

New Powers for Dispositionalism

Giacomo Giannini (giacomo.giannini2@gmail.com)

Durham University

Penultimate Draft. Please cite published version (open access): <https://doi.org/10.1007/s11229-020-02906-7>

1. Introduction

Dispositionalism is the theory of modality according to which the truth of alethic modal claims is grounded in the irreducibly dispositional properties of actual entities. It is a ‘hardcore actualist’ (Contessa 2009) or ‘new actualist’ (Vetter 2011) theory of modality, in so far as possible worlds, however conceived, do not play any role in fixing the modal facts and making modal claims true or false. The idea of the theory is that the way something *is* fully grounds the ways things could behave, and in general how things *could be*. These special properties include tendencies, capacities, dispositions, abilities, potentialities, and so on; for the purposes of this paper, I will not be concerned with fine-grained distinctions between them, and will refer to this class of properties with the umbrella term ‘powers’. Very roughly, a first characterisation of the view¹ can be given by the conjunction of the following:

DPoss: ‘possibly p ’ is true *iff* and because there is some power whose manifestations, if manifested, would make ‘ p ’ true.²

DNec: ‘necessarily p ’ is true *iff* and because there is no power whose manifestation, if manifested, would make ‘not- p ’ true.

I formulate Dispositionalism in terms of truthmaking because I take the *explananda* for a theory of modality to be the truth of modal sentences, but, *mutatis mutandis*, all I say in what follows can be re-formulated in terms of modal facts and grounding thereof with minimal adjustments.³

¹ Although there are various different dispositional theories of modality (or sketches thereof) in the literature (e.g. Mumford 2004, Borghini & Williams 2008, Jacobs 2010), in this paper I will mainly be concerned with the version of Dispositionalism proposed by Vetter (2015), as it is by far the most well-developed and fleshed out.

² One might worry that these principles are problematic because of the ‘would’ which appears in the *explanans* (thanks to Tobias Wilsch and an anonymous reviewer for raising this point). This would be the case if we operated with the Armstrongian, modal characterisation of truthmaking as necessitation (Armstrong 2003). However, that is not my intention: whenever I will speak of truthmaking in what follows, I will mean *exact truthmaking*, as presented by Fine 2014; 2017. Exact truthmaking is not a modal notion, and so we should not be concerned about the ‘would’ that appears in the formulation of the principles. *Mutatis mutandis* the same holds if we formulate Dispositionalism in terms of grounding: I assume that a non-modal notion of grounding is available and is what it is employed when spelling out the sources of modality (compare the use of essence to characterise the notion of source of modality in Wilsch 2017).

³ This should assuage the worries of those who i) do not accept truthmaking in general: everything can be stated in terms of grounding (or another suitable non-modal hyperintensional notion of dependence). This should also help fend off a connected worry, namely that ii) modal truths do not need truthmakers (e.g. Mellor 2003) — thanks to an anonymous reviewer for raising this point. This is because, if we translate DPoss and DNec in terms of grounding, the second worry reads as ‘what of those who think that modal facts do not need an explanation?’. Crudely put, the reply is that such a point is beyond the scope of the paper, because it questions the very enterprise of Dispositionalism as a whole. Since it is not my aim in this paper to justify Dispositionalism or the project of offering a foundation of modality, but rather to offer an improved version of Dispositionalism, I will assume that some modal truths can be explained (or have truthmakers).

We can distinguish two tasks that need to be fulfilled in order for Dispositionalism to be a viable theory of modality. First, although Dispositionalism does not aim to be a fully reductive theory of modality (the way, say, Lewis' is), it retains explanatory ambitions and is not simply a primitivist theory of modality: it aims to individuate a basic localised (Vetter 2015:2) "modal" phenomenon (powers), and to explain all the other alethic modal truths (or facts) upon it. So, firstly, it has to spell out how, exactly, powers can ground *all* modal talk. Such account needs to be, minimally, both formally adequate and extensionally correct (Vetter 2015: 15). Call this the 'grounding task'.

Secondly, dispositionalists have to make sure that we know what we are talking about when we talk about powers: what are, exactly, these properties that are supposed to do all the heavy-lifting in a dispositionalist theory of modality? This point is surprisingly obscure, despite (or perhaps because of) the recent explosion of interest in powers ontologies. Taking a closer look at the literature on powers, it turns out that many powers theorists have very different notions of what powers are supposed to be and how they should be characterised (Bird 2016; Groff ms). In order to avoid ambiguities and confusions, and because it is not obvious that every account of powers is equally well-suited for the dispositionalist project, it is important to clarify the metaphysics of powers. Call this the 'metaphysical task'.

These two tasks are closely related. The results of the metaphysical task have important consequences on the grounding one: different metaphysical theories of powers will provide different resources to tackle the grounding task, and so how powers are supposed to ground all modal truths will partially depend on how we conceive of powers. Thus, misunderstandings or unsatisfactory metaphysical theories about powers risk to undermine the viability of Dispositionalism in general. On the other hand, we might adopt one metaphysics of powers over another also because it allows us to better perform the grounding task: if theoretical virtue plays a role in theory choice, then *ceteris paribus* we should choose the metaphysics that can do more work for us. In this paper I will be concerned precisely with a case where a misunderstanding in the metaphysics of powers creates a problem for the grounding task, and will argue in favour of a different metaphysics of powers on the basis of its positive consequences for the grounding task.

The misunderstanding stems from the fact that a classic problem in the metaphysics of powers, known as 'Too Much Possibility', has not received a fully satisfactory solution yet. Too Much Possibility concerns the status of unmanifested manifestations and involves a tension between two core principles of powers ontologies, namely i) that powers are directed towards their manifestations (Directedness) and ii) that powers might remain dormant and fail to bring manifestations about (Independence). The current standard solution to this tension, I will argue, is inadequate because it creates serious difficulties for the grounding task of Dispositionalism — in particular, it threatens its expressive power and therefore its extensional correctness.

The aim of this paper is to provide an alternative solution to Too Much Possibility, one that makes it possible to carry out the grounding task more successfully. After presenting in some detail the tension between Directedness and Independence and its most common solution in §2, I will present the problem it generates for the grounding task, taking the moves from an argument by Jessica Leech. I will argue that those who adopt the standard solution must pay too steep a price to respond to it in §3. In §4-5, I will develop a new solution to Too Much Possibility and a better characterisation of unmanifested manifestations, one that allows particulars to be unmanifested manifestations and thus offers a more natural solution to Leech's challenge. The solution will require significant changes to both the ontology and the ideology of powers metaphysics: a rather different picture

of what powers are will emerge. I will conclude discussing some consequences and two sets of objections and potential problems: in section 6 I discuss two general and methodological worries connected to my proposal, while in section 7 I consider objections concerning my use of a primitive essence operator in sketching the new metaphysics of powers.

2. Too Much Possibility and The Problem of Unmanifested Manifestations

The following two theses are core principles of any powers metaphysics:

Directedness: Powers are directed towards their manifestation.

Independence: There are powers which exist without their manifestations ever being manifested.

Directedness is the main guiding principle of any powers ontology: ‘Powers, or dispositions, are properties *for* some behaviour, usually of their bearers. These properties have an object towards which they are oriented or directed’ (Molnar 2003: 60).⁴ I take this principle to be closely related to the identity-conditions of powers: the identity of a power is determined⁵ by what it is for.

Independence is also usually taken to be a truism about at least a considerable subset of powers,⁶ and is usually thought to play a crucial role in resisting the reduction of powers to indicative conditionals or counterfactuals (Bird 1998; 2007a, Schrenk 2010): powers can be prevented from bringing about their manifestations, or can exist even in situations in which the conditions necessary for their exercise never occur (e.g. the fragile glass never falls on the floor, the salt is never immersed in water, etc).

There is a well-known tension between these two principles. In fact, from Independence and Directedness we can derive a contradiction. The argument, also known as ‘Too Much Possibility’ (Armstrong 1997, Bird 2006) runs as follows:⁷

1	$Directed(P, M)$	Directedness	P is directed to M
2	$\exists x(x=M)$	1, $\exists I$	M is something
3	$\exists X(X=P) \wedge \neg \exists x(x=M)$	Independence	P is something and M is not something
4	$\exists x(x=M) \wedge \neg \exists x(x=M)$	2,3.	M is something and M is not something

⁴ See also Bird (2007a; 2016), Mumford (2004), Shoemaker (1980), Yates (2013).

⁵ In what follows, I freely use ‘determine’ and ‘fix’ interchangeably: if x determines that Fy , then x fixes the F of y .

⁶ Some, like Molnar (2003) and Mumford & Anjum (2011; 2018) take Independence to be constitutive of powers in general. But even those who deny that Independence holds for all powers in virtue of what it is to be a power (e.g. Vetter 2015; 2018, where she argues that Independence is grounded in the *degree* of powers, and only holds for powers with a *non-maximal degree*), still recognise that the thesis is holds of a considerable portion of powers.

⁷ I use first-order variables for manifestations in order to remain neutral on what a power can be directed towards and not postulate that M must be a property. A parallel argument using second order variables can be formulated without any substantial modification. I also use singular variables, but the argument could be re-formulated with plural quantification without any problem; indeed, if we think that powers are multi-track, plural quantification would be preferable.

The argument is sound if we accept the following four background assumptions:

- A. Existential Generalisation is admitted.
- B. Existence is captured by the unrestricted existential quantifier (of the most natural language).⁸
- C. Directedness is a relation.
- D. Being manifested consists in coming into existence/becoming something.

I assume that Independence and Directedness are non-negotiable linchpins of any theory of powers, so to avoid the contradiction we must reject one of the background premisses. Therefore, there are four broad families of strategies for resisting Too Much Possibility, stemming from the rejection of A-D: call these the ‘Free Logic Route’, ‘Real Existence Route’, ‘Non-Existence Route’, and ‘Actualisation Route’, respectively. Unfortunately, discussing each of these strategies with the required depth would take us too far afield. Therefore, for the purposes of this paper, I will focus solely on the most common strategy, the Actualisation Route. This is the family of strategies that aim to dispel Too Much Possibility by rejecting premise D. and argue that what happens when a manifestation becomes manifested *does not* involve something new popping into existence: the difference between being manifested and being unmanifested is not to be captured in terms of existence and non-existence.

