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PHYSICALISM AND PANENTHEISM: GOOD NEWS AND BAD NEWS

Carl Gillett

The sciences provide great evidence for physicalism and I argue that this is good news for panentheists. For I show that if physicalism is true and there is a providential God, then a certain kind of panentheism is plausibly true. But I further argue that physicalism also brings some potentially bad news in the metaphysical problem of showing how realized properties can be causally efficacious in a physicalist universe. I argue that in order to accommodate divine action, and be compatible with the sciences, panentheist positions must answer this general metaphysical question. My conclusion is that until such an account is formulated the promise of panentheist views must go unrealized, and we must go without a version of theism that may be fully compatible with the sciences.

Can the actions of a providential God be fully compatible with a scientific view of the natural world? A diverse array of accounts defending positive answers to this question have recently been offered as researchers have moved beyond 'conflict' models of the relationship between the sciences and religion.¹ An important subsidiary issue for such accounts is whether divine action is compatible with 'physicalism' (PHY), very roughly the thesis that all the entities in space-time are microphysically composed, since the sciences provide powerful evidence for this doctrine. Physicalists have often inclined towards atheism, but intriguingly Arthur Peacocke, the biochemist and theologian, has recently suggested that the truth of physicalism would *support* a particular account of divine action – so-called 'pan-en-theist' views under which the natural world is, in some sense, a 'component' of God.²

In this paper my primary goal is to explore the metaphysical implications of physicalism for divine action. After providing a precise formulation of physicalism, in Part 1, I shall argue that Peacocke's main contention is correct and that the truth of physicalism would be good news for panentheists. For I will show that if physicalism is true and there is a providential God, then a specific form of panentheism is plausibly true. The resulting panentheism is of a rather different kind than that defended by Peacocke and other panentheists in the debate over divine action, for it takes the properties of God that are causally efficacious in the natural world to be microphysically realized. I will call such a position 'physicalist panentheism'. There are some obvious theological concerns about this position, but



I briefly argue that it potentially has the resources to overcome them.

Unfortunately for panentheists, in Part 2, I will argue that the truth of physicalism apparently brings some bad news in the shape of less pliant metaphysical problems. Philosophers of mind, and others, have recently been greatly concerned with the general metaphysical problem of how realized properties can be causally efficacious in a physicalist universe. For there are plausible skeptical arguments that if physicalism is true, then only microphysical properties are causally efficacious. The bad news is that such arguments clearly apply to physicalist panentheism. To highlight the severity of these difficulties, and the character of physicalist panentheism, I will examine how the recent panentheist accounts of divine action independently offered by Peacocke, and Philip Clayton, cope with these concerns. Although I shall argue that the latter positions fail to solve the problems, I will suggest that their focus is a promising one.

Ultimately, there are more global implications from my arguments about the good and bad news for panentheism. If my arguments are correct, then physicalism implies the truth of physicalist panentheism. Given the powerful scientific evidence for physicalism, it therefore appears that physicalist panentheism must shoulder the burden of supplying a scientifically compatible account of divine action. But in order for this position to be successful one must answer the general metaphysical question of how any realized property could be causally efficacious in such a universe. The wider conclusions of my arguments will consequently be that until such an answer is successfully provided we must accept that divine action is incompatible with physicalism. And that, furthermore, we must go without a version of theism that may be fully compatible with the sciences.

1. *Physicalism and the Goods News for Panentheism.*

Notoriously Henry VIII's desire for an heir led to the formation of the Church England. And it is a commonplace of our everyday lives that, in similar fashion, persons (and other types of individual) cause various effects in virtue of their properties. Although ultimately metaphorical, our conception of a providential, personal God embodies similar ideas, for we take God to cause certain natural effects in virtue of His, or Her, properties, for example omni-benevolence. Although it is an important metaphysical question how we should explicate such ideas, here I shall attempt to remain relatively neutral by assuming that events are the causal relata, but that events enter into particular causal relations in virtue of their properties. I shall therefore use the familiar framework for causation that takes events as the primary causal relata, but retain the commonsense idea that properties play a crucial role in causal relations. Furthermore, I shall apply this framework to divine action, following the commonsense understanding of God as acting in the natural world in virtue of His or Her properties.

Properties will loom large in our discussion and I shall therefore assume Sydney Shoemaker's 'causal theory of properties' (Shoemaker (1980)). Under this theory, a property is individuated by the causal powers it *potentially* contributes to the individuals in which it is instantiated. Every property is distinguished by an array of such causal powers and two properties are only dif-

ferent if they differ in the causal powers they potentially contribute to individuals. For reasons that will become apparent below, I focus on properties I term 'causally efficacious', that is properties whose instantiation in an individual *actually contributes* to an individual's causal powers. In addition, I use the term 'entity' to refer to relations, properties, events, and individuals; and 'composition' in a similarly wide manner to refer to realization or constitution. I take one property, or individual, to be 'higher level' relative to another property, or individual, if the latter composes the former.

As Arthur Peacocke has emphasized, the sciences have made it plausible that the natural universe is a comprehensive compositional hierarchy involving 'layers' of properties and individuals. We have a great deal of evidence that all higher level entities are composed by lower level entities, which are in turn composed by still lower entities, with this chain of composition ultimately bottoming out with the entities of microphysics. A range of scientific evidence has been uncovered to support this 'layered' picture over the last two hundred years, but the findings that finally established such a view were plausibly made in the last century.

The nature of this evidence can be appreciated by focussing on the case of forces. At the beginning of the twentieth century, many important scientists in a variety of areas were still committed to the existence of 'special' forces, that is physically unrealized and fundamental forces, whether chemical, vital, mental, or some further kind.³ As the century proceeded, scientific findings made the existence of such special forces more, and more, implausible. First, the development of quantum mechanical explanations of chemical phenomena put paid to the existence of special forces in chemistry. Second, the steadily increasing explanatory power of biochemistry, encompassing accounts of the operation of cells, the processes of genetic transmission, and the nature of proteins generally, undermined the existence of vital forces. Lastly, physiological explanations of the nervous system and neurons, as well as physiological accounts of psychological disorders such as schizophrenia, left us with no evidence for the existence of special mental forces. Such evidence constitutes a powerful case that there are *only* four (possibly three) fundamental forces, all physical – the electro-magnetic, gravitational, and weak and strong nuclear forces. Bolstered by similar findings across the sciences, we thus have evidence that these forces, with the other entities of physics, compose *everything* in the natural universe.

