

ARTICLE

Disentangling Dispositions from Powers

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Abstract

Many powers-realists assume that the powers of objects are identical with the dispositions of objects and, hence, that ‘power’ and ‘disposition’ are interchangeable. In this article, I aim to disentangle dispositions from powers with the goal of getting a better sense of how powers and dispositions relate to one another. I present and defend a modest realism about dispositions built upon a standard strong realism about powers. I argue that each correct disposition-ascription we can make of an object is made true by the manifestations towards which a given power or collection of powers of the object is directed.

Résumé

De nombreux réalistes des pouvoirs supposent que les pouvoirs des objets sont identiques aux dispositions des objets et, par conséquent, que le « pouvoir » et la « disposition » sont interchangeables. Dans cet article, j’ai pour objectif de démêler les dispositions des pouvoirs dans le but d’avoir une meilleure idée de la façon dont les pouvoirs et les dispositions se rapportent les uns aux autres. Je présente et défends un réalisme des dispositions modeste fondées sur un réalisme des pouvoirs standard fort. Je soutiens que chaque disposition-ascription correcte que nous pouvons faire d’un objet est rendue vraie par les manifestations vers lesquelles un pouvoir donné ou une collection de pouvoirs de l’objet est dirigé.

Keywords: dispositions; powers; properties; causation; metaphysics; ontology

1. Introduction

It is not uncommon to find proponents of a powers-ontology, according to which at least some of the properties of objects are powers, assert and defend the claim that the dispositions of objects are conferred upon them by the powers of the object. In this article, I question a further assumption made by many powers-theorists. Anyone with some familiarity with the recent literature on dispositions knows that, among powers-realists, dispositions are assumed by some to be identical with powers. ‘Power’ and ‘disposition’ are taken to be interchangeable and synonymous, co-referring to a dispositional property of an object. Examples of identifying dispositions with powers are legion and often go unnoticed. Cataloguing all of

the cases of this assumption at work by powers-theorists would be an onerous task.¹ I do not propose to do that here. My intention in this article is to try to clarify the relation between powers and dispositions with the goal of getting a better sense of how they relate to one another.

In brief, I will be arguing against identifying dispositions with powers.² I will present and defend a modest realism about dispositions built upon a standard strong realism about powers. I will contend that the truthmakers for predicating dispositions of objects are provided by powers themselves. Thus, in brief, I will be defending the thesis that dispositions are predicates, while powers are properties that provide the truthmakers for representations of states of affairs involving dispositions. Moreover, there is not a one-to-one correspondence between the dispositions we ascribe to objects and the actual properties of objects. I take it that each discrete true disposition-ascription we can make of an object picks out one of the manifestations towards which a given power or collection of powers of the object is directed. Representations of the manifestation of a specific disposition of an object are made true by the activation of a power of an object that is directed at that manifestation. The view I will defend is realist insofar as I take it that our representations that involve predicating dispositions to objects are true. But it is a *modest* realism about dispositions, given that I deny that each disposition-ascription picks out a unique property. Thus, by 'modest realism' about dispositions, I mean to endorse the view that it is true that objects have dispositions, but its being true that dispositions are real (and not identical with powers) does not involve any addition of being.³

In the interest of clarity, I will first articulate some very general assumptions about the ontology of powers and truthmaking with which I will be working. Next, as a first step towards making my case for disentangling dispositions from powers, I will present a simple argument against the identity of dispositions and powers and will offer a defence of the argument's two most controversial premises. I will then articulate my account of dispositions and provide reasons for accepting it. Finally, in the interest of

¹ Some high-profile examples of this sort of assumption at work can be found in the work of Chakravartty (2013), Dumsday (2019), Heil (2003 and 2012), Molnar (2003), Mumford (2004 and 2013), and Mumford and Anjum (2011). All of these authors use 'power' and 'disposition' interchangeably. Others, like Martin (2007) and McKittrick (2018), simply opt to use 'disposition' where others, like myself, would use the term 'power' or 'causal power.'

² As I understand the views of Shoemaker (1980) on this matter, it seems that he takes powers to bestow dispositions on objects. Kistler (2012 and 2020) and Yates (2013 and 2018) come closest to the view presented here. While there are significant differences between the proposals made by some other authors and what I claim here, others who make a distinction between powers and dispositions include Bird (2013 and 2016), Borghini and Williams (2008), Contessa (2015 and 2019), and Williams (2019). But while the view being put forward here on the relation between powers and dispositions may bear a family resemblance to the work of these other metaphysicians, as I read them, none of them take disposition-ascriptions to be made true by the power at a time in precisely the way I suggest here.

