WHAT IS THE NATURE OF PROPERTIES?

Lorenzo Azzano

ABSTRACT. In the recent debate about the nature of properties, dispositional essentialism, which claims that a property possesses its powers essentially, seems to provide an interesting alternative to the quite simple and problematic view that properties are to be identified through primitive qualities, *quidditates* (this position may be called *quidditism*). However, it is not easy to characterize explicitly and uncontroversially dispositional essentialism, in particular when it comes to the treatment of powers. A further reference to primitive qualities may prove to be unavoidable, thus suggesting a medium between quidditism and dispositional essentialism.

Whatever means are used in the explanation of a property's nature, the resort to a rock-bottom entity like a *quidditas* seems to be the only way to avoid a regress.

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1 Introduction

The ball is red. A cucumber is not red. Milan is a big town, Paris is a big town too, and much bigger than Milan. There are ways things are, and such ways can be compared, and, according to these comparisons, things are said to be similar or different. These ways are called properties[1], and are sometimes said to be real entities somehow correlated with the things they are attributed to. Yet it is far from clear how this simple reification could be, *per se*, of any philosophical interest: what kind of thing is a property? The most venerable debate about properties is the explanation of the alleged repeatability of their instances, say, the debate that separates universalists from particularists. As interesting as it is, this is not the kind of question that we are going to address in this paper. Our primary point of interest will be rather *the nature of properties as they are themselves*, and not relatively to their instances; the focus will thus primarily be on the nature and identity of properties.

First of all, it would be best to clarify our lexicon. We'll be using the terms "essence" and "nature" as synonyms; the nature/essence of x is what makes x what it is, or, according to a different definition, the very being of x. We will sometimes use the term "essential property" – and although we won't explain the correlation between essence and essential properties, for an x to have P essentially means that the very being of x somehow includes or encompasses P. To have P essentially involves a *de re* predication of (metaphysical) necessity, but the converse may or may not be the case – it will be best to keep neutral on the matter.

Talk about identity can be even more confusing; let us separate *identity* from *individuation*. We take identity to be the classic relation =, a.k.a., the smallest equivalence relation, a.k.a., the equivalence relation for which Leibniz's Law holds. Identity between entities falling under a sortal P is pivotal in reasoning about the number of Ps: this is achieved through identity conditions of the form "$x = y$ if and only if...". Individuation is a quite different thing; intuitively, the operation of individuation is an operation of determination in which we single out an entity from a certain collection. This determination, however, has to satisfy a few requirements; for instance, Caesar may be undeniably singled out by the fact that he was the only Roman dictator stabbed to death in 44 b.C. – yet that is wholly contingent of Caesar. We would want this kind of determination to be stronger; so, in order to know what is always, necessarily true of x and only of x, we must understand what does it take to be x, and so we have to know what ultimately x is: the concept of individuation is thus entangled with the concept of nature and essence[2]. It is crucial to understand that to have criteria of individuation involves having a criterion for identity (but not *vice versa*): if we know what does it take to be Socrates rather than Plato we know whether Socrates and Plato are numerically different or not (we have identity conditions for humans); conversely, we may be able to tell humans apart – to decide statements of numerical identity between them – without knowing their nature, or even without knowing what does it take to be human. Criteria of identity given through criteria of individuation, the ones we will be interested in, are those that settle whether or not x and y are (absolutely, numerically) identical *on the basis of what*

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[1]Also relations are ways things are. Moreover, properties can be seen as monadic relations. However, the nature and identity of polyadic relations raise many specific problems, which lie beyond the proper subject matter of this paper.

[2]As already noted, statements of necessity may or may not entail statements of essence. See Fine (1994). This is also true of individuation: not all necessary determinations are individuations in the strict sense, if they fail to take into consideration the essence of the determined; using Fine's example of a necessary non-essential predication, Caesar is not individuated by the fact that, necessarily, he's the only member of his singleton.

x and y essentially are[3].

The goal of this paper is to shed at least some light on the nature of properties, and also on their criteria of individuation and identity.

Both identities and essences of objects are notably given through the properties they have, but, if properties themselves are to be found amongst other entities in the world, we could ask about the identity and essences of properties as well. To some extent, some properties' identities and essences are given through other properties, for instance in the case of what we will call *complex properties*. For a complex property, identities and essences of properties are given through simpler properties, or properties of constituents. "Being human" is different from "being a horse" insofar as being a horse entails a whole different set of properties, and, on the other hand, the essence of "being human" is, for instance, "being a rational animal", just like the essence of each human is to be a rational animal. Yet when it comes to simpler properties, this can't go on forever. Yet, if properties are genuine entities, they too exist, and call for essences, natures, conditions of identity and individuation. How are they to be given?

