

How to Rule Out Disjunctive Properties

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ABSTRACT: Are there disjunctive properties? This question is important for at least two reasons. First, disjunctive properties are invoked in defense of certain philosophical theories, especially in the philosophy of mind. Second, the question raises the prior issue of what counts as a genuine property, a central concern in the metaphysics of properties. I argue here, on the basis of general considerations in the metaphysics of properties, that there are no disjunctive properties. Specifically, I argue that genuine properties must guarantee *similarity-in-a-respect* among their instances, and must *inhere* in their bearers (two notions to be clarified). Disjunctive properties would fail both requirements. I compare the case of disjunctive properties with “mere Cambridge properties,” determinable properties, and functional properties, and show how my conception of properties remains compatible with determinables and functional properties while ruling out disjunctive and mere Cambridge properties.

1 Clarification of the Issue

The question of whether there are disjunctive properties concerns the structure of properties, not the structure of predicates. It is obvious that some predicates have a disjunctive structure. And one important lesson of Nelson Goodman’s work is that, with a little ingenuity, any property can be expressed by a disjunctive predicate, just as greenness can be expressed by ‘is grue and observed before 2500 or else bleen’.¹ It is another question altogether whether any property has a disjunctive structure, that is, whether anything with a disjunctive structure could count as a genuine property.

Such questions of genuineness occupy a great deal of philosophical thinking about properties. As Sydney Shoemaker puts the issue,

Philosophers sometimes use the term ‘property’ in such a way that for every predicate *F* true of a thing there is a property of [being *F*] ... It is natural, however, to feel that such properties are not ‘real’ or ‘genuine’ properties.²

He opposes genuine properties with *mere Cambridge* properties (borrowing a coinage from P.T. Geach).³ Even David Lewis, who allows that there are disjunctive properties, cautions that they are not *natural* properties, which are “the [properties] whose sharing makes for resemblance, and the ones relevant to causal powers.”⁴ The classification of some properties as natural is of

¹ Goodman 1955, ch. 3, sec. 4. Let ‘grue’ mean *green and observed before the year 2500 or else blue*. Let ‘bleen’ mean *blue and observed before the year 2500 or else green*.

² Shoemaker 1980, p. 207 in the reprint in Shoemaker 2003.

³ Geach 1969.

⁴ Lewis 1983, p. 13 in the reprint in Lewis 1999

such importance to Lewis that he goes on to say “an *adequate* theory of properties is one that recognizes an objective difference between natural and unnatural properties...”⁵

It is common enough to make the sort of distinction we find in Lewis and Shoemaker. But even granting it, we face the question of which side disjunctive properties occupy. Here I will put forth two claims about what makes a property genuine. I will use ‘property’ so as to exclude relations (leaving important questions about the genuineness of relations for another occasion). I will argue that genuine properties must guarantee *similarity-in-a-respect* among their instances, and that this requires properties to *inhere* in their bearers. Then I will show that disjunctive properties would not meet these criteria. First, however, we must consider an existing objection to disjunctive properties and why it falls short.

2 First Pass at an Argument Against Disjunctive Properties

Is there a property of being red-or-round? One might suppose so, simply because there is a property of being red and a property of being round, and the domain of properties is closed under disjunction (or, given that properties are not truth-functional, some appropriate analogue of disjunction). But consider a red square and a blue circle. Each satisfies ‘is red or round’, yet intuitively they are not similar *in the relevant respect*, that is, in respect of their red-or-round-ness. One is red-or-round by being red, the other by being round. There is no guarantee that any red thing should resemble any round thing, so why should there be any guarantee that any two things that are red-or-round be similar? If property-sharing must guarantee similarity, then it seems that there can be no disjunctive properties.

Beware the objection that in fact red things and round things are bound to resemble, say, in being *spatially located*. This point can be conceded, because this similarity would still not be similarity *in respect of* being red-or-round. Being red-or-round plays no role in securing this similarity; it is merely coincidental with the things’ being red-or-round. (This illustrates that gross similarity will not suffice as a criterion of genuineness for properties, a point to be discussed further below.)

Something along these lines is at work in various attempts to dispatch disjunctive properties. According to Armstrong, “disjunctive properties offend against the principle that a genuine property is identical in its different particulars.”⁶ His objection presupposes that properties are immanent universals, but it is possible to levy his criticism in a more neutral way. According to Heil, e.g., “if distinct objects possess the very same property, *F*, they must be precisely similar *F*-wise” (or, as I would put it, similar *in respect of F*-ness).⁷

I agree, for the most part, with Armstrong’s and Heil’s diagnosis. But it does not go quite far enough. The notion of similarity-in-a-respect is one that requires elucidation. Depending on how the notion is cashed out, we may or may not end up with a cogent argument against disjunctive properties. Suppose, for example, we define similarity-in-a-respect as follows:

⁵ Lewis 1983, p. 14 in the reprint in Lewis 1999.

⁶ Armstrong 1978b, p. 20.

⁷ Heil 2005, p. 347.

(S₀) For any things x and y , and any property, F : x and y are similar in respect of being $F =_{df}$ x is F and y is F .

All there is to similarity-in-a-respect, on this understanding, is property-sharing. Now consider the following requirement for being a genuine property:

(P₀) There is a property of being F only if: necessarily, for any things x and y , if x is F and y is F , then x and y are similar in respect of being F .

Given (S₀), every property trivially satisfies (P₀). Given that similarity-in-a-respect is just property-sharing, every property is automatically such that sharing it guarantees similarity-in-a-respect. If so, the only way to deny that disjunctive properties satisfy the condition is to deny that there are any. If D is a disjunctive property, then by the above definition of similarity-in-a-respect, any two things that are D are automatically similar in respect of their D -ness. While appealingly straightforward, then, this notion of similarity-in-a-respect cannot support a non-question-begging argument against disjunctive properties.