³ Heil (2009) contrasts 'modest realism' with 'hyper-realism' in his treatment of relations. Taking Heil's account as providing a blueprint for how to think of modest realism, we get something like the following. For any x , S is a modest realist about x if S takes statements about x to be true but does not assume that the truthmakers for statements about x to involve that there be some existents in the world that are uniquely picked out by ' x .' Hyper-realism would assume that ' x ' would pick out some distinctive existents. What I identify as 'strong realism' corresponds to what Heil labels 'hyper-realism.'

clarifying and strengthening my case for the distinction for which I am arguing, I will respond to three objections.

2. Assumptions

In what follows, I assume a version of powers-realism. On the account with which I will be working, at least some of the properties of objects are powers — they are real ways that objects are. I assume that ‘power’ and ‘dispositional property’ are co-referring terms. For it will be in virtue of having a power/dispositional property that we can truthfully predicate some disposition of an object. One way we can individuate the powers of objects is by the types of changes a given power alone brings about or contributes to bringing about in appropriate circumstances.⁴ This feature of powers is essential to their identity. Thus, *qua* dispositional properties, powers are, more specifically, *causal* properties.

I will remain neutral on the question of whether all of an object’s properties are powers. I take it that the dispositional properties (or instances of dispositional properties) of objects are causal powers. If there are any purely categorical properties/pure qualities/quiddities of objects, they will themselves be causally inert. That said, I am not suggesting that anyone who holds that *all* properties are categorical properties must reject dispositional realism and endorse some version of neo-Humeanism and a simple conditional analysis of dispositions (or some more sophisticated variant of a conditional analysis). One could follow D. M. Armstrong and endorse a version of dispositional realism on which the truthmakers for true claims about dispositions are given by the laws of nature (understood as governing and not merely descriptive, holding in virtue of determining relations that hold between universals). On such a view, it is not individual property-instances that have causal ‘oomph.’ Rather, the powers of objects are, in Armstrong’s words, “subsequent to, and nothing more than, these laws” (Armstrong, 2005, p. 315; see also Armstrong, 1997, Chapter 5). I will not address views such as Armstrong’s here. While his account is a variant of dispositional-realism, it involves a deflationary view of the causal powers of objects that is rejected by those I am labelling ‘powers-realists’ in the present article.

While some proponents of powers-realism deny that all of an object’s properties are powers,⁵ other powers-realists deny that there are any purely categorical or qualitative properties. Those in the latter group can be split into two camps. On the one hand are those who hold that all of the properties of objects are pure powers. That is, on such a view, the essence of any property is wholly exhausted by its causal/dispositional/powerful profile.⁶ This view stands in contrast to a powerful-qualities view of

⁴ This is not to say that a power’s manifestation conditions of which we are aware or that occur in the actual world exhaust what it is a power *for* (more on this below). A power may be directed at various manifestations that we will never witness, owing to the distance of some potential manifestation partner from the power in question. Therefore, the claim I am making is an epistemic claim about one of the ways that we as cognizers can individuate powers. Specifically, we can individuate them by what we discover about their causal contributions.

⁵ See, for instance, Ellis (2001) and Molnar (2003).

⁶ Some prominent defences of this view include Bird (2007a and 2007b), Mumford (2004), and Shoemaker (1980).

properties on which properties are viewed as being simultaneously powers and qualities. Proponents of this view either hold that the powerfulness and quality of properties are identical (the same thing under different descriptions) or they understand properties as being Janus-faced, having a powerful side and a qualitative side.⁷ I will not take sides in either the debate between proponents of pure-powers versus those who defend powerful-qualities or the dispute over how best to characterize properties as powerful-qualities.⁸

I assume that a powers ontology is most consistent with a rejection of Platonism about properties (given that such a view of properties would resist being understood causally⁹). While I assume that we ought to reject Platonism, I do not think that much hangs on whether the powers of objects are best understood as either particulars (tropes or modes of an object) or as instances of immanent universals. That they are real particular ways that objects are at times *is* important, for otherwise it is hard to understand how to make sense of the claim that objects and, specifically, their attributes, make a causal difference in the world.