In section 2 and 3 we'll proceed to explore two competitive answers to this question, *quidditism* and *dispositional essentialism*; in section 4 we will present the problems of an extreme interpretation of dispositional essentialism, and given that quidditism is an highly problematic position itself, we will conclude (section 5) that an intermediate solution within the boundaries of dispositional essentialism may be preferable to both extremes.

2   Quidditism

Let us consider some of the most fundamental properties of physics; these properties are sometimes called *simple qualities*: to ask about their identity conditions seems quite puzzling. This is because they are admittedly quite difficult to individuate. Why is it that "having a positive charge" is different than "having a negative charge" (and why, in turn, are they different from "having a mass")?

One of the most tempting answer is that "having a mass" and "having a positive charge" are different because they are what they are, and this matter is no longer open for explanation; at the bottom of the properties-defined identity conditions and essences ladder, if properties are finite (and at some point, there is a property which is simple in the sense we defined earlier), then there must be at least a case of identity conditions and essence not given through other properties. This is when the notion of *quidditas* comes into play. *Quidditates* are non-qualitative primitive identities for properties (just like *haecceitates* for individuals). *Quidditates* directly individuate properties – in pretty much the same way *haecceitates* pick out the same individual across instants or possible worlds, whatever the change they undergo. Identity between qualities is primitively settled by *quidditates*, and a *quidditas* is the only essential feature of a property[4]. Having a mass is different from having a charge because they are different qualities: their only difference is their quantitative difference (they are two *quidditates*, and not one).

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[3]As individuation has a stronger modal value, conditions of individuations are usually taken to provide conditions of identity across possible worlds (trans-world identity): to check whether or not Humphrey is the same person as the guy *x* winning the election in a possible world we need to know whether or not that guy *x* has all that is required to be Humphrey.

[4]It is often put forward the claim that qualities are essentially all alike; this is because their essences are exhausted by *quidditates*, which are different only by merely being numerically distinct.

This position, that we may call *quidditism*, in his purest and most naïve version, such as the one we presented, is vulnerable from at least three objections. The first objection is not really an argument (let alone a knock-down argument), but a more general claim that this theory is *not very interesting*; it does not offer any insight on what a simple property is like, nor does it care to explain much on the features of *quidditates*. When quidditism is compared with some more explanatory alternatives, this objection gains strength by highlighting the lack of explanatory content of quidditism.

The second objection is an objection from epistemic humility[5]. The point is that our only source of knowledge for properties passes through the *causal powers* to interact with us in a certain fashion. A causal power is the ability to interact with the environment in order to produce a certain manifestation in certain circumstances, and it is usually determined by its manifestation property. But if *quidditates* exhaust a property's essence, all powers are only contingently possessed by those properties. In a counterfactual situation a property may be unrecognizable to us, and its true nature, its *quidditas*, remains forever unknowable. Therefore, there could be two different but apparently indiscernible worlds[6], insofar as they give rise to the same knowledge but present different qualities (a slightly different way to put quidditism is: identities and differences of properties do not supervene on any recognizable feature they possess). This form of humility constitutes a heavy requirement for a pure form of quidditism which takes powers to be contingent of properties.

The third objection is the "swapping powers" objection, and, in short, it claims that it is weird to think that essential features of properties are exhausted by *quidditates*[7]; it is a metaphysical version of the previous epistemological argument. If all causal powers are contingent of properties, it is plausible to posit two possible worlds, w and w_1, where two properties A and B completely swap their causal powers, and therefore their nomic and causal roles, while remaining absolutely re-identifiable with themselves in the transition from w to w_1. If their only essential feature is their *quidditas*, besides, they have swapped all of their characteristics – including how they are called in that world. The *quidditist* requires that w and w_1 are different worlds, even if their distinction seems completely irrelevant and, in a sense, does not make any difference[8].

This is not, strictly speaking, a compelling argument; if it was to be rigidly formulated, it would be clear that it is precisely assuming the question-begging claim that there cannot be a *quidditas* to explain the difference between worlds w and w_1. The point however is that the quidditist metaphysics is unnecessarily complicated. What can be said for properties A and B in world w, in fact, can be said for any other couple of properties at any world, and the introduction of the additional possibility constituted by world w_1 can be straightforwardly generalized: there is a great number, perhaps an infinite number, of additional possibilities, indistinguishable between them, which are however not identical insofar as they display

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[5]At least one famous supporter of quidditism – David Lewis – explicitly embraced the consequences of the epistemic humility objection; see (Lewis, 2008).

[6]Theoretically, they are discernible; that is to say, this is not a violation of Leibniz's Law. They are indiscernible from an human perspective – or for any entity for which a causal theory of knowledge applies.

[7](Black, 2000), (Bird, 2007*a*, ch. 4).