To get around this problem, we must refine the notion of similarity-in-a-respect, which I will do below using the idea of *inherence*. But in order to make the importance of that idea fully clear, we must first consider just what a disjunctive property is supposed to be.

3 The Concept of “Disjunctive Property”

It is little use arguing against disjunctive properties without a clear sense of what they are (or would be). One influential understanding is put forward by Lenny Clapp:

(D₀) D is a disjunctive property just in case D can be designated by a predicate of the form $[\varphi_1 \vee \varphi_2 \vee \varphi_3 \vee \dots]$ where (a) each of the φ_i designates a property, and (b) no two of the φ_i designate the same property.⁸

If (D₀) is correct, at least some intuitively non-disjunctive properties will turn out to be disjunctive because they happen to be expressible as disjunctions of other properties. Being red, for example, can be expressed by ‘scarlet or maroon or ...’, and having length can be expressed by ‘is shorter than 1m or is 1m or is longer than 1m’.⁹ But these disjunctive expressions disguise important similarities among the properties they express. The shades of red all look more-or-less alike,¹⁰ for example, and however different a pair of lengths is, they are more like each other than they are like a mass or an electric charge. Such similarities seem

⁸ Clapp 2001.

⁹ Note that in these examples, each of the disjunct predicates plausibly expresses a genuine property. If (D₀) stated that a property is disjunctive just in case it can be expressed disjunctively (never mind whether the disjunction is of predicates that themselves express genuine properties), then it would apparently rule every property disjunctive. It seems to me that Goodman’s (1955) procedure for introducing a disjunctive predicate to replace ‘green’ (‘grue and observed before t or else bleen’) could be employed to introduce a disjunctive predicate for any property whatsoever. Cf. Clapp 2001, fn. 19.

¹⁰ Looking alike is not always a reliable guide to non-disjunctivity of course (e.g., jadeite and nephrite look alike), but does seem to be an important guide in the case of colors.

to show that these properties are not truly disjunctive. In any case, these properties would not be disjunctive simply because there happen to be disjunctive predicates by which we can express them.¹¹ It seems, then, that (D₀) fails to capture the intuitive notion of disjunctive properties.

My interest is in disjunctive properties understood as properties whose sole claim to propertyhood is that they are disjunctions of properties. These are properties that, as it were, inherit their propertyhood from their disjuncts. Thus, the question of whether there are disjunctive properties is the question of whether every disjunction of properties itself counts as a property (equivalently, whether the domain of properties is closed under disjunction). Now, properties cannot be disjoined in the usual sense; disjunction is a truth-function and properties are not truth-valued. So the notion of a disjunctive property appears to depend on a different sort of disjunction, a manner of combining properties. The notion is not unintuitive, especially if it is understood by analogy with conjunction. The idea that properties can be combined by conjunction, though not uncontroversial, is at least straightforward. One way to get a handle on what disjunctive properties are supposed to be, then, is to say that they are the complex properties that result from combining simpler properties in this disjunctive manner.

Alternatively, we can say what a disjunctive property is using the ordinary notion of disjunction: a property, D , is disjunctive just in case a thing's having D consists just in its having F or its having G or ... (for some F, G, \dots , such that $F \neq G$, etc.). Symbolically, $Dx =_{df} (Fx \vee Gx)$. We can equivalently say that D is a disjunction of the properties F, G, \dots . The issue of whether there are disjunctive properties, then, concerns the status of the following principle:

(D) If being F and being G are properties and being $F \neq$ being G , then there is a property of being D such that $Dx =_{df} (Fx \vee Gx)$.¹²

This gives the notion of disjunctive properties discussed by Armstrong, according to whom the question is whether “any predicate of the form ‘ $P \vee Q$ ’, where ‘ P ’ and ‘ Q ’ are property-predicates, is itself a (disjunctive) property-predicate.”¹³

If (D) is true, then there are properties whose only claim to being properties is that they are definable in terms of a disjunction of properties, and indeed, anything that satisfies this meager criterion counts as a property. But can there be any such properties—any properties, that is, whose *only* claim to being a property is being definable as a disjunction of properties?

Now, one could argue that this will never be the *only* claim something has to being a property, since it will also be *instantiable* (in one or another sense), be *expressible by predicates* (in ordinary cases), have something like *argument places*, and so forth.¹⁴ But it seems to me that these features are all had by concepts as well as properties, and so having them is a very

¹¹ Compare Antony 2003, p. 10.

¹² If one prefers, (D) can be expressed using the lambda calculus: If being F and being G are properties and being $F \neq$ being G , then there is a property of being D , where being $D = \lambda x(Fx \vee Gx)$.

¹³ Armstrong 1978b, p. 20. I think it is clear that Armstrong is interested in whether every such predicate expresses a property, though his ‘any’ could be read as “at least one”.

¹⁴ Thanks to Cody Gilmore for this point. Note that this will have to be a neutral sense of instantiation to avoid begging the question against inherence realism, according to which the way properties are instantiated is very different from the way concepts are instantiated.

weak claim to being a genuine property rather than a mere concept. I do not argue here that there are no disjunctive concepts (and in fact, I am certain that there are). But of course the question is whether any of them correspond to genuine properties that themselves have a disjunctive structure. Disjunctive properties, as defined by (D), have a slightly stronger claim to being properties than just having these features shared with concepts. The idea behind (D) is that disjunctive properties inherit their propertyhood from that of their disjuncts. Disjunction, the thought goes, is an acceptable manner of combining properties, so that the domain of properties is closed under disjunction. Compare conjunctive properties. There is little reason to believe that every conjunction whatsoever counts as a property, but the idea that every conjunction *of properties* is a property is at least initially credible.

