PUTTING POWERS BACK ON MULTI-TRACK

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ABSTRACT: Power theorists are divided on the question of whether individual powers are single-track (for a single manifestation type) or are multi-track (capable of producing distinct manifestation types for distinct stimuli). EJ Lowe has recently defended single-tracking, arguing that the multi-tracker can provide no adequate reason for treating powers as capable of having multiple manifestation types, and claiming that putative instances of multi-track powers are either single-track powers in need of unifying descriptions or are merely several single-track powers. I respond to Lowe on behalf of the multi-tracker, first by arguing that he overlooks the extra-empirical features of the debate, then by posing a dilemma for any single-track account of powers concerning the single-tracker's ability to appropriately deal with fine-grained manifestation types. Finally I provide the aforementioned reason for thinking that there are multi-track powers.

1. INTRODUCTION

It was Ryle who first introduced us to the distinction between 'single-track' powers, those restricted to a single type of manifestation, and 'multi-track' powers, those capable of being manifested in a variety of ways when met with diverse stimuli (1949: 43-45).[1] Though Ryle's examples of latter focused on mental capacities, contemporary advocates of multi-track powers (hereafter 'multi-trackers') extend the notion across the class of physical powers, arguing that many or all physical powers are capable of being exercised in more than one way. For instance, multi-tracker John Heil writes

> Consider a simple case, the sphericity of a particular ball. The ball's sphericity, in concert with incoming light radiation, structures outgoing radiation in a definite way. The very same property of the ball disposes it to produce a concave depression in a lump of clay or to roll; each of these manifestations depends on the presence of appropriate reciprocal disposition partners: one disposition, many different kinds of manifestation (2003: 198-199).

In contrast, single-tracker George Molnar claims that "The same power must always make the same contribution, however, no matter how different the effect" (2003: 194).

Recently, EJ Lowe has waded into the debate offering three arguments on behalf of the single-trackers (2010).[2] These are significant because, despite its popularity, defences of single-tracking are rare, and Lowe's arguments are quite

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[1] In what follows I use 'power' and 'disposition' interchangeably, as is standard in the literature.

[2] Lowe might feel differently about mental powers—my present interests concern only physical powers.

general in that they express the thinking of many single-trackers. The first argument concentrates on a specific power—*magnetism*—and asks if it is at all plausible that *it*, the power to attract ferrous metals, should also be the power to do something else? He says it could not; not, that is, if we have correctly characterized its essence. His second argument is formulated as a response to putative counterexamples to single-tracking. He provides, in effect, a single-tracker's guidebook for dealing with any power that looks multi-track. Lowe's third argument comes in the form of a dilemma, but boils down to the suggestion that the onus is on the multi-tracker to tells us why, if the possible manifestations of a power cannot be unified under a single description, we should suppose that there is a single power involved and not multiple powers each associated with the distinct manifestation types.

In what follows I respond to Lowe on behalf of the multi-tracker. In Section 2 I claim that Lowe's essence argument overlooks the extent to which our knowledge of powers is an extra-empirical matter. In Section 3 I argue that Lowe's 'guidebook' leads to a dilemma that makes treating powers as single-track quite unattractive. Finally in Section 4 I meet Lowe's challenge by providing a reason for thinking that some or all physical powers are multi-track; that reason makes use of how instances of the powers we detect are arranged in the world.

To avoid confusion, let me clarify that the present debate concerns powers specifically, not the properties (dispositional or otherwise) that are the bases of these powers. I am not here interested in whether a single property can support numerous powers, but whether individual powers can be manifested in more than one way. Though some might believe the connection between them is one-to-one, no such isomorphism is required. For instance, Molnar is a single-tracker about powers but takes properties to be *clusters* of powers (to wit, any property could support a multitude of powers).[3] Additionally, I do not claim that most or all powers are multi-track, just that the single-tracker is mistaken in her claim that no powers are, or could be, that way.

2. MAGNETISM AND THE ESSENCE OF POWERS

Lowe begins his argument against multi-track powers with the claim that types of powers are to be individuated by their manifestation type (or *types* should that be the case).[4] That is, powers are picked out in virtue of what they are powers to do. Moreover, what a power is a power to do constitutes a part of its essence; "It cannot be a merely *accidental* feature of a given power that it is a power to do such-and-such" (2010: 10).

Next Lowe asks if this essence must be restricted to a single manifestation type, or if a power could have two or more manifestation types as part of its essence. He considers the case of *magnetism*, which—at a first approximation—he takes to be something like an object's power to attract ferrous metals in its vicinity. Might it be the case that magnetism, in addition to its being a power to attract ferrous metals, is *also* a power to do something else? Lowe thinks not. Not, that is, if we are genuinely correct in characterizing the essence of the power as the power to attract ferrous metals.