This doctrine, which I earlier labeled 'physicalism' (PHY), has become increasingly important in philosophical debates and the prevailing consensus is that we should eschew formulations of it relying upon supervenience relations (Horgan (1993) and Kim (1998)). I shall therefore use the following definition focussed upon so-called 'realization' relations between properties:

(PHY) All properties instantiated in individuals located in space-time are realized by, or identical to, microphysical properties; and all individuals located in space-time are constituted by, or identical to, microphysical individuals.⁴

We should make note of a few features of PHY. First, although our focus will primarily be upon properties, PHY obviously also frames an impor-

tant claim about individuals. Second, this definition is slightly narrower than usual, given its limitation to individuals located in space-time and the properties instantiated in them, but this has a number of side benefits. For example, the definition is compatible with the existence of numbers and other abstracta that are not microphysically composed, for these are plausibly not located in space-time. And, for the same reason, physicalism so defined also does not by itself rule out the existence of a wholly non-physical, deistic God located and acting outside space-time. These features are apparently strengths, since one may be dubious that the sciences can reveal anything about entities not located in space-time.

Obviously identity and realization are central to PHY and given our focus upon properties we need to be careful that we are clear about their natures. The conditions for the identity of properties are clear enough under the causal theory, but we also need an account of the realization relation. The core idea of realization is that a realizer property “plays the causal role of” the realized property where this involves an asymmetric dependence relation, since the “role playing” means that the realized property depends upon the realizer property, but not vice versa. Let us thus define realization as follows:

Property/relation instance(s) F1-Fn realize an instance of a property G, in an individual *s*, if and only if *s* has powers that are individuated of an instance of G in virtue of the powers contributed by F1-Fn to *s* or *s*'s constituent(s), but not vice versa.⁵

With this definition of realization in hand, we can now consider what, if anything, is implied by acceptance of physicalism and its ‘layered’ picture of the world.

Peacocke claims that the sciences have made it plausible that the “causal nexus” of the natural world does *not* involve spirits, entelechies, vital forces, or any other ‘spooky’ entities, whether properties or individuals, that are not microphysically composed (Peacocke (1999), p.217-8). This putative implication of physicalism is important and I want to use our metaphysical machinery to explore whether it is supported. PHY states that all properties instantiated in individuals located in space-time are either realized by, or identical to, microphysical properties. But given the nature of the realization relation, and identity, we can consequently see that this implies all properties have causal powers such that the instantiation of microphysical properties suffices for individuals having such powers. We can thus see that Peacocke is correct that physicalism entails a view that is monopolistic in a certain sense, and we shall later see that it is very important how strong a thesis one takes this ‘monopoly’ to imply. But, for our present purposes, it is enough to note that PHY entails that the “causal nexus” of the natural world is exhausted by events whose properties have causal powers which never ‘dangle’ outside of the web of microphysical powers. When PHY is true, as the evidence outlined earlier makes plausible, there are thus no microphysically unrealized forces or other properties whose causal powers are such that instantiation of microphysical properties does not suffice for individuals having such properties and powers.

We can sharpen this latter point into an argument that illuminates the implications of PHY still further. The type of argument I have in mind can be framed in a number of ways, but here let me use a simple version centering around the crude notion of a 'force' as a property which is basically an 'influence to change the motions of masses'. Obviously this notion of 'force' is far simpler than that used in contemporary physics, since, for example, forces obviously bring about other microphysical effects than changes in the motions of masses. But the simple argument outlined below can apparently be altered to incorporate all such changes, although at the cost of simplicity of exposition, and it will serve here to outline the general form of the argument I wish to consider.⁶

Given the simple notion of a 'force', consider some property 'F' whose causal efficacy is manifested in space-time in virtue of its causing, through its involvement in some event, the natural effect 'e'. This effect *e* is obviously located in the natural universe, but can we illuminate anything about the nature of the property F? Given PHY, we may assume the event *e* is, ultimately, wholly composed by microphysical properties and individuals. Hence we can assume that *e* must involve a change in the motion of some mass (or some other change in microphysical properties). Consequently, when PHY is true, it appears that if F is a property whose causal efficacy is manifested in the natural world, then F will exert a 'force' in the natural universe of the kind outlined above. Let us assume this claim is correct, though as noted above it clearly needs qualifying in various ways to take account of all the nuances of contemporary physics. If we accept that there are only four fundamental forces, all microphysical, then F must be realized by, or identical to, the fundamental microphysical forces. Thus, if PHY is true, then it appears that what I shall call the 'Efficacy Thesis' is true:

(Efficacy Thesis) All properties whose causal efficacy is manifested in the natural world, i.e. space-time, are realized by, or identical to, microphysical properties.

The simple argument about 'forces' thus provides a more precise defense of Peacocke's claims about the implications of physicalism and its scientific support.

As will become apparent in the second half of the paper, the specific nature of the thesis supported by PHY is very important. It is thus worthwhile reflecting on the Efficacy Thesis and its character. Again we should mark that the truth of the Efficacy Thesis is compatible with the existence of non-physical individuals and properties whose causal efficacy is only manifested beyond space-time – for example, a deistic God who creates space-time yet never causally acts within it.⁷ More importantly, we should note a widely held thesis that is superficially similar to the Efficacy Thesis, what I will call the 'Completeness of Physics' (CP) (often also termed the 'Causal Closure of Physics') and define as follows (following Papineau (1993)):

(CP) All microphysical events are determined, in so far as they are determined at all, by prior microphysical events and the laws of physics.

It might be argued that our simple argument actually supports CP because there is no real difference between the Efficacy Thesis and CP. However, I want to mark that shortly, in Part 2, I will present arguments that show that there are very important differences between CP and the Efficacy Thesis. In fact I will argue that these theses have different implications for the very possibility of causally efficacious realized properties in a physicalist universe. For the moment, however, I shall simply focus upon drawing out the implications of the Efficacy Thesis, since we can now see that it initially brings good news for panentheism.

