**Debating Powers: Where the Real PuzzleLies**

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Abstract: Stephen Mumford and Alexander Bird disagree about which properties are powers and, correspondingly, about the extent of the philosophical work to which powers may be put. Unfortunately, there is an important respect in which these authors are talking past each other and so the reason for their disagreement remains obscured. I highlight what has gone wrong in their recent exchange, attempt to clear up the confusion and pinpoint the true source of their disagreement. My hope is to redirect the efforts of these authors and their followers onto more pressing foundational issues in the metaphysics of powers.

Keywords: Powers, Properties, Explanation, Essence, Necessity

Powers theorists believe that at least some properties are *powers* and that powers can be put to work in explaining a range of philosophical phenomena.[[1]](#footnote-1) There is disagreement among the powers theorists about which properties get to count as powers and, correspondingly, about the extent of the philosophical work to which powers may reasonably be put. Bird (2016) has argued that while there are good reasons to believe that fundamental properties are powers there are no reasons to believe that macro (i.e., non-fundamental) properties are powers.[[2]](#footnote-2) It follows that there is no work for macro powers in accounting for macro phenomena such as causation, intentionality, free will, etc.

Mumford (2021) has responded to Bird and defended the claims i) that there exist macro powers and ii) that these macro powers can be put to work in accounting for macro phenomena. Crucially, Mumford says that “The *primary* reason I find why Bird thinks there are no useful powers-based accounts of macrophenomena such as causation and agency is that he believes there are no macro-powers that could be at work in these phenomena” (Mumford 2021, 1299, my emphasis).

My concern is that Mumford’s argument for the existence of macro powers fails to make the necessary contact with the details of Bird’s argument *against* macro powers (though the situation is perhaps not helped by some unclarity on Bird’s part). In short, Mumford argues that many macro properties are modally fixed—they have their dispositional character necessarily—from which he infers, contrary to Bird, that these properties are powers. But while Bird does think that modal fixity is necessary for being a power, he does not think that modal fixity suffices for being a power. Thus, Mumford’s arguments to the effect that many macro properties are modally fixed will do nothing to convince Bird that these properties are powers, hence Mumford’s reply will not convince Bird that there exist macro powers that may do the work of explaining macro phenomena. I’ll elaborate on the details of this situation in what follows.

The confused (as I see it) state of this debate risks obstructing future work on the philosophy of powers, a topic in which there is a lot of current interest. The point of this paper is thus to try and clear up any confusion with the hope of facilitating future debates.

To see why Mumford’s response to Bird misses its target it is important to keep in mind the details of Bird’s account of the metaphysics of powers because Bird’s argument against macro powers crucially turns on these details. Bird maintains that a power is *a property that is dispositional in nature* (Bird 2016, 341, 345), *viz.* the “essence or identity of a power is determined by its dispositional character” (Bird 2016, 356), this is Bird’s understanding of the metaphysics of powers.

It follows from the fact that the essence of a power is determined by its dispositional character that powers are *modally fixed*: they have their dispositional character necessarily. Essence implies necessity (but plausibly *not* vice versa, cf. Fine (1994)). *Modal fixity* is thus a necessary condition on being a power, according to Bird. *Mass*, for example,confers on its bearers a disposition to warp spacetime. This is the dispositional character of mass. If mass is a power, then, according to Bird, this dispositional character is of the essence of mass, from which it follows that it is necessary that if something instantiates mass then it is disposed to warp spacetime, i.e., massis modally fixed.

Now according to Mumford: “Bird insists that ontic macro-properties are not powers in the required sense of having modal fixity.” (2021, 1299). In an effort to counter Bird, Mumford thus takes up the task of arguing that there are (many) ontic (aka *sparse* or *natural* as opposed to merely predicatory) macro properties that are modally fixed. In particular, he focuses on some purported counterexamples to the thesis that all (or many) properties are powers: *sphericity*, *being leukopenic* and *being covalent*; each of these, Mumford argues, plausibly *is* modally fixed.

But this would only stand a chance of convincing Bird that the properties in question are powers if Bird thought that the modal fixity of a property sufficed for it to be a power, which he does not. Explicit evidence for this comes in Bird’s discussion of the property *aromaticity*.