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[3] Though I characterise Heil as a multi-tracker, his position is ambiguous between that in which a single 'base' property supports numerous single-track powers and one that incorporates multi-track powers. As his view is raised for illustrative purposes only, we need not concern ourselves with its correct interpretation.

[4] According to Lowe, the individuation of token powers requires a conjunction of manifestation-type along with the power's possessor and time of possession. The present discussion is concerned only with types of powers.

Hence, according to Lowe, where the manifestation type φ is a singular manifestation type, and we have correctly characterized the essence of a power *P* as the power to φ, it follows that *P* is a single-track power.

As we have seen, the essence of a power is constituted partly, if not entirely, by what it is a power to do. Lowe therefore makes no mistake when he claims that *if* we are correct in characterizing the essence of magnetism as the power to attract ferrous metals, then magnetism is a single-track power. But surely the real question here is not whether a power whose essence is the power to attract ferrous metals is single-track or not, but whether that is the essence of the power at all. What reason could we have for thinking we have located the correct characterisation of the power's essence? And are essences, qua essence, even the sorts of thing to which we have access, as Lowe's argument suggests?

In order to make headway on these questions it will be useful to start at the beginning, long before Lowe's claims about the nature of powers, with some basic features of power ascriptions. Simplifying matters greatly, our awareness of powers typically comes from our having observed some activity or behaviour φ in which an object (or instances of an object type) habitually engages, from which, working backwards, we ascribe to the object(s) the power to φ.[5] Because we have worked backwards from the object's φ-ing, our *concept* of the associated power is that of the power to φ. And as far as our concept of the power goes, there is nothing more to it than its being exclusively the power to φ. We might even say that this captures the essence of the concept. But does this also capture the essence of the power?

Here is one reason (albeit an erroneous one) why we might think that we have figured out the essence of the power in question, and why we might therefore be tempted to think it is a single-track power. Because the power in question was picked out via its possessor's φ-ing, it stands to reason that the power's essence is properly characterized as being the power to φ, and further that the power is single-track. In other words, we have correctly characterised the power because the features of our power concept can be applied directly to the world. For example, in a case like magnetism, 'magnetism' is the name for the power we ascribe to various objects in virtue of their having attracted ferrous metals; 'magnetism' therefore just means the power to φ, where φ-ing is attracting ferrous metals. It follows that magnetism is a single-track power.[6]

However, an important shift takes places when we not only ascribe this power to an object, but claim in doing so to have fully characterized the power in question. We may be right to ascribe to the object the power to produce behaviours like φ, but nothing warrants the further belief that the power in question is restricted to producing φ-type behaviours. The mistake comes from thinking that genuine powers (features of the world independent of thought and speech) must be in direct correspondence with our power concepts (mind-dependant entities). The world—including those powers that populate it—is not beholden to our understanding of it, nor to the ways in which we conceptualize powers. Hence this will not do as reason for thinking we have identified the power's essence.

This error is further disguised by the way we name powers. Consider

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[5] As indicated, this is only a rough characterisation of how we ascribe powers, and does not apply to all cases. (A notable exception are those powers we ascribe that are rarely or never exercised.) Nonetheless, I suggest it adequately captures the central kind of case and is the foundation from which other, less direct, power ascriptions are made.

[6] This error is committed—implicitly—in the thinking of a number of single-trackers; I have in mind Prior (1985), Jackson, Pargetter and Prior (1982), and Psillos (2006), but I suspect it is quite common.

magnetism once more. The concept of the power of magnetism is achieved via reverse engineering, and is thereby restricted in our understanding to just the one manifestation type. Imagine, as is our tendency, that we name the power responsible for these behaviours 'magnetism'. We now illicitly project on to that power our concept of magnetism, in virtue of the power's carrying that name. We limit what we take the power to be capable of because we associate with its name a specific manifestation type. But no such association is warranted, and nothing about our grasp of the concept warrants our treating it as having captured the essence of the power so named. Just because we have *named* the power on the basis of its potential to give rise to one specific manifestation type does not limit it accordingly. The correct characterisation of a power's essence is not dictated by the ways we become aware of powers, how we pick them out, ascribe them, or how we name them. These are all points on the path of discovery, they are not termini.