Physicalism implies that *all* the properties whose causal efficacy is manifested in the natural world are either realized by, or identical to, microphysical properties. Therefore, if physicalism is true and a providential God exists, then all the properties in virtue of which God causally acts in the natural world will be realized by, or identical to, microphysical properties. Furthermore, given the scientific support for PHY, any account of divine action that seeks to be fully compatible with the sciences must seek compatibility with physicalism. Thus, any account of divine action seeking to be fully compatible with the sciences must also apparently take the properties of God whose causal efficacy is manifested in space-time to be microphysically realized. The good news is consequently that anyone who accepts the existence of a providential God and the truth of physicalism, as well as those who seek scientifically compatible accounts of divine action, must plausibly adopt what I earlier dubbed 'physicalist panentheism'.

The latter position is what we might term a 'minimal' form of physicalist panentheism, since it only takes certain properties of God to be composed by natural properties. However, one might argue that physicalism can establish a more encompassing position if we reflect upon the implications that realization relations between properties may have for the individuals that instantiate them. To illustrate this kind of argument, let us briefly consider a thesis about this issue:

(Constituent Principle) An instance of a property X (either on its own or in combination with instances of other properties) is a realizer of an instance of a property Y instantiated in an individual *s* *only if* this instance of X is either instantiated in *s* or in an individual that is a constituent of *s*.

The Principle basically implies that a property instance can realize another property instance only if the realizing property is instantiated in the same individual, *s*, as the realized property, or in one of *s*'s constituents.

It appears the usual exemplars of realization relations support the Principle. Consider the famous examples of combinations of microphysical properties that realize an instance of the property of being a carburetor or the property of being a Coke machine. In both cases it appears that all the realizing microphysical properties are instantiated in microphysical individuals that are constituents of the complex individuals instantiating the property of being a carburetor or the property of being a Coke machine. Obviously the Principle needs far more support before we would be justified in accepting it, but it does appear promising.

We should therefore note that the Principle allows us to leverage our knowledge about realization relations between properties to infer conclusions about the constitution relations holding between the individuals in which realized, and realizer, properties are instantiated. The Principle can thus be used in combination with the claim that those of God's properties whose causal efficacy is manifested in the natural world are realized by, or identical to, microphysical properties. The conclusion is that those 'parts', or 'constituents', of God that instantiate properties which are causally active in the natural world are themselves constituted by, or identical to, microphysical individuals. These further arguments, building upon the Efficacy Thesis, thus support what we may term 'strong' physicalist panentheism – the position that both those of God's properties which are causally active in the natural world, *and* the 'parts' or 'constituents' of God instantiating them, are microphysically composed. However, it remains to be shown that we should accept the Principle. Thus it remains unclear whether a commitment to PHY should be accompanied by acceptance of strong physicalist panentheism. Nonetheless, such arguments may not be too far over the metaphysical horizon.

I have now argued that physicalism entails some form of physicalist panentheism about a providential God and it should be emphasized that such a position is a very specific kind of panentheism. In Part 2, I will consider whether there are differences between this and other versions of panentheism recently offered as accounts of divine action. But, in concluding this section, I want to briefly consider two obvious theological concerns about this specific type of position. It bears emphasis that physicalist panentheism, of either variety, is a skeletal metaphysics of God's nature that may be given a variety of richer theological overlays. These views range from more traditional panentheist accounts under which God's nature goes beyond those 'parts' composed by natural entities, as well as more radical positions that take God to be 'embodied' in the natural world and possibly even to be wholly composed by natural entities.⁸ I will not examine the implications of physicalist panentheism under each of the metaphysical and theological variations. Rather I will sketch answers that might be given by a defender of the simplest of these positions - a panentheist holding merely that those of God's properties that are causally active in the natural world are microphysically realized.

The first concern is whether we can make sense of how God can be the creator of the natural universe if the deity is in fact partially composed by elements of the natural universe. Most panentheists take God to be passible and a ready answer is thus available to this question. Under such a dynamic view, one might argue that God does not merely create the natural world, but creates this world so that God now has new properties that are realized by, or identical to, microphysical properties. After creating the natural universe, God thus has a different form, possibly still changing, which now includes properties that are naturally composed. Such a picture is apparently coherent and provides the physicalist panentheist with one way she may explain how even though God creates the natural world at some point the creator has properties which are realized by the natural properties so created.⁹

The latter picture apparently has no intractable theological difficulty once God is taken to be possible, but a second question appears to pose tougher problems. Initially, it may appear that physicalist pantheism can be a position which takes the natural world to be the 'body' of God and those 'parts' beyond space-time to constitute God's 'psychological' nature or 'mind'. But we must note that if it is correct that physicalism entails the Efficacy Thesis, then when PHY is true any property of God whose causal efficacy is manifested, directly or indirectly, in space-time must be microphysically composed. That is, if one property of God has an effect on another property of God that ultimately results in a causal effect in the natural world, then the Efficacy Thesis plausibly implies that both properties of God must be microphysically composed. There is no insulation from microphysical composition for any property of God whose causal efficacy is manifested in the natural world. Our second theological question is consequently whether one can preserve a conception of God as a personal being under physicalist pantheism. For in taking the causally efficacious properties of God to be microphysically realized will these properties themselves not be, in a crucial sense, mere 'dumb' matter? The looming concern is whether God's causal interactions in the natural world must thus be akin to 'reflexes' caused by the deity's 'bodily' properties, rather than 'actions' produced by God's 'psychological' properties. The latter points raise the specter that physicalist pantheism must be a peculiar deistic position where there is a personal God who never *acts* within the natural world, although this deity has 'bodily parts' whose '*reflexes*' do have causal effects in nature.

This second theological concern appears to rest upon a philosophically contentious assumption, namely that microphysically realized properties cannot be, in any sense, psychological. Two points ought to be stressed in response. First, we must follow many participants in the debate on divine action in paying heed to Austin Farrer's (1967) point that ultimately God's precise nature is mysterious to us, and beyond our comprehension; for example with regard to divine 'psychology', properties and the character of the relation between God and His or Her properties, amongst other issues. (Thus the plethora of scare quotes used to mark the metaphorical application of our concepts to God). Given this mystery, one may be dubious that we can know that if some property of God is microphysically realized, then this property cannot be 'psychological'.

