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Henry Taylor

1. The pure powers view

Many believe that properties are powers. On this view, properties have a dispositional essence. The most extreme version of this position is the pure powers (PP) view, which I take to be:

> (PP) All properties have an exhaustively dispositional essence.

On this view, for *all* properties, there is *nothing more* to their nature than their dispositional characteristics.[1] PP has long been objected to on the grounds that it implies a vicious regress, or vicious circularity. I first outline this regress (§2), then offer a new response to it (§§3–4). I argue that this response is plausible, even independently of issues connected to PP. Finally, I argue that this response implies that advocates of PP should reject one-category ontologies (§5).

The notion of essence is to be interpreted as identity-fixing (Fine 1994).[2] According to PP, the dispositional characteristics of a property are what fix its identity (what make it the particular property that it is). I am concerned with the view that *all* properties' essences are *exhaustively* dispositional. The word 'power' should be interpreted in this way throughout. I will not consider views on which properties' essences are *partially* dispositional (Taylor 2018), and I will not discuss the view that only *some* properties are essentially dispositional (Molnar 2003: p. 178). A power's manifestation is the event that the property is 'directed' toward (in the case of fragility, its manifestation is smashing). A property's stimulus is what is required in order to actualize this manifestation (in fragility's case, the stimulus is the force applied to the object).

2. The regress argument

The regress argument against PP has many forms (Bird 2007a: pp.132–146, 2007b, Ingthorsson 2015), but I stick to the version given by Lowe (2006: 138). It goes as follows:

(1) According to PP, all properties have their identities fixed by their dispositional characteristics.

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1 See Bird 2007a: p. 100 and Mumford 2004: p. 185. Mumford rejects talk of essence, saying instead that properties are identical with bundles of dispositions. Bird restricts the claim to all *fundamental* properties. These complications will not matter for this paper.

2 I use 'nature', and 'essence' interchangeably, and understand both as that which determines an entity's identity.

(2) These dispositional characteristics are determined by nothing more than relations to potential stimuli and manifestations.

(3) All stimuli and manifestations themselves consist of just more pure powers.

(4) The pure powers involved in these stimuli and manifestations have their identities fixed by their own dispositional characteristics, which are themselves fixed by their relations to further stimuli and manifestations, which are themselves just more pure powers . . .

(5) (Therefore) all powers have their identities fixed by their relations to other pure powers in a network.

(6) This leads to either a vicious regress, or vicious circle, with the result that no property can get its identity fixed.

(7) (Therefore) PP should be rejected.

Fundamentally, the regress argument says that pure powers are just not sufficient to do the work of fixing each other's essences. As a result, (the advocate of the argument claims) we need to inject something new into the system, the identity of which is not fixed by its relations to other pure powers. For this reason, advocates of the argument insist that we must accept the existence of at least some properties, the essences of which are not fixed merely by their relations to other properties.

I mention some complications in order to set them aside. Some theorists reject (2) on the grounds that powers are individuated by their manifestations alone, not their stimuli and manifestations (Vetter 2015: p. 65).[3] I will assume the 'stimuli and manifestations' view throughout this paper, but the main arguments of this paper can be converted to apply to the view that powers are only individuated by their manifestations. I leave this implicit in what follows.

The standard response to the argument is to accept (1)–(5), but deny (6) (Bird 2007b). That is, to accept that a power's identity is fixed by its relational position in a network of properties, but deny that this is vicious. Graph theory is used to argue for the coherence of a system in which the essence of each property is fixed by nothing more than stimuli and manifestation relations to other properties. This response has been the subject of much debate (Barker 2009). One core worry is that it is hard to accept that the identities of concrete properties like mass and charge could be fixed by a purely abstract structure. Given these worries, it is at least reasonable to explore other options. The purpose of this paper is to put forward a novel solution. I do not aim to prove that my proposed solution is the best, only that it is a plausible one that is at least deserving of serious consideration.

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3   Vetter prefers the term 'potentialities' to 'powers'. I pass over these issues in this paper.

This is an important result, regardless of what we think of the standard response.

3. The solution

Although masses has been written about the regress argument, (3) has gone without scrutiny. (3) is necessary for the argument because it ensures that the advocate of PP cannot use any resources other than pure powers to explain how powers' identities are fixed. Suppose (3) were not true. In that case, a pure power P would have its identity fixed by its manifestation M and stimulus S. However, M and S would themselves not be entirely constituted by further pure powers. M and S would be (at least partially) constituted by something other than pure powers. These additional elements would then be parts of the system that can help do the job of fixing the identities of powers. In that case, pure powers would not be entirely reliant on other pure powers to explain how their identities are fixed, because they could rely on these other elements as well. As a result, (5) would no longer follow.