So how do we reach the termini? The strict answer is that we do not— the essences of powers are beyond our epistemic ken. But it will not do to concede that the true natures of powers are inscrutable and use this as an excuse for letting our concepts do all the work. Down that path lies scepticism, anti-realism, and perhaps other similarly terrible things; nor is it a response Lowe, myself, or any other scientific realist would endorse. What we need instead is a balance of discovery and decision: discovery because we are dealing with features of the world, decision because no power's essence can ever reveal itself as such. How exactly this balance should be struck is well beyond the scope of this paper, but some indications can be gleaned from Lowe's (hypothetical) handling of magnetism.[7]

Lowe's initial proposal is that magnetism is the power to attract ferrous metals. To the extent that our understanding follows the pattern outlined above, this already admits elements both of discovery (the relevant behaviour) as well as decision (an abstraction from the behaviour to the power). He next asks if magnetism might also be the power to induce an electrical current, or even a certain kind of sensation in pigeons used for navigation.[8] Once again we see discovery at work. But answering the question of what should or should not be annexed to the power is a matter of decision (itself further informed by discovery). Regarding the first case, Lowe denies that inducing electrical current is part of magnetism on the grounds that no unifying characterisation is available to us (more on this in sxn 3). Which characterisations are available to us is a product of discovery, but how we assess and apply them is entirely up to us (decision). Regarding the second, he argues that the pigeons' sensations are only *indirectly* due to magnetism: "the earth's magnetic field has an attractive effect on certain ferrous materials in pigeons' brains, which subsequently gives rise to the sensations in question."[9] Once again we have discoveries (regarding pigeon cognitive hardware), which we slot into an ontological framework that we supply (decision). In the sequel I will be critical of the sorts of decision Lowe endorses, but for present purposes what matters is that which manifestation types should be annexed to a power is ultimately a decision. It is informed by discovery, but is a decision nonetheless. A power's essence, qua essence, is not something we can discover.[10]

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[7] Recall that Lowe's discussion is purely illustrative: neither he nor I is attempting to make any serious headway regarding the nature of magnetism.

[8] Lowe indicates (endnote 8) that pigeons are said to be able to sense the earth's magnetic field, and use this in navigation.

[9] Lowe (2010: 25, endnote 8).

[10] Single-tracker Alexander Bird (2007) argues that we can treat any putative multi-track power as a collection of single-track powers. This is a point I gladly concede; it adds support to the claim that we are dealing with a decision not a discovery.

We are now in a position to consider Lowe's argument that if we are correct in characterizing the essence of magnetism as the power to attract ferrous metals, then magnetism is a single-track power. As a feature of the world, the power's essence (qua essence) is not open to discovery. We need to make a decision, based on the best evidence we have, about what sorts of effects this power can have. But regardless of how well informed by discovery this decision happens to be, no amount of discovery can inform the aspect of the decision that is our present topic of concern. To wit, whether powers are single or multi-track is ultimately an extra-empirical decision. Hence Lowe's appeal to the 'correct' characterisation of the essence is of no moment. Facts about a power's essence are not up to us, but best guesses about their natures are. And it us up to us—and what we deem the right sort of metaphysic of powers—whether that best guess treats powers as multi-track or single-track. Lowe cannot, therefore, appeal to facts about the essences of power on behalf of the single tracker any more than the multi-tracker can. Lowe's first argument can do nothing to convince us that powers are single-track.

3. OVERSTRETCHING SINGLE-TRACK POWERS

Lowe's first argument relies on our having correctly characterized the essence of magnetism as the power to attract ferrous metals. I have replied that what we know about the essence of that or any other power depends on our *deciding* whether to take powers to be single-track or not, so cannot be offered as evidence in favour of their being single-track. Lowe's second argument also deals with a question of essence, only this time the matter concerns putative counterexamples to single-track powers.

We had assumed—at first—that *magnetism* was an object's power to attract ferrous metals, but what if our first approximation was off the mark? What if, perhaps, magnetism is *also* the power to induce an electrical current? Is it not reasonable to think that magnetism might also be the power to do that? Lowe's response is that this should merely direct us to think more clearly about how we describe the manifestation type that captures the essence of magnetism. What we need to find, he says, is a description of the manifestation type that "covers in a unified way *all* the supposedly 'different' things that the power is a power to do" (2010: 11). If we are unable to come up with any unified description, Lowe advises we give up on the thought that this is just *one* power we are dealing with, and conclude that the case involves two or more powers. He adds that magnetism might in fact be one such case: the disparate effects of magnetism might be due to a group of different but related powers.