Second, and perhaps more telling, is the fact that recent work in the philosophy of mind has produced a number of plausible accounts about how various types of psychological properties may be microphysically realized. In fact, the concept of 'realization' derives from philosophical work on such accounts. For example, so-called 'functionalist' theories argue that mental properties, such as believing that grass is green, are simply properties individuated by the causal roles that they play in large systems of causally interconnected properties, causal inputs and causal outputs.¹⁰ Under such a view it is argued that a combination of microphysical properties can clearly realize a mental property so long as this combination plays the requisite causal role. Functionalism therefore apparently provides good reasons to believe that psychological properties, whether human or divine, can be microphysically realized.

In addition, it appears that functionalism offers still more specific support for the possibility of 'psychological' properties of a personal God that are microphysically realized. For it has been widely noted that an implication of functionalist views is that *any* physical system that plays the specified causal roles will realize mental properties. Infamously, it has been argued that even systems such as a vast array of causally interacting tin cans on a beach might have mental properties (see Lycan (1987) for a survey)! Such examples are often used to argue that functionalism makes it *too* easy for physical systems to have mentality, leading to mental properties floating around *outside* humans and other organisms!, and these cases are thus taken to be problematic. But in the context of physicalist panentheism this implication of functionalism may help the panentheist and, in turn, this version of theism may ameliorate the difficulties of functionalism. As we have seen, functionalism is helpful to the panentheist by allowing the possibility, whose precise details must be mysterious to us, that the properties of God that are microphysically realized may be 'psychological' in nature, staving off the regress of physicalist panentheism into the peculiar deism noted. In the other direction, physicalist panentheism's implication that microphysical properties will realize 'psychological' properties of a personal, but ultimately mysterious, God can greatly help the functionalist. For if this version of theism is correct, then it is *to be expected* both: (a) that there will be systems of microphysical properties outside of humans, and other organisms, that realize mental properties. And (b) that the ultimate nature of these systems, and the realization relations they ground, will be mysterious. For such mental properties will include properties of God under physicalist panentheism and functionalism will not so clearly make instantiation of mental properties too widespread.

To conclude, I have argued there are resources available for answering both of the obvious theological concerns about physicalist panentheism. That answers to these theological concerns are available is fortunate. For the main conclusion of this section has been that physicalism, and its supporting scientific evidence, make it plausible that if there is a God who acts in the natural world, then physicalist panentheism is true. And this is regardless of whether such a position is compatible with the existence of a personal God who created the natural world.

2. Physicalism and the Bad News about Divine Action.

As I noted earlier, just as we take persons to cause certain actions in virtue of their mental properties, so a providential God is taken to be causally responsible for certain effects in the natural world in virtue of His or Her 'psychological' properties. When these commitments are combined with PHY, we now see that one is committed to the familiar thesis which I will call 'Higher Causal Efficacy' (HCE):

(HCE) There are causally efficacious higher level properties instantiated in individuals located in space-time.

Physicalist panentheism is based upon Higher Causal Efficacy, since it takes

God to be causally responsible for certain effects in virtue of this being's mental properties which are microphysically realized. Since a property is causally efficacious only when it *actually contributes* causal powers to an individual, we therefore see that physicalist panentheism implies that there are realized properties that contribute causal powers to individuals. But, given these latter commitments, physicalism apparently brings some bad news for panentheists. For philosophers have recently argued there are profound metaphysical problems about how *both* PHY and HCE could be true together. To illuminate how these problems play out I will first give a general outline and then show how they apply in the case of divine action.

Recall that PHY implies that all properties are realized by, or identical to, microphysical properties. As the Efficacy Thesis summarizes, there are no 'spooky' dualistic entities, such as entelechies or vital forces, acting outside the "causal nexus" comprised by the microphysical web of properties and powers. Given this, a critic may argue that it is ontologically profligate to take any property to contribute causal powers and hence to be causally efficacious *in addition* to microphysical properties and relations. For the critic points out that given the nature of the realization relation, and identity, we can account for *all* the causal powers of individuals simply using the contributions of powers by the microphysical properties of these individuals, or their constituents, rather than also as contributions from higher level properties. But we cannot account for all causal powers of individuals simply as contributions by higher level properties. If we assume that the causal powers of individuals are not overdetermined, then appealing to Occam's Razor the critic argues that we should accept the existence of no more casually efficacious properties than we need to account for the causal powers of individuals. She thus concludes that this simple argument implies that if PHY is true, then we should *only* accept that microphysical properties are causally efficacious and hence should take HCE to be false. Let us call this the 'Argument from Realization' (AR), since it uses the nature of the realization relation, and the truth of PHY, to argue we should not take higher level properties to be causally efficacious.¹¹

As a side-point, we should mark that the same type of argument is easily constructed for so-called 'structural', and other higher level, properties that are identical to combinations of microphysical properties. For such structural properties are plausibly individuated by causal powers that are also had in virtue of the causal powers contributed by microphysical properties.¹² To better illustrate the general nature of AR let us examine a detailed example focussed upon realization, but where there is also a higher level property identical to some combination of microphysical properties.

Consider a case where a combination of microphysical properties and relations, 'P1', 'P2', 'P3', ... etc. is instantiated in microphysical individuals '*a1*'-'*an*' which themselves constitute a higher level individual '*s*'. I will term the latter, structural property 'COMBO' to mark that it is a higher level property identical to a *combination* of microphysical individuals, properties and relations. If we take '*C*₁', '*C*₂', '*C*₃', ... etc., to be the causal powers individuating P1, P2, P3... etc. respectively, then the causal powers individuating COMBO, '*C*_{com}', are apparently the powers resulting from *C*₁, *C*₂, *C*₃... etc together and had by *s*. That is, the powers that P1, P2,

P3... etc. together suffice for s to have. Finally, let us assume that COMBO realizes some property 'G' uniquely individuated by causal powers ' C_G '. For example, let us simply assume that C_G is a subset of C_{com} (though this is not necessary for realization), thus COMBO is not identical to G, but COMBO's powers suffice for G's instantiation.