I believe that this is, ultimately, the most attractive and promising strategy, and that the others are either not viable at all or comparatively worse off, but an extended argument for this conclusion will have to be left to future work. Thus, what follows is to be read conditionally: *if* the Dispositionalist takes the Actualisation Route to solve Too Much Possibility (as many Dispositionalists do, including Vetter), *then* they should adopt the overall metaphysics of powers that I will present.

3. The Actualisation Route, Universals, and Mere *Possibilia*

According to the Actualisation Route, the best way to solve Too Much Possibility is to reject the idea that being unmanifested means to lack existence, and becoming manifested means to come into existence. There is some difference between being manifested and unmanifested, but it must be something other than existence that differentiate them. It is easy to see how this avoids the contradiction: indicating the difference-maker property as ‘F’, we can re-formulate Too Much Possibility without generating the contradiction.

1	$Directed(P, M)$	Directedness	P is directed to M
2	$\exists x (x = M)$	1., $\exists I$	M is something

⁸ I assume that Too Much Possibility is formulated in such a language: for the powers theorist, powers are part of the basic furniture of the world, and hence we better be able to talk about them in Ontologese (Sider 2009; 2011). In case the reader is not comfortable talking of ‘most natural language’, they are free to substitute background premiss B with something along the lines of ‘The quantifier employed in the argument expresses ontological commitment’.

3	$F(P) \wedge \neg F(M)$	Independence	P is F and M is not F
4	$\exists x (x=M \wedge \neg F(M))$	2,3	M is something and it is not F

This suggests that the main goal for any power theorist who adopts the Actualisation Route should be to offer a credible candidate for F : understanding what is the status of unmanifested manifestations simply means understanding which property they lack, and manifested manifestations have.

The most popular way to flesh out the Actualisation Route involves universals.⁹ Call this the ‘Standard Actualisation Route’. The idea is that, if manifestations of powers are universals, we can understand *manifested* manifestations as *instantiated* universals, whereas *unmanifested* manifestations are *uninstantiated* universals.¹⁰

The Standard Actualisation Route is, I think, a viable solution to Too Much Possibility— it does not raise problems for the metaphysical task. However, adopting it generates troubles for the grounding task of Dispositionalism. In particular, it makes it hard to answer to (a generalisation of) an argument offered by Jessica Leech against Vetter’s Dispositionalism. Leech (2017) starts by considering a claim of contingent existence, such as:

(1) Possibly, Vetter doesn’t (never has and never will) exist.

She notes that, to make sense of such a possibility in a dispositionalist framework, (1) requires for some x to have the power to be such that Vetter does not exist. Leech now asks:

[W]hat could x be? Not Vetter – at first blush, it would seem that Vetter can’t herself have the potentiality to be such that Vetter doesn’t (never has and never will) exist, because to manifest it she would have to never have existed, and something that doesn’t exist cannot manifest any property. So it must be something else (Leech 2017: 461).

Since ‘nothing *now* could have the potentiality for [Vetter] to have never existed’ (Leech 2017: 461; cf. Vetter 2015: 281), the most natural proposal to account for (1) is to appeal to the powers of something existing *before* Vetter existed, such as her parents’ power not to generate her. After all, surely anyone’s power to generate offspring is not a maximal power, and thus could have failed to be exercised. There is, however, a rub:

[C]onsidering a time before Vetter came into existence, how can we take the potentialities of anything existing then *to concern anything to do with her in particular?* How can we be assured that this is a genuine *de re* possibility for Vetter never to exist, rather

⁹ Mumford (2004), Bird (2006; 2007), Tugby (2013), Vetter (2015), arguably McKittrick (2018).

¹⁰ So far I have presented the differentiating feature between being manifested an unmanifested as a *property*. This might be problematic for the Standard Actualisation route, as it would threaten a Bradley-style regress: for the property of being instantiated would require, in turn, to be instantiated. I will assume, on the grounds of charity, that we can concede to the proponent of a universals-based Actualisation Route an understanding of instantiation that does avoid such problem—e.g. that instantiation is a ‘non-relational tie’.

than a generic possibility for, for example, there never to be an author of a book called *Potentiality*?... The specification of this potentiality crucially involves rigid reference to Vetter – some x has a potentiality to be such that Vetter does not exist (Leech 2017: 461. Emphasis added).

Leech's objection relies on Vetter's particular theses about the interaction of time and potentiality and only concerns truths of contingent existence. However, it has deeper roots and can be generalised to a wider problem for Dispositionalism. For Leech's argument can be extended to all cases of truths concerning (*de re*) merely possible entities. Consider, for example:

(2) It is possible for one of my merely possible granddaughters, Dory, to become a painter. However, it is not possible for another of my merely possible granddaughters, Lucy, to become a painter.

Note that I am here interested in the possibility *de re* of Dory herself (bang on the table, profusion of italics) rather than Lucy being possibly a painter—not just the possibility (*de dicto*) that somebody thus-and-so (e.g. someone who is my granddaughter)¹¹ is a painter. Insofar as we think that there are modal truths about merely possible entities, this is a serious problem for the grounding task: there would be modal truths that cannot be grounded upon actual powers.

Leech maintains that the puzzle cannot be solved by invoking merely possible individuals, since Dispositionalism is a hardcore actualist theory, and merely possible individuals require the existence of other possible worlds, thus undermining the whole hardcore actualist project. But there is no need to have mere *possibilia* to solve the problem: in a sense, powers ontologies already provide the perfect ersatz candidates. It is all too natural to think of the coming to be of individuals (e.g. Dory's coming into existence) as manifestations of powers, and therefore the obvious way to account for our reference to Dory herself (or Vetter before her birth) is to appeal to the (temporarily or permanently) unmanifested manifestations of the relevant powers. The solution to Too Much Possibility via the Actualisation Route is, then, crucially involved in meeting Leech's objection and paving the way to the grounding task: we have, after all, already admitted the existence of unmanifested manifestations, so we should have the resources for dealing with truths involving Dory or Vetter before she was born.

But does the Standard Actualisation Route actually provide the resources to deal with *de re* truths about mere *possibilia*? It is true that the existence of unmanifested manifestations is admitted, but unmanifested manifestations are taken to be uninstantiated *universals*, not particulars. Are universals up to the job?

I can see two ways in which the Standard Actualisation Route can offer the dispositionalist the means to meet the generalised version of Leech's objection by invoking uninstantiated universals. The first is to claim that the identity of particulars can be reduced or grounded in the distribution of (non-haecceitistic) properties. The second is to invoke uninstantiated haecceitistic properties — individual universals.

¹¹ Note that the problem can also be generalised to the views that take only fundamental properties such as mass or charge as powers (Bird 2007; 2016), insofar as these can give rise to individuals. Assume that only mass and electric charge (and spin etc) are fundamental properties and they are the only powers. Insofar as they are responsible for the formation of atoms or molecules, *if* atoms and molecules are particular individuals (e.g. it makes sense to speak of *this* water molecule, Andy, and of *that* water molecule, Bertie), then also fundamental powers will concern modal truths about mere *possibilia* (e.g. the electric charge of this electron could have resulted in *that* water molecule, Andy, but it did not, and instead resulted in the formation of *this other* water molecule, Bertie).

The first strategy, in a sense, simply dismisses the problem, and maintain that there is no need of posing (fundamental) particulars in our ontology. All we need are properties, and we can get all the truths about particulars out of those. Truths about individuals can be grounded (perhaps only collectively) in truths about property instantiations at spacetime points or stuff-like matter (Jubien 2009, Dasgupta 2009; 2014). In this case, *de re* truths about mere *possibilia* are not a problem for the Standard Actualisation Route, because there are no particulars with primitive identities anyway, let alone possible individuals. I do not think that Dispositionalists should follow this line of reply to Leech’s objection. Even if Generalism might be true, I take it that neutrality about the existence of primitive individuals is a virtuous trait for a theory of modality: the viability of Dispositionalism should not rely on whether there are individuals with primitive identities—Dispositionalism should be appealing even if there are irreducible particulars. I will assume, therefore, that the ability to account for *de re* modal truths without having to rely on Generalism is, *ceteris paribus*, a *desideratum* that every theory of modality should meet.

This leaves the proponent of the Standard Actualisation Route with the other option, as far as I can see: have universals do the work of particulars, to make sense of ‘individualistic’ truths or facts (Dasgupta 2014). This seems to be Vetter’s strategy. Insofar as the actual entities are involved, it is not very hard to generate the relevant properties. Vetter adopts a very lightweight, abundant conception of properties, according to which any predicate that can be obtained via an abstraction operator (e.g. lambda calculus) corresponds to a property. Given that every entity is identical to itself, we can generate the property of being identical to it: from Socrates’ self-identity we derive the property of being Socrates, simply as ‘ $\lambda x. x = \text{Socrates}$ ’. Once we have these properties, we can easily build everything we need for our potentialities and manifestations. The trouble is that this approach might work with the property of being some *actually existent* entity (like Socrates), but cannot work when it comes to mere *possibilia*, because the problem is precisely that in that case there is no particular actual entity to abstract a haecceitistic property from.