How plausible is (3)? Even independently of the regress argument, (3) is implausible. Consider the property of fragility possessed by a vase. Start by restricting our discussion to its manifestation, setting stimuli to one side for now. Its manifestation is the vase's *smashing*. The smashing essentially involves the vase. The vase is an ineliminable part of the manifestation. The vase is an object, not a property. Therefore, the manifestation involves something more than just properties. There is something more to the manifestation than just pure powers (after all, PP only involves the claim that *properties* are pure powers, not objects).[4]

The implausibility of (3) becomes even clearer when we consider manifestations for the creation of new objects. To take a simple macroscopic example, suppose I put together two halves of a Russian doll. This interaction of the powers involved in the two halves of the doll will result in the creation of a new object, which is the doll. This doll (an object) is an ineliminable part of the manifestation of these powers. Again, there is something more than mere properties involved in the manifestation, so (3) is implausible.

These considerations show that (3) is implausible. Its implausibility grows when we consider philosophical theories of events. Return to fragility's manifestation, which is smashing. Smashing is an event. There are two main theories of events, the Davidsonian one and the Kimian one. Take each in turn. On the former, events are ontological primitives, individuated by their causal relations to other events (Davidson 1969). On this view, since the smashing of the vase is an event, it would be an ontological primitive. Therefore, it would not be reducible to the powers involved in it. On this picture, then, (3) is false. Now take the Kimian view of events, on which they are constituted by three

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4   In §5 I discuss the suggestion that the object is itself just constituted of more powers.

elements: a substance that undergoes the event (the vase), a property (breaking) and the particular time at which the event occurs (Kim 1976). Of course, the advocate of PP does have to accept that the *property* that partially constitutes the event is a pure power. However, the substance (vase) also features in constituting the event of smashing, as does the time. These are not properties, and so the manifestation does not entirely consist of just more pure powers. So, again, (3) is false.

I will not attempt to settle the issue of whether the Davidsonian or Kimian view of events is preferable. I remain neutral on this. The point is that on either view, (3) is implausible, and should be rejected.

(3) is implausible both in the case of *token* powers, and in the case of power *types*. Start with tokens. Consider an individual token instance of fragility, instantiated by a particular vase. Such a token power would be a particular instantiation of the fragility universal, or a fragility trope. The manifestation of this fragility token is a particular event token, which is the smashing of the particular vase that instantiates it. As we have already seen, this event may itself be a Davidson-style ontological primitive, or it may be constituted in a Kimian fashion of substance, property and time. Either way, there is more to this smashing than just pure powers. In the Davidsonian case, the manifestation itself would be an ontological primitive (and hence irreducible to powers). In the Kimian case, it essentially involves an object (the vase), and hence there is more to it than just pure powers. So (3) is implausible at the token level.

Now, move to the *type* level of powers, and consider the general type of which this vase's fragility is a token. There are of course different levels of grain at which we might individuate this power-type. One such type will be 'fragility possessed by vases', and another will be 'fragility' generally. Regardless of the level at which we individuate the power-type, any such power-type will have an event-type as its manifestation. This event-type may itself be another ontologically fundamental feature of reality (in a Davidsonian fashion), or it may be composed in a Kimian fashion by constituents including object-types. In either case, these event-types will not be merely composed of pure powers. So (3) is implausible at the type level.

In rejecting (3), we are pointing out that manifestations consist of more than just pure powers. Of course, this can only help the advocate of PP if the additional elements involved in these manifestations can be used to help explain how powers get their identities fixed. More can be said on this point, to illustrate how power individuation will work. For simplicity, I here restrict myself to power *tokens*, or instances of powers.[5] It is implausible that a persisting power would be individuated by the *time* of the manifestation event (it is not

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5   I will focus on the Kimian view in the rest of this section. A very similar strategy as the one I outline here can also be applied to the Davidsonian view (where events are simply ontological primitives). I leave this implicit in what follows.

essential to a power that it manifest at a particular time) so the time of the manifestation is unlikely to be helpful to the powers theorist in explaining how a property's essence is fixed. Rather, a powers theorist taking the Kimian view of events will claim that the power is partially individuated by the *object* involved in the manifestation. Consider a single token power P (such as the fragility of a vase) and its manifestation M. Suppose M is partially constituted in a Kimian fashion by object O (the vase) (as well as a property and time). P bears the manifestation relation to M, and M is partially constituted by O. Even this very simple relational structure is already enough to distinguish P from any pure power token, the manifestation of which involves *any* object other than O.[6] So even with this very small part of the network (just one token power and one relation to a token manifestation) we already have done most of the individuating work distinguishing P from other powers.