Should we take either the instances of G or COMBO to be causally efficacious in such a case? The proponent of AR will argue that we should not. For neither G or COMBO is a fundamental microphysical property or relation. And AR implies we should not take anything more than the 'component' microphysical properties and relations to be causally efficacious, for *a1-an* instantiating their microphysical properties and relations *alone* suffices to account for all the causal powers of these individuals and s . In this case there is no need to take either the causal powers C_{com} or its subset C_G , to pick out causally efficacious properties in addition to P1, P2, P3... etc. For this would again be ontologically profligate - a case of "double-counting", to use David Lewis' phrase, the causally efficacious properties. All the causal powers of the individuals in this case can be accounted for simply by taking P1-Pn to contribute causal powers. Thus, the proponent of AR concludes that neither realized properties such as G, nor so-called structural properties such as COMBO that are identical to combinations of microphysical properties, should be taken to be causally efficacious.

The metaphysical problems posed by AR are obviously quite general and the following dilemma serves to illuminate the difficulties raised for physicalist panentheism. On one hand, if one accepts the truth of physicalism, then one's account of divine action will be fully compatible with the findings of the sciences. But AR shows that such a view leaves no room for divine action, since it shows that *only* the properties of microphysics will be causally efficacious and not any of the properties they realize, whether instantiated by a divine being or otherwise! Yet, on the other hand, if one accepts that God does act in the world, then one's account cannot be compatible with PHY and hence the sciences. For God must apparently have a 'dualistic', physically unrealized property that is causally efficacious in the natural world in virtue of causal powers 'dangling' outside the "causal nexus" of microphysical powers identified by the sciences. Either way, one is left without an account of divine action that is fully compatible with physicalism and the sciences!

Such metaphysical problems have been addressed in the recent debate over divine action by researchers offering panentheist accounts. Perhaps the two most prominent panentheists in this debate have been the philosopher Philip Clayton and, as noted earlier, Arthur Peacocke. It will be useful to examine each of their accounts, for this will serve to better illuminate the character of physicalist panentheism and also the nature of the general metaphysical problems for divine action that physicalism brings in its wake. I will argue that Clayton's position, although panentheist, is not a *physicalist* panentheism and I will suggest that Peacocke's position may be, depending upon his answer to a crucial metaphysical question. Furthermore, I will argue that, on deeper inspection, Clayton's and Peacocke's positions are both unsuccessful in answering AR.

In his (1997), Philip Clayton offers an account of divine action based

upon the existence of “emergent” properties which he argues are not examples of non-physical *substances*, but are fundamental, non-physical *properties*.¹³ Clayton argues that such non-physical properties make a form of “downward causation” possible by which a human or divine agent can have a causal impact in the natural world. And Clayton consequently concludes that:

...theology does not need to embrace *either* a radical dualism of mind/soul and body *or* the physicalism that is widespread among scientists and philosophers today. The theory of *emergent properties* forms an attractive *via media* between these two poles of the discussion. (Clayton (1997), p.247. Original emphasis.)

Clayton’s “emergent” properties provide a kind of response to AR. Such properties are not microphysically realized and hence allow for divine (or human) action, and downward causation. For these properties are not in the microphysical web of properties and there is consequently no paradox about how they could be causally efficacious, rather than some micro-physical realizer.

Unfortunately, Clayton’s position preserves Higher Causal Efficacy only by abandoning physicalism, for it accepts the existence of fundamental, i.e. unrealized, non-physical properties and adopts a form of dualism less radical than traditional substance dualism, but still at odds with the scientific findings supporting PHY. Clayton’s account of divine action is consequently *not* fully compatible with the sciences. In pressing this point, I am leveling against Clayton the same criticism (Clayton (1997), p.219) that he makes to Nancey Murphy (1995). Murphy bases her account of divine agency around fundamental, non-physical forces that allow God to act at the quantum level of events. Clayton concedes that Murphy’s position, and her careful interpretation of quantum physics, answers the question “Is divine agency *possible*?”. But Clayton furthers objects that Murphy has not successfully answered the question “Is divine agency *plausible*?”. For he argues that, given the scientific evidence, scientists will balk at the idea of further fundamental, and non-physical, forces. I contend that Clayton’s theory also fails to successfully answer the question “Is divine agency *plausible*?”, for his own account is committed to fundamental, causally efficacious non-physical properties. Events instantiating such properties will obviously have microphysical effects in virtue of them and application of the argument based upon the simple notion of ‘force’ used in Part 1 easily serves to highlight Clayton’s consequent commitment to fundamental, non-physical forces. His account thus fails to be scientifically compatible because it flies in the face of the scientific evidence for physicalism.¹⁴

Let us turn to the other prominent panentheist in the recent debate over divine action. Is Arthur Peacocke a physicalist panentheist? And does he offer an answer to AR? Peacocke is sensitive to the scientific evidence supporting physicalism and this sensitivity is a driving force behind his account of divine agency. Like Clayton, Peacocke postulates “emergent” properties and “downward causation”, terming his position “Emergentist Monism”. But these notions apparently take a very different form in

Peacocke's account, since he makes clear that his type of "emergent" property is intended to be microphysically composed. Interestingly, at the core of Peacocke's position are a number of metaphysical ideas that may be interpreted as comprising a response to AR. In his earliest work (Peacocke (1990)), Peacocke sought to explain how a composite could be causally efficacious using the notion of "downward causation". But the idea that a composite exerts a causal influence upon its own parts is problematic, for causal relations only hold between *wholly distinct* entities. Thus if the composites Peacocke postulates did causally interact with their parts in a "downward" fashion, then these composites would apparently have properties that are wholly distinct from the microphysical properties of their components. Such properties would not therefore be microphysically realized and physicalism would be apparently be false!