[8]Black (2000) is well aware that this is not a knock-down argument against quidditism. He therefore makes the additional claim that quidditism generates a serious problem when it comes to determine the cardinality of the set of possible worlds. Given that all that you need to posit a new quality is to determine its numerical difference from the others, there seems to be no non-arbitrary answer to the question "how many possible qualities are there?". That is to say, for any collection of possible worlds, there always is the possibility of an additional world where some *new* quality is present. A full exposition and evaluation of Black's argument, and its interesting correlation with the cardinality paradoxes for possible worlds, would lead us astray, and we leave it for another time.

different (unknowable) qualities[9].

3   Causal powers

In order to dispel the epistemological argument shown earlier, Shoemaker (1980), suggested the possibility to take a property's causal powers as necessary, and even essential to it. It is, on a general level, an interesting proposal; in the case of the extremely simple properties, such as charge, what allows us to distinguish one property from another is not some underlying quality, but how the possession of the property affects the behavior of the individual. Positively charged individuals, for instance, are those that are disposed to repel other positively charged individuals and attract the negatively charged ones.

The idea of a strict correlation between properties and causal powers can be understood with different degrees of strength, and this is what several philosophers have done within the so-called project of *dispositional essentialism*[10]. In the weakest interpretation, dispositional essentialism claims that a property's powers are essential to it. The stronger interpretation claims that all that there is to a property is its causal powers: they are not only essential to it, but they exhaust its essence. Let us see both of them in turn.

3.1   Causal powers as essential properties

If a property's powers to interact with the environment are essential to it, two problems of quidditism are immediately solved: humility on the one hand, and the "swapping powers" problem (that is to say, the problem of trans-world identification) on the other. This is because a property retains all of its powers at all worlds in which it exists. Yet to take causal powers as essential suggests more general consequences on one's metaphysical landscape.

If the causal, and thus the nomic, roles a property occupies are the same at all worlds, an interesting consequence is that natural laws are necessary: in fact, all individuals that have that property behave in the same way at all worlds in which they exist. Dispositional essentialism often takes a step forward and claims that natural laws, whose nature has been

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[9]The previous line of reasoning requires that there is no issue with property trans-world identity per se. The whole "swapping powers" objection echoes Beth (1967) reasoning on haecceitism. (Chisholm worked, in that paper, with world-indexed properties, so this reconstruction is slightly different from his exposition – yet, properly treated, the content is the same). Let us take two actual individuals A and B such that $A \neq B$, and consider a possible world w_1 where they both exist (they are both identical to something in w_1, respectively, A_1 and B_1) but have some property swapped between them; now, iterate the same operation on a series of worlds $w_2, w_3 \ldots w_n$ until all of their properties have been swapped: A_n is indiscernible from B, and B_n from A. But, for the transitivity of identity, A_n is identical to A, and B_n to B. And, *ex hypothesi*, A is not identical to B. If we characterize haecceitism with the claim that individuals' identity does not supervene on their properties (Identity of Indiscernibles is false), we can follow Chisholm's reasoning on the rebuttal of haecceitism; as it is absurd to claim that w_n is *not* actuality (that $A_n \neq B$, and $B_n \neq A$), the problem resides on whether (1) some passage in the whole swapping operation was unwarranted because of essential properties (properties that could not be lost without the individual ceasing to exist/to be identical to something in that world) or (2) there was something wrong about trans-world identity to begin with. Alternative conceptions, such as counterpart theory, offer some way out of the problem. As Bird (2007a, p. 73) stresses out, this is Lewis' view on particulars. Yet if this counter-objection has to work not only for haecceitism but also for quidditism, one has to accept counterpart theory for properties, or some other treatment for *de re* modal contexts that does excludes trans-world identity.

On a side note, could Chisholm's rebuttal of haecceitism help us understand what, in turn, is wrong with quidditism? Unfortunately, Chisholm is not so clear on the matter: he simply states that, if there is a non-actual world in which you and I have all of our properties swapped, but still are, respectively, you and I, "God could have had no sufficient reason for choosing the world in which you play your present role instead of one in which you play mine".

[10]Notably Harré and Madden (1975), Shoemaker (1980), Ellis and Lierse (1994), Ellis (2001) and Molnar (2003).

difficult to account for, are to be grounded and explainable through causal powers rather than *vice versa*.

The view that laws are contingent is on the other hand often associated with antirealism about powers: power and dispositional ascriptions are sometimes analyzed as ascriptions of non-dispositional properties in relation with a relevant law. If powers are non-essential of a property, the nature of this property, that must not be dispositional in character, needs to be explained. Categoricalism, that is to say, the claim that a property's powers are not essential to it, is closely related to quidditism, which offers an apparently viable non-dispositional story about the nature of a property. According to this position, all properties are essentially non-dispositional in character (this is the kind of properties that are sometimes called "categorical properties")[11].