An opponent may ask about two different token powers, the manifestations of which both involve the same object. For example, suppose we have two token powers P_1 and P_2. Suppose both of their manifestations involve object O, but nonetheless P_1 and P_2 are different powers. For example, suppose O is a brass ball. One power that it instantiates is the power to be heated if exposed to a flame (call this P_1) and another power would be the power to roll if placed on a slope (call this P_2). These two properties have distinct manifestations (heating and rolling), but they both involve the same object O, so O alone cannot individuate them one from the other. This is not a problem, however, as we can appeal to the objects involved in the *stimuli* for these properties. In the case of P_1, its stimulus condition involves a flame (or some other heat source), whereas the stimulus condition for P_2 involves a slope. Since there are different objects involved in the stimuli conditions, we are able to distinguish P_1 and P_2.

In these cases, P_1 and P_2 are distinguished by the objects that feature in their stimuli and manifestations. The relationship need not be so direct. A power P_1 could be individuated by the fact that its manifestation involves another power P_2, which itself is individuated by the fact that its manifestation involves object O. Here, O serves to fix P_2, and then this property itself serves to fix P_1.

For simplicity, I have assumed that each power would have only one manifestation and one stimulus. However, the case gets all the stronger if we assume the multi-track view that each power has a range of potential manifestations given a range of alternative stimuli. This will only add more

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6   Suppose M is never actualized. Does this imply that P is individuated by a non-actual manifestation featuring a non-actual vase? Would this non-actual vase be *identical* with the actual vase O, which actually instantiates P? My preference is to answer 'yes' to the latter question (and thereby commit to cross-world identity of objects). Another option is to say that, strictly speaking, P is individuated by a non-actual manifestation featuring a non-actual vase that is a *counterpart* of the actual vase O (cf. Lewis 1986: ch.4). Either reply is compatible with my proposed solution to the regress argument.

resources for the advocate of PP to use to explain how properties' identities are fixed.

Since (as I have argued) (3) is implausible independently of issues connected to the pure powers view, our rejection of it cannot be accused of being ad hoc. Notice how modest my claim is. The minimal claim required to reject (3) is that *at least some* stimuli or manifestations are not *entirely* composed of just more pure powers. Simply denying this global claim is enough to provide the pure powers theorist with objects (or primitive events) that do not have their identities fixed by other pure powers, and which can help fix the identities of powers.

Indeed, it is somewhat odd that everyone assumes that (PP) can only use pure powers to explain how powers' identities are fixed. After all, PP is only a claim about *properties*. The advocate of PP is free to invoke any other elements of her ontology to explain how properties' identities are fixed.

4. *Partial individuation by powers*

An opponent may reply as follows. Suppose we reject (3), and thereby say that stimuli and manifestations are not entirely constituted by pure powers. It is still the case that they *partially* involve pure powers. This is because stimuli and manifestations involve properties, which (for the advocate of PP) must be pure powers. Therefore, pure powers still rely *partially* on other pure powers for their individuation.

This is not problematic. We need to distinguish two claims:

(i) Pure powers' identities are fixed entirely by their relations to other pure powers.
(ii) Pure powers' identities are fixed partially by their relations to other pure powers.

The regress argument targets (i). But by rejecting (3), the response proposed in this paper avoids commitment to (i). We allow other constituents of pure powers' stimuli and manifestations (e.g. objects) to help with the work of fixing properties' identities. The proposed response is committed to (ii) at most. On the current proposal, pure powers are dependent partially on other pure powers for their essence to be fixed, but also partially on other elements of our ontology (e.g. objects, or primitive events). However, (ii) is not problematic. The regress argument targets the idea that pure powers *alone* are sufficient to fix the essences of properties. (ii) carries no such commitment, so the regress argument does not touch the proposed view.

An opponent may still insist that (ii) is problematic. They would then be claiming that other powers cannot play *any* role in fixing powers' identities. However, this amounts to an implausible insistence that relations to other properties must be *irrelevant* to a property's identity. There is no reason to

accept this.[7] Note that PP is by no means the only ontology that is committed to the claim that properties have their identities fixed *partially* by their relations to other properties. Views according to which only some properties are powers (Molnar 2003: p. 178), and views according to which properties have a partially powerful and partially non-powerful nature (Taylor 2018) are committed to the same.

An opponent may argue that rejecting (i) is in contradiction with the pure powers ontology itself, because it involves the claim that powers are not individuated just by more powers. This worry can be answered by showing that PP does not entail (i), and hence that one can accept PP whilst rejecting (i). PP only claims that *properties* are powers, which is to be understood as the claim that properties' natures are entirely fixed by their stimuli and manifestation relations. PP does not entail that stimuli and manifestations must themselves be constituted entirely by pure powers. It is entirely consistent with PP that stimuli and manifestations are partially constituted by objects, or primitive events, as well as further powers. Therefore, PP does not entail that powers' identities must be fixed entirely by powers. We can accept that all properties are pure powers whilst avoiding commitment to (i).