So, it seems to me, the only way out of this problem for those Dispositionalists who take the Standard Actualisation Route to solve Too Much Possibility and want to account for *de re* truths about merely possible particulars with primitive identities (that is, not bound to a commitment to Generalism), is to invoke full blown Platonic individual universals. By this I mean universals that must be instantiated (if at all) uniquely: the universal of being Dory can only be instantiated by one entity at a time (say, a certain organism).¹² If the dispositionalist could avail herself of such non-multiply instantiable universals, then she could say that these are what powers involving mere *possibilia* are pointing towards — Dory herself could be substituted by the property of being Dory, and thus the power to generate Dory would just be the powers to be such that the property of being Dory is instantiated. In this context, Dory’s power to become a painter would be cashed out in terms of second order universals: the property of being Dory would, in turn, bear the power to be such that Dory is a painter, etc. Thus, in order to answer to the general worry stemming from Leech’s objection, it seems that the dispositionalist

¹² I am assuming here the following minimal necessary condition for particularity: For all x , x is a particular only if for all y , if y is determinately located at region R , and x is determinately located at R^* , and $R \neq R^*$, then $x \neq y$. Of course, the principle would need a much more refined formulation to deal with cases of vagueness, but I think it is safe to assume that a principle like this is fairly uncontroversial: particulars cannot be multi-located, and therefore individual universals cannot be multiply instantiated. Plausibly there are stronger necessary conditions: I find it very puzzling, for instance, to think that the same particular could stop existing for a period of time and then re-appear (e.g. Dory existed from 50 B.C to 55 B.C. and then from 2025 to 2070. But this would introduce all sorts of complications that are best avoided in this context.

who adopts the Standard Actualisation Route is committed to the following two steps: i) admit Platonic¹³ primitive first order haeccectistic universals, such as being Socrates and ii) maintain that all other universals are second-order properties instantiated by the ‘individual universals’.

I think that this would be a considerable cost for the theory. Individual universals have a deservedly bad reputation, and a number of arguments have been offered in the literature against their adoption,¹⁴ which I find very compelling. I will not rehearse them here. I will just point to one brief additional reason to think that dispositionalist (especially those sharing Vetter’s key *desiderata* and assumptions) ought to be particularly weary of adopting individual universals. One of the key benefits of a Dispositionalist theory of modality is that it allows us to ground modality upon the powers of *objects*. But if we allow for properties to play the role of particulars, and we cash out their (iterated) powers as second order properties, we risk losing Dispositionalism’s anchoring to objects. Furthermore, a commitment to individual universals makes a commitment to ordinary objects redundant: if Platonic universals can be the bearers of properties and the manifestations of powers, why bother having also particulars with primitive identities, from which to abstract the identity-properties (e.g. $\lambda x. x = \text{Socrates}$)? Why not have only universals? I think that such picture would clash considerably with the spirit of Dispositionalism (see Vetter 2020: 214). So, I suggest that it would be preferable for the dispositionalists if a different solution to Too Much Possibility, one which allows particulars to be unmanifested manifestations, could be found. In the next two sections, I will present such an alternative solution. I will start with an analogy with the situation that necessitists are in when it comes to sentences like (1).

4. A Williamsonian Analogy

Necessitism is the thesis that necessarily, everything exists necessarily (Williamson 2013). The thesis entails that (1), the sentence initially considered by Leech, is simply false. The thesis apparently flies in the face of common sense or, at least, it clashes with a fairly widespread intuition. Although this conflict with pre-theoretical intuitions need not pose an important obstacle to the truth of the thesis, it is fair to expect that necessitists have at least some account that explains it.

The strategy adopted by the necessitist to account for the pre-theoretical beliefs about the truth of propositions like (1) consists in explaining away the intuitions as being *near the mark, but not quite on target*, a sort of ‘soft error theory’. The idea is to characterise the contrast between necessitism and (1) ‘Possibly, Vetter doesn’t (never has and never will) exist’ not as:

1. $\Box \forall x \Box (\exists y y = x)$
2. $\exists x (x = BV \wedge \Diamond \neg \exists x (x = BV))$

Which in English read:

¹³ The universals need to violate the principle of instantiation if we want to account for *de re* truths about mere *possibilia* in general; Aristotelian universals might do the trick in cases where the power end up being manifested at some time (such as the one presented by Leech with reference to Vetter’s contingent existence), provided that we accept Eternalism or moving spotlight (cf. Armstrong 2008: 65). Mere logical existents are aliens, and I take that Tugby (2013) has convincingly shown that, if manifestations are to be universals, they better be Platonic universals if we want to account for them. See also Gianini & Tugby (2020) for further arguments.

¹⁴ See in particular Markosian (2004:54-6), Menzel (2014), and Williamson (2013: 267-77).

1. Necessarily, everything is necessarily something
2. Vetter is something and possibly it is not something

But rather as:

- A. $\Box \forall x \Box (\exists y, y=x)$
- B. $\exists x (x=BV \wedge F(BV) \wedge \Diamond \neg F(BV))$

In English:

- A. Necessarily, everything is necessarily something
- B. Vetter is something and is F and possibly Vetter is not F

where F is a property that existents can have or lack and that can be used to make sense of our common-sense intuitions of contingency. While 1. and 2. are inconsistent, A. and B. are not.

This situation mirrors almost perfectly the Actualisation Route’s solution to Too Much Possibility. Therefore, by looking at how necessitists characterise the difference-making property F, we might hope to find some useful ideas to develop a new way to characterise unmanifested manifestations. The idea that the status of unmanifested manifestations can be clarified with reference to the way in which necessitists treat claims of non-existence is not new: it has already suggested by Alexander Bird (2006; 2007a). Unfortunately, Bird did not elaborate the idea in sufficient detail. In particular, he did not move past the analogy and develop a systematic account of what adjustments need to be made to adapt these ideas to the contest of a metaphysics of powers and a dispositionalist theory of modality. Such adjustments, I will argue, are necessary. In this section, I will show why this is the case, while in the following section I will present my proposed amendments.

Necessitists maintain that the property involved in the soft error strategy is concreteness, and lack thereof (Williamson 2002; 2013). What we are really gesturing towards when we utter ‘Vetter might have not existed’ *really just is* ‘Vetter might have not been concrete’. The analogy suggests that power theorists should think of the defining feature of unmanifested manifestations as not being concrete: manifested manifestations are concrete, whereas unmanifested ones are not. This, however, does not mean that unmanifested manifestations are abstract, which would clash with the idea that many powers are relevant to causal processes (*e.g.* Shoemaker 1980, Mumford & Anjum 2011, Williams 2019). According to the view, ‘it is a fallacy to treat “abstract” and “concrete” as contradictories, although they might be contraries’ (Williamson 2013: 7). It is possible for something to be neither concrete nor abstract. Such entities exist in the ‘logical sense of “exist”’ (Williamson 2002: 245). Call these ‘merely logical existents’ (MLEs for short). I propose that unmanifested manifestations are mere logical existents. In order to understand and evaluate the suggestion and the usefulness of the analogy, we have to say something more as to what it is to exist in the ‘logical sense’, or we will just have swapped one technical term for another.

Williamson offers two characterisations of what it means to exist in the logical sense. According to the first, merely logical existents are those entities that have only modal properties. According to the second, they are

those entities that are contingently non-located in spacetime. Unfortunately, neither of these understandings of merely logical existence do quite work for powers ontologies and Dispositionalism: we'll need some tweaks for the proposal to work. Let's look at what goes wrong with the original characterisations first.

4.1 *Only Modal Properties*

Williamson suggests that one way to characterise the difference between logical existence and *concreta/abstracta* is that the latter have non-modal properties as well as modal ones, while logical existents have modal properties only. A concrete entity, such as myself, could be thus-and-so, but also *is* so-and-so: there is a way I am. On the other hand, a merely logically existent object, such as my putative granddaughter, could be thus-and-so (she could be tall or short, funny or boring, etc) but there is no way in which she *is*: she is neither tall nor short. The ways in which she *could be* are her only properties.¹⁵

This understanding of merely logical existence is problematic for the dispositionalist for the following reason: it is all too natural for her to identify modal properties with powers, and non-modal properties with categorical properties. Powers and dispositions are, after all, irreducibly modal properties: what else there is to powers beside what they *could* do? This would obviously have unwelcome consequences for the friend of powers. Were she to adopt pandispositionalism (the view that *all* properties are powers), she would be committed to the idea that everything is a mere logical existent: every entity could only have modal properties.¹⁶ A 'powerful qualities' view, on the other hand, according to which every property P

is simultaneously dispositional and qualitative; P's dispositionality and qualitativity are not aspects or properties of P; P's dispositionality, P_d is P's qualitativity, P_q and each of these is P: P_d = P_q = P (Heil 2003)

would instead reduce to Megarian actualism (Molnar 2003): all manifestations are concrete and actual insofar as they are qualitative and non-modal, and so there could not be chains of iterated powers. Hybrid theories (such as Molnar 2003, Lowe 2010) would not be much better off, either: they would entail that a considerable subset of powers (those having other powers as manifestations) could never bring about their manifestations, whereas those powers that have the categorical properties as manifestations would *always* be manifested. None of these options are appealing.

4.2 *Contingently Non-located in Spacetime*

The second characterisation offered by Williamson (1998; 2002; 2013) is that mere logical existents are *contingently spatiotemporally non-located* entities, whereas *abstracta* are necessarily so, and *concreta* are contingently located in spacetime. This also seems to be the characterisation endorsed by Bird (2007). This characterisation raises a problem for Dispositionalism, which, recall, can be minimally spelled out as the conjunction of the following:

¹⁵ Obviously, we have to exclude negative properties in order for this characterisation to work; my merely possible granddaughter is not tall because she lacks the property of being tall, and not because he has the (negative) property of being not-tall.

¹⁶ This conclusion would perhaps vindicate Armstrong's (1997:80) 'Reality Regress' (Ingthorsson 2015) against pure powers, nicely summed up by the *dictum* 'Always Packing, Never Travelling'.

DPoss: ‘possibly p ’ is true *iff* and because there is some power whose manifestations, if manifested, would make ‘ p ’ true.

DNec: ‘necessarily p ’ is true *iff* and because there is no power whose manifestation, if manifested, would make ‘not- p ’ true.

It is hard to square Dispositionalism and the view according to which mere logical existents are *contingently* non-located entities. Assume as a starting point that there are some unmanifested manifestations, as stated by Independence. If we understand being unmanifested as being contingently non-located, we have the following situation:

Independence: For some power P , i) P is directed to M , ii) M is not spatiotemporally located and iii) it is possible that M is spatiotemporally located.