To better understand what is it that dispositional essentialism is claiming, let us answer the following question: *what is the difference between a power and a law?* The question might seem awkward; yet, powers and laws are strikingly similar items, as they both provide correlations of events/states/property instance patterns throughout space-time; they both have some modal value. Both of them, furthermore, have something to do with causation. Long story short, whatever the role, laws and powers seem to compete for it[12]. But then, why are they competing at all? What is the difference between a law and a power? The crucial difference between them is that the power is referred to a property (as part or constituent of it, or even as numerically identical to it), and so, ultimately, the object that possesses it. It is the object that has the power to M when S, in virtue of some property it possesses. Laws, on the other hand, are not subject to this kind of attribution: it is not the object which "has the law" that all Ps are Qs – we rather say that the law applies to it. This suggests an important truth about laws, even if not an uncontroversial one: laws are usually taken to be *external* to individuals and properties they are taken to. So the difference between dispositional essentialism and categoricalism/quidditism, when it comes to the nature of properties, is that while the first considers the source of change as internal to the property, the second considers it external. Therefore, according to quidditism, they cannot neither individuate them either; if x is external to y, x cannot be "what is it that makes y so", nor "its very being".

What is the best metaphysics of properties and laws? There is a recent and interesting argument against laws of nature that may be interesting to discuss: Mumford (2004)'s Central Dilemma. Being an argument against realism about laws, it is tailored to immediately qualify dispositional essentialism as a better candidate when it comes to the correct positioning of nomic roles of properties. The pivotal claim of the Central Dilemma is that realists about laws, such as nomological realists, have failed to clearly express what is the role (intuitively, the "governing" role on individual pattern of properties / events) laws are playing in one's

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[11]The use of the term categorical may be confusing; the point is that, if the presence of a dispositional property can be settled only through test, the presence of a non-dispositional property can, at least in principle, be decided *here* and *now* through observation. Back in the days of empiricism, when powers were sometimes equated with their manifestations, the legitimate properties were said to be "categorical" as they were unconditionally instantiated by objects, and not only in certain circumstances, for instance under stimulation.

[12]Metaphysically, laws and powers may indeed be the very same thing. On one of the most accredited account of laws, *nomological realism* (Dretske (1977), Tooley (1977), Armstrong (1983)) a law is an higher-order relation between types, and one of the best account of powers says that powers are technically relations between types: a power is a "power to M (type) when S (type)". For this claim, see Ellis (2001, pp. 132–135), Mumford (2004, pp. 192–195) and Bird (2007*a*, pp. 106–108). Their difference rather lies in the correlation between second-order relations and the first-order properties they relate; according to Barker and Smart (2012) this similarity is of serious concern for the dispositional essentialist.

metaphysics and how they are supposed to play it[13]. It is a not fiercely compelling argument – it does not claim that such a specification is impossible, yet it clearly puts the adversaries of dispositional essentialism at a disadvantage.

The argument proceeds through a dilemma-like form in two horns: the horns are generated by the choice between *external* or *internal* laws, that is to say whether or not being a case of a governing law is internal or not to what the law is supposed to govern. The dilemma argues that there is no viable reconstruction of laws as neither externally (first horn) or internally (second horn) governing principles, thus concluding that laws cannot be governing principles at all.

Let us start from the first horn: external laws. Nomological realism is a good option for external laws (Mumford claims that is the best option), as laws are external relations connecting the universals instantiated in the patterns. Let us consider a successful causal pattern from $S(x)$ to $M(x)$ which is an instance of the law $L(S, M)$. This instance, relative to object a, can be called $L_i(S(a), M(a))$. The L_i instance is clearly related to L through instantiation, but it is less clear how it is governed by L. Intuitively we can characterize L_i as governed by L by saying that, $S(a)$ and $L(S, M)$ are sufficient to nomically necessitate $M(a)$, and so the instance L_i of L. The relation of instantiation is not explicitly tailored to be a relation of dependence of the instance on what it instantiates, especially if we consider some kind of Aristotelian theory of properties[14]. The external horn of Mumford's argument argues that no viable account of governing external law has been proposed, and presumably is not forthcoming.

The internal horn states that no law that is internal to properties occurrences/states of affairs/events that it applies to, can govern the behavior of the premises 'from the inside'. Here the argument proceeds from the assumption that laws must not be taken as a primitive and, being internal to some other kind of entity, can be construed out of it in some fashion, for instance through the relation of supervenience, or reduction, or constitution; yet it is far from clear how they could govern, or exert any determining force in such a subordinate position: in the case of Ellis (2001), for instance, the governing role is taken upon properties themselves, in the sense that, being essentially dispositional, nomic roles pertain necessarily to properties, that basically auto-govern themselves.

So, if (governing) laws cannot be neither internal nor external, if we want some non-Humean metaphysics about properties and laws, the most flashed-out candidate is dispositional essentialism. That being said, dispositional essentialism, like that set forth by Bird (2007a, Ch. 9) could consider laws as internal, in the sense of being generated by essential powers of individuals, but such laws would fail to possess the feature of contingency and governance – they are not doing the real job. For our goal, the internal horn of Mumford's dilemma is the most interesting, as it excludes *a priori* the possibility of primitive internal laws; things such as "the fact that all As are Bs" cannot be internal to some individual.