Peacocke has gradually become sensitive to the problems surrounding "downward causation" of this type and in his more recent work he has instead adopted the notions of "whole-part constraint" (1995, Fn.1) and finally "whole-part influence" (1999, Fn.1). This latter idea apparently promises an answer about how a composed entity, a whole, could still be causal in the world even though it is fully composed by parts. However, before we examine this idea further, we must be careful to note that there are two possible interpretations of Peacocke's position, perhaps unsurprisingly given the emphasis he places upon the ultimate mystery of God's nature. Peacocke argues that the natural world is 'in' God, but this may be interpreted in weaker and stronger fashions. On the weaker reading, which Peacocke himself apparently favors, the 'in' merely implies a spatial relation and no further compositional relation (Peacocke (Personal communication)). Thus the world is in God just as a person may be in the Empire State Building, though clearly neither the person or the world is a part of the entity they are 'in'. (Peacocke (1999)'s favored metaphor for the relation, Fn.78, follows Augustine's idea of the natural world as a sponge floating in God's sea). As a result, the weaker reading does not take the causally efficacious properties of God to be realized by microphysical, or any other, properties instantiated by individuals located in the natural world. On the stronger reading, the manner in which the natural world is 'in' God is taken to imply a compositional relation where the properties of God are realized by properties instantiated in the natural world, thus leaving Peacocke's position as a full-blown instance of physicalist panentheism. (For reasons related to the theological concerns examined at the end of Part 1, Peacocke (Personal communication) is wary of accepting this latter form of panentheism). Though they differ in exegetical accuracy, the positions resulting from these interpretations are both interesting and I want to examine how each fares as an account of divine action in a physicalist world.

With regard to Peacocke's intended position, where the natural world is merely spatially within God in some metaphorical sense, we can see that the account faces similar problems to Clayton's position. For on such a view, the causally efficacious properties of God will not be realized by microphysical properties. But, once again, the simple argument about forces, offered in Part 1, suffices to illuminate the consequent difficulties. For let us assume God acts upon the natural world in virtue of some prop-

erty 'D' that effects some change in either the whole of the natural universe, considered as a "system-of-systems" as Peacocke puts it, or in some portion of it. Let us call this latter effect of God 'e'. Given the evidence for PHY, we may assume that the event *e* involves a change in the motion of some mass (or some other change in microphysical properties, but as noted earlier I leave these considerations to one side for simplicity's sake). Consequently, it appears that if God acts in the natural world in virtue of D, then the latter property would have to change the motions of masses and hence exert a 'force' in the natural universe, in the sense outlined in Part 1. It appears we have two alternatives with regard to this divine 'force' D. On one hand, we can follow Clayton and accept a version of dualism, accepting that D is a fundamental, non-physical force flying in the face of the scientific evidence. Whilst on the other hand, we can accept the scientific evidence that there are only four fundamental forces, all microphysical, and conclude that D must be realized by such fundamental physical forces. On this second option, one accepts that those of God's properties that are causally active in the natural world are microphysically realized. But we must thus abandon the claim that God is only spatially related to the natural world, for at least some of God's properties will be realized by microphysical properties.

It appears that the position that a God who acts in the natural world is merely spatially, but not compositionally, related to the natural world either collapses into a dualistic position, or must be re-interpreted as an instance of physicalist panentheism. Though Peacocke is wary of committing himself to a full-blown physicalist panentheism, I want to briefly re-interpret his account as a version of this latter position using an alternative understanding of "part-whole" influence. I shall ultimately suggest that his re-interpreted position also fails, but I want to consider this kind of view because I will later suggest that the general kind has promise as a response to AR.¹⁵

On the reading I have in mind, we would re-interpret Peacocke as using what he calls a "flow of information" to explain how microphysically composed properties may exert what he terms a "whole-part influence" to *slightly alter* their microphysical components contributions of causal powers. Crucially, this alteration would be a 'quantitative' rather than a 'qualitative' change at the microphysical level - it would be slight enough that the properties would still contribute the vast preponderance of causal powers they contribute elsewhere. Thus the same fundamental forces would plausibly still exist and no new ontologically fundamental forces would have been brought into existence. But the existing fundamental physical forces would have their 'quantities', their contributions of causal powers, slightly altered in some brute way by realizing certain higher level property. As a result, it might be argued that the relevant higher level properties could be causally efficacious through their partial determination of the causal powers contributed by the existing microphysical forces, rather than through exerting some new, 'spooky', non-physical force. Through this partial determination of the *existing* microphysical properties Peacocke could thus be re-interpreted, rightly or wrongly, as arguing that higher level properties can be causally efficacious in themselves, but *with-*

out adding to the fundamental ontology of the universe and violating PHY. Higher level properties are necessary to account for the contribution of causal powers, supporting the truth of HCE, yet all causal powers are nonetheless powers of microphysical properties, thus making it plausible such higher level properties are realized and supporting the claim that PHY is also true.

Under the framework I am using to re-interpret Peacocke, the resulting view may thus be charitably taken to be seeking to show that HCE can be true when physicalism holds; and hence that a panentheist God of the physicalist variety can be causally efficacious. Unfortunately, we can quickly see that even under this reading the same metaphysical problems arise once more for Peacocke's account, since he repeatedly states that any flow of information is mediated by the transfer of energy (Peacocke (1999), p.225 and 229). If we consider one of the realized properties, 'H', in virtue of which God, or some other "whole", exerts a "whole-part influence", then we have two interpretive alternatives. On one side, if the energy transferred when information flows from H to its realizers is the energy of these microphysical realizers, then physicalism remains true. But then AR implies we should only accept that the microphysical properties are causally efficacious. For *their energy* is responsible for the information flow and what appeared to be a "whole-part influence" of the realized property H. Thus PHY would be true, but HCE would not. Under the other alternative, if the energy transferred when information flows is energy had by H but *not* by its microphysical realizers, then HCE would be true. For it would be in virtue of H that some event caused certain microphysical events, rather than *solely* in virtue of H's microphysical realizers. Yet, as a consequence, H and its energy would also not be microphysically realized. Basically, H would comprise a fundamental, non-physical form of energy and though HCE might hold true, PHY would not. Thus Peacocke's idea of "whole-part influence" still fails to answer AR even under the broached physicalist panentheist re-interpretation.