Given Dispositionalism, the *global* modality occurring in clause iii) is to be grounded or explained by a *local* modality, *viz.* a power. Accordingly, the kosher way to express Independence should be the following:

Independence*: For some power P , i) P is directed to M , ii) M is not spatiotemporally located and iii) there is a power P^* whose manifestation is that M is spatiotemporally located.

But of course P^* is in turn a power whose manifestation is unmanifested – otherwise, M would be in fact located, and hence manifested. This means that Independence* entails the following:

Independence:** For some power P , i) P is directed to M , ii) M is not spatiotemporally located and iii) there is a power P^* whose manifestation M^* (= that M is spatiotemporally located) is contingently not spatiotemporally located.

Again, the clause iii) contains a global modality which should be reduced to a power. A vicious infinite regress ensues. The problem here is not that there is an infinite sequence of answers, so that there is no final step that fully satisfies us, but rather that we do not advance at all, regardless of the number of steps; not only we are never *fully satisfied*, but rather that *we don't even begin being satisfied by the answer*. We started off by asking ourselves ‘what it is to be unmanifested?’ and we realised that the answer made reference to being unmanifested again. We did not advance by a single step. This, I take it, is the defining feature of vicious regresses—the exact same question we asked at the beginning appears in the answer:

[t]he explanatory failure that occurs at the first level of the analysis consists in the fact that the explanans is of the same form as the explanandum: the phenomenon for which we are seeking an explanation reappears as its own explanation (Bliss 2013: 410).

Despite the regress, I think that this second characterisation of mere logical existents is on the right track: spatiotemporal location seems to be precisely the sort of thing that could explain the difference between manifested

and unmanifested manifestations perspicuously, and offer an viable and informative way to flesh out the Actualisation Route. However, spatiotemporal location (and lack thereof) alone is not sufficient to distinguish between being concrete, abstract, and unmanifested. We need something else to complement it.

5. A New Framework for Powers

The problem of Williamson’s account of MLEs, when applied to the manifestations of powers, is that it is formulated in modal terms, in a context in which the global modality is the *explanandum*. Therefore, we could escape the problem by invoking a different explanation. One way to do this is to invoke a non-modal, local phenomenon. My proposal is that we use a non-modal notion of essence (Fine 1994, Hale 2013, Lowe 2016) and reformulate the definition by saying that something is a mere logical existent if and only if it is not part of its essence that it is spatiotemporally located.

Given a non-modal essence operator, we can offer an independent characterisation of MLEs and unmanifested manifestations that avoids the explanatory circularity. MLEs can be defined as the kind of things that are not located, but it is not part of their nature that this is the case. Adopting Fine’s (1994) symbolism, where ‘ $\Box_a p$ ’ is to be read as ‘it is essential to a that p ’ or ‘it is true in virtue of the nature of a that p ’:

MLE a is a mere logical existent iff $\neg Located(a) \wedge \neg \Box_a \neg Located(a)$

This characterisation of MLEs allows us to clarify what is the difference-maker between manifested and unmanifested manifestations, and thus solve Too Much Possibility via the Actualisation Route. The property that manifested manifestations have and that unmanifested manifestations lack is simply that the former have a spatiotemporal location, whereas the latter do not. However, this is not enough to conclude that unmanifested manifestations are abstract objects, making a mystery of the manifesting of manifestations: unmanifested manifestations are not essentially non-located, and thus can be brought about by the action of powers. The Actualisation Route is to be understood thus:

1	$Directed(P, M)$	Directedness	P is directed to M
2	$\exists x (x=M)$	1., $\exists I$	M is something
3	$Located(P) \wedge \neg Located(M)$	Independence	P is located and M is not located
4	$\exists x (x=M \wedge \neg Located(M))$	2,3	M is something and it is not located

Cashing out the Actualisation Route in this way does more than simply solving Too Much Possibility: it has a number of consequences, both for the metaphysical task as well as for the grounding task. Let’s start with the former. First of all, the proposed picture allows us to formulate an entire new metaphysical framework for powers. By taking spatiotemporal location and its essentiality as factors (in the sense of Simons 2012; 2018), we can generate the following matrix:

Essentially Located	Essentially Non-Located
Non-Essentially Located	Non-Essentially Non-Located

Table 1

This matrix allows us to define not only what it is to be an unmanifested manifestation, but also what it is to be concrete and abstract:

MLE x is a mere logical existent iff it is non-essentially non-located: $\neg Located(x) \wedge \neg \Box_x \neg Located(x)$.

Concrete: x is a concrete entity iff it is non-essentially located: $Located(x) \wedge \neg \Box_x Located(x)$.

Abstract: x is abstract iff it is essentially non-located: $\neg Located(x) \wedge \Box_x \neg Located(x)$.

The matrix generates a fourth slot: the essentially spatiotemporally located entities. It is not immediately clear what could occupy such position. My preferred hypothesis, which unfortunately I cannot develop further in this paper, is that they are the space-time points themselves:¹⁷ it is hard to conceive how a space-time point could fail to have a location, for it seems to me that their identity is exhausted by being located where they are—there is nothing more to *what* they are than *where and when* they are. If so, it makes sense to think that they are essentially located: a non-located spacetime point seems to be a contradictory entity, just like a square circle. The hypothesis fits more naturally with a substantialist view of spacetime, but I do not see any reason why it couldn't work within a relationalist framework, too: nothing in the schema above suggests that we have to treat any of these entities as *fundamental*. If we assume that Independence is a governing principle for *all* powers—that is, that it must be possible for the manifestation of each power to fail to be manifested (Mumford & Anjum 2011; 2018)—then we have to conclude that spacetime points cannot be the manifestation of powers. I take this to mean that, according to the view, the *topology* of spacetime would be independent of the action of dispositional properties.¹⁸ We can sum up the schema as follows:

	Essentially	Spatiotemporally located
Concrete	X	✓
Abstract	✓	X
Logical Existence	X	X
Spacetime points	✓	✓

¹⁷ An alternative hypothesis, which I find less appealing: it could be the *substratum* described by certain theories of substance, e.g. Moreland (2013).

¹⁸ This does not mean, however, that powers cannot dictate the *metric* of spacetime. This would still allow the ontology of powers here presented to be compatible with General Relativity: it can still maintain that 'the spatiotemporal geometry of the universe depends on the distribution of matter and energy' (Maudlin 2012: 140) and in particular on the action of certain powers (e.g. mass) of physical entities.

Table 2

Another consequence for the metaphysical task is that the view allows us to understand what it is that happens when a power brings its manifestation about, that is, when the manifestation is manifested: becoming manifested is simply to acquire a spatiotemporal location. What does it mean to say that an entity acquires a spatiotemporal location, and for a power to bring about such acquisition? The phenomenon is no more mysterious than the instantiation of a property — or, at least, it can be described exactly in the same terms. Start by clarifying what it means to acquire a spatiotemporal location. Distinguish existence *simpliciter* and existence at a time, where the latter is characterised in the standard way (Sider 2001) as being located at a time, occupying a time. From the chart above it should be clear that MLEs, like abstract objects, can exist *simpliciter* even if they do not exist at any time: it does not follow from that fact that x exists *simpliciter* that there is some spacetime point p at which x is located, if x is either abstract or a mere logical existent (this, of course, does not mean that MLEs cannot also exist at some time, unlike abstract objects).¹⁹

We can now introduce the notions of being accompanied and being unaccompanied:

Company: x is accompanied by y at t iff x exists at t and y exists at t .

NotCompany: x is unaccompanied by y at t iff x exists at t and y does not exist at t .

Now, we can make sense of becoming manifested at some time t — that is, acquiring a spatiotemporal location — simply by saying that the manifestation, M , although existing *simpliciter*, is not always accompanied. Indeed, the manifestation was unaccompanied before t and is accompanied at t . Therefore, we can say some manifestation M , which is unmanifested up to t_1 , becomes manifested (located) at t_2 :

- i) M exists *simpliciter*
- ii) At t_1 , no x is accompanied by M .
- iii) At t_2 , some x is accompanied by M .

More generally:

Manifesting as Company: M becomes manifested at t_n =_{df} there is no x such that x is accompanied by M at t_m and there is a y such that y is accompanied by M at t_n , where $t_n \neq t_m$.

We can add all sorts of bells and whistles to this account — for instance, we can add constraints establishing whether the time of manifestation must be later than the time at which the power began to exist or exists (thus banning past-directed powers), or whether a specific interval must occur between at the time at which a power is directed at M or activated and the time at which M is accompanied by something (thus establishing that some

¹⁹ In case MLEs happen to be located at some point, it is not the case that MLEs exist *simpliciter* in virtue of the fact that they are located.

powers take a certain amount of time to unfold), or that there must be a process starting when the power is activated and terminating when the manifestation is manifested.²⁰

Now we can make sense of how a power brings about a certain manifestation: we simply add the fact that a power P is *directed at* some manifestation M to the fact that P was first unaccompanied by M and is at some later time accompanied by it (or, more generally, that at some time in which P was directed at M, P was not accompanied by M, and at some later time *something* was accompanied by M:

Bring About: P brings about M at $t_n =_{df}$ At some time t_k before t_n , P is directed to M, and M becomes manifested at t_n .

These are the bare bones of the account: there are, again, all sorts of bells and whistles we can add if we want to express the idea that powers *produce* their manifestations, or that they do so acting *dynamically*.²¹ But these further features can be added to the present account without too many problems in a second time.²²

A third metaphysical consequence is that a primitive essence operator allows us to express Directedness more clearly:

Directedness*: The manifestations of a power are essential to it.

This captures the idea, expressed by Dispositional Essentialists such as Ellis (2001; 2002) and Bird (2007; 2016), that the point of powers is that their modal and causal profile is essential (and necessary) to them. I am inclined to maintain that essential truths hold *simpliciter*, as they are true in virtue of something's real definition, and thus hold even if the entity does not exist, at least in conditional form. Typically,²³ essentialists will maintain that 'it is essential that Socrates is human if something' — similarly, therefore, Directedness* will yield that 'it is essential that power P is directed to M if anything', and maintain that this is true *simpliciter*. Again, this is not incompatible with it being true at some time that P is directed towards M. If P is located at some spacetime point t , and it is essential to P that it is directed towards M (and thus true *simpliciter* that P is directed to M), then it will be true at t that P is directed to M. Given Directedness*, we can distinguish genuine powers from categorical properties that only happen to be 'modally fixed', as in the case, described by Tugby (2013b: 4) and Azzano (2019: 347), where we engineer an Armstrongian *faux*-power by having two categorical universals linked by a necessitation relation that happens to be metaphysically necessary.