The properties Clapp defends under the title ‘disjunctive properties’—such as determinables—are not truly disjunctive properties if (D) is correct. Their claim to being properties is not merely that they are expressible as disjunctions of properties, but rather that each of their instances resembles the others in some way (according to Clapp, in bestowing overlapping sets of causal powers on things).¹⁵ The very reason why disjunctive properties, understood according to (D), ought to be rejected is that they fail to guarantee similarity among their instances, while it is of the very essence of a property that its instances should all resemble one another, and do so *in respect of that property* (a notion to be defined below). Below, I will make this objection precise. Note, in the meantime, that the particular “disjunctive” properties Clapp seeks to defend are not ruled out by my account.¹⁶

4 Two Theses about the Nature of Properties

Now that we have the relevant understanding of disjunctive properties before us, we can begin to consider whether there are any. The considerations I will bring to bear are two claims about what it takes for a property to be genuine. Above, I indicated that genuine properties must guarantee similarity-in-a-respect among their instances. This is one of the criteria of genuineness that I will defend. As I argue below, an adequate account of similarity-in-a-respect requires us to understand properties as inhering in their instances. Inherence is thus the other criterion of genuineness that I will defend, and the one to which I now turn.

4.1 Inherence

An important divide between theories of properties is between those that take properties to *inhere* in the things that instantiate them (trope theory and Aristotelian realism), and those that do not (Platonic realism and the various forms of nominalism). Let us call the former views *inherence realist*. The view that a property inheres in a particular entails that the property is a constituent of the particular (though not necessarily a part of it in any ordinary

¹⁵ See Clapp 2001, p. 127.

¹⁶ Antony 2003 (p. 9) denies that there are truly disjunctive properties (as opposed to predicates). She is keen to defend not disjunctive properties but rather, roughly, the scientific respectability of predicates that pick out disjunctions of fundamental physical properties. What I say here is consistent with her view.

sense of ‘part’).¹⁷ Inherence realism rules out the possibility that properties transcend entirely the things that instantiate them, say, because the things are concrete while the properties are abstract.

A number of contemporary philosophers are inherence realists, including D. M. Armstrong, John Heil, E. J. Lowe, and Sydney Shoemaker.¹⁸ Each takes properties to be present in the things that instantiate them. Among property realists, a particularly notable opponent of property-inherence is Peter van Inwagen.¹⁹ According to him, properties are *unsaturated assertibles*, things that can be said of particulars.²⁰ These assertibles are abstracta; they are imperceptible, non-causal, necessary existents, and certainly not present in the particulars of which they are truly assertible. Nominalists, too, count as opponents of property-inherence realism. If one regards properties as reducible to sets or classes of ordinary particulars (as do David Lewis and Gonzalo Rodriguez-Pereyra), then properties, again, are of the wrong ontological category to be constituents of the things that have them.²¹

The notion of inherence is difficult to characterize. It can be taken as primitive. It seems that when we say that *F*-ness is wholly present in *a*, or is a non-mereological constituent of *a*, we are adverting to a primitive notion of instantiation. But we cannot leave it at this, because inherence anti-realists may also regard instantiation as primitive. Platonic realists, for example, may take instantiation to be primitive while denying that Platonic universals inhere in their bearers. So we should say something about how instantiation-as-inherence differs from other notions of instantiation.

We can shed some light on what inherence amounts to by considering what it means to talk about an object *insofar as* it has a certain property. This locution, for the inherence realist, carries real metaphysical weight. There are, of course, fairly neutral uses of the phrase ‘insofar as’ (such as “insofar as she was a professor, she had a strong urge to correct his grammar”). But I want to focus on the following construction: *a* insofar as *a* is *F*. This usage, it seems to me, is not entirely neutral. For one thing, it appears to refer. Specifically, it appears to refer to something that overlaps *a* yet is not *a* itself, or anyway not in its entirety. But it will be controversial whether there is anything to which this phrase might plausibly refer (even assuming that *a* is in fact *F*). If one posits tropes—such things as *a*’s *F*-ness—then ‘*a* insofar as *a* is *F*’ presumably refers to *a*’s *F*-ness, the *F*-ness trope belonging to *a*. If one posits immanent universals, then ‘*a* insofar as *a* is *F*’ presumably refers to the universal *F*-ness. In this case ‘*a* insofar as *a* is *F*’ and ‘*b* insofar as *b* is *F*’ will co-refer. Yet the phrases appear not to mean the same thing altogether, and so we see that the content of ‘*a* insofar as *a* is *F*’ is not exhausted by its reference. Even if ‘*a* insofar as *a* is *F*’ refers to a universal *F*-ness, it presents *F*-ness as a constituent of *a*. So ‘*a* insofar as *a* is *F*’ and ‘*b* insofar as *b* is *F*’ differ semantically even if they co-refer.

¹⁷ Paul 2002 distinguishes between ordinary parts and *logical parts* of things, and takes properties to be parts of the latter kind.

¹⁸ See, e.g., Armstrong 1978a and 1997, Heil 2003, Lowe 2006, and Shoemaker 1980.

¹⁹ Van Inwagen 2004. See also van Inwagen 2011.

²⁰ In contrast with van Inwagen, Newman 2002 (pp. 25-6) uses the Fregean notion of saturation to shed light on the relation of inherence.

²¹ Lewis 1986 and Rodriguez-Pereyra 1999 and 2002.