Regarding the role of powers in causal processes, I assume that they are typically manifested in response to being partnered with some appropriate reciprocal manifestation partner(s).¹⁰ And such manifestations occur when the objects of which some given powers are properties interact with one another. (Exceptions are so-called ‘spontaneous powers’ that do not require any partnering with other powers to be manifested. For instance, the power of strontium-90 to beta-decay would be such a power.) The manifestation partners *Q* of a power *P* would be the powers at which *P* is directed at a specific manifestation when partnered. *Q*, in turn, would be directed at a specific manifestation when partnered with *P* (hence, their being *reciprocal* manifestation partners). Any causal production occurs as the polygenic outcome of the manifestations of each member of a constellation of reciprocal causal powers of objects. Given that powers are directed at manifestations with other powers that serve as manifestation partners, we can describe powers as ‘for’ or ‘about’ manifestations with other powers. This directionality or projectivity of powers will be essential for the account of dispositions I will develop here.

Finally, the modest realism about dispositions for which I will be offering an argument involves an explicit appeal to the powers of objects providing the truthmakers for disposition-ascriptions. I understand truthmaking to be a relation that holds between a truthbearer and a truthmaker. A truthbearer will be “a representation of

⁷ Variants of the powerful qualities view on which powerfulness and quality of properties are identical include Contessa (2019), Heil (2003 and 2012), Ingthorsson (2013), and Martin (2007). Jacobs (2011) presents an account on which properties give us the truthmakers to describe them as qualities and as powers. Finally, Gianotti (2021) and Williams (2019) both present accounts on which the powerful and qualitative are aspects of properties.

⁸ See Taylor (2018) for an argument to the effect that there is no real difference between a pure powers view and at least certain accounts of powers as powerful qualities.

⁹ While I am dismissing Platonism about properties as an option for the powers-realist, Platonism has had its defenders in the powers-realist camp (e.g., Tugby, 2013).

¹⁰ For more on this sort of view of powers in causal processes, see Buckareff (2017), Chakravartty (2005), Heil (2012), Marmodoro (2017), Molnar (2003), and Mumford and Anjum (2011). For a slightly different take on powers in causation on which the activity of powers is part of a story of substances as causes, see Ingthorsson (2021), Kuykendall (2019), and Whittle (2016).

some way the universe is” (Heil, 2021, p. S851). I assume that this will include both linguistic representations (e.g., statements, propositions) and non-linguistic representations (e.g., various kinds of perceptual states the contents of which we can express linguistically but whose representational content may involve non-linguistic imagery). A truthmaker for any truth is, as Armstrong notes, “just some existent, some portion of reality, in virtue of which [some] truth is true” (Armstrong, 2004, p. 9). I assume that truthmaking is an internal relation that obtains whenever you have a truth-bearer and a truthmaker for what is represented. What I will stay silent on is over whether all truths have truthmakers. Some allow that mathematical and logical truths are “trivial truths” that are not in need of truthmakers (Heil, 2012, pp. 168–177). Whether such truths do not require truthmakers is unimportant for my purposes here. That said, I assume that true representations of dispositions of objects *do* have truthmakers (and require truthmakers, at that).

Importantly, an account of truthmaking such as the one I assume can provide us with a useful criterion to determine the ontological commitments of our theories. For a representation that x , it is an open question what the world must be like in order for x to be true. Importantly, it can be true that ‘ x exists’ but the truthmaker for this statement may not be x . So, following Ross Cameron (2008, p. 4), I take it that ‘dispositions exist’ may be true according to our theory of dispositions without dispositions as distinct existents being an ontological commitment of our theory. I will say more about this shortly.

The foregoing set of presuppositions should be adequate for now. There are other commitments that some powers-theorists who endorse powers-realism have taken to be essential to an adequate theory of causal powers (e.g., that powers endure over time, that all powers are intrinsic properties of objects, etc.) that I will not take up since they are controversial and, more importantly, do not have any direct bearing on what I am doing in this article.

3. Why Deny the Identity of Powers with Dispositions?

Consider the following relatively simple argument.

- (1) Most powers are multi-track.
- (2) All dispositions are single-track.
- (3) Nothing can be both multi-track and single-track.
- (4) So, at least some powers are not dispositions.

Premises (1) and (2) are most in need of clarification and defence. (3) simply notes that being single-track and being multi-track are incompatible with one another. (4) spells out an implication of (1) through (3). It appears, then, that reasons are needed for accepting (1) and (2) as true. To those reasons I now turn.

3.1. Premise (1)

Premise (1) is simply an assertion of the claim that most powers are multi-track. All powers may be multi-track. But I admit that there may be powers that are outliers that

are single-track. For instance, spontaneous powers (such as the power of strontium-90 to beta-decay that I mentioned above) may be single-track.