²⁰ Following Mumford and Anjum (2011), I take an appeal to processes to be the key to account for the *dynamic* character of powers, and also to hold the key for accounting for *dated* powers, such as Jamie's power to run a marathon on June the second, or the salt's power to be dissolved at midday but not at nine, etc. Unfortunately, the details, as well as discussion regarding the role of our metaphysics of time in this picture, cannot be discussed in this paper.

²¹ These further theses need not be adopted by all dispositionalists: they characterise a "more radical" subset of powers theorists, such as Mumford and Anjum (2011), Groff (ms), etc.

²² I sketch how I think this could be done in Giannini (forthcoming).

²³ But not universally: see Almog (2003).

The theory has also important consequences for the grounding task. Firstly, this solution to Too Much Possibility is capable of offering us better resources for dealing with the problem of *de re* truths involving *possibilia* raised by Leech. According to the schema, powers for which Independence holds can be directed at any kind of entity that can be an unmanifested manifestation—that is to say, any entity whose essence does not contain information about its location or non-location. This means that we can be fairly liberal when it comes to the category of the manifestation of powers—it should be clear that the view allows powers to be directed at both individuals and properties, as long as we think that it is not essential to these individuals that they are spatiotemporally located. Thus, according to the view I am proposing, directedness is a cross-categorical relation, which can link powers to properties as well as particulars, be they concrete, abstract, or mere logical existents. A power is essentially directed at some M — it does not really matter whether M is located in spacetime or not.²⁴

The fact that we can allow powers to be directed at particulars should come as no surprise, considering that we arrived at the proposed framework via an analogy with Williamson’s mere logically existent entities. Powers ontologies should be able to invoke the same entities (almost: presumably, the modal space of the dispositionalist, being grounded in actual powers, is somewhat more limited) that populate the domain of the necessitist. Thus, we can appeal to all those individuals that are unmanifested manifestations of powers in order to make sense of truths concerning Dory, or Vetter before she was born: we could specify the power to generate *Vetter* herself, as opposed to a qualitative duplicate of hers, had by her parents by appealing to her status as a temporarily unmanifested manifestation.

But the benefits for the grounding task might outstrip the ability to ground truths about mere *possibilia* — being able to account for mere *possibilia* might have a momentous upshot. Vetter (2015) has shown how Dispositionalism can support a modal logic as strong as T; unfortunately, T is relatively unpopular, as many take it to be too weak a logic of absolute modality — S4 and S5 being the more popular options, and so, unfortunately for Dispositionalism, many might reject the view on the basis of the fact that it yields too weak a modal logic. Recently, however, Kimpton-Nye (forthcoming) has argued that Dispositionalism can support S5 if it admits a necessitist framework. If he is right, then the proposed metaphysics of powers might offer an independent motivations for accepting MLEs: it might offer an independently motivated metaphysical basis to meet Kimpton-Nye’s requirements and allow Dispositionalism to support the default modal logic for metaphysical modality.

6. General Objections

Before concluding that dispositionalists ought to adopt my proposed metaphysics of powers, however, there are some objections that need to be addressed. In this section I will consider two general worries about the proposal,²⁵ while in the next I will consider two issues more specifically linked with my invocation of a primitive essence operator.

The first general objection is that, although I have assumed Vetter’s brand of Dispositionalism and have argued that mine is a better metaphysical ground for her theory of modality than the Standard Actualisation

²⁴ Therefore my theory of manifestations of powers need not be limited to individuals and properties as manifestations — it might also admit facts or states of affairs, provided that it can be shown that these are neither essentially located nor essentially non-located in spacetime. I am personally inclined to think that states of affairs meet this requirement, but arguing that this is the case would take us on too long a detour, so for the purposes of this paper, I will stick to the claim that powers can be directed at properties and particulars only.

²⁵ Thanks to an anonymous reviewer for raising both these general worries.

Route that she takes, the metaphysics that I present is actually at odds with some of Vetter's key assumptions, and therefore it is unclear who would accept the picture presented. The second general objection is that adopting my view sits uncomfortably with the standard view according to which the identity of powers is a structural affair which involves the overall network of powers and their manifestations. Let's flesh out these objections and consider them in more detail.

6.1 No Buyers for MLEs.

The first objection can take this form: either the theory proposed above is targeted to those who accept Vetter's brand of Dispositionalism, or it is targeted to Dispositionalists of all stripes, including those who do not share Vetter's theory. i) If it is targeted at Vetter's Dispositionalism, it misses the mark, because it clashes with some of her key assumptions, and therefore cannot be accepted by her and those who share these assumptions. ii) If it is targeted to all other dispositionalists, then the metaphysics is under-motivated, because it was designed to avoid Leech's objection, which only concerns Vetter's theory. Insofar as the solution to Leech's argument is what gives my theory the edge over the Standard Actualisation Route, the position is not motivated for those who do not need to worry about the argument.

I think that both horns of the objection can be resisted. One reason why my proposal can be thought to clash with some of Vetter's guiding principles and assumptions is that her theory aims to ground metaphysical modality in

just the ordinary objects of this, the actual, world, with which we are in regular epistemic contact [...] if it succeeds then it does so by anchoring possibilities in realistically respectable bits of the world, ordinary concrete objects (Vetter 2015: 11).

Her theory of modality is meant to both preserve a commonsensical "Aristotelian" ontology of object plus properties and allow for the possibility for an *a posteriori* epistemology of modality, based on causal contact with objects and their powers. But, the objection goes, there is little of commonsensical, safe and sane, about an ontology of mere logical existents; and since they are non-located in space and time, they can hardly be known via causal contact.

It is important to note that Vetter is not committed to an ontology of sole concrete entities, nor to the idea that only those can be the bearers of potentialities. To account for both truths about mathematics, grant closure under entailment for possibility, and answer to criticisms from Yates (2015) and Giannini & Tugby (2020) she explicitly states (Vetter 2018; Vetter 2020) that abstract entities can bear properties, and that entities of any ontological category can have joint potentialities with them (e.g. natural numbers and my dog have the joint potentiality to be such that $2+2=4$). So there is no general ban on non-concrete entities (that is, no adherence to ontological naturalism, 'the doctrine that reality consists of nothing but a single all-embracing spatio-temporal system' Armstrong 1981: 149), nor it seems that such entities cannot be involved in the activities of powers. If this works for *abstracta*, then there is no reason to think that it should not work for MLEs. Similarly, there are no new special epistemological concerns: the powers that we know about and come into causal contact can well be had by concrete objects, and *they* are both the truthmakers and the sources of our knowledge of modal truths; this has little to do with the nature of their manifestation (be they abstract universals or non-located mere logical existents).

A second reason to think that my picture clashes with Vetter’s fundamental assumptions is her account of what makes potentialities a *localised* phenomenon, in contrast with possibility, which is a non-localised (or global) phenomenon. The difference is reflected in the fact that the latter is expressed by a *sentential operator*, whereas the ‘the proper operator for ascribing potentiality is thus a predicate operator: ... has a potentiality to ... (fill a singular term for the first blank, and a *predicate* for the second)’ (Vetter 2015: 2; emphasis added). But my theory, allowing powers to be directed at particulars and not only properties, must violate this principle: ‘... has a potentiality to ...’ must admit something that is not a predicate to fill the second blank. Therefore, my theory threatens the locality of powers, which is unacceptable. I do not think that the threat to locality is very serious. It seems to me that the key feature that captures locality, and which anchors the contrast between POT and diamond is that the former is sub-sentential, whereas the latter is sentential. The informal characterisation of locality is this:

A potentiality is localised in the sense that that it is a property of a particular object... possibility, on the contrary, is not localised this way. Its being possible that such-and-such is not primarily a fact about any one particular object; it is a fact about how things in general might have turned out to be (Vetter 2015: 2).

My theory, although it requires a modification of the POT operator so that also singular terms can fill its second argument, does not thereby transform it into a sentential operator like diamond or box; so, I am inclined to think that it preserves the key intuition of Vetter’s theory (although it does require a tweak in the technical apparatus). I am inclined to think that the prospect of a Dispositionalist theory of modality that can account for *de re* modal truths and support S5 is worth the price of this modification.

However, it is important to note that, given the resources offered by the metaphysics proposed, there might not be any need to even tweak the potentiality operator as I suggested, and maintain that powers are only directed towards properties.²⁶ The idea is this: assuming a liberal conception of properties, which allows us to accept that every predicate obtained by means of lambda-abstraction corresponds to a genuine ontic property, of the kind adopted by Vetter and discussed in §3, once we accept in our ontology the existence of MLEs, then we can generate the property of being Dory, alongside all the properties acting as ersatz particulars. If Dory exists (as a mere logical existent), then she will be self-identical, and from this we can obtain by abstraction the property of $\lambda x. x = \text{Dory}$. Then, we do not even need to say that the manifestation of the power to generate Dory is Dory herself: we can make do with the property of being Dory. While I think that it is still preferable to tweak the POT operator and admit powers to bring about particulars, rather than make do with these abstracted individual properties, unfortunately I cannot expand on this without going too far afield, so I am happy to concede that this might be a viable option too. If one so wishes, by accepting my metaphysics, she can preserve the original technical characterisation of locality and POT operator offered by Vetter and answer to Leech’s worry.