Can an inherence anti-realist regard '*a* insofar as *a* is *F*' as referring? It would be a little odd, if properties were abstract, to regard '*a* insofar as *a* is *F*' as referring to the abstract entity *F*-ness. If that entity is not a constituent of *a*, but only something truly assertible of it, then why mention *a* at all? I grant that this is *merely* odd; there is no reason why a Platonic realist cannot regard '*a* insofar as *a* is *F*' as referring to an abstract entity. But it is clear that Platonists will not mean the same thing by the phrase as inherence realists. The crucial difference is this: the inherence realist holds, while the inherence anti-realist denies, that objects have a certain kind of internal complexity that accounts for our ability, at least in thought, to carve up objects into constituents other than their spatial parts.²² An inherence anti-realist, even a nominalist, may allow that we can engage in *partial consideration* of an object—that we can consider it just insofar as it is *F*—while denying that *F*-ness is a constituent of it, or that the distinction between its being *F* and its being *G* is anything other than a distinction of reason. The inherence realist insists that the distinction we make in thought between, say, *a* insofar as it is *F* and *a* insofar as it is *G* corresponds to a distinction in the thing itself.²³ The inherence realist differs, then, from both the nominalist and the Platonist. The nominalist insists that the distinction between *a* insofar as it is *F* and *a* insofar as it is *G* is merely a distinction of reason. The Platonist allows that there is a real distinction here, but denies that it corresponds to any divisions within *a* itself between non-mereological constituents of *a*.

While inherence realism cannot allow that all properties are abstract, it can allow that some are, provided they are properties of abstract objects. For example, we distinguish 17's primality from its oddness. So it seems that 17 has a sort of internal complexity that accounts for our ability to draw this distinction, and which comprises different dimensions of similarity between 17 and other things. Its primality constitutes a similarity with 2 but not with 9, its oddness with 9 but not with 2. All this is compatible with inherence realism, even supposing that numbers are abstract. This is simply because the operative notion of inherence is in no way cashed out in spatiotemporal terms (say, as spatiotemporal overlap).

Let me recap briefly. The inherence realist is an anti-nominalist who takes properties to inhere in the things that have them. To say that a property inheres in something is to say at least that the thing has a certain constituent. (In the case of properties of material objects, it is a constituent with which the thing spatiotemporally overlaps.) Each such non-mereological constituent of something is one of many; there is one for every genuine intrinsic property of the thing, and presumably nothing has just one such constituent. And these constituents are what

²² Compare the notion of qualitative parts defended in Paul 2002. Unlike me, Paul would resist the characterization of properties as *non-mereological* constituents of objects, since she regards mereology as applicable to properties just as it is to parts. In any case, she would agree that properties are not mereological constituents of objects of the same kind as their spatial parts. Also, her view appears to be a form of inherence realism.

²³ One might wonder whether a nominalist can say all this. Might something have the requisite structure without there being *entities* within it that are responsible for that structure? Mightn't we be primitivists about the relevant structure, thereby obviating the need for entities—properties—to account for it? I will assume here that the answer to both questions is *No*. It seems that what it is to posit the relevant kind of structure is to posit constituents of a certain kind. The idea that there might be natural divisions within a particular that are not divisions among different entities seems empty. (The constituents need not, however, be assumed capable of existing independently from what they constitute or from one another.) This is a matter worth pursuing further, but in another venue.

we single out when we focus abstractly on a thing, not *en bloc*, but just insofar as it has certain properties. This much is accepted by all inherence realists, though they may differ with regard to what, exactly, these constituents are. Still, the phrase ‘*a* insofar as it is *F*’ will, according to the inherence realist, refer—either to a universal or to a trope.

4.2 Similarity-in-a-Respect

Why be an inherence realist? I will argue in the next section that inherence realism is required for an adequate understanding of similarity-in-a-respect, and furthermore, that similarity-in-a-respect is required for an adequate understanding of properties. It is a truism that properties and similarity are essentially connected. Necessarily, if *a* is *F* and *b* is *F*, then *a* and *b* are at least to some extent similar. But gross similarity—the two-place relation between particulars that makes no mention of how they resemble—is not enough to capture the nature of properties and the way they make for resemblance among their possessors. One way to bring the issue out is through the problem of *imperfect community*.²⁴ Suppose we have a big white triangle, a small black triangle, and a big black circle. Each pair resembles, and so they form a *community*. But the community is imperfect because, intuitively, there is no respect in which every pair resembles. One pair resembles in shape, one in color, and one in size, and no pair resembles in more than one of these respects. This problem is typically posed as an objection to resemblance nominalism (on which more below).²⁵ The resemblance nominalist seeks to analyze properties reductively as classes of resembling particulars, and the problem is how to rule out imperfect communities as property-constitutive classes without appeal to the notion of property. The lesson of the example is that an adequate theory of properties must accommodate not just similarity, but similarity *in a respect*. This is why it is incumbent on nominalists to solve the problem. Without a solution, resemblance nominalism seems restricted to the gross notion of similarity, and remains unable to explain the intuitive difference between perfect communities (like the class of all triangles) and imperfect ones (like the one indicated above), and thus unable to support a principled distinction between genuine properties and imposters.

5 In Defense of the Two Theses

I have now made two important claims about the nature of properties, each of which can be formulated as criterion for the genuineness of some putative property:

- (C₁) A putative property is genuine only if it inheres in the things that have it.
- (C₂) A putative property is genuine only if its instances exhibit similarity in respect of it.

Consider first (C₂), the claim that genuine properties guarantee similarity-in-a-respect. Above, I claimed that this idea is intuitive. In fact, it is a necessary truth. One might even think that the

²⁴ The problem of imperfect community comes from Goodman 1951.