Through our discussion of Clayton and Peacocke, we have seen that AR poses formidable difficulties both for physicalist panentheist accounts of divine action and, consequently, for any account of divine action which seeks to be fully scientifically compatible. Although physicalism implies that God's nature must accord with physicalist panentheism, it also appears that physicalism provides a *prima facie* reason to believe that such a God could not act in the world! Given these profound metaphysical problems, should we abandon physicalist panentheism? In evaluating this question two points stand out. First, AR does not merely undermine the causal efficacy of the properties of a physicalist panentheist deity, but undermines the causal efficacy of *all* higher level properties! Accepting AR will thus not merely undermine divine agency, but also human agency and the causal efficacy of a swathe of other properties. We thus have quite general reasons why we should not yield to AR. Second, if we take AR to be unanswerable and abandon the search for a position under which both PHY and HCE are true, then we are abandoning the search for an account of divine action that may be *fully* compatible with the sciences. For we would be admitting that an account of divine action cannot be compatible

with physicalism and all the scientific evidence supporting it.¹⁶ Again, this provides good reason to contest AR.

Rather than admit defeat in either of these respects, I contend that theists should continue to explore metaphysical responses to AR and associated accounts of divine action. Given this stance, by reflecting upon what it would take to successfully respond to AR we can now appreciate the importance of the differences between the Completeness of Physics, and the Efficacy Thesis, which I noted in Part 1. What would suffice to block AR? Apparently a metaphysical, rather than epistemic, reason why instantiation of some higher level property is, or even could be, necessary to account for the causal powers of individuals when PHY is true. I call this the 'Metaphysical Condition', since it is the demand for a metaphysical reason whose specific nature I leave open for the obvious reason that the very possibility of such a reason is at issue. However, if the Condition is satisfied, then a crucial premise of AR is undermined, namely that instantiation of microphysical properties alone suffices to account for all the powers of individuals when PHY holds.

We can now see that commitment to CP considerably deepens the problems posed by AR. Satisfying the Metaphysical Condition entails that there is a metaphysical reason why instantiation of some higher level property 'H' is necessary to account for some causal power 'C' of some individual. But if there were a causal power of the relevant kind, then it is plausible that H will be a necessary part of the cause of some microphysical event. (Again assuming the non-existence of causal power overdetermination). For one would need to posit the instantiation of H in order to account both for the individual having C and any microphysical event that is caused in virtue of the individual, and any event it composes, having C. Consequently, the microphysical would *not* be causally complete, for not all microphysical events would be determined, in so far as they are determined at all, by prior microphysical events. Though quick, this shows, I suggest, that the truth of CP is incompatible with satisfaction of the Metaphysical Condition. This inconsistency obviously poses a further substantive problem for the many physicalists who accept CP in addition to PHY.

If CP raises such grave problems, does commitment to the Efficacy Thesis alone leave physicalists any better situated? It appears that it may well do so and we can see this by returning to the core idea I earlier used in re-interpreting Peacocke's position. To reprise, and stripping away Peacocke's commitments to transfer of information or energy etc., the central idea was that higher level properties might partially determine the causal powers contributed by some of their microphysical realizers. Consequently, I suggested that higher level properties could be causally efficacious through their determination of the natures of the existing microphysical forces, rather than through exerting some new, 'spooky', non-physical force. For higher level properties would be necessary to account for the contribution of causal powers to individuals by microphysical properties, supporting the truth of HCE. Yet all causal powers would nonetheless be powers of microphysical properties, thus making it plausible such higher level properties are realized and supporting the claim that PHY is true. In such a scenario, there consequently appears to be a chance that the Metaphysical Condition would be satisfied.

Furthermore, although CP would be false for the reasons noted above, the Efficacy Thesis would arguably still be true, since all higher level properties would be microphysically realized. It thus appears that the Efficacy Thesis leaves a chink of metaphysical space, through its more permissive implications about the entities that can be determinative, where the determinative 'monopoly' implied by CP leaves none.

It obviously remains to be shown that the Efficacy Thesis allows both HCE and PHY to be true together. However, I hope that I have shown that the Efficacy Thesis is importantly different from CP; and also begun to illuminate one type of possible response to AR this may allow. I should note that in their focus upon so-called 'emergent' properties, and associated ideas such as "part-whole influence", Clayton and especially Peacocke apparently point the way to just this type of promising metaphysical approach to AR. Ultimately, I have argued that their positions conflict with the truth of physicalism, but their underlying ideas and the positions of earlier 'emergentists' are clearly worth further investigation. Before theists abandon accounts of divine action that are fully compatible with scientific findings I contend that they ought to explore whether such 'emergentist' frameworks help in answering AR and I have pursued this project at length elsewhere.¹⁷ In addition, many contemporary philosophers have begun to offer a range of other responses to AR that do not rely upon 'emergentist' ideas (see, for example, Jackson (1995), Kim (1998) and Shoemaker (2001), amongst others). Whether these responses succeed is also a highly contentious issue, and still more so if one pays careful attention to the noted implications of CP which is endorsed by many of these writers. Nonetheless, it also behooves theists to fully explore such accounts before they conclude that divine action is not fully compatible with the scientific view of the natural world.

To conclude, I have argued here that the good news for panentheists is that Peacocke is correct that the truth of physicalism, and its supporting scientific evidence, implies that those properties of God whose causal efficacy is manifested in the natural world are realized by microphysical properties. But the bad news that I have argued that physicalism brings in its wake is that such a panentheist position faces profound metaphysical problems. For the Argument from Realization implies that if we accept PHY, then we ought to reject HCE. Panentheists of the physicalist persuasion must answer this general metaphysical argument and so too must anyone seeking an account of God's action that is *fully* compatible with the sciences. As noted above, I contend that Peacocke and Clayton were right to pursue 'emergentist' positions, albeit of an overly dualistic kind, for such views promise help with the AR. Elsewhere I have offered a metaphysical defense of an 'emergentist' account of how Higher Causal Efficacy and physicalism may both be true; and argued that it vindicates physicalist panentheist approaches to divine action.¹⁸ However, my conclusions here are that until some answer to AR is successfully provided we must accept that the existence of a providential God is incompatible with the truth of physicalism. And we must go without a view of God's action that may be fully compatible with the sciences.¹⁹

NOTES

1. For examples, see Clayton (1997), Gregerson (1998), Murphy (1995), Peacocke (1990), (1995) and (Forthcoming), and Polkinghorne (1993) and (1995), as well as many of the papers in Tracy (1994). In addition, in a combined project between the Vatican Observatory and the Center for Theology and the Natural Sciences, there have been a series of conferences and volumes on the compatibility of various scientific areas for divine action, see for example Russell et al (1993) and (1995), amongst others.