The second horn of the objection, according to which Leech’s objection *only* concerns Vetter’s brand of Dispositionalism and hence the proposed metaphysics of powers is under-motivated for other Dispositionalists can be resisted, too. Those who take powers to directly ground counterfactuals (e.g. Jacobs 2010) face both the problem of solving Too Much Possibility (pertaining to the metaphysical task) and the problem, pertaining to the grounding task, of accounting for the truth of simple *de re* sentences concerning mere possibilia (e.g. ‘it is possi-

²⁶ Many thanks to Barbara Vetter for suggesting this alternative: unfortunately I cannot discuss it here with the due depth.

ble that Dory becomes a painter²⁷). For dispositionalists like Jacobs, these simple possibility claims will be derived from the appropriate counterfactuals (e.g. ‘if I were to have a granddaughter, she would be Dory’, ‘if Dory were to go to art school, she might be a painter’, or ‘if Vetter’s parents never met, Vetter would not have existed’ etc). The trouble is, these counterfactuals contain reference to Dory herself (and to Vetter herself). How are we to secure this reference (and thus give truth-functional semantics for the counterfactuals) if there is no Vetter yet, and no Dory at all? Of course, we cannot appeal to non-actual possible worlds where Dory exists, as Stalnaker-Lewis semantics would have it — our theory needs to be hardcore actualist, and *ex hypothesis* my potentiality to be such that Dory exists in not exercised.

By Directedness, we are committed to the idea that powers are *for* their manifestation. If powers are to be understood counterfactually, their manifestations either are counterfactual facts that have Dory as a constituent, or alternatively the manifestation of the power *plus* the stimulus. And the manifestation will involve Dory. Either way, we need to make sense of her ontological status.²⁷

So, concerning *de re* truths about mere *possibilia*, those who take powers to be linked with counterfactuals are in the same predicament as Vetter. They will need Dory herself to play some role in fixing the identity of the counterfactual fact, or the meaning of the counterfactual, or is the unmanifested manifestation of the power plus its stimulus. Those who think that powers are linked with counterfactuals can deny that only universals can be manifestations of powers, and admit facts, states of affairs, and so on. But they still need to offer an account of the ontological status of unmanifested manifestations involving merely possible particulars, even if these are facts. I see no reason why they could not consider (and, indeed, accept) my solution to Too Much Possibility involving mere logical existents just on the basis of their commitment to a counterfactual characterisation of powers. Therefore, I think that my metaphysical picture, although developed within the framework of Vetter’s Dispositionalism, is also relevant to those, like Jacobs or Bird, who take powers to be most intimately linked with counterfactuals.

6.2 Identity of Powers and Structuralism

The second general worry concerns the compatibility of my proposal with the view that powers have their identity determined relationally. The objection, as I understand it, runs as follows: a commonly accepted solution to the “identity regress” (Lowe 2010; Ingthorsson 2015) is that the identity of powers is determined holistically by their directedness network (Bird 2007; 2007b, Tugby 2017, Williams 2010; 2019). This either involves only their manifestations (Vetter 2015) or both manifestations and stimuli (Bird 2007). This is usually taken to mean that the identity of powers is determined by all other *powers* and their mutual relation. But if we think that powers can be directed not only at other powers, but also at particulars, then we undermine the assumption: the identity of a power is not constituted solely by all the other powers and their mutual relations. Therefore, either we distinguish two families of powers (“pure powers” that only have other powers as manifestations, and “cross-categorical powers” which admit also individuals), or we threaten the idea that powers have a modal nature. Since adopting such dualism, or abandoning the view that powers have modal identities, would be a heftier cost than

²⁷ Note that we cannot simply deny that the stimulus ever occurs, and hence we need not worry about these cases when the manifestation is a mere possibility: the literature on masks, antidotes, etc. has taught us that dispositions and powers might fail to manifest even if the right stimulus is present (and hence the antecedent of the counterfactual obtains) — Vetter might have failed to exist even if her parents did meet, and Dory might have failed to be a painter even if she went to art-school, etc.

biting the bullet with regard to their inability to ground *de re* truths about mere possibilia, we should not accept my theory.

The topic of the identity of powers is vast and complex, and offering a fully satisfactory answer to the objection would require a long detour. I will offer only some brief considerations, in the hope that they will suffice to assuage the worry above. The first is that friends of powers are primarily committed to the view that the identity of powers is fixed by their *manifestation* (or the manifestation-stimulus pair, if they have a counterfactual view. I will henceforth omit the stimulus for the sake of readability), that is, by what powers are for. This fact alone does neither entail that powers can only be directed at other powers or properties, nor that there is nothing more to the identity of powers than their relative place in a structure. Powers theorists might not believe that all properties are powers, for instance — they could be directed at categorical properties with primitive identities, which act as “dead-ends” in the network (this seems to be Lowe’s position, for instance). Those who adopt such “dualist” theory of properties (Lowe 2010, Molnar 2003, Cartwright & Pemberton 2013) can still defend the idea that the identity of powers is wholly relational: the identity of powers is given by what they are for. However, what they are for sometimes is a fixed point with primitive identity, i.e. not a power. This means that there is an easier solution to the regress of powers: there are fixed endpoints. Thus, they do not require a full-blown structuralist solution such as Bird’s. But they still agree with Bird that the identity of powers are wholly relational, and that powers have their modal profile necessarily (indeed, essentially). And, of course, if this reasoning involving “dead-ends” works for powers for categorical properties, why should it not hold for powers directed at particulars? They, too, could be “dead-ends” with primitive identities, which pose no bigger threat to the idea that powers have relational identities than categorical properties do.

This does not undermine the idea that powers are properties with modal natures, either. The modal nature of a power’s identity is given by the fact that *what a power is* is (essentially) determined by *what it is for*, and under no circumstance the same power can exist and be embedded in a different directedness network. If we think that there is a unique network (i.e. we reject the “olympic circles” model of Williams 2010), then the modal profile of *all* powers is fixed, e.g. mass could not exist in a world where not only gravity behaved differently, but also electric force. But this would not be affected by the hypothesis that some powers point to dead-ends with primitive identities: it would still be true that nothing in the network could change and the power retain its essence. Assume that particulars have primitive identities, and that I have a power to generate Dory, but not a power to generate Mary (Mary is essentially Wittgenstein’s daughter, say). If all powers are caught up in a single network, then strictly speaking a world where I have the power to generate Mary and Wittgenstein has a power to generate Dory is incompatible with what mass is in the actual world, no less than how a world where electric charge does not behave in conformity to Coulomb’s law would be incompatible with what mass is.

Of course, having nodes in the network of powers which have primitive identities would make a fully structuralist theory, such as Bird’s, somewhat unnecessary. Powers are still uniquely individuated by their relations to other nodes, but some nodes can be individuated regardless of their position in the network: they have primitive identity— figuratively, some nodes in the graph are glowing. We might still need the network to be modelled by an asymmetric graph to individuate powers, though: we need to make sure that ‘P is the power that is twice removed from the property of generating Dory’ picks out a unique entity, and asymmetric graphs might still be our best bet to insure that this is the case. But powers theories need not be strictly structuralists, if ‘dead-ends’ with primitive identities are individuated. Overall, I do not think this is a cost of the theory. Bird’s structuralist

view, however popular, is not without its critics and its problems (Barker 2009; Odenberg 2011; 2012; Ingthorsson 2015; Tugby 2017, Williams 2019) and is not the only way to cash out the idea that the identity of powers is relational and that their modal profile is essential and fixed. This modifies the trade-off invoked by the objection: my theory is not incompatible with the idea that the identity of powers is a relational affair, but rather with one particular way of cashing out that idea, namely Bird's structuralist solution. I think that abandoning the latter is not remotely as unappealing as abandoning the former — indeed, it could even make the pandispositionalist's life easier: if one accepts particulars with primitive identities, but not properties with primitive identities, one could maintain that all properties are powers (i.e. are directed and their identity is given relationally) without being forced to adopt Bird's view and face its well-known critiques.²⁸

7. Is an Appeal to Essence Problematic?

In this section I consider two worries which concern the role played by essence in my theory. The first objection is that invoking of a non-modal notion of essence risks to undermine the whole Dispositionalist project, insofar as essences themselves ground necessities. The second objection concerns the other essential properties of non-located entities: surely, it will be essential to Socrates that he is human. But can a non-concrete entity be human? If not, then Socrates cannot be a mere logical existent. Let's look at them more closely in turn.

7.1 *Too Much Essentialism?*

The first objection runs as follows. Understanding mere logical existents in terms of *non-essential non-location*, and therefore formulating the framework for powers ontologies making use of a primitive notion of essence, seems to run counter the very spirit of Dispositionalism. Finean essences are 'non-modal' in the sense that they are not *reducible* to simple metaphysical necessity—not that they do not have modal consequences. Indeed, Fine and other essentialists such as Hale (2013) and Lowe (2016) propose to ground alethic modality in its entirety upon essences, based on the fact that if it true in virtue of the nature of *a* that *p*, then it is necessary that *p*. This, evidently, creates an embarrassment for Dispositionalists, if their project is to ground metaphysical modality *tout court* solely upon powers, for it seems that in order to make sense of powers themselves we have to invoke a notion that has modal consequences, and cannot be analysed in terms of powers (or the circularity of Williamson's second characterisation would ensue once again). One might fear that this this results in a fatal blow to Dispositionalism's ambitions: Essentialism and Dispositionalism can be thought as rival hardcore actualist theories of modality, and admitting that powers might not be the only source of modality could mean admitting defeat. I set out by saying that I wanted to develop a good metaphysics of powers to carry out the Dispositionalist project, and yet my proposed metaphysics of powers already encodes its failure. Therefore, an appeal to Platonic individual properties is, all things considered, less costly. The point is a fair one, but we should not rush to conclusions.