²⁵ For discussion of the problem, and a proposed solution on behalf of resemblance nominalism, see Rodriguez-Pereyra 1999 and 2002. For criticism of the proposed solution, see Wilson 2006.

concept of things' resembling *in a respect* just is the concept of their having some property in common, perhaps because 'respect' here just means *property*. In that case, (C₂) would be analytic. I am inclined to deny this, however, because the notion of similarity-in-a-respect is explicitly relational in a way that there being one property that each of two things has is not. In any case, (C₂) is by no means a triviality, and serves to constrain in an informative way what form a theory of properties can plausibly take. In particular, the ordinary facts about similarity-in-a-respect provide definite requirements for an adequate theory of properties. Recall the problem of imperfect community. Whatever properties are, they are essential to the story of how the class of all triangles differs from an imperfect community. No theory of properties could be successful if it failed to account for the difference between these two kinds of class.²⁶

I take it that (C₂) is uncontroversial, even though there are different ways of understanding what similarity-in-a-respect amounts to. I will present my own understanding below, but first I want to argue for inherence realism and thereby for (C₁). I will motivate it by examining a theory that is realist about properties but anti-realist about inherence. It is the theory that properties are *unsaturated assertibles*, abstracta that can be said of concrete particulars. This theory will be the main foil to my own in what follows. In defending this theory, van Inwagen asks: "what is the property whiteness but something we, in speaking of things, occasionally predicate of some of them?"²⁷ Indeed, the role of properties in accounting for true predications is something that any theory of properties must accommodate. But besides that, the property role includes accounting for things' behavior (why they causally interact the way they do, e.g.), and—most importantly for our purposes—for certain ordinary facts about how resemblance works. Let's consider now whether unsaturated assertibles can account for these facts.

Things do not, as I have noted above, merely resemble one another, or fail to. They do so in various respects. Take a white triangle and a black one. It leaves out something important to say only that they are similar, for they are similar specifically in shape, yet dissimilar in color. The metaphysical situation here, according to van Inwagen, is that we have various abstracta (the unsaturated assertibles *is white*, *is black*, *is triangular*), and that while *is triangular* can be said truly of both objects, *is white* can be said truly of only one of them. But now we must ask *why* they differ in what can be said truly of them. It strikes me as undeniable that there is some *intrinsic* difference between the two things that accounts for why *is white* can be said truly of only one of them.

Now, in defending van Inwagen, one could insist that for a thing to have an intrinsic property is just for one of the intrinsic properties (a certain family of unsaturated assertibles) to be truly sayable of that thing.²⁸ If this is what intrinsicity is, then van Inwagen's view can allow that intrinsic features of things account for what is truly sayable of them (e.g., *are the same in shape* is sayable of the two things because *is triangular* is sayable of each, and *is triangular* is one of the intrinsic properties). But this is just to change the subject. As I am using the term, a property's being intrinsic to an object requires its being internal or contained within

²⁶ Lewis 1983 argues that the difference can simply be taken as primitive. I show the cost of such primitivism below.

²⁷ Van Inwagen 2004, p. 134.

²⁸ Cf. Sider 1995.

the object. Being related (in whatever way) to a wholly distinct entity is paradigmatically extrinsic.

There are two points to make at this juncture. First, while it is extremely plausible to say that what can be said truly of a thing very often depends on its intrinsic character, this is something the theory of properties as unsaturated assertibles cannot allow. Second, it turns out to be impossible to capture ordinary facts of resemblance if properties are not constituents of the things that have them (that is, if inherence realism is false). Let us take these points in turn.

According to van Inwagen, “a property, if it is an assertible, cannot be a part or constituent of any concrete object.”²⁹ So when an object has a property, on this view, that is a matter of two separate things’ standing in a relation (the relation *being truly assertible of*). It will be a primitive matter, on this view, whether or not a thing and a property stand in that relation. But it seems that something on the part of the object accounts for why it stands in that relation: *is white* is assertible of a certain thing because of how that thing is *in itself*. Such an account is possible, however, only if a thing’s having a property is ultimately a matter of how that thing is in itself—only, that is, if inherence realism is true.

So far, this might not seem to be a very powerful argument on behalf of inherence realism. So far, the issue might seem to be simply whether to take one class of facts as primitive (the facts about what is truly assertible of what) or whether to admit another class of facts (the facts about which properties inhere in which particulars) in order to account for those in the former class. But we can go a step further. To deny that properties are constituents of the things that have them is to deny that things have a certain kind of ontological structure. This denial leaves open that things have mereological structure, the structure corresponding to their parts, but rejects the idea of any internal structure that divides things according to what properties they have.³⁰ Recall, now, the truism that things resemble, not merely grossly, but in various respects. If things are, as it were, undifferentiated within their borders, there is no basis for saying that a pair of things is similar in one respect but not in another. If things have no internal structure, it can make no sense to say that they are similar in some ways but not in others (at least not if these are ways of being similar intrinsically).

A word of clarification is in order here. It might seem possible for things with no internal structure to be similar in some respects but not others. At least as we experience colors, they seem to be simple.³¹ But take two shades of red. Despite their lack of internal structure, are they not capable of differing intrinsically? This example fails for at least one of two reasons. First, it might turn out that colors—even as experienced—are never completely simple, but have a tripartite internal structure given in terms of hue, saturation, and brightness. Second, even granting their simplicity, we must distinguish between things’ resembling (or differing) in various respects and their resembling (or differing) to different degrees. Determinables like color appear to present axes along which things can be similar to various degrees but in the same respect. Compare charge. A pair of simple particles, one of which has charge -1 and the other of which has charge -2 are similar in respect of charge, though similar

²⁹ Van Inwagen 2004, p. 134.

³⁰ Compare van Inwagen 2011, pp. 390-92.

³¹ This is at least true of the “psychological primaries,” red, blue, green, and yellow. See Hardin 1984.

only to a degree (a degree falling short of perfect qualitative match). Indeed, there is no particular mystery here. But now say the two particles differ in some other way, say in color or mass. The question is how to make sense of this further difference without introducing some complexity in the intrinsic natures of the particles, two distinct qualitative axes along which they can resemble or differ to whatever degree. How could this further difference be a matter only of their standing in different relations to a Platonic object (or to anything else, for that matter)?