How are we to understand Lowe's response that all powers are single-track? I suggest the following reconstruction, which I have formulated as something of a single-tracker's guidebook for dealing with any putative multi-track power:

1. Consider the manifestation type φ and the power P (the power to φ).
2. Now consider any manifestation type ϕ (where $\phi \neq \varphi$), and ask if P might also be the power to ϕ.
3. If the answer is *no*, then P is a single-track power.
4. If the answer is *yes*, then attempt to locate a manifestation type γ, such that the description of γ unifies the descriptions of manifestation types φ and ϕ, and where the essence of P is that of being the power to γ.

5. If the attempt is successful, then, as γ-ing is a single manifestation-type, P is a single-track power.

6. If the attempt fails, postulate new powers Q, R, etc., as needed for those manifestation types that evade unification.

7. P, Q, R, etc., are single-track powers.

8. Therefore, all powers are single-track powers.

I will raise two objections to Lowe's argument: the first considers step [6], where we give up on a unifying description and opt for multiple single-track powers; the second picks up on the assumption made in step [4], concerning the specification of the manifestation types. But first a brief word of clarification.

Consider a manifestation type γ, where the description of γ unifies the descriptions of manifestation types φ and ϕ. If no restriction is in place regarding the sort of descriptions available to us, then nothing stops us defining, by fiat, some abstract manifestation type γ that just is the unification of manifestation types φ and ϕ, even if we cannot say anything else about it. As noted above, there will always be an epistemic gap between our best guesses and the essences of powers, but our best guesses only deserve that title if they are based on the best empirical information available to us. Hence, unifying descriptions that arise from purely formal devices should be outlawed. Our best guesses ought to come from decisions that are empirically informed: the class of permissible descriptions we select from should be restricted to those arising from the behaviours and activities studied in the relevant sciences. To do anything less would make learning about powers a purely aprioristic enterprise, and it is already sufficiently extra-empirical.[11]

I now turn to the objections. The first of my two objections is brief, but no less forceful for being so. According to Lowe, if we are unable to locate a suitable unifying description, then we should treat the distinct manifestation types as picking out distinct powers (step [6] above). But what possible reason—short of single-tracking itself—could be given for doing this? None jumps to mind. As ought to be obvious, this step in the process concerns a decision not a discovery. Even if we were to agree with step [5] and concede that locating a suitable unifying description is sufficient for thinking we are dealing with a single-track power (I argue below that we should not), it does not follow that in the absence of such a description we are forced to treat the non-unified manifestation types as picking out distinct powers. That decision is entirely up to us, and we have us much reason to treat them as many single-track powers as we do one multi-track power. All else being equal the result is a stalemate; there is no (non-question begging) reason to be found here in support of single-tracking.

I suggest we should be similarly sceptical of the significance of having located a suitable unifying description, if and when we do. One can easily appreciate how finding such a description is a necessary condition for single-tracking, but what reason can be offered for thinking it is also a sufficient condition? That the relevant science affords a description that satisfies the unifying criterion given in [4] is not, by itself, an adequate reason for treating the power in question as single-track. To be fair, it may well be the case that the relevant science guides us to this conclusion, in which case I would be in

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[11] Lowe's eschewal of defining unifying descriptions by fiat follows from his general claim that a criterion of identity is supposed to be a principle that gives the identity conditions for entities of kind *K* in "an *informative or non-trivial* way" (2010: 8). Lowe is less explicit concerning where to find suitable descriptions, but his treatment of pigeon navigation makes clear that empirical evidence should be driving the cart.

full agreement, but this falls well short of a *principle* according to which locating a unifying description is sufficient for thinking we have located a single-track power. Hence, because it fails to offer any independent reason for doing so, Lowe's argument does nothing to convince the multi-tracker that any putative counterexamples are really just single-track powers.

But that is not the only problem with his argument. It also suffers from a more general problem that picks up on the assumption made in step [4] concerning the specification of the event types that are the manifestations. We will see that once we pay close attention to the event descriptions the single-tracker uses to individuate powers, a dilemma results.

Despite all the discussion of manifestation types, I have yet to say anything about what manifestations are. According to Lowe, manifestation types are types of *activities*: solubility gives rise to activities of dissolving; magnetism to activities of ferrous metals undergoing motion towards magnetic objects, and so on.[12] By 'activity' Lowe intends what most of us would call an 'event'. Indeed, it is common in the powers literature to think of manifestations as events (even if only some specialised sub-class of events, such as effects or processes), and likewise to think that manifestation types are event types, so it should be safe for us to do the same.[13] After all, events are open to a wide range of interpretations, including those that treat them as property instantiations.