While I recognise that the appeal to non-modal essences is not ideal, we have to keep in mind that essences were going to prove tricky for Dispositionalism anyway. The metaphysics that I have proposed gives non-modal essence a key role which other theories of powers do not. But this does not mean that Dispositionalism could just *ignore* essences, just because they were not embedded in their minimal metaphysics (or, at least, not so explicitly). Dispositionalists still have to say something about essences, and account for the

²⁸ Note that this solution would not solve all the criticisms moved to the structuralist pan-dispositionalist: in particular, it would do nothing to defend the theory from the 'lack of qualities/phenomenal character' objection by Williams (2019: §5).

whole set of truths involving them: it still makes sense to talk of the essence of {Socrates}, presumably—and more insidiously, of the fact that the modal (or even causal) profile of a power is essential to it. This means that the Dispositionalist has to face the following dilemma²⁹ regardless of how ingrained essences are in her metaphysics: she can either i) adopt a modalist account of essence and reduce it to powers or ii) recognise that there are primitive non-modal essences, and therefore accept that Dispositionalism cannot be the *sole source* of modal truths (or that there might be some overlap). The only problematic option for my account is i), and I will argue that it is not a viable strategy; therefore, the fact that my metaphysics posits irreducible essences at the core of Dispositionalism does not create any additional problems.

One way to deal with the phenomenon of essences is to simply adopt a modalist account, and argue that there is nothing more to it than mere necessity. In order to do so, the dispositionalist would have to deal with what we can call ‘Fine-Sentences’ such as:

FS: It is essential to {Socrates} that it has Socrates as a member, but it is not essential to Socrates that he is a member of {Socrates}.

She can deal with them either by simply rejecting their truth, or by offering an alternative explanation. The latter option does not seem promising. Torza (2015) has presented a convincing formal argument against the possibility of reducing the essence in terms of any operator definable in first order modal language. He also presented some interesting arguments against more sophisticated forms of modalism, involving impossible worlds. But note that it is not necessary to go this far: Dispositionalism does not have the expressive means to even talk about impossible worlds. The potentiality operator that Vetter uses does not introduce hyperintensional contexts, so it is useless to introduce impossible worlds as a way of modelling such fine-grained phenomena. In general, admitting any ‘disposition impossible’ (Jenkins and Nolan 2012) would fatally undermine D_{Poss}, and with it Dispositionalism as a whole. This seems to pose a hard challenge for those who seek to be reductionist about essence: they need to do so with merely intensional resources (or at least without appeal to impossible worlds). But, if we accept Fine-Sentences, essence cannot be reduced or captured in merely intensional terms.

So, the only strategy open to dispositionalist to pursue i) is to flatly reject that anything like FS is true. Of course, our acceptance of FS relies on our intuitions, and without a theory-independent epistemology of modality (which is hard to imagine is coming anytime soon), to some degree which modal sentences we should believe to be true will depend upon which theory of the foundations of modality we accept — so, it is in principle open to dispositionalists to just say that FS and its ilk are false, just like they will bite the bullet and concede that ‘there could have been nothing rather than something’ is simply not true (Cameron 2008, Pruss 2002, Vetter 2015: 273 ff). However, I find FS considerably more plausible than nihilism: its denial seems to me to be an unacceptable cost to pay. I recognise that this is not a knock-down argument, by any means. I am happy to leave the choice to the dispositionalist’s philosophical good conscience, to cite Goodman (1954: 32).

The upshot of these considerations is that it is not very plausible to think that dispositionalists have the means to reduce away essence. Therefore, it seems that, if dispositionalists recognise that Fine-Sentences can be true and there are such things as essences, then they must find a way to integrate essences within their overall

²⁹ There would be a third option: deny that essence entails or grounds necessity (Almog 2003). I will not discuss it in this paper, as it would require an extremely long detour.

picture anyway. Thus, the fact that my theory places essences at the very heart of the metaphysics of powers does not give rise to *further problems*: any problem generated by essences' seemingly grounding modal truths were there regardless — the fact that some key element of powers metaphysics is defined in terms of essence is just more of the same problem. In slogan form: if dispositionalism is not able to accommodate modal truths seemingly generated by essence, it has worse problems than the fact that my solution to Too Much Possibility invokes essence, too — the whole grounding task would be threatened.

I think there are good reasons to be optimistic about the co-existence of essence and potentiality. Barbara Vetter (forthcoming, §4.2) has recently presented an interesting 'piggybacking' model for the interaction of essence-generated necessities and absence of powers generated necessities, which nicely explains why the two line up and all essence-generated necessities and also powers-generated necessities, but unfortunately the systematic exploration of the relationship between Dispositionalism and essence will have to wait for future work.

It is important to stress that my consideration of Fine-Sentences is not meant to justify the fact that I have employed essence to characterise mere logical existents — but simply to justify that it was legitimate to use essences at all in a dispositionalist context. The justification for the picture I have offered in §§4-5 will rely not on direct argument but rather on the theoretical benefits of adopting my proposal: solving Too Much Possibility, offering a way to account for *de re* modal truths and thus simplifying the grounding task of Dispositionalism, offering an independently clear and attractive characterisation of what it means to become manifested, and hopefully other benefits down the line. As it is often the case, I think that the verdict on the prospects of a metaphysical theory will crucially depend upon the work it can perform overall, rather than a direct argument to the effect that MLEs are best characterised with the aid of essence. If there is a different, Dispositionalist-friendly way to characterise mere logical existents (and reap the other benefits I have argued follow from this picture) without making use of essence, then we could debate whether my proposal is preferable or not to *that* picture, but such discussion will have to wait until such alternative picture exists and will take, I suspect, the form of a comparison between the strengths of the two theories rather than a direct argument to the effect that MLEs must be characterised as I proposed. The goal of this paper is to offer a metaphysics of powers that is better suited for Dispositionalism than those currently on the market. If I am right and the proposed metaphysics makes the grounding task easier, then I have accomplished as much, and that suffices as a reason to characterise mere logical existents in terms of essence, lacking an alternative solution.

7.2 *Essences of Concreta*

The second worry concerning the presence of primitive essences, on the other hand, concerns specifically the way I employ it to characterise Mere Logical Existents. The objection could run as follows:³⁰

Suppose that it is essential to Socrates that he is human. Suppose that being human entails that Socrates is spatiotemporally located and hence concrete. Therefore Socrates cannot be an unmanifested manifestation. Yet, it seems exactly the kind of thing that you want to say can be in potency: surely Phaenarete and Sophroniscus had the power to generate Socrates (since they did) and plausibly this was a preventable (non-maximal) power: they could have failed to generate him.

³⁰ Thanks to an anonymous reviewer for raising this objection.

Schematically, the argument boils down to:

1. The essence of Socrates is to be human
2. Being human entails being concrete
3. Therefore Socrates cannot be human and not concrete
4. Therefore Socrates cannot be a merely logical existent
5. Therefore Socrates cannot be a manifestation

There are two ways to resist it: rejecting either the first or the second premiss. Williamson suggests to take the former path:

Necessitists and permanentists typically deny some popular essentialist theses ... many philosophers regard membership of a natural kind as essential to its members. Thus a tiger is essentially a tiger, and gold is essentially gold. Hence a tiger is always necessarily if anything a tiger, and gold always necessarily if anything gold. Given those claims, necessitism implies that tigers are necessarily tigers, and gold necessarily gold. But presumably there could have been no tigers and no gold: once there were no tigers and no gold. Consequently, necessitists and permanentists should reject the essentialist theses as stated (Williamson 2013: 8).

Williamson maintains that nothing is lost by rejecting 1., and that the necessitist can replace ‘Socrates is essentially human if anything’ with ‘Socrates is essentially human if concrete’ without losing much:

those are just the modifications one would expect in switching from a contingentist framework to a necessitist one. They do not affect the underlying strategy of explaining modal matters in terms of essential natures (Williamson 2013: 391).

The strategy works, formally, so the objection could be blocked in this way. However, I think that rejecting 1. is more problematic than what Williamson claims.³¹ However, I also think that the Dispositionalist can reject the second premise. I see no reason for a friend of powers to say that being human *entails* being spatio-temporally located. For the Dispositionalist, it is very natural to think that being human is either a power, or a structured bundle of more fundamental powers:³² being human just is *doing this and that characteristically human activities*. Being concrete is essential to neither of these features: the only essential feature of powers is their directedness relations.³³ And of course powers can be directed even if they are not located in spacetime: what they cannot do is to *bring about* their manifestation without being manifested. But that is not a problem: of course, no non-concrete entity can *act* humanly, or do the essential activities of humans. But that simply means

³¹ Discussing why this is the case would take up too much space: briefly, I find the asymmetry with essences of abstract entities (which maintain the ‘essential if anything’ clause) suggested by Williamson’s position troubling.

³² I take the fact that this position is surprisingly close to the original Aristotelian (Witt 2003, Kosman 2013) as a positive indication that the two main strands of Neo-Aristotelian metaphysics (powers and essences) can interact in interesting and productive ways.

³³ Here I am treating powers as ‘pure powers’ and not the ‘mixed powers’ defended by Williams (2019). However, I suspect that even admitting powers with some *character* could be compatible with what I say, but cannot discuss it in detail.

that no power which is not manifested can bring about its manifestations, which is just as it should be. It does not mean that a power lacks its directedness when it is not manifested. Being concrete (and thus being embodied) is a pre-condition for a range of characteristic essential activities of humans. But, if being human is a power to do so-and-so, then such power can be had by MLEs, even if they will not be able to *exercise* the power without being concrete. But this is as it should be — surely Dory must be generated before being a painter, even if she can be a painter even before being generated. A defence along these lines, I think, allows us to accept much of the standard essentialist (that is, objectual essentialist) claims at face value, and still admit entities such as Socrates as manifestations of powers.

8. Conclusions

Dispositionalism is still in its early days: there is much work to be done to show that the grounding task can be completed satisfactorily and the theory can achieve both extensional correctness and formal adequacy. Having the right metaphysics of powers can help such grounding task considerably; more precisely, having the wrong metaphysics could greatly hurt our chances of success in fulfilling it.

On the other hand, the current landscape of the literature on the metaphysics of powers presents an almost bewildering variety of views, and it is often hard to understand and map the differences and relations between the various views. I think that some feedback from the potential applications of powers could be helpful here: it seems reasonable that, *ceteris paribus*, we should adopt the metaphysics of powers that is best suited to successfully solve the problem that powers are employed for, and grounding alethic modality is surely one of the most important and ambitious applications of powers. Metaphysicians interested in powers should be as interested and attentive to the grounding task as dispositionalists ought to be interested in the underlying metaphysics.