5. Reducibility to powers?

I have pointed out that manifestations and stimuli are composed of more than just pure powers. One suggestion is that they are also composed of objects, and another suggestion is that they are primitive events themselves. However, an opponent may reply that these additional elements are themselves reducible to mere powers. For example, above I used the example of the fragility possessed by a vase, and pointed out that the manifestation ineliminably involves an object (the vase). The objector may insist that the vase itself is nothing more than a bundle of powers.[8] The regress would then recur. We could not invoke the vase in our explanation of how fragility has its identity fixed, because there would be a question over what fixes the identity of the powers that compose the vase, and we would invite the regress again.

This problem only arises if we accept that the additional elements involved in a power's stimuli and manifestation are themselves exhaustively composed of pure powers. The advocate of PP should therefore reject this problematic claim. With the example of the vase, this will involve rejecting the claim that the vase is a mere bundle of powers. Since they cannot be exhaustively reduced to powers, the regress does not return. This commitment has wider repercussions. By claiming that some elements of our ontology are not reducible to

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7   Opponents may appeal to Humean independence to make this case (Wilson 2010). However, any advocate of PP is already committed to the denial of Humean independence (Bird 2007a). So it carries no weight in this dialectical context.

8   See Campbell (1990) for the view that objects are bundles of properties.

pure powers, the advocate of PP will thereby be accepting that powers are not the only fundamental constituents of reality. On this view, there are other fundamental categories, which cannot themselves be exhaustively reduced to powers.

This is an important consequence of the reply presented here: that it commits us to a rejection of the view that powers are the only fundamental constituents of reality. There are many ontologies that would fit this, most obviously two-category substance and property views (Heil 2003: pp.171–175). The important point is not which ontology the advocate of PP accepts, but just that they reject the claim that powers are the *only* fundamental constituents of reality.

Is this additional commitment problematic for PP? No. One-category property ontologies are widely rejected anyway, for metaphysical reasons independent of issues over powers (Heil 2003: pp. 107–10, Lowe 2006: pp. 70–72). So it is not as though the advocate of PP is being forced into an implausible position. Even setting this point aside, the fact that the proposed solution carries with it wider metaphysical consequences is no objection to it. After all, ontological commitments will always have consequences elsewhere in the metaphysical system.[9]

If PP were motivated by the claim that powers are sufficient to account for all of reality, then rejecting a one-category ontology would be a major problem for the view, as it would void its motivations. However, when we examine the motivations for PP, this is not the case. PP is motivated by its ability to give a good account of fundamental laws of nature, and of causation (Bird 2007a: pp.43–50, Mumford and Anjum 2013: pp. 23–43). None of these motivations are endangered by accepting that powers are not the only fundamental constituent of reality. We can accept that properties are not the only fundamental ontological category, and still retain all the reasons we initially had to accept PP.[10]

6. Conclusion

The standard solution to the regress argument invokes graph theory to explain how powers' identities are fixed. This may appear implausible, on the grounds

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9   As further evidence that there is no clash between the rejection of a one-category ontology and PP, consider that Mumford suggests that substance may be accepted within a pure powers ontology (2004: 173–74). However, he does not use this to address the regress argument.

10 Can the view remain neutral on the 3D/4D controversy concerning time? On one hand, 3D views face the problem of change: how could the same object (given Leibniz's law) undergo the kinds of changes that a powers view implies (Lewis 1986: 202–9)? Conversely, 4D views struggle to explain dispositional predication (Wahlberg 2009, cf. Mumford 2009). Full discussion of this will take us too far afield, but note that my view is compatible with standard 3D responses to the problem of change (Lowe 1987). Furthermore, the proposed incompatibility of 4D views with dispositional predication affects any ontology that includes dispositional predication, not merely pure powers views (cf. Wahlberg 2009: 45).

that a mere abstract structure of relations, with no greater grounding in reality, could determine the identities of concrete *de re* properties such as mass and charge. The solution proposed here avoids this problem, by taking concrete entities like objects and events as a part of its explanatory resources.[11]

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Abstract

I offer a new response to the regress argument against pure powers ontologies. This involves rejecting an overlooked premiss, which is that a power's manifestation is exhaustively accounted for by the powers involved in it. Rejection of this premiss not only answers the regress argument, but also brings with it wider metaphysical consequences, including a shift away from one-category ontologies.

Keywords: Powers, Regress, Essence, Events