Recall from section 2 that power ascriptions begin with the recognition of some behaviour φ. When we then say that the object in question has the power to φ, the description of φ is nothing more than a description of an event type. We also saw in section 2 that the class of suitable descriptions is given to us by the science in question. In other words, the set of powers we ascribe to an object is developed out of the set of event types a given science produces vis-a-vis some object type. It follows that even though our best guesses about what powers there are (and what essences they have) is ultimately a matter of decision, it is a decision that is both constrained and guided by the sciences in question. The extent to which it is constrained is simply that stated above: to wit, the set of available descriptions of event types is provided by the relevant science. But the decision is also guided by the science: our best guesses as to what powers there are needs to be sensitive to the needs of the various sciences in question. To be informative, and to have any hope of being right, the descriptions we select must be those most salient to the science in question, otherwise we are letting our ontological cart drive our realist horse. That means, I hazard, that they cannot be overly coarse, or alternatively, too fine-grained.

With that in mind, consider a fairly common manifestation type, that of *stretching* (without breaking), as experienced with rubber bands. Using the process of reverse engineering, stretching type events lead us to ascribe the power of *elasticity* (the power to elongate, widen, or deform in response to stress and return to previous shape once the load is removed) to rubber bands.[14] Now imagine a rubber band *b* that is 10cm long and can be stretched to a

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[12] These activities might turn out to be nothing more than acquisitions of further powers by the objects involved (so claims the pandispositionalist), but Lowe rejects this possibility arguing that some of the activities must be 'pure' in the sense that they do not consist merely in the acquisition of further powers (2010: 10).

[13] For instance, Ellis (2001) and Handfield (2008) treat manifestations as processes, McKitrick (2010) as effects. Molnar (2003) and Mumford (2009) offer non-event type views. I briefly consider their accounts below.

[14] A 'sparse' theory of powers is unlikely to include powers like elasticity, but the argument of this section applies equally to sparse powers. Lowe, it would appear, does not endorse a sparse account.

maximum of 15cm lengthwise. The nature of elasticity is that the stretching events it can produce are not restricted to the maximum: *b* can be deformed lengthwise any length from its initial 10cm up to and including stretchings of 15cm. 15cm is *b*'s limit state before tensile failure. Common sense tells us that events of the type we call '14 cm stretchings' (or 13, or 11.3 etc.) are not the same as what we would call '15cm stretchings', as my mechanic and knee specialist will attest. (Too much stretch in a belt and your fan stops; not enough in a ligament and it ruptures.) Dare I say, it hardly takes a mechanical engineer to tell us how important these different types of stretching are or to point out the need for fine-grained distinctions between types of stretching.

Here then is the single-tracker's dilemma. Recall that the single-tracker takes descriptions of event types to determine manifestation types, and then chooses among those manifestation types when deciding how to individuate powers. Consequently, which event type description(s) the single-tracker selects is of central importance to what powers the single-tracker believes there are, and what she takes their essences to be. Various types of stretching, like those just considered, inform the decision regarding what she takes a power to be for, and therefore its identity. This means that when it comes to *b*'s elasticity, the single-tracker has two options available to her: she can treat each of the types of stretching as determining a unique power, or she can group them all together under a single description and get just one power. Neither is at all desirable.

Start with the first option, treating each as distinct. 14 cm stretchings are not 15cm stretchings, so the single tracker will tell us we have two powers here. It is somewhat counterintuitive to suggest that as the tensile force varies the stretching that results is the product of a distinct power, but perhaps not offensively so. However, if the single-tracker wants to defend the mildly unintuitive claim that we have two powers here, she will thereby saddle herself with the implausible thesis that *b* has continuum many powers, each corresponding to a minutely different length of stretch, as there is nothing about a 14cm stretch that makes it any more or less significant than a 12.5cm stretch, or one that is 13.6667cm long for that matter. As far as salience is concerned, there are sciences where it is important that we distinguish among these events types, and in an especially fine-grained way.[15] Hence, according to this strategy, it takes a vast number of powers to account for *b*'s elasticity (without having yet considered anything else *b* might be capable of). That would, borrowing Lowe's phrase, "render the notion of power a rather feeble and trivial one" if anything would (2010: 12). Even the single-tracker will find this prospect unappealing. No doubt she will instead resort to some strategy that collects these powers, like Lowe's suggestion of capturing all the event types under one unifying description. Let us try that horn on for size.

In order that *b*'s powers not get out of hand, the single-tracker needs to provide some single unified description that captures all the types of tensile stretching *b* can do. What might that description be? Something as general as 'stretching simpliciter' is far too general. Other bands like rubber band *c*, also 10cm long but less elastic, could have an ultimate tensile strength of 14cm. A power to stretch simpliciter would completely ignore the fine-grained distinctions that the mechanical engineer needs to make between *b* and *c*. Perhaps 'stretching *up to* 15cm' fares better. This would appear to get what we want, as it recognizes that 15cm is the maximum the band can stretch, but does not rule out shorter stretchings. Or does it?