Now, it might be objected that inherence realists and anti-realists are really in the same boat. Theorists of both kinds allow that sometimes things just have (or lack) a certain property, full stop; there is no proper account of why the relevant property is instantiated (or not). Similarly, both views will hold that for two things to resemble in respect of being *F* is just for both to be *F*. This comparison is correct as far as it goes, but it ignores a crucial distinction between the two views: that only the inherence realist is entitled to say that a thing's having a property is a matter of how the thing is intrinsically, a matter of its internal nature. The inherence anti-realist takes a thing's having a property to be a matter of the thing's standing in some relation—a relation to an unsaturated assertible, Platonic form, predicate, or concept; a relation to other particulars (as resemblance nominalists hold); the relation of membership in a certain class (as class nominalists hold). One problem is the notion that things could stand in these relations as a matter of brute fact.³² But the problem is drastically compounded by the thought that things *differ*—again, brutally—in whether they stand in these relations. If there is nothing in a given thing that is its whiteness, it seems utterly arbitrary that it should stand in a relation to the unsaturated assertible *is white*, and so utterly arbitrary that it is similar to something else in respect of its whiteness (though, possibly, not in any other respect). Finally, the point is not that inherence anti-realists are forced to admit a primitive. Everyone is. The point is that the primitives open to an inherence anti-realist are all fundamentally relational, and so make all property possession extrinsic, when in fact it is—at least in many cases—intrinsic.

This is all I will say here in defense of inherence realism. It will be enough for my purposes if inherence realism can be seen to be plausible (if not incumbent on us), and if its connection to similarity-in-a-respect is apparent. (That connection will be clearer below when I draw on the resources of inherence realism to argue against disjunctive properties.) What follows can be understood as arguing that disjunctive properties are incompatible with inherence realism, given the truism about similarity-in-a-respect. That much can be accepted even by opponents of inherence realism.

6 Ruling Out Disjunctive Properties

³² Some relations may hold between their relata brutally. Take an external relation such as *being 1 meter apart*. The intrinsic natures of things may be entirely irrelevant to whether or not they stand in this relation. But now take an internal relation such as *being the same color as*. Obviously, whether or not things stand in this relation depends essentially on their intrinsic character. If inherence anti-realism is true, not only would property instantiation apparently fail to involve the intrinsic characters of things, but there would be no relations whose instantiation depended differentially on the intrinsic characters of things. Apparently, then, the intuitive distinction between these two kinds of relation requires inherence realism.

6.1 Higher- and Lower-Level Properties

For inherence realism, a property's being instantiated in an object will always involve the object's having some constituent, a portion of its intrinsic nature, that is the property in question. So for the inherence realist, similarity-in-a-respect will be a relation that holds between constituents of objects. For x to be similar to y in respect of being F will be for x insofar as x is F to resemble y insofar as y is F . Now, what does 'x insofar as it is F ' refer to when x is F in virtue of having some other property, G ? Do 'x insofar as it is F ' and 'x insofar as it is G ' refer to the same thing in this case? Is there just one constituent of x that counts as both its F -ness and its G -ness? This issue is relevant because if there are disjunctive properties, they might well bear some such relation to the disjunct properties. And we must identify which constituents of things are relevant to whether they count as being similar in a given respect.

For present purposes, we can simply consider two kinds of case. Let's speak generically of higher-level and lower-level properties. The crucial distinction, then, is between (a) cases in which the higher-level property *perfectly overlaps* the lower-level property in virtue of which it is instantiated, and (b) cases in which the higher-level property *does not perfectly overlap* the lower-level property. Note that if properties were abstracta, it would not make sense to speak of them as overlapping. But if inherence realism is true, then this way of speaking does make sense (though inherence realists can deny that different properties ever overlap, even when a given thing instantiates both of them). Let us say that F and G perfectly overlap in x just in case x insofar as it is F is identical with x insofar as it is G (that is, x 's F -ness and x 's G -ness are the same constituent of x). It is only when this is not the case that 'x insofar as it is F ' and 'x insofar as it is G ' can fail to co-refer.

The difference can be illustrated using determinables as an example. Take, for example, the determinable *redness*. On one view, all there is of redness in a given red thing is whatever particular determinate shade of redness the thing instantiates. So if x is maroon, then x 's redness just is its maroonness, and so 'x insofar as it is red' refers to x 's maroonness (whether that be a universal or a trope).³³ Here we have identity of the relevant constituents of x , and identity is of course the simplest case of perfect overlap. An alternative view is that determinates are in a certain way complex, containing a portion common to all determinates of the relevant determinable, and another portion that is unique. On this view, the constituent of a red object that is its redness overlaps the constituent of it that is its maroonness, but not perfectly.³⁴ It is open to a view of this kind to take 'x insofar as it is red' to refer just to the property of redness, falling short of referring to x 's determinate shade of redness. Still another view is that the determinate and determinable are completely distinct constituents of the things that have them, so that 'x insofar as it is maroon' and 'x insofar as it is red' must refer to different things.

Where would disjunctive properties fall in this scheme? Let's begin with the assumption (questioned below) that if x is $F \vee G$ just in virtue of being F , then x insofar as it is $F \vee G$ perfectly

³³ Compare Heil 2003, p. 27. Heil's view is not realist about determinables, but one could have a view of the same form according to which there are determinable properties, yet all it is for a determinable to be instantiated in something is for one of its determinates to inhere in that thing.

