplifying the effect of particular quantum indeterminacies. It is hard to suggest any other means than chaotic systems, but, as has already been noted, chaos comes in degrees and frequently has no significant effect on the behaviour of the system in which it occurs. An even greater difficulty is that quantum theory seems to imply that chaos cannot occur. According to quantum theory, systems described by the Schrödinger equation are not capable of exhibiting the type of sensitive dependency on their initial state characteristic of chaotic systems. We have at present no resolution of the problem of how to reconcile quantum theory and chaos theory and no solution seems apparent on the horizon.²¹ Given this state of affairs, any suggestion that the *modus operandi* of miracle is the amplification of quantum events by means of chaotic systems remains a rather vague speculation, as opposed to a well developed model.

Third, it is not clear that his model is compatible with asserting CPP. McDermid defines CPP as the claim that ‘no physical cause is pre-empted (thwarted, modified, undone) by a non-physical cause’ (128). He claims that since quantum events are to some degree physically undetermined there is room for God to exert influence without contradicting the truth of CPP. The reason this is so is

... that although it is true that any event would have occurred or not ... it does not follow that the *components* of that proposition have determinate truth values ... for truly indeterministic events, like quantum events ... ‘indeterminism’ simply means ‘what would have happened’ *has no content*: indeterminism does not support such counterfactual or hypothetical inferences, by definition. So, by my [McDermid’s] lights, God’s intervention *does* bring about a physical event via immaterial (non-physical) cause, but this does not affect *anything* determined by physical cause, *because that event was not determined by a physical cause*, which is why it passes CPP. There is no ‘what would have happened’ for God to override, in this case. (emphasis in the original)²²

It is not clear that this saves McDermid from the charge that his model is inconsistent with the truth of CPP. Miracles are typically conceived not only as supernatural interventions in the natural order, but as interventions which change what would otherwise occur naturally. Thus, for example, Jesus’ raising of Lazarus is regarded as a miracle precisely because it pre-empted (thwarted, modified, undid) what would otherwise have naturally occurred. It is precisely because it is believed that the counterfactual, ‘this event would not have occurred naturally’, is true that the event is regarded as miraculous. It thus seems that, to the extent that God’s realization of certain quantum possibilities can be seen as, for example, bringing about the raising of Lazarus, the realization of these possibilities must be seen as pre-empting what otherwise have naturally occurred and therefore in conflict with McDermid’s endorsement of CPP.

Conclusion

It seems clear that my (Larmer's) model of miracle neither makes the laws of nature metaphysically toothless nor implies the lack of subtlety in divine intervention. Further, it is far from evident that McDermid's alternative models of miracle are superior to my model.

Notes

1. Kirk McDermid 'Miracles: metaphysics, physics, and physicalism', *Religious Studies*, 44 (2008), 125–147. All in-text references are to this article.
2. Hume's use of the term 'violation' seems to have been influential in the adoption of this view. It is significant that almost all Hume's critics objected to his use of the term. See, for example, R. M. Burns *The Great Debate on Miracles: From Joseph Glanvill to David Hume* (London: Associated University Presses, 1981), 234–236.
3. See, for example, William Alston 'The place of the explanation of particular facts in science', *Philosophy of Science*, 38 (1971), 17–24.
4. A possible objection that might be raised is that the experimental evidence that provides support for the claim that energy is conserved in an isolated system equally provides support for the claim that energy can neither be created nor destroyed. I discuss this objection at length elsewhere. In light of space considerations, I will confine myself in the present discussion to making the point that on this model accepting the occurrence of a miracle does not commit one to denying the vast body of experimental evidence supporting the conservation of energy in an isolated system.
5. McDermid adds the restriction that probability be given a frequentist, as opposed to propensity, interpretation; McDermid, 'Miracles: metaphysics, physics, and physicalism', 140.
6. John 6.1–26.
7. C. S. Lewis *Miracles; A Preliminary Study* (New York NY: Macmillan, 1947), 72.
8. Theists are generally agreed that such constant and unremitting intervention would be inconsistent with God's character and would undermine His achieving His purposes in creation.
9. More precisely, my point in the passage that McDermid references was that the claim that energy can neither be created nor destroyed amounts to asserting the truth of physicalism, which by definition rules out the possibility of miracles, since physicalism asserts that all causes are physical. Unless, therefore, good reasons are given for accepting this form of the principle of the conservation of energy, it begs the question to use it as an objection to belief in miracles.
10. McDermid suggests in an e-mail (15 June 2007) that, since God and his character are immanent in natural laws, that principles of divine restraint can be 'translated' into physical closure conditions. I resist such a 'translation' on the basis the God's purposes far exceed creating a causally closed physical universe.
11. The notion of a non-physical repository of matter seems a contradiction in terms. McDermid seems to reach the same conclusion when he writes that 'by allowing conservation laws into the non-physical, one must first let in dynamical laws – and that appears to effectively make the formerly [presumed?] non-physical portion of the universe physical'. McDermid's mistake is his assumption that my model of miracle commits me to the existence of such a repository.
12. McDermid makes much of the fact that dynamical laws imply symmetries. This is true, but such symmetries are only implied in the absence of any intervening cause, that is to say in causally isolated systems.
13. I have discussed this issue at greater length in 'Against "Against Miracles"', in Robert Larmer (ed.) *Questions of Miracle* (Montreal: McGill-Queen's University Press, 1996), 57–58.
14. Daniel Stoljar 'Physicalism', in Edward N. Zalta (ed.) *The Stanford Encyclopedia of Philosophy* (Winter 2005 edn), URL=<http://plato.stanford.edu/archives/win2005/entries/physicalism/>.
15. McDermid argues for this on the basis of his analogy that the difference between a well-shuffled deck of cards and one that is stacked is not readily apparent. The analogy is misleading. There is no causal connection between the numbering of the various cards, whereas there are causal connections between

the various components of a physical microstate. Although the second law of thermodynamics is interpreted statistically, it would lead us to believe, to use McDermid's example, that even though we may not know the exact microstates of the Red Sea, that its parting is infinitesimally unlikely in the absence of some major intervening causal factor. It would thus seem that if that factor is taken to be physical it would be evident at the macroscopic level.

16. Jeffrey Koperski, 'God, chaos, and the quantum dice', *Zygon*, 35 (2000), 557.
17. There are, as I have pointed out elsewhere, important connections between the mind-body problem and questions of how miracles might be conceived as occurring. See for example, my *Water Into Wine?* (Montreal: McGill-University Press, 1988), 24–25.
18. On Larmer's model, miracles can be seen as at least sometimes occurring in response to human's free choices. Thus, for example, before performing a miracle of healing Jesus asks a crippled man whether it is truly the man's desire to be made whole (John 5.5–9).
19. Lawrence Osborn 'Theology and the new physics', in Christopher Southgate (ed.) *God, Humanity and the Cosmos* (Harrisburg PA: Trinity Press International, 1999), 115.
20. John Polkinghorne *Belief in God in an Age of Science* (New Haven CT: Yale University Press, 1998), 60.
21. Koperski 'God, chaos, and the quantum dice', 555–556.
22. Personal e-mail from McDermid to Larmer, 15 June 2007.