In maintaining that most powers are multi-track, what I am asserting is that most powers *can* be manifested in a variety of different ways with different partners. This is because they are *directed at* a variety of manifestations with different manifestation partners. C. B. Martin describes them as “projective for endless manifestations with an infinity of present or absent, actual or nonactual” manifestation partners (Martin, 2007, p. 29). He suggests that this total projectivity or directionality can be thought of as constituting a *complex power web* or *power net*, with each line being a manifestation at which a power is directed with a possible reciprocal manifestation partner. Powers can be individuated by their power nets which represent their causal profile that specifies and distinguishes the different partners with which they are *for* a range of different manifestations and those with which they are *not* for a range of manifestations. Some powers will serve as manifestation partners of a given power for a specific manifestation. Some of these manifestation partners, when working together may have a net additive effect on the influence of a power in a causal process. Others will mask a power. Some will have another type of subtractive effect, perhaps diminishing a power’s final productive contribution to an outcome. Still others will have neither.¹¹

That a power is multi-track is controversial. Despite efforts by some to argue that all powers are single-track (e.g., Lowe, 2010; Molnar, 2003), compelling arguments have been offered for taking at least some of them to be multi-track (e.g., Williams, 2011; Vetter, 2013). I will not rehearse those arguments here. But, by considering some examples, we will see that it is not an unreasonable position to hold about most powers.

Consider an ion. I assume that it is relatively uncontroversial among many powers-realists to assert that the positive charge of a cation is a power it possesses. In ionic bonding, the positive charge of a cation is directed at attracting the negative charge of the anion to which it gave up an electron. The anion’s negative charge is a power directed at attracting the positive charge of the cation from which it gained an electron. The outcome of their pairing and mutually manifesting is an ionic bond. The end product is an ionic compound. The same power (in this case, the cation’s positive charge) can be directed at multiple different manifestations with various partners. So, for instance, the positive charge of a sodium cation (Na^+) is directed at forming an ionic bond with different types of anions — e.g., with chloride (Cl^-), iodide (I^-), and bicarbonate (HCO_3^-) anions (among others). It is also directed at migrating to the cathode in electrolysis. These would all be ways of manifesting the positive charge of a sodium cation. Even if the *type* of manifestation is the same (bonding), it is significant that the *potential* bond is with multiple partners. It is not just directed at a single manifestation, for instance, bonding with a chloride anion.

There are more reasons for treating at least some powers as multi-track. When considering the multi-track nature of some powers, we often emphasize the more

¹¹ See Mumford and Anjum (2011) for more on how powers may interact and either diminish or enhance a power’s contribution to a polygenic outcome.

dynamic manifestations that involve significant changes at which the powers of objects are directed while failing to consider the less dynamic manifestations at which powers are directed. For instance, powers are directed at being masked or blocked by the presence or activation of certain other powers. Consider some power P of an object. P is directed at remaining in potentiality (or having its activation suspended) with respect to one of its manifestations when partnered with some other power Q whose presence and/or manifestation masks a particular manifestation of P .¹² P 's failure to manifest in a certain way — thus, for instance, remaining in potentiality with respect to the manifestation in question — is itself a manifestation at which P is directed with respect to being paired with Q .¹³ John Heil has made a similar point to what I am making here. He has argued that “[w]hat occurs when a ‘blocker’ or ‘antidote’ is on the scene is not the prevention of a manifestation, but the occurrence of a *different* kind of manifestation” (Heil, 2017, p. 100). Insofar as we can describe this as a case involving the prevention of a manifestation M of a power of an object, the prevention of M is owing to the occurrence of a different kind of manifestation M^* of the same power. In such a case, M^* excludes M from happening concurrently (Martin, 2007, p. 2). This would be the case with masking. Of course, if one asserts that masking involves a manifestation of the masked power, one should expect some head-scratching on the part of many of one’s interlocutors. Thus, I need to say a little more about why what I am asserting is reasonable to accept.

It may be argued that remaining in potentiality is not a manifestation at all. But notice that the presence of Q is something at which P is directed at remaining in potentiality *as a reaction* when they are partnered. Moreover, the presence of any other powers with which P may partner at that moment and to which it would otherwise be activated in response do not countervail the total subtractive effect on P that results from the presence of Q . This is a manifestation at which P is directed. Compare it to P 's being in the presence of powers at which P is not directed at any kind of manifestation. In such a case, there is no manifestation at which P is directed. P remains in potentiality when in the presence of said powers. But P 's remaining in potentiality is not a manifestation of P since there is nothing at which P is directed for a specific manifestation that is present. And, moreover, unlike when Q is present, P would be activated if some other power at which P is directed for a specific manifestation were present.