³⁴ Two prominent examples of such a view are Armstrong 1997 (ch. 4) and Shoemaker 2001 and 2007. For criticism of Armstrong's view, see Denkel 1998 and Pautz 1997.

overlaps x insofar as it is F . After a brief return to the notion of similarity-in-a-respect, we will have all we need for a straightforward argument against disjunctive properties.

6.2 Similarity-in-a-Respect Defined

As we have seen, the notion of similarity-in-a-respect, while intuitive, requires elucidation. According to the simplest interpretation, x and y are similar-in-a-respect just in case there is some property F that both have. If we put this together with the inherence-realist requirement that properties inhere in their bearers, we get the following, stronger interpretation:

- (S) For any things x and y , and any property, F , x and y are similar in respect of being F =_{df} x insofar as x is F is similar to y insofar as y is F .

That x insofar as x is F is similar to y insofar as y is F presupposes that x and y are both F , and so (S) encompasses the simple conception of similarity-in-a-respect, but further requires that the respects of resemblance (the F -nesses of each thing) be inherent in the resembling things. For things to be similar in respect of their F -ness, then, is for them to have constituents—portions of their intrinsic nature—in which they are similar.

Notice that (S) does not require the similarity between the relevant constituents of things to be *perfect*. For this reason, determinables would not be ruled out by the present conception of properties even if the determinable property perfectly overlaps the coinstantiated determinate. (S) allows x and y to be similar in respect of F even if x insofar as x is F and y insofar as y is F are only imperfectly similar (one is scarlet, the other maroon, say)—though of course it also allows that the similarity be perfect (so that insofar as they are F , x and y differ, if at all, only numerically).

6.3 Against Disjunctive Properties

We at last have all we need for an argument against disjunctive properties. I began this paper by noting that the question of whether there are disjunctive properties concerns what makes a property genuine. I then proposed that a putative property, F , is genuine only if (among other things) its instances are bound to resemble in respect of being F . Finally, I defined similarity-in-a-respect in distinctively inherence-realist terms, claiming that what it is for two things to be similar in respect of some property, F , is for them to be similar, specifically, in the constituents that are their F -nesses. Combining the criteria of genuineness and the inherence-realist understanding of similarity-in-a-respect, we have the following condition on being a genuine property:

- (P) There is a property of being F only if, necessarily, for any things x and y , if x is F and y is F , then x insofar as x is F is similar to y insofar as y is F .

Once again, the question before us is whether arbitrary disjunctions of properties themselves count as properties, whether the domain of properties is closed under disjunction

(as (D) above provides). So let's take two arbitrary properties, redness and roundness, and consider whether their disjunction—the alleged property of being red-or-round—satisfies (P). Plainly, it does not. According to (P), there is a property of being red-or-round only if, necessarily, any two things that are red-or-round are similar insofar as they are red-or-round. But a red thing that isn't round and a round thing that isn't red are not similar in this way. The first, just insofar as it is red-or-round, is red, with no trace of roundness. The second, just insofar as it is red-or-round, is round, with no trace of redness. And rednesses do not resemble roundnesses. A red thing *just insofar as it is red* never resembles a round thing *just insofar as it is round*. And so it will be for many arbitrary disjunctions of properties. Any pair of properties can be disjoined, but not any pair will present a way for things to be similar.

Before I offer further defense of this argument, note that if (P) is correct, disjunctive properties are not the only alleged properties to meet demise. Consider the paradigmatic mere Cambridge property of being such that Obama is president. Is it necessary that any two things such that Obama is president be similar insofar as they are such that Obama is president? In this case, it is not even clear that the expression 'x insofar as it is such that Obama is president' refers to anything (even assuming we establish a referent for 'x'). It is at least the case that there can be no such property of individual persons. There is nothing in me alone, no constituent of me, that is my being such that Obama is president. Such an alleged property would make no demands on the intrinsic nature of its instances. An electron across the galaxy is as suited to be such that Obama is president as is Obama himself. If properties are unsaturated assertibles, by contrast, there is no problem about there being such a property. The assertible *is such that Obama is president* can be said of things, and truly at that. So, again, it is an inherence-realist conception of properties that rules out mere Cambridge properties.

6.4 Disjunctive Properties as Higher-Level Properties

I will assume that no one is prepared to say that a red thing just insofar as it is red is similar to a round thing just insofar as it is round. But there might be another way to render disjunctive properties compatible with (P). The defender of disjunctive properties might claim that what is relevant is not the one thing insofar as it is red and the other insofar as it is round, but rather the two insofar as they are red-or-round. That is, inherence realism by itself does not force us to deny that there is a constituent in a red thing that is its red-or-roundness, and that this constituent is different from the one that is the thing's bare redness. Compare determinables. As discussed above, one view of determinables entails that, for example, the maroonness and redness of a maroon thing are two different constituents of it, constituents that may not overlap. On this view, one might even think that two things that are different shades of red are *dissimilar* insofar as each is some determinate shade of red, and similar only insofar as they are red.³⁵ But if there can be a property of redness even though red things insofar as they are maroon do not resemble other red things insofar as they are crimson, why can't there be a property of being red-or-round?