At first blush it looks as if a description like 'stretching up to 15cm' would allow for a range of manifestation types but, on closer inspection, how

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[15] To the mechanical engineer who studies tensile strength, minute differences might be the only data she works with.

could it? In order to amalgamate the fine-grained manifestation types (so as to avoid invoking untold powers), the fine-grained manifestation types must be dropped in favour of the unifying description. The single-tracker's understanding of powers is that of always being "a power only to do some *one* thing" (Lowe 2010: 10). Hence, if we take seriously the single-tracker's claim that this is just *one* power at work (where each power is individuated by its manifestation type), then the power can only be for that *one* unifying manifestation type and the fine-grained manifestation types cannot stay. In order that the power be *for just one manifestation type*, the fine-grained manifestation types must be swallowed up by the unifying description. But this is far too great a cost. When the mechanical engineer tests for tensile strength she cares greatly about these fine-grained manifestation types, even if they never arise. And you and I should care no less; giving up the fine-grained distinctions between manifestation types is just as bad as having too many powers. The unified description that gives the single manifestation type does so at the expense of the fine-grained manifestation types. The second horn is just as uncomfortable for the single-tracker as the first.

What if the single-tracker replies that the different manifestation types are still available, only now they are collected under a unifying determinable manifestation type for which they are the determinates? Something about this sounds roughly correct to my ear, but is not a strategy the single-tracker can adopt, as it relies on the mistaken assumption that locating a unifying manifestation type is sufficient for having located a single-track power. That is because finding a manifestation type that has the other manifestation types as more determinate determinables violates the spirit of single-tracking. The result is not a single power with one manifestation type, but rather an 'umbrella' power that is for many different manifestation types, unified by a more general manifestation type that they all fall under. It is hard to see this as guided by science, and looks more like single-tracking at all costs. (Yet again I am prone to inquire why we should think that finding a unifying description is itself sufficient for thinking we have located a single-track power). Furthermore, if we allow more and more general (determinable) descriptions of manifestation types that unify other (more determinate) manifestation types to count as single-track powers, then we lose the distinction between single and multi-track powers. Powers of this sort would be single powers that respond differently for different stimuli—and that just is what it is to be a multi-track power.

Perhaps the thought is not that more and more determinate descriptions are permitted, but that for elasticity the manifestation types are sufficiently similar to warrant unification under a single manifestation type.[16] It might even be suggested that the variable stretchings can be unified because they differ only in *degree*, not in type.[17] But we should not be tempted by such a response. Quantitative differences among event types are no more or less significant than their qualitative counterparts. For numerous sciences the only differences are quantitative, and for plenty others only the quantitative differences matter. It would be odd, to say the least, to suggest that each of these sciences is confined to the study of just one manifestation type. Nor, in that case, could we seriously claim that our best guesses concerning the nature of powers was being suitably guided by the sciences in question, or that our ontology was appropriately sensitive to the needs of the science at hand. Type differences are not restricted to qualitative features; doing justice to the highly

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[16] I suggest that something like this criterion be required for any power to count as a single-track power.

[17] Thanks to an anonymous referee for raising this issue.

quantitative sciences demands we afford quantitative differences the same sort of fine-grained distinctions we afford qualitative differences in other sciences.[18]

In a nutshell, what you and I and the structural engineer want is to be able to take seriously the subtle and extremely fine-grained distinctions found between types of stretching, without thereby committing ourselves to equally many fine-grained powers. The single-tracker's dilemma is that she must surrender one or the other, and that is why treating all powers as single-track is unappealing. In contrast, the multi-tracker can have it all: there is just one power at work here, but it can be manifested in a variety of ways when met with distinct stimuli.

The proposed dilemma arises for any single-tracker who takes manifestations to be events, and who picks out powers by way of their manifestations alone. But not all single-trackers endorse these two theses. At least two prominent single-trackers, Molnar (2003) and Mumford (2009), reject the first of these two claims, denying that manifestations are events.[19] The details of their views are not important to us here; what is significant is that they treat manifestations as stable *contributions* to events, and not the events themselves. Hence, when a power like magnetism is manifested what *it* produces is not the attraction of ferrous metals in the vicinity of its bearer, but some abstract aspect of that event.