I recognize that describing the power of an object being directed at being masked by the presence of another power is a bit odd to describe as a type of manifestation at which the power is directed. But I think it helps to think of masking as the limiting case of something that is fairly common when it comes to the activity of powers in causal processes. Consider P and Q again, only this time suppose that Q has a subtractive effect on the strength of a manifestation of P , but Q does not completely mask P .¹⁴ Suppose that P and Q are the postsynaptic potentials of an excitatory synapse and an inhibitory synapse,

¹² I assume that P and Q may be powers of the same object (intrinsic masking) or of different objects (extrinsic masking). See Clarke (2010) and Molnar (2003).

¹³ Bird's (1998, p. 228) example of a poison and an antidote is a case like this.

¹⁴ What follows echoes what Mumford and Anjum (2011) have argued for about the additive and subtractive effects of powers on one another in causal processes.

respectively. They are nearby inputs into the same cell active at the same time. Suppose that P is greater than Q . The membrane potential is the algebraic sum of P and Q . P and Q are each directed at exciting or inhibiting a neuron's firing, respectively. But this is only one of the manifestations at which P and Q are directed. P and Q are also directed at summing, with the strength of each having a subtractive effect on the other. The outcome of the process is the final strength of the membrane potential. Notice that masking is just the limiting case of this kind of causal process on which a specific manifestation (e.g., Q 's inhibiting the neuron's firing) is completely blocked.

When we shift our attention to objects with which we are familiar from our everyday experiences, we find that the pattern I have identified generalizes. The fluidity of a litre of water is a power that is directed at filling a porous object like a sponge, making it wet. The same power of water is directed at hydrating an organism, among other things. The shape of a puzzle piece is directed at connecting in a certain way with certain appropriate puzzle pieces and not others. It is also directed at making an impression with the same shape when pressed into some wet sand. And, importantly, it is directed at generating a representation of an object with a certain shape in our visual systems. I could offer more examples, but I believe the foregoing should suffice to make my point about powers being multi-track.

If I am right, then the causal powers of objects are directed at a range of manifestations. At the very least, they are directed at a single active manifestation and a single non-active manifestation (in virtue of being directed at being activated by partnering with an active manifestation partner and their being directed at being masked by a blocker or antidote). Active manifestations are more easily recognized than non-active manifestations. But these are both types of manifestations at which any single power is directed. It appears, then, that we have good reason to take at least some causal powers to be multi-track and, hence, accept the truth of premise (1).

3.2. *Premise (2)*

Each disposition of an object corresponds to one of the potential manifestations of a power that is at rest. That is, each disposition-ascription of an object is made true by a single, *specific* manifestation at which a power is directed. Thus, dispositions can be described as single-track. Just consider the difference between an object's disposition for a particular active manifestation M versus its disposition for its having M being masked. These are not the same dispositions, but they are dispositions an object may have owing to the manifestations at which a power it possesses are directed.

While Martin would object to this (owing to his identifying dispositions with powers), I suggest that for each manifestation a power is for — what Martin calls a “disposition line” (Martin, 2007, p. 29) — we have the truthmaker for ascribing a distinct disposition to an object. Therefore, each line in a power-net provides the truthmaker for a representation of a distinct disposition we can truthfully ascribe to an object. While one power can do many things, each disposition represents a distinct potentiality of a power. That is, each disposition represents one of the distinct manifestations at which a power is directed.

Returning to the case of ions, the ascription of a disposition to a sodium cation to form an ionic bond with a chloride anion represents one of the manifestations that

the charge of the cation is for. This disposition is not the same thing as its disposition to form an ionic bond with an iodide anion. These represent two specific manifestations the power is projective for or directed at. They are different disposition-lines, so to speak, that can be represented as different dispositions. This will generalize to other dispositions that we can ascribe to other objects owing to their powers. Consider the powers of a complex object, for instance, the specific mass and roundness of a ball. In virtue of having these powers and their projectivity (and given the acceleration of gravity on Earth), the ball can be truthfully described as having various dispositions that are not obviously the same disposition. For instance, the ball is disposed to roll down an unobstructed inclined surface with a specific force. It can also be truthfully represented as being disposed to leave an impression of a specific depth in a vat of blancmange. The disposition of the ball to roll down an inclined surface is not the same thing as its disposition to make an impression on some quantity of blancmange. But each of these dispositions we ascribe to the ball is owing to its roundness and mass. If this is right and generalizes, then each disposition of an object is for a single specific manifestation and, therefore, dispositions are single-track.