This move ultimately sacrifices the disjunctivity of the properties it seeks to defend—at least, assuming inherence realism. Suppose we allow that there is something in a red thing,

³⁵ Compare Armstrong 1978b, p. 117.

besides its redness, that is its red-or-round-ness, and further, that it is this red-or-round-ness that the red thing shares with any round thing. (This view is not at all plausible, but it is instructive to consider it anyway.) The question now is why we should regard red-or-round-ness as disjunctive. It is not disjunctive because it is somehow composed of its disjuncts (unless, somehow, every red thing—being red-or-round—is bound to have some roundness in it, which seems absurd). The natural next thought is that this property is disjunctive because some disjunction such as the following is true: every red-or-round thing is red or is round. But we can see in the case of quadrilaterality that this is not sufficient for disjunctivity. Every quadrilateral thing is square or trapezoidal or ... But even so, quadrilaterality is not disjunctive. Moving on, one might say that red-or-round is disjunctive because there is a disjunction of properties *in virtue of which* it can be instantiated. But again, this fails to suffice for disjunctivity. Determinables may be like this: it may be that every red thing is red in virtue of being maroon or red in virtue of being scarlet or... But this does not make redness disjunctive. While there is a disjunction of the determinates in virtue of which redness can be instantiated, there is nevertheless a non-disjunctive common thread of similarity running through all the red things just insofar as they are red. Or, at least, if there are determinable properties, this is how inherence realism requires them to be.

Let me close this section with a dilemma. If there were disjunctive properties, either they would perfectly overlap their disjunct properties, or they would not. For example, in the case of being red-or-round, the redness and red-or-round-ness of a thing perfectly overlap in the thing, or they do not. If they perfectly overlap, (P) disqualifies disjunctive properties, because the red-or-round-ness of a red thing is nothing like the red-or-round-ness of round thing. If they do not perfectly overlap, then (P) may be met by insisting that the red thing and the round thing are similar in something beyond the redness of the one and the roundness of the other: their red-or-round-ness. But if this is how the property in question works, disjunctive label aside, there is no good metaphysical reason for thinking of it as disjunctive. It is no longer the case that its claim to being a genuine property is merely that it is a disjunction of genuine properties. Its claim to being a genuine property is the same as any other: it is a constituent of things, and insofar as any two things have it, they resemble.

7 Determinables and Functional Properties

Does (P) rule out functional properties in the same way it rules out disjunctive ones? Functional properties are often characterized as *second-order* properties, where to have a second-order property is *just* to have some property or other that meets a certain condition (say, playing a certain causal role).³⁶ The typical examples of such properties seem to involve a great deal of dissimilarity among their instances, and this feature is supposed to be a virtue of functionalism because it is precisely what enables functionalism to accommodate multiple realizability. The property of being in pain, for example, is supposed to be realizable at least in principle (even if this is nomically impossible) by properties of silicon-based Martian brains, just as it is realizable by the flesh-and-blood properties of the human brain. There is not clearly any guarantee that these various realizers of pain would be similar at all. What is more, many will

³⁶ Compare Kim 1998, p. 20. See also Putnam 1970.

have sympathy for the following general reason to suppose that realizers of a common functional property need not be similar at all: that any distinct existences can, in principle, be (or fail to be) causally related. If this is right, then no matter how intrinsically different two properties are, they can in principle play the same functional role. And in turn, things insofar as they have a given (alleged) functional property are not guaranteed to be similar at all. (P) thus seems to threaten functional properties.

There is an important presupposition motivating these worries about functional properties: that conferring similar causal powers does not itself count toward similarity. To see the point, let's revisit the objection in slightly different terms. Let F be some functional property, and R_1 and R_2 two possible realizers of it. For the sake of argument, let's assume that there are no non-causal similarities—what we might call *qualitative* similarities—between R_1 and R_2 .³⁷ Let's assume further that a thing just insofar as it has a functional property is the thing just insofar as it has some realizer of that functional property (i.e., the constituent of the thing that is the functional property just is the constituent that is the realizing property).³⁸ If F is to count as a property, then by (P), if x and y are both F , x insofar as it is R_1 must be similar to y insofar as it is R_2 . Therefore, if only qualitative similarities count, the alleged property F is no property at all.

The question we now face is why only non-causal similarities should count. Inherence realism is committed to the view that the kind of similarity involved in the sharing of a genuine property must hold between intrinsic constituents of the things that have the property. The ultimate question, then, is whether causal powers are intrinsic constituents of things (as opposed to something like relations between categorical properties possible effects). The important point for now is that (P) does not by itself force on us any particular metaphysical account of powers.

On one influential view, powers are constituents of properties (which in turn are constituents of objects). This is the metaphysical framework underlying the subset account of realization, defended prominently by Sydney Shoemaker.³⁹ On this view, one property realizes another just in case the constitutive powers of the realizee are a proper subset of the constitutive powers of the realizer. Both functional properties and determinable properties are realized properties on this account. Every realizer of a realized property, on this view, will share the set of powers constitutive of that property. However much the various realizers differ in other powers, then, the things that instantiate them are bound to share certain powers—and on the present view of powers, bound to have certain resembling constituents. Whether or not this view of powers is ultimately plausible, it illustrates why (P) by itself does not rule out functional properties.

³⁷ For the moment, I am assuming that we can cleave apart qualities and causal powers in this way. For a contrary view, see Heil 2003 and Heil 2004.

³⁸ This conception of functional properties could be jettisoned, thereby providing another way for (P) to be compatible with functional properties. This move comes with a cost, however. It is very attractive (for reasons of economy) to think that all it takes to have a functional property is to have some realizer of it, so that the functional property presents no “addition of being” to the property that realizes it. (I take this to be essential to the conception of functional properties as second-order properties.)

³⁹ Shoemaker 2001 and 2007. See also Wilson 2011. For criticism, see Audi 2012.

8 Conclusion

There is an intimate connection between properties and similarity. Two things share a property only if they are similar, and what is more, similar in respect of that property. I have argued that properties inhere in their instances, so that similarity-in-a-respect should be understood as similarity between constituents of things. And I have argued that arbitrary disjunctions of properties fail to guarantee similarity-in-a-respect so conceived, and hence fail to be genuine properties. The conclusion that there are no disjunctive properties is important in its own right, but is especially important as a special case of the question of what makes a property genuine. An adequate theory of properties must answer this question, and I hope to have made progress toward an answer.⁴⁰

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