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[13]The exact meaning of "governing" is not spelt out. However, we can claim that governing laws are laws that are not simply supervenient on (the totality of) matter of facts, as regularist Humean-like laws, but rather determine and regulate their cases through a specific relation, that we may call "government" (it may have, for instance, a modal value, or an explanatory function).

[14]One of the most prominent supporter of nomological realism, David Armstrong, is also an Aristotelian about properties. It is not immediate to see where the incompatibility lies, as we both a lack a precise definition of *governing laws* and *Aristotelism about properties*. But if the specific case C is an instance of the general law L, governing laws needs some kind of metaphysical priority of L over C, while Aristotelism about properties sanctions metaphysical priority of C over L. Thorough scrutiny is needed to understand what this 'metaphysical priority' amounts to and whether or not it is the same in the two cases.

In conclusion, the crucial difference between powers and laws is that powers are internal and laws are external to properties and individuals; so it would be nonsense to be realist about causal powers, while at the same time holding that powers are not internal to properties: that would just be a realist theory of laws under disguise. The choice between categoricalism and dispositional essentialism is just parasitically a choice about whether a property has its powers contingently or necessarily; it is primarily a choice between laws being more fundamental than powers rather than *vice versa*. Therefore, their difference, when it comes to the nature of properties, is *whether the source of potential change a property affords is internal of it, or not*. In accordance to Ellis (2001), dispositional essentialism is a rebuttal of the passivist view of the world which features *per se* inert entities being externally put in motion by laws and principles.

On the contrary, categoricalism/quidditism is both the thesis that properties have their powers contingently and that they have a non-powerful nature. They are strictly correlated[15] and yet different claims.

3.2 Causal powers and the identity of properties

It is an interesting divide to keep in mind that essential properties may not be essences *tout court*; a set of essential properties may not exhaust the essence of an individual, so it may be the case that, even if dispositional essentialism is true, trans-world individuation for properties through powers may fail, as it could be the case that two distinct properties A and B have the same set of essential powers[16]. It is not the case that each difference between individuals/properties is an essential difference; nonetheless, if powers are not sufficient for trans-world individuation, something else is needed to exhaust a property's nature.

Therefore, even if we accept the weak thesis usually correlated with dispositional essentialism ("a property has its powers essentially"), our quest for the nature of properties is not yet concluded.

The stronger thesis in the same continuum is the thesis that not only powers are essential to properties, but that matters of individuation of properties are settled through powers[17]. We won't present any argument for or against the possibility of two properties necessarily sharing the same powers, but we shall explore the possibility of giving criteria of individuation of properties through powers. Was this suggestion to be taken literally, the nature of a property would consist in the nomic/causal roles it is called to play.

There are a few problems with this suggestion. First of all, it may generate an unbearable regress in the determination of the identity of a property. Let us assume that each property is identified by one causal power (but a similar argument works even if the powers involved are more than one): if property A is identified by its power to produce property B – where property B is the output of the said power – and property B by the power to produce property C, and

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[15]As far as we know, there is no other attempt to build non-contingent laws that does not appeal to constitutive powers of individuals. By contrast, all attempts to build dispositional essences for properties with contingent powers seem weird: we could have, for instance, couples <world, powers> that pair for each possible world the powers the property has in it, but it still looks wrong to say that the essence of a property is a set of worldly- relativized items. It takes a bold departure from our initial sense of "essence" and "nature" to consider the essence of a property as constituted by its contingencies.

[16]This also suggests the somewhat related point that even if we currently talk about "essential properties", the very essence of an individual is probably not a property possessed by it, as that would involve the weird consequence that an individual is (numerically) different from its essence, at least on a substance-attribute position abut property instantiation.

[17]Technically, intra-world criteria of identity are given through power-based trans-world criteria of individuation.

so forth we would have a structure of identity determination that is infinite, if there are infinite properties, or circular, if they are finite in number. Even if each operation of identity determination or individuation is *per se* successful, the global structure is unacceptable. The problem is engendered by the fact that identity conditions of properties are given through other properties[18].

Nonetheless, Bird (2007*b*) shows how it is a simple truth of graph theory that this claim is not backed up by facts. Let us assume that there are finite properties, and so the structure is circular. In what sense is it unacceptable? In the following graph
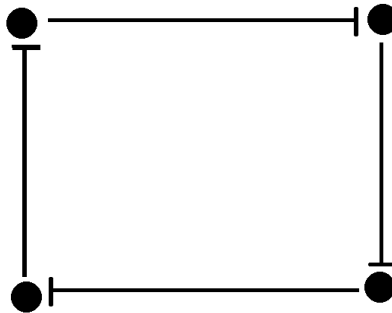

the dots represent properties and lines the relation of identity determination; the shaped lines work like arrows or vectors – they represent an asymmetric relation. It is a graph of a 2-place relation structure displaying non-trivial automorphism. That is to say, points can be moved leaving the structure untouched. The identity of the points should be determined by their position in the structure, but unfortunately, no internal feature of the structure allows to discriminate one position from another. We know that the points are four, yet, given two variables ranging on points, there is no non-haecceitistic property to provide a suitable right member of the formula "for each x and y, $x = y$ if and only if...". Therefore the structure fails to determine their identity, that is to say, out of the model, fails to determine the identity of properties involved. This is because points are not properly individuated.