In this paper I have tried to do exactly that: I have offered a new solution to a central and classic metaphysical problem of powers ontologies with the goal of providing a better foundation for Dispositionalism; its success in addressing the challenge of accounting for *de re* modal truths about mere *possibilia* should count, I believe, as a reason to adopt it as a general metaphysics for powers also in other contexts.³⁴

References

- Almog, J. (2003). The Structure-in-Things: Existence, Essence and Logic. *Proceedings of the Aristotelian Society* 103: 197-225.
- Armstrong, D. (1981). *The Nature of Mind and Other Essays*. Cornell University Press, Ithaca.
- (1997). *A World of States of Affairs*. Cambridge: Cambridge University Press.
- (2004) *Truth and Truthmakers*. Cambridge: Cambridge University Press.
- Azzano, L. (2019). The Question of Realism of Powers. *Synthese* 196: 329–354.
- Barker, S. (2009). Dispositional Monism, Relational Constitution and Quiddities, *Analysis* 69(2): 242-50.
- Barnes, E. (2018). Symmetric Dependence, in R. Bliss and G. Priest (eds.) *Reality and its Structure*. Oxford: Oxford University Press.

³⁴ I would like to thank Marco di Natale, Chiara Martini, Stephen Mumford, Jamie Taylor, Matthew Tugby, Barbara Vetter, Tobias Wilsch, and three anonymous reviewers for their helpful comments. I would also like to thank the audiences at Exeter and Oxford where the paper was presented for insightful discussions. The research for this paper was conducted with the support of the AHRC's Northern Bridge Doctoral Training Partnership.

- Bird, A. (1998). Dispositions and Antidotes. *The Philosophical Quarterly* 48: 227-34.
- (2006). Potency and Modality. *Synthese* 149: 491–508.
- (2007). *Nature's Metaphysics*. Oxford: Oxford University Press.
- (2007b). The Regress of Pure Powers?. *Philosophical Quarterly* 57: 513-34.
- (2016). Overpowering: How the Powers Ontology has Overreached Itself. *Mind* 125: 342-83.
- Bliss, R. (2013). Viciousness and the Structure of Reality. *Philosophical Studies* 166: 399-418.
- Borghini, A. and Williams, N. (2008). A Dispositional Theory of Possibility. *Dialectica* 62: 21-41.
- Cameron, R. (2008). Truthmakers and Modality. *Synthese* 164: 261-80.
- Cartwright, N. and Pemberton, J. (2013). Aristotelian Powers: Without Them, What Would Modern Science Do?.
In R. Groff and J. Greco (eds.) *Powers and Capacities in Philosophy: The New Aristotelianism*. London/NY: Routledge.
- Contessa, G. (2009). Modal Truthmakers and Two Varieties of Actualism. *Synthese* 174:341-53.
- Correia, F. and Schnieder, B. (2012). *Metaphysical Grounding: Understanding the Structure of Reality*. Cambridge: Cambridge University Press.
- Dasgupta, S. (2009). Individuals: An Essay in Revisionary Metaphysics. *Philosophical Studies* 145 (1): 35-67.
- (2014). On the Plurality of Grounds. *Philosophers' Imprint* 14(20): 1-28.
- Ellis, B. (2001). *Scientific Essentialism*. Cambridge: Cambridge University Press.
- (2002). *The Philosophy of Nature. A Guide to the New Essentialism*. Chesham: Acumen.
- (2010). Causal Powers and Categorical Properties. In A. Marmodoro (ed.) *The Metaphysics of Powers*. London/New York: Routledge.
- Fine, K. (1994). Essence and modality. In Tomberlin, J. (ed.) *Philosophical Perspectives 8: Logic and Language*. Atascadero, Ca: Ridgeview.
- Giannini, G. (Forthcoming). Powers, Processes, and Time. *Erkenntnis*.
- Giannini, G. and Tugby, M. (2020). Potentiality: Actualism minus Naturalism equals Platonism? *Philosophical Inquiries* 8(1): 117-40.
- Goodman, N. (1954). *Fact, Fiction, and Forecast*. Cambridge (MA): Harvard University Press.
- Hale, B. (2013). *Necessary Beings. An Essay on Ontology, Modality, and the Relation Between Them*. Oxford: Oxford University Press.
- Heil, J. (2003). *From an Ontological Point of View*. Oxford: Oxford University Press.
- Ingthorsson, R.D. (2015). The Regress of Pure Powers Revisited. *The European Journal of Philosophy* 23(3): 529-41.
- Jacobs, J. (2010). A Powers Theory of Modality: or, How I Learned to Stop Worrying and Reject Possible Worlds. *Philosophical Studies* 151:227-48.
- Jenkins, C. S. and Nolan, D. (2012). Disposition Impossible. *Noûs* 46: 732-52.
- Jubien, M. (2009). *Possibility*. Oxford: Oxford University Press.
- Kimpton-Nye, S. (forthcoming). Can Hardcore Actualism Validate S5? *Philosophy and Phenomenological Research*.
- Kosman, L.A. (2013). *The Activity of Being*. Cambridge (MA): Harvard University Press.
- Leech, J. (2017). Potentiality. *Analysis* 77 (2): 457-67.
- Lowe, E.J. (2010). On the Individuation of Powers' in Anna Marmodoro (ed.) *The Metaphysics of Powers. Their Grounding and their Manifestations*. London/New York: Routledge.
- (2016). *Forms of Thought. A Study in Philosophical Logic*. Oxford: Oxford University Press.

- Markosian, N. (2004). A Defence of Presentism. In Zimmerman, D. (ed.) *Oxford Studies in Metaphysics I*. Oxford: Oxford University Press.
- Maudlin, T. (2012). *Philosophy of Physics. Space and Time*. Princeton: Princeton University Press.
- McKittrick, J. (2018). *Dispositional Pluralism*. Oxford: Oxford University Press.
- Menzel, C. (2014). Actualism. In *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/sum2018/entries/actualism>>.
- Molnar, G. (2003). *Powers: A Study in Metaphysics*, ed. S. Mumford. Oxford: Oxford University Press.
- Moreland, J.P. (2013). Exemplification and Constituent Realism: A Clarification and Modest Defense. *Axiomathes* 23 (2):247-259.
- Mumford, S. (2004). *Laws in Nature*. London/New York: Routledge.
- Mumford S. and Anjum, R. L. (2011). *Getting Causes from Powers*. Oxford: Oxford University Press.
- (2018). *What Tends To Be*. Oxford: Oxford University Press.
- Oderberg, D. (2011). The World is not an Asymmetric Graph. *Analysis* 71(1):3-10.
- Pruss, A. (2002). The Actual and the Possible. In R. Gale (ed.) *The Blackwell Guide To Metaphysics*. Oxford: Blackwell.
- Raven, M. (2015). Ground. *Philosophy Compass* 10(5): 322-33.
- Schrenk, M. (2010). Antidotes for Dispositional Essentialism. In A. Marmodoro, (ed.) *The Metaphysics of Powers. Their Grounding and their Manifestations*. London/New York: Routledge.
- Shoemaker, S. (1980). Causal and Metaphysical Necessity. In P. van Inwagen (ed). *Time and Cause*. Dordrecht: Reidel.
- Sider, T. (2001). *Four Dimensionalism: An Ontology of Persistence and Time*. Oxford: Oxford University Press.
- (2009). Ontological Realism. In D. Chalmers, D. Manley and R. Wasserman (eds.) *Metametaphysics: New Essays on the Foundation of Ontology*. Oxford: Oxford University Press.
- (2011). *Writing the Book of the World*. Oxford: Oxford University Press.
- Simons, P. (2012). Four Categories – and More. In Tahko, T. (ed.), *Contemporary Aristotelian Metaphysics*. Cambridge: Cambridge University Press.
- 2018. ‘Lowe, the Primacy of Metaphysics, and the Basis of Categorical Distinctions’ in A.D. Carruth, S. Gibb, J. Heil (eds.) *Ontology, Modality, and Mind*. Oxford: Oxford University Press.
- Stalnaker, R. (2012). *Mere Possibilities*. Princeton: Princeton University Press.
- Tahko, T. and Lowe, E.J. (2015). Ontological Dependence. In *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition), Edward N. Zalta (ed.).
- Torza, A. (2015). Speaking of Essence. *The Philosophical Quarterly* 65 (261): 754-71.
- Tugby, M. (2013). Platonic dispositionalism. *Mind* 122: 451-80.
- (2013b). Categoricalism, Dispositionalism, and the Epistemology of Properties. *Synthese*, 191(6), 1–16.
- (2017). Power Worlds and the Problem of Individuation. *American Philosophical Quarterly* 54(3): 269-81.
- Vetter, B. (2011). Recent Work: Modality Without Possible Worlds. *Analysis* 71: 742-54.
- (2015). *Potentiality: From Dispositions to Modality*. Oxford: Oxford University Press.
- (2018). A Plenitude of Powers. *Synthese*.
- (2020). Replies to Bird, Wildman, Yates, McKittrick, Giannini and Tugby, and Wang. *Philosophical Inquiries* 8(1): 199-221.

- (forthcoming). Essence, Potentiality, and Modality. *Mind*.
- Williams, N. (2019). *The Powers Metaphysics*. Oxford: Oxford University Press.
- Williamson, T. (1998). Bare Possibilia. *Erkenntnis* 48: 257-77.
- (2002). Necessary Existents. In O'Hear, Anthony, ed. *Royal Institute of Philosophy Supplement*. Cambridge: Cambridge University Press.
- (2013). *Modal Logic as Metaphysics*. Oxford: Oxford University Press.
- Wilsch, T. (2017). Sophisticated Modal Primitivism. *Philosophical Issues* 27: 428-48.
- Witt, C. (2003). *Ways of Being: Potentiality and Actuality in Aristotle's Metaphysics*. Ithaca: Cornell University Press.

Declarations

Funding: The research was conducted with the support of the AHRC's Northern Bridge Doctoral Training Partnership.

Conflict of Interest/Competing Interests: Not Applicable

Availability of data and material: Not Applicable

Code availability: Not Applicable