Views like this can avoid the dilemma, but have their own crosses to bear. I will not go into the details here, save one brief comment.[20] As powers almost always work in concert with other powers to give rise to their effects (what Martin (2008) calls 'reciprocity'—a central facet of both Molnar and Mumford's views), there are virtually no conditions under which the contribution a power makes can be teased apart from the resultant (mutual) effect. Consequently most powers have manifestations that are largely mysterious to us. That strikes me as a very high price to pay, perhaps a greater one than that of sitting on either horn of the above dilemma.

4. MEETING LOWE'S CHALLENGE

The argument of the previous section sets us up to respond to Lowe's third argument against multi-track powers. Less an argument than a challenge, Lowe poses a dilemma for the multi-tracker. The dilemma starts with a positive response to the question posed in step [2] above, by supposing that there is some single power that has more than one manifestation type. If that is the case, argues Lowe, then *either* the different manifestation types can be captured under a single unified description, as per [5], or they cannot. If they can, then we are dealing with a single-track power. If they cannot, "then what reason is there to suppose that there is really just *one* power involved rather than two or more—one for each genuinely different manifestation-type?"

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[18] I am not convinced that there is any good reason for denying that strictly quantitative differences are differences in type. But for those yet to be swayed, it might help to ask whether we can be sure that the different stretchings differ *only* in length. Despite being our primary focus, it might well be the case that two stretching event types are not otherwise identical. It stands to reason that each stretching event type carries with it some other variation, perhaps in terms of the powers involved. In that case we would have addition grounds for accepting that these are differences in event type.

[19] I will leave aside the question of whether they also reject the second. To my mind, their views postulate unknowable manifestations, so endorsing the second would make all powers similarly unknowable. The result is not inconsistent, but it is impossibly sceptical.

[20] See McKitrick (2010) for a comprehensive discussion of the problems these views face.

(2010: 11).

We have already seen that the first horn of Lowe's dilemma has a much sharper point than he believes, and further that finding a unifying description is not itself sufficient for having a single-track power. But it is the second horn that now concerns us. Lowe has tossed down the gauntlet asking for some reason to interpret the scenario as one in which there is a single power with non-unified manifestation types, rather than distinct powers for each unified manifestation type.

Before taking up the gauntlet, note that Lowe's challenge to the multi-tracker is no less a challenge for the single-tracker. The single-tracker has no claim to the high ground here. The scenario is open to both interpretations, and hence a reason is required on behalf of whichever interpretation we are to prefer. What we have before us is a *decision*. Should the multi-tracker fail to provide a reason, the result is a stalemate, not a win for the single-tracker. Furthermore, we should resist Lowe's request for a *general* principle in favour of multi-tracking that can be applied every time we have different manifestation types that resist unification. Sensitivity to the science in question requires that we consider cases individually, considering the distinct merits of multi-tracking versus single-tracking in each scenario. Hence what I offer in response to Lowe in support of multi-tracking is not a general principle that supports multi-tracking in every case. Rather it is a reason that might arise in specific cases, and that could, in those cases, prompt us to think that the power in question is a multi-track power. This will, of course, have to be weighed against other considerations that arise in each specific case, but such is always one's lot when making a decision that is guided by the relevant science.

The reason I offer is that certain powers are found together whenever we locate them—they are 'clustered'. 'Clustering' can be defined thusly: for event types ϕ and φ, where ϕ-ing $\neq$ φ-ing, the power to φ and the power to ϕ are *clustered* just in case the class of objects with the power to φ is identical with the class of objects with the power to ϕ. The phenomenon of clustering is (strictly) neutral between the single and multi-track positions: the power to φ and the power ϕ to could be two distinct single-track powers or one multi-track power. Likewise clustering could be explained by the presence of a single 'base' property that supports a group of single-track powers.[21] But what best explains their always being found together? The answer will vary according to the specific case, but one short and tidy response—in at least some instances of clustering—is that they are one and the same power responding differently to different stimuli, and this is why we find them together.

To be clear, I am not suggesting that clustering, when it occurs, is itself a reason to think we are dealing with a multi-track power. As I have indicated, all the relevant information must be weighed up before we can reach that conclusion, and those other factors might push us in a different direction. But to the extent that we are interested in making best guesses about the natures of powers, we must leave open the possibility of multi-tracking. We cannot lose sight of the fact that these are empirically informed decisions, and therefore cannot rule out multi-tracking by fiat. Multi-tracking offers a good explanation of clustering, even if other explanations, in certain cases, win the day.

We should, of course, keep in mind that clustering is only significant if it is necessary. If the clusterings we observe are of powers that *just happen* to never come apart, but could have done so, then the phenomenon does not demand multi-track powers as an explanation (it would, rather, preclude such an explanation). Does this leave the multi-tracker open to the objection that

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[21] This latter option would not be available to single-trackers who identify powers with their bases.

there are possible worlds where instances of the power to φ are not perfectly coincident with instances of the power to ϕ, and so our clusters are not necessary after all?