It must be precised that the identity of a property cannot just be determined by one other property. We earlier said that each power is determined by the couple <input, output>, corresponding to stimulus and manifestation properties; in that case identity determination is a 3-place relation, having two *determinantes* and a *determinandum*. The stimulus-manifestation model is not, however, the only one in town; to avoid complications let us say that identity determination for properties is an $(n + 1)$-place relation, where n is the number of *determinantes* needed. The problem is not yet dissolved, as shown in the following graph of a 3-place relation structure with the same feature of non-trivial automorphism (again, the shape of the lines roughly represents the asymmetry of the relation).

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[18](Lowe, 2006, p. 138).
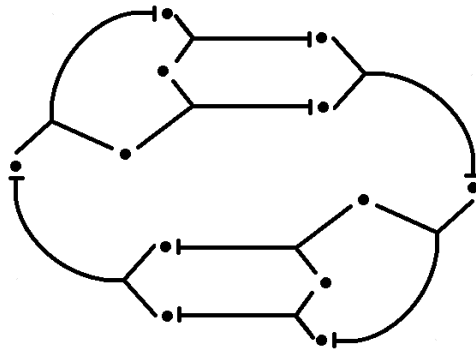
Bird's solution rests on the possibility that the structure generated by powers has no non-trivial automorphism. That cannot be excluded *a priori*. In Bird's words "the identity and distinctness of the vertices of a graph can indeed supervene on the structure of that graph", by providing an asymmetrical graph as in the following case.
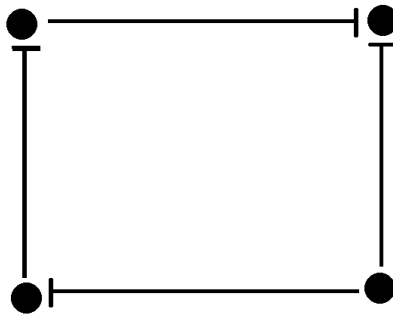
Properties are determined by clusters of powers. In our graphs, properties are represented as positions in the structure. This kind of position constitutes a metaphysically robust take on properties as it involves *holism about their identity*. Therefore, as the identity determination we are looking for is not contingent (it depends on trans-world individuation), the whole structure, and the properties in it, needs to exist at all worlds that display at least one of them (e.g., there cannot be qualitatively poorer worlds where at least one of the actual properties is present).

It looks like a good start, but the most pressing worries for dispositional essentialism at this point are not formal but ontological. Given the graphs we previously showed, what really is a power? This is the right moment to shed some light on the generic claim that a property bears essentially all of its powers. It is then the case that we have two things, the property and (the set of) the powers? From the point of view of the dispositional essentialist, it is perfectly fine to say that a property *essentially has* all its powers, or that it *is determined* by its powers (and, additionally, individuated by powers), or that it supervenes on its powers. However the *pure powers view*, as we may call this version of dispositional essentialism does not settle for that: it claims that a property just is its powers. This is the position endorsed in both Bird (2007*b*) and Mumford (2004, p. 170), who claims: "The view of properties I find most attractive is one in which they are natural clusters of, and exhausted by, powers"[19]. So, if we consider again the last graph, the most economic outcome is that properties do

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[19]In the same pages however Mumford downplays the importance of essentialism in his account. It is of no importance right now.

not fill positions in the structure: they rather are positions in the structure. The natural justification of this kind of position is that it avoids any redundancy in the explanation of the relation between properties and powers: it is, allegedly, a more parsimonious solution.

4 *Quidditism* strikes back

According to the pure powers view, all that a property is, are causal powers – or a bundle of causal powers. There seem to be, however, a couple of objections to this proposal that may suggest the possibility of *quidditates* coming back into the picture – these (partially related) objections, roughly put, question the ultimate metaphysical consistency of the picture set forth by the pure power theorist. They do so by questioning the nature of powers *specifically*, rather than properties generically, and the correlation between powers and properties.

First objection: one of the most pressing worries in the metaphysics of powers is constituted by the need to explain the correlation between a power and its manifestation (e.g., between fragility and breaking); pure power theorists sometimes imply what we may call a *relational framework of powers*: that is to say, that a "power to M" is to be understood as an n-adic relation where a *relatum* is M[20]. To take at face-value the correlation between a power and its manifestation as a genuine relation is surely tempting; yet, from the standpoint of the pure powers view, that solution is bound to backfire, as eventually (although pure power theorists like Bird did not explicitly claim of this conclusion) properties would just be relations, or bundles of relations.