Taking dispositions to be single-track allows us to avoid some embarrassing consequences of identifying them with multi-track powers. For instance, consider masking again. One and the same power is directed at a specific active manifestation when paired with a reciprocal active-manifestation partner; and it is also directed at what I have identified as a 'non-active manifestation' when masked by a reciprocal manifestation partner that is directed at blocking an active manifestation. These are two different dispositions of an object that we can ascribe to it in virtue of the object's having a particular power. Consider a poison. The same power of a poison is both directed at interacting with some powers of the organism that ingests it with the outcome being the death of the organism and it is directed at being blocked by some power(s) of an antidote. Now notice that we can say that the poison is disposed to kill the person who ingests it and it is disposed to be neutralized by an antidote. These are *different* dispositions. But the same power of the poison provides the truthmakers for these two very different disposition-ascriptions (a disposition to kill versus a disposition to be neutralized).

By way of summary, any disposition is a disposition for a particular manifestation and not any other. A failure to appreciate this fact will result in our treating two dispositions for completely different and opposing manifestations as the same disposition. Given the foregoing, it is reasonable to accept that dispositions are single-track and, hence, that premise (2) is true.

4. What Are Dispositions?

The account of dispositions I wish to put forward is a version of modest realism about dispositions.¹⁵ Again, by 'modest realism' about dispositions, I mean the view on which our representations about objects having dispositions are true, but they are not made true by some existents distinct from powers (or identical with powers) that we can pick out as 'dispositions.' One way to state the view I am presenting

¹⁵ This is similar to the "minimal realism" about dispositions presented by Contessa (2015, p. 162).

here is to follow David Yates and understand powers as *bestowing* dispositions on objects (Yates, 2013 and 2018). While Yates appears to be in broad agreement with the position I am defending here, my worry is that articulating the position I am presenting in terms of powers *bestowing* dispositions is ambiguous between the modest realism I wish to defend and a stronger thesis, according to which dispositions are existents in their own right that are ontologically dependent upon powers for their being. If ‘disposition’ and ‘dispositional property’ are interchangeable (which I am not assuming here), then the bestowal of dispositions upon objects by powers would involve the bestowal upon objects of distinct dispositional properties. But, on my view, power-ascriptions and disposition-ascriptions have the same truthmakers, namely, the powers of objects (which I take to be the same thing as dispositional properties). In the case of a power-ascription, the truthmaker is the power *in toto*. In the case of a disposition-ascription, the truthmaker is a disposition-line of a power. More needs to be said about these matters.

Modest realism about dispositions stands in contrast to strong realism about dispositions. As I use the term ‘strong realism,’ it may pick out either (a) the position according to which any disposition is identical with a power of an object, or (b) the view on which there are both powers and dispositions, with each having some sort of life as an existent in its own right. On (a), each correct disposition-ascription picks out the same thing we pick out with a distinct power-ascription. I have offered reasons for rejecting (a). The proponent of (b) would be convinced that (a) is untenable, holding that dispositions are not identical with powers. But, rather than endorsing a modest realism about dispositions, the proponent of (b) would instead endorse a strong realism about powers *and* dispositions. Thus, the proponent of (b) might distinguish dispositional properties from powers and take dispositions to be dispositional properties that are either ontologically parasitic upon powers or take them to be as fundamental as powers. In any case, as I made clear in the previous paragraph, (b) is a position I also wish to reject. I take it that the reasons I offer for endorsing modest realism about dispositions will count against both (a) and (b). I will add that an advantage that both modest realism and (a) have over (b) is that they can do the same explanatory work without needlessly multiplying entities. So, both (a) and modest realism are simpler and can do all the explanatory work we can get out of (b). And, as I will show below, we can get all we want from an account of dispositions by accepting modest realism. Modest realism will, thus, be able to deliver the same goods as (a) but will allow us to trim the fat, as it were, in our ontology. In the remainder of this section, when I refer to ‘strong realism,’ I should be understood as referring to (a), not (b).

Assuming that I am right about dispositions being for a single manifestation, at least one of the problems with strong realism about dispositions is that it commits us to needlessly multiplying powers. In the case of the sodium cation, as opposed to its positive charge being a single power directed at various manifestations, we would have a power for every disposition we can predicate of the cation. Ergo, this sort of view quickly forces us to accept a rather bloated ontology on which each disposition-ascription is made true by a distinct power. I hope it is evident that this would be an unwelcome consequence.