There are some straightforward responses concerning a posteriori identities that show that 'conceivability' arguments of this sort are generally specious. That we can imagine worlds where the identified come apart tells us nothing more than that the identity is not one given by our concepts alone. Stating that there are possible worlds at which the objects with the power to φ lack the power ϕ has the false air of an empirical discovery, but of course it is nothing of the sort. It is the recognition that these are distinct notions, and that the presence of one does not, a priori, entail the presence of the other. The way we individuate powers across conceptual space has no bearing on the way real powers get carved up; it is not a source of data. The only genuine data is what we discover. And though incomplete and fallible, it is the best evidence we have to go on. That best evidence tells us that some powers cluster, and this phenomenon demands explanation.

Of course, as with any proposed a posteriori identity, claiming that the two powers are really just one power responding differently to different stimuli is at risk of being demonstrated false. We might, after all, find one in the absence of the other. But until shown otherwise—should that be in the offing—we are wise, in the right sort of case, to leave treat them as one. Even if we are often mistaken and discover that powers we thought were identical are distinct after all (and even if we *never* discover that some powers we take to be identical are in fact distinct), we have a very good reason for *thinking* some powers are multi-track. One thing we certainly should not do is rule out the possibility of multi-tracking a priori. However frequently we might be in error about which powers are multi-track, there is no error in suggesting that this is a way powers could be.

As a final worry about multi-tracking, Lowe objects that if we side with the multi-tracker we are at risk of losing all useful individuation of powers:

> Once we allow that powers may genuinely have multiple manifestation-types which don't fall under any unified description, it becomes unclear why we should think that a single object may have many different powers rather than just *one—a* power to do all the things that it can do. And that would render the notion of power a rather feeble and trivial one (2010: 11-12).

Lowe suggests that multi-tracking is a slippery slope, and that at the end we find ourselves without the useful distinctions between powers we are prone to make, forced instead to speak of the 'super-power' each object possesses that explains all the object is capable of. I do not find the prospect of a super-power ontology attractive in the least (despite conceding its consistency), but nor do I find at all compelling the suggestion that multi-tracking will lead us down a slippery slope, so I do not think we need be concerned. Multi-track powers explain clustering, but only certain powers cluster. That is why we should think that objects have many powers and not just one. Until we find a science that prompts us to think that all powers (all the relevant powers anyway) travel together, we have no reason to fear (or postulate) super-powers.

5. CONCLUSION

I have argued that certain accounts of single-track powers (those that treat manifestations types as types of events, such as Lowe's) lead to a dilemma. I have also argued that in addition to avoiding this dilemma, multi-tracking provides an elegant explanation for the clustering of powers. The moral ought to be clear: we should treat powers as capable of being multi-track. That is not to suggest that they all are, but some or many could be that way. Nor is it up to me to say which—that is a task that must be guided by our mature sciences.

Consequently it is not up to me to say if there are multi-track powers of the sort I quote Heil as supporting in the introduction. The 'stretching' type case I argue for in section 3 falls well short of the wide variability displayed in Heil's example, but I take it that once the door has been opened to multi-track powers there is no principled reason to object to such cases. It all depends on how the relevant sciences guide us. And if the shoe fits, as they say, then we should wear it.

To be clear, I have not claimed that all powers must be that multi-track, or that the question itself is an empirical one. Whether any powers are in fact multi-track is strictly beyond our epistemic ken. We are left with 'best guesses' about the nature of powers, and these are extra-empirical, despite being guided by the sciences in question. We must avail ourselves of the best information we can find, and use it—case by case—to help in our decision about how we should think about each power and whether or not it is multi-track. We must not decide—ahead of time—that no power could be that way.

As a final word, it might be thought that the problems with single-tracking come down to the way they tend to be individuated. For instance, Heil writes that, "In identifying dispositions solely by reference to their manifestations, we are naturally led to suppose that different kinds of manifestation signal different dispositions" (Heil 2010: 69). I do not deny that this is a contributing factor, but nor do think individuating powers this way is fully to blame. There is, after all, nothing stopping us picking out powers by way of *multiple* manifestation types. Consequently, rejecting single-track powers does not require that we also reject the rather intuitive method of individuating powers by way of their manifestations. We simply need not expect them to line up one-to-one. As for what the real culprit is, as I suggest above, I think it has more to do with our conceptions of powers being allowed to overstep their boundaries and dictating what the world is like than anything else. And I should hope that it is gratuitous for me to add that this is most undesirable.[22]

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