It is a gloomy perspective: if we identify each property with a (set of) higher-order relations, there is no lower-order property that can be properly said to enter into such relations. We are therefore asked to identify the *relata*, if there are any, of these relations. But these *relata* cannot be, as initially suggested, properties themselves, as they are, in turn, bundles of relations. So our task is to identify alternative *relata* for the power relation. Jacobs (2011, pp. 84–89) raises this problem, suggesting other kinds of *relata* the pure power theorist can appeal to. The main problem, according to Jacobs, is to suitably link individuals with the power-structure, in a way that such a structure is not left "floating around" uninstantiated, while at the same time keeping a strongly realist attitude on properties. As the task is impossible, according to Jacobs, the pure powers variety of dispositional essentialism is to be rejected in favor of some sort of weaker position.

We can for example suppose that *relata* we are searching for are further instances of the relation itself. Everything that instantiates the relation by being a *relatum* is a relation itself. But if at some point we want individuals to have powers, that would have the consequence that not only properties but also individuals are (bundles of) relations. If we accept this line of reasoning, together with a classical repartition of worldly existents between substances/individuals and properties – the outcome is that all that there is, is structure generated by the power relation. Intuitively, whenever we go searching for what is filling one place in the structure, we discover *more* structure; there is nothing immediately malicious in this regress (except, maybe, the ontological commitment to an infinite number of relations), but the resulting stance is overly complex and demanding. If any form of dispositional essentialist is insubstantial, this one is.

However, as Mumford (2004, p. 173) claimed, "[a] cluster theory of properties is wholly

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[20]Bird (2007*b*) is a fine example of this category.

independent from a cluster theory of substances", therefore we may want to search for some less expensive solution. We could, for example, think that the *relata* of the dispositional relation are individuals themselves. So we have individuals and a first-order structure. The charge against this second solution is that it cannot properly countenance the existence of properties; since, at the end of the day, it reduces properties to relations; such a reduction constitutes the topic for a tricky and very complex debate that we are not going to discuss right now[21].

Any weakened position that grants more autonomy to properties with respect to powers needs to explain what that autonomy amounts to; and quidditism is indeed the most natural response, as we will need something that is not dispositional in itself to fill the places in the structure.

The second problem, as raised in Barker (2009), is the following: if properties are just (bundles of) relations, our initial question about the nature of properties is bound to ultimately pop up for relations as well: what are relations – in particular, what is the power-relation? After all, one of our premise was that properties are just a special kind of relations. To iterate the pure powers view would just mean to generate a *regressum ad infinitum* in the explanation of properties; this is not a merely apparent regress, such as the one discussed earlier. It is a real one, as the latter (merely apparent) regress is generated between same-order powers, and can easily be dispelled by manipulating the shape of the structure, while the former regress is between different-order powers. If the pure power theorist does not want to run in full circles, she has to deny the existence of a regress of high-ordered structures in the determination of properties/relations. But, that being said, no non-quidditist solution seems appealing; for instance, we can understand powers in terms of functions; yet a function is a unitary entity which generates the correspondence between the input and output, as a power for its stimulus and response; in the case of simple arithmetical function, what is it that makes the function $y = x + 2$ different from the function $y = x \check{} 2$ that is not the difference in <input, output> pairs they produce? It seems that they are different because they are made to work *that way*, and that is no longer open for further explanation.

In conclusion, there are three troublesome commitments for the pure powers view (on a relational account of powers). Some of them point to what we take to be fatal flaws of the position.

1) Necessary existence of the structure where at least one property exists.

2) A purely relational view of properties (and perhaps of substances as well).

3) An infinite regress of high-ordered structures.

5   Powerful quidditism

A fall-back manoeuver from pure powers may be preferable. We can accept that it is in the property's constitutive nature to be dispositional, but that cannot be the end of the story. So, we cannot go past weak dispositional essentialism to strong dispositional essentialism, and give full criteria of identity/individuation of properties in terms of powers.

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[21]We earlier said that properties are a particular kind of relations, but this is something more; according to the first definition, properties are monadic relations – but if the previous reasoning is correct, there are no monadic relations.

How to formulate a new position? The idea is to accept the existence of *quidditates*, that is to say, primitive sources of identities that make each property the property that it is, and not another. Properties would therefore be both dispositional and categorical[22]. Quidditates would fill the places in the structure in virtue of being what they are and not other qualities. As a property's powers are retained necessarily, this dispositional essentialist-friendly version of quidditism (that we are going to call "powerful quidditism") will not be affected by any of the arguments above. As for the first objection, powerful quidditism is more interesting than the traditional one: even if ultimately the true nature of a property cannot be fleshed out in more simple terms, each *quidditas* now generates a series of core features, summarized by the role in the power structure the property essentially plays; this sheds at least some light on what a property essentially is. The humility objection and the "swapping powers" objections are dealt with, insofar as properties retain their powers necessarily and can easily be recognized through worlds.