Assuming the foregoing is correct, an advantage that modest realism about dispositions has over strong realism is that we can do the same explanatory work as we can on strong realism without having to countenance as many properties in the world. This view sits well with a sparse view of properties while allowing us to regard the dispositions of objects as being abundant. This advantage of modest realism is a significant one. Owing to the leaner ontology of modest realism, power-ascriptions on this view have a great deal of unifying explanatory power. A single power or collection of powers can be referred to in order to account for and explain multiple dispositions of an object.

Of course, if minimal realism is to be accepted as tenable, we need a clearer idea of what a disposition *is*. Again, on the view I am proposing here, a disposition is *not* a dispositional property. Dispositional properties are powers. Powers, I contend, are the truthmakers for our disposition-ascriptions. And dispositions are ascribed truthfully of an object because of something a power disposes its possessor to do. The nature of a power is revealed by the disposition-ascriptions it supports. Thus, we can truthfully ascribe a disposition to an object in virtue of (where the ‘in virtue of’ is meant to express truthmaking, not grounding) some power or powers of that object. Each disposition of an object can be truthfully ascribed to it in virtue of the projectivity of some power or collection of powers for a particular manifestation. Differently stated, for each of the manifestations at which a given power or collection of powers of an object is directed, we have separate truthmakers for ascribing discrete dispositions to said object.

In the case of powers taken individually, for each disposition-line of a power, we have the truthmaker for predicating a disposition of an object. For instance, the positive charge of the sodium cation is directed at bonding with the negative charge of the chloride anion. We can, therefore, truthfully represent the sodium cation as being disposed to bond with the chloride anion. And, to repeat what was said above, the same power can provide the truthmaker for *multiple* disposition-ascriptions. But each disposition-ascription is for a *single* manifestation at which a power is directed (they represent distinct disposition-lines that the power has a readiness or potentiality for).

What is true of individual powers is also true of collections of powers. A system of powers can be directed at acting in concert with one another to produce an outcome and the derived directionality of the system of powers may suffice for the system to be described as having a particular disposition. This may be a better way to represent what George Molnar calls a “derivative power” (Molnar, 2003, pp. 144–145). They would be derivative dispositions of composite objects. Changing things up a bit from Molnar’s formulation, “*a*’s [disposition] to φ is derivative if the (actual or possible) joint exercise of several powers of some of *a*’s parts, when these parts stand in special relations, manifests φ -ing” (Molnar, 2003, p. 145). The disposition of the ball mentioned earlier to make a specific type of impression of a specific depth owing to its mass and shape would be an example of such a disposition. Consider another example: imagine a dedicated portion of a visual system that could only detect house cats. The myriad powers that, working together, would manifest to detect a house cat would provide us with the truthmakers for describing the thing that has the visual system as having the disposition to see house cats.

Given the foregoing, I take it that a single power can provide the truthmakers for multiple disposition-ascriptions; but it is also the case that multiple powers working together can provide the truthmakers for a single disposition-ascription. And, of course, a single power may only provide the truthmaker for one disposition-ascription (recall the power of strontium-90 to beta decay) and multiple powers working together may provide the truthmakers for multiple disposition-ascriptions (consider the entire collection of powers constitutive of a visual system).

To summarize the central claims being made about dispositions here, dispositions are predicates. And we can truthfully represent an object as having a disposition in virtue of some manifestation at which a power of the object is directed or a manifestation at which a collection of integrated powers of an object is directed. When we correctly ascribe a disposition to an object, and the disposition is not manifested, what makes the disposition-ascription true is one of the potential manifestations at which some power (or collection of powers) is directed. It is not in actuality. The power (or collection of powers) is 'at the ready' for that manifestation. The same power (or collection of powers), when activated in the relevant way picked out by the disposition-ascription, provides the truthmakers for describing the object that possesses the relevant power (or collection of powers) as manifesting a disposition it has.

5. Objections

Admittedly, what I am arguing for here is a bit of a departure from a view held by some powers-realists. I have no doubts that some will resist the move I am urging here. Before concluding, I will respond to three objections that have been raised against my theory of dispositions.¹⁶

5.1. *This Is Merely a Labelling Dispute*

Perhaps the most significant worry is that this is just a labelling dispute. Since I claim that disposition-ascriptions are made true by the disposition-lines of powers in Sections 3.2 and 4 of this article, a proponent of identifying dispositions with powers may argue that nothing of real metaphysical significance hangs on the terminology.