2. See Peacocke (1990), (1995) and, especially, (Forthcoming).

3. See Elkana (1974) and Haraway (1976) for surveys of the variety of scientists committed to special forces at this time.

4. We could tighten the definition further by limiting it to properties individuated by their causal powers. In this way one might avoid concerns that, for example, some individual located in space-time instantiates some causally inert property. Having noted this type of amendment, I will leave it to one side. I should also note that there are substantive questions about defining the key notion of a 'microphysical' property. Elsewhere I have argued that such problems can be overcome (see Crook and Gillett (2001)).

5. This account is defended in Gillett (Forthcoming-a) and (Unpublished-c). The definition is slightly more complex than the usual definitions of realization, but this is needed if one is to respect the different individuals in which realized properties and their realizers may be instantiated, and to accommodate the fact that such properties may share no causal powers. The definition also has the feature, which we will see below is a virtue, of covering cases of realization where the higher level property is "structural".

6. Consider, for instance, the same argument based around the notion of 'force' defined as the influence to bring about microphysical changes of types 'A1', 'A2',... 'An', where the A's represent all the types of microphysical changes effected by forces. It appears the argument will still be valid if it uses this wider notion.

7. Deism is compatible with the Efficacy Thesis. But is the Thesis compatible with a position that takes God to causally act in the natural world through natural 'surrogates' that do not form any 'part' of God? The primary example of such accounts are so-called 'two causes' views of divine action, such as Wiles (1986), under which natural events are argued to have both a natural cause and also a divine cause, whether as a 'sustaining' cause or some other form of causation. I will not consider such accounts, since there are plausible objections to their truth. For example, see Thomas Tracey's critique in the introduction to his (1994) and his contribution to Russell et al. (1995). (Furthermore, the argument offered in Part 1 may apparently be applied to establish that, assuming PHY, such accounts must devolve into physicalist pantheism or contradiction).

8. See Peacocke (1990) and (1999) for the more traditional form of pantheism where God's nature exceeds the natural universe. For more radical forms of pantheism, closer to physicalist pantheism, see McFague (1993), and Jantzen (1984) which have 'embodiment' accounts of God's relation to the natural world. See also the work of Charles Hartshorne who espouses a position similar to physicalist pantheism. (Thanks to Edgar Towne for the latter point).

9. This type of explanation can easily be extended to individuals as well as properties in order to defend strong physicalist pantheism.

10. See Putnam (1967) and Lycan (1987), for seminal and recent functionalist accounts.

11. The philosopher Jaegwon Kim has perhaps done the most to illuminate the nature of these problems in a series of papers and books, see for example Kim (1993), (1997) and (1998). Kim's arguments are primarily focussed on the causal efficacy of realized properties and similar arguments, including arguments directed at dispositional properties, are also found in Prior, Pargetter and Jackson (1982), Martin (1997) and Heil (2000), amongst others.

12. Gillett and Rives (2001) provides a defense of the claim that the same style of argument is easily translated to apply to properties identical to, rather than realized by, combinations of microphysical properties. Gillett (Forthcoming-a) provides a more precise metaphysical argument for the point.

13. Clayton accepts O'Connor's (1994) account of emergent properties under which they are not realized by lower level properties (Clayton (1997), p.248).

14. With regard to this criticism it appears Clayton's main response echoes a suggestion of John Polkinghorne, for Clayton argues that the methodology of the sciences does not require adherence to physicalism (Clayton (1997), p.202-201). And hence he suggests that an account that conflicts with PHY is *not* at odds with the sciences. I fully agree with the point that scientific methodology does not require endorsement of PHY and I have offered an extended argument for just this claim elsewhere (Gillett (2001)). The problem for Clayton is that the methodological strictures of the sciences are *not* the main support for PHY. As I outlined in the Part 1, the findings of the sciences provide a large body of evidence about the *compositional* relations that hold between entities, for example that DNA composes genes or certain quantum states compose particular chemical bonds. It is such empirical evidence that makes it so plausible that PHY is true, not the methodology of the sciences. Consequently, by rejecting PHY Clayton's account of divine agency is plausibly in conflict with the findings of the sciences.

15. The re-interpretation of Peacocke uses the kind of account that Gillett (Unpublished-a) argues was actually espoused by Samuel Alexander's (1920) and which Gillett (Forthcoming-b) has defended in the contemporary debate.

16. There are two opposed forms 'pessimistic' responses may take. The first says "So much the worse for physicalism!" and like Clayton adopts some form of dualistic position, arguing that the existence of a divine (or human) agent shows the sciences must be incomplete in their findings about the world's structure. In contrast, the other says "So much the worse for divine (or human) agents!" and argues the sciences have shown us that our pre-scientific assumptions, here HCE, were mistaken once more. Such a position will lead either to deism, pantheism or atheism.

17. For example, ideas about 'emergence' and the possible determinative role of microphysically composed higher level properties are to be found in Alexander (1920) and Lloyd Morgan (1923), amongst others. See Gillett (Unpublished-a) for a detailed explication of Alexander's position and suggestions about its promise for answering AR.

18. In Gillett (Unpublished-b) and (Forthcoming-b). For a survey of recent concepts of emergence as they relate to AR see Gillett (Forthcoming-c).

19. A shorter version of this paper was read at the Gifford Conference on Natural Theology, the University of Aberdeen, in May 2000. I am grateful to the audience and my commentator Edgar Towne. Thanks also to Seth Crook, Brad Rives and Arthur Peacocke. Finally, I am grateful to the editor, and four anonymous referees, whose helpful comments improved the paper.

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