As for the problems of pure powers, powerful quidditism solves some of them. Firstly, the identity conditions of a property are not determined holistically but locally, by the *quidditas*; yet, as it is essential of the property to enter that place in the structure, the structure must still exist at all worlds in which the property exists.

As for the second *regressum* objection, there is still the problem that if power-talk has to be understood as a relational talk (if the structure is real), we have to countenance a special *quidditas*, the quality of the power-relation which is different from the others as it generates the structure and doesn't have powers itself. This peculiar *quidditas* would be different from the others not just by being primitively numerically different, but by displaying different features, such as not having a place in the structure. It is indeed a problematic and not parsimonious claim to make. Quidditism is one thing, *double* quidditism is another.

At this point, dispositional essentialism risks being forced to renounce the core of her credo: if one doesn't accept the existence of this "special" *quidditas*, there will be nothing left of dispositional essentialism in powerful quidditism. As a consequence, powerful quidditism lapses back into categorical quidditism as presented in sections 2 and 3.

We could eliminate the need of this special *quidditas* and claim each property to be *directly (and essentially) powerful* – and not through a power-making relation. But, as in this interpretation the power structure is not real, we would have to explain what "powerful" means. Jacobs (2011) claims powerful qualities to be so, insofar as they are primitively apt to be the truthmakers of counterfactual conditionals[23]. This eliminates the problems of powerful quidditism relatively to the nature of the power-relation, but we take it to be a troublesome path to take. First of all, the relation between dispositions and conditionals is known for being controversial, so if an entailment between a power ascription and a conditional is taken to formalize the relation of truthmaking, several counterexamples can be brought forward. Secondly, if the dispositional character of a property is played by the quiddity itself, no metaphysically interesting explanation is given of why should a property be dispositional. Instead, a property would be primitively dispositional in virtue of its correlation with a truth-bearer, such as a proposition: but it does not seem right to claim that dispositionality resides in a relation with a linguistic entity. It may be true that properties are truthmakers for counterfactuals, but that cannot be the end of the story: we have to point out the nature of the property that truly allows us to call it powerful, and to be a truthmaker. If we cannot do that,

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[22]See Martin (2008), Martin and Heil (1999) and Heil (2003).

[23]Jacobs' proposal seem to be, in turn, the more straightforward interpretation of some statements usually put forward by dispositional essentialists. For example, see: Ellis and Lierse (1994, p. 33).

because we appeal to a primitive nature like a *quidditas*, then the account ends up being less interesting.

The general problem seems to be a reiteration of the regress argument against pure powers. First, a theory endows a property a with a feature b that makes a dispositional. Second, the same problem that concerned property a is raised for feature b (since features can be seen as properties under a different label – as in the relational account of the correlation between a power and its manifestation). And so on[24].

6 Conclusions

Dispositional essentialism, the claim that a property is essentially powerful, seems more explanatory than a radical categorical quidditism, as it has overall more to say about what a property is. However, it is difficult to make dispositional essentialism evolve from a theory about essential properties into a theory about essences. Even if, pros and cons all considered, we still take dispositional essentialism to be a more enlightening position when it comes to analyze the nature of properties, there is no non- problematic version of it. Our take is that powerful quidditism (there are essentially powerful *quidditates*) is an interesting intermediate position between pure powers (the most extreme version of dispositional essentialism) and categorical quidditism.

Powerful quidditism can solve all the problems of pure quidditism and at least one problem of pure powers (the problem of finding the *relata* in the power structure). Yet we still lack an account of what makes a property powerful that does not fall in the problems of either the "double quidditism" position or in the problems of simpler accounts, such as the one in Jacobs (2011). This last choice suggests a further problematic all dispositional essentialists have to tackle, and precisely whether or not we have to agree on a relational account on the correlation between a power and its manifestation: no disposition-based account of properties is forthcoming without an understanding on this matter.

The dispositional essentialist, in short, still owes us many explanations, and the question about the nature of properties is far from being fully answered.

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[24]These positions were sometimes labeled as a kind of "double aspect" insofar as they endow each property with both a dispositional and a categorical side. The problem of the double aspect was to explain how could the categorical and the dispositional coexist in one and the same property, and, from the point of view of dispositional essentialism, how it happens that they necessarily covary. While both of these problems are solved by non-relational accounts of powers such as Jacobs (2011) through the appeal to an ineffable *quidditas*, they are somewhat problematic for double quidditism; strictly speaking, on that account, properties are not essentially dispositional, yet they enter necessarily into some position in the power structure – but *why* is each quality necessarily paired with a position in the structure is left unsaid.

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