In response, I maintain that failing to label things properly has metaphysical implications. So, what are the metaphysical implications of simply letting sleeping dogs lie and taking 'disposition' and 'power' to be interchangeable (and for that matter, to identify both of them with dispositional properties)?

On my view, there are powers. These are real existents in the world. They are identical with the dispositional properties of objects. For any disposition an object has, it is true that it has that disposition in virtue of one or more of the powers/dispositional properties that the object possesses. The powers of objects provide us with the truthmakers for our disposition-ascriptions. When we move from making true disposition-ascriptions to then taking dispositions to be actual existents that are identical with powers, we are making the mistake of reifying a product of abstraction,

¹⁶ The first of these objections was offered by Kim Frost and the second by a referee for this journal.

treating it as a real existent in its own right. Specifically, the product of abstraction is the disposition we ascribe to an object owing to our consideration of one of the many possible manifestations at which a power is directed.¹⁷ Reifying dispositions without good reason to do so is inadvisable.

Finally, contra my argument, one may elect to make the move of denying that any powers are multi-track (see Lowe, 2010; Molnar 2003), thereby making the identification of dispositions with powers easy. If one makes this move, then the dispute is merely verbal over whether 'disposition' and 'power' are co-referring (we are then back to the debate over whether premise (1) of my argument is true). But if one accepts that most powers are multi-track and if I am right that each disposition-ascription is for a single manifestation of a power, then we do not have what is merely a labelling dispute as I believe I have shown in making the case for premises (1) and (2) of my argument in Section 3. There may be cases where we are identifying the same thing when referring to it as a 'disposition' or a 'power,' but, if I am right, in most cases, these can be cleaved apart.

5.2. *The Position Being Defended Is a Nominalist Theory of Dispositions*

One might argue that my modest realism about dispositions is, in fact, just a version of nominalism about dispositions. And, if it is a species of nominalism, then it is not, in fact, a realist position about dispositions at all. If it is not a version of realism about dispositions, then it is an anti-realist view.

I cannot settle here what makes a theory count as realist or anti-realist. But labelling it as nominalist is unhelpful. If nominalism about x entails anti-realism about x , then my view is not anti-realist. Why not? Because 'realism' as I am using the term here is concerned with truth-values of representations. Strong realism about x is the view that for any true representation that x , there is some specific corresponding existent x that is the truthmaker for the representation that x . Modest realism leaves it open that when we truthfully represent something as being x , what makes it true that the thing in question is x could be something other than x . I am endorsing strong realism about our representations of powers and a modest realism about dispositions. For the reasons I have articulated, I take it that powers and dispositions are not the same thing. But our various truthful representations of objects having powers and dispositions have the same things as their truthmakers, namely, the powers of objects.¹⁸

5.3. *This Is a Reductionist Theory of Dispositions*

My interlocutor, being satisfied that the theory of dispositions presented here is not nominalist, might maintain that my account is a *reductionist* view about dispositions. If what is meant is that the truths about the dispositions of objects are reducible to truths about their powers (i.e., theoretical reduction), then what I am offering is not a reductionist theory of dispositions. While the powers of objects are the

¹⁷ Thanks to Kim Frost for helping me articulate the foregoing point about the sort of mistake I am attributing to my interlocutor.

¹⁸ To see what a nominalist view of powers and dispositions might look like, see Whittle (2009).

truthmakers for true representations of the dispositions of objects, we cannot always simply paraphrase or analyze statements about an object's dispositions to a statement about its powers or replace talk about dispositions with talk about powers.¹⁹

If what is meant is that dispositions are *ontologically* reducible (but perhaps theoretically irreducible) to the disposition-lines of powers, then that would not be right, either. For the disposition-lines of powers are the potential manifestations at which a power is directed, and not the powers *in toto*. The disposition-lines of powers are not things in their own right to which dispositions could be reduced (perhaps we can describe them as aspects of powers — but I fear that such language could be misleading). The powers of objects that are directed at various manifestations provide us with the truthmakers for truthfully representing those objects as having particular dispositions. Nothing about this view is clearly reductionist.

6. Conclusion

I do not expect to convince proponents of strong realism about dispositions who identify them with the powers of objects to accept the position being defended in this article. However, if I am right, then they do owe an account of why we ought to accept that each disposition is identical with a power.

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¹⁹ My thinking here about reduction is influenced by the discussion of reduction in Heil (2021, p. S855–S856).

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