Even if we can light on a set of dispositions shared (necessarily) by all aromatic compounds, that complex of dispositions would neither be nor determine the nature, essence or identity of aromaticity. Rather, what aromaticity is is a matter of the structure of the molecules and their bonds and electrons. That in turn explains any shared dispositions. *The necessity of any relationship between aromaticity and a disposition does not amount to a relationship of essence* (or nature or identity). (Bird 2016, 356, my emphasis).

The above passage in conjunction with Bird’s account of powers according to which the “essence or identity of a power is determined by its dispositional character” (Bird 2016, 356), implies that Bird thinks that *aromaticity* is not a power, *notwithstanding* its being modally fixed. This is the crucial passage for understanding the problem with Mumford’s response to Bird. The time spent arguing that Bird’s purported counterexamples are modally fixed is in vain because, in Bird’s eyes, a property can be modally fixed without being a power if its essence is given non-dispositionally but, rather, structurally or compositionally, for example, as is the case with *aromaticity*.[[3]](#footnote-3) This is what the above passage makes clear. Having said this, there is at least one point at which what Bird says could be seen to encourage Mumford’s interpretation, namely, on p. 366 he says: “The difference between the powers view of properties and its alternatives concerns the modal nature of properties, whether they are modally fixed or modally variable. Do they have any dispositional character necessarily or contingently? Are they essentially dispositional or categorical?”. *This* makes modal fixity seem like the defining feature of powers and tantamount to being essentially dispositional. Nevertheless, I think the previous Bird (2016, 356) quote is conclusive in establishing that for Bird modal fixity does not suffice for being a power and either way, the point stands that clarity on the metaphysics of powers is missing in this Bird-Mumford exchange.

It is fair of Mumford to point out that providing some counterexamples (*aromaticity*, *being covalent*, etc.) to pandispositionalism (the thesis that all ontic properties are powers) does not by itself constitute an argument against the claim that there are *some* (or even many) ontic macro powers and that these play an important role in explaining macro phenomena of philosophical interest, such as causation, and Bird isn’t as clear as he perhaps could’ve been on the dialectic here. But Bird does think that his argument applies to a great many properties in (higher-level) science; he gives many more examples than those mentioned here, and, more importantly, he provides a recipe for identifying more still: find a property that is ontic because it plays an explanatory role in science (cf. Schaffer 2004), discover that its essence/identity is given compositionally, structurally or otherwise non-dispositionally and it will be a non-power. Hence it seems plausible that a great many scientific properties are not powers on Bird’s way of thinking about things and this is not affected by showing that the properties in question are modally fixed. Those who would put powers to work in accounts of macro phenomena such as causation are thus burdened to show that macro powers really are needed in addition to our ontology of macro properties, and Bird does not think this an easy burden to carry (2016, 357). In many cases, causally relevant properties will not be powers (in Bird’s sense), the presence of oxygen, for example, is a causal factor in explaining a fire, but this concerns constitution, not disposition (ibid), so why posit powers *in addition* to the non-powerful causally relevant properties?

My point, then, is that contrary to what is suggested by Mumford’s reply to Bird, the crux of the Mumford-Bird disagreement is not whether there are (m)any macro properties that are *modally fixed* because, for Bird, a property being modal fixed does not suffice for its being a power and so does not establish what is needed to motivate macro-powers-based explanations of macro phenomena. As far as I can tell, there is no substantive disagreement between Mumford and Bird about which properties are modally fixed.

There is, however, disagreement about which properties count as powers, hence the substantive disagreement concerns the *metaphysics* of powers. Mumford thinks that it does not disqualify a property from being a power if its essence can be specified non-dispositionally. Mumford’s discussions of sphericity and being a covalent bond (Mumford 2021, 1300–1302) serve as evidence for this since these are properties whose essence can be given non-dispositionally (mathematically and structurally, respectively) and these are properties that Mumford wishes to hold up as examples of powers. What’s more, Mumford thinks that being metaphysically *productive* of manifestationsis central to what it is to be a power (Mumford 2021, 1296). Bird, on the other hand, is clear that if a property’s essence can be given non-dispositionally then it is not a power, as evidenced by his discussion of, e.g., aromaticity (see quote above and Bird 2016, 356); he thinks that powers are properties whose essence or identity is given in *purely* dispositional terms. And Bird does not invoke the notion of *production* in his account of what it is to be a power.

It is unfortunate that Bird and Mumford’s substantive disagreement about the metaphysics of powers is obscured by a relatively trivial discussion of which properties are modally fixed. The issue of the metaphysics of powers is intimately tied up with the critical issue of whether powers are capable of doing the explanatory work for which they were originally proposed. It is generally agreed that to be a power a property must stand in some appropriate explanatory relationship to modality and this then disqualifies properties as understood by, for example Lewis (e.g., 2009) and Armstrong (e.g., 1999) from being powers, see, e.g., Azzano (2019) and Vetter (2021) for some illuminating discussion. It would be beyond my present scope to enter this debate in any detail, but it is worth noting that it has been argued, for example, that an understanding of powers as properties whose essences are constituted by dispositions will not suffice to explain laws of nature and modality in terms of those powers (Barker and Smart 2012; Tugby 2012; Barker 2013; Jaag 2014; Kimpton-Nye 2021; Friend and Kimpton-Nye 2023). This has motivated alternative accounts of the metaphysics of powers, notably in ground-theoretic terms ( Tugby 2012; 2020; Coates 2020; Kimpton-Nye 2021). One might also think that the details of the metaphysics of powers has implications for how far the powers ontology extends, for how many properties get to count as powers. As should be evident from the previous discussion of Bird’s view, there is reason to think that if powers are just those properties whose essences are purely dispositional, then not all ontic properties will count as powers. But it has been argued that if powers are categorical *grounds* of dispositions, then *all* ontic properties are powers, i.e., *pandispositionalism* is true (see, e.g., Kimpton-Nye 2022; Tugby 2010).

 My worry, then, is that the confusion embedded in the Bird-Mumford debate distracts from the really important task with which proponents of powers must engage, namely, developing an account of the metaphysics of powers that renders powers capable of doing their most important explanatory work in the first place. It arguably won’t help to just stipulate explanatory roles for powers since the metaphysics of powers must render them up to the explanatory task (Lewis’s comments about mighty biceps (1983, 366) and fair naming of your whatnots (1994, 484) come to mind). The issue of which properties are modally fixed is relatively unimportant and so the surface level disagreement between Bird and Mumford is relatively unimportant. But as I have shown, I think the real driving force behind the Bird-Mumford debate is a disagreement about the metaphysics of powers. The way to debate *this* point is by debating which metaphysical account of powers renders powers best able to do the explanatory work for which they were first proposed. And this in turn plausibly has implications for which properties get to count as powers and so has an interesting bearing on the controversial thesis of pandispositionalism. I hope that this paper will help Bird, Mumford and their followers to realise this and thus get on board with the important foundational work going on elsewhere in the literature on powers.

ACKNOWLEDGEMENTS: Thank you to Francesca Bellazzi, Toby Friend, Will Morgan, Vanessa Seifert and Tuomas Tahko for discussion of these ideas. And many thanks indeed to the ERC-funded MetaScience project of which I was a part when working on this paper and which made this research (and much more besides!) possible.

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1. Roughly speaking, *powers* are irreducibly modal properties. Unfortunately, I can’t say more at this stage because the precise account of what it is to be a power is what is at stake in this paper. [↑](#footnote-ref-1)
2. He revises this in his (2018) where he argues that some evolved macro properties are powers, but this won’t be relevant for my present discussion. [↑](#footnote-ref-2)
3. The property *sphericity* is another good example of this. Perhaps *sphericity* is necessarily connected with a disposition to roll down an incline (among others) but the essence of *sphericity* can be specified entirely non-dispositionally: to be a sphere is to have a surface all points on which are equidistant from a given point. So, on the evidence of his comments regarding *aromaticity*, Bird should deem *sphericity* a non-power. [↑](#footnote-ref-3)