

## Collapsing the Substance-Property Distinction

### I. Introduction

Normally, the fragility of a glass and its microscopic characteristics are taken to be two different types of properties. The first is the glass's disposition (i.e., a tendency of the glass to behave in certain ways given certain circumstances) to shatter when struck or dropped on a hard surface, and the second is a quality of the glass (i.e., a way the glass is in itself without appeal to its behaviors). These two properties are closely related to one another. The fragility of the glass is dependent upon the glass having its particular microstructure. Physicists are hardly content to appeal to fragility itself to explain the shattering of the glass; when the glass is actually struck and broken, the causal explanation for this breaking is to be found in the qualitative facts about the glass—its composition, molecular bonding, and the rest. The causal basis for the fragility of the glass, then, is its particular microstructure. Yet, as intimately tied as these two properties of the glass are, they seemingly come apart. It appears that there is a possible world with different natural laws where there is a qualitative duplicate of the glass that is not fragile. I, however, believe that no such possible world exists, and there have been various convincing arguments in the literature in support of this claim.<sup>1</sup> Perhaps the most forceful position one might take is to identify dispositions with their qualitative bases. Certainly, if the two are identical, then they cannot come apart. This is the position defended by John Heil (2004).

The distinction between qualities and dispositions is analogous to that between substances and properties more generally, and it is the latter that is my focus in this paper. We shall call the two-category ontology that envisions substances and properties as entities in their own rights the 'classical view'. I wish to provide an alternative possibility. If Heil is right and dispositions are identical

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<sup>1</sup> See Blackburn (1990), Contessa (2015), Heil (2004), Martin (1994), McKittrick (2003), and Shoemaker (1980).

with their qualitative bases, then a clean, parsimonious possibility becomes available: properties are identical with their substances. My aim in this paper is to defend that this view is highly plausible. My objective is not to provide a decisive argument in favor of this identity; instead, I offer it as a viable alternative worth taking seriously.

My proposal depends upon an identity being drawn between qualities and dispositions. Elizabeth Prior, Robert Pargetter, and Frank Jackson set forth the canonical view on this matter in their seminal (1982) paper, where they argue that no such identity holds. Accordingly, I will begin by addressing their arguments. It is in response to the theses Prior, Pargetter, and Jackson defend that Heil presents his alternative, and so I will draw from his work in setting the stage for my own views. I will then move into the domain of substances and properties. My arguments will proceed from a thought experiment concerning the stipulated behaviors of some simples. I will pit the classical view against my proposed view by considering what each would have to say about how said simples resemble one another. Finally, I'll consider some objections that can be raised against my position and the kinds of moves we may have to make in order to keep the proposal tenable.

## II. Qualities and Dispositions

Prior, Pargetter, and Jackson provide what are arguably the standard commitments on qualities and dispositions. They offer us three theses. The first thesis states that all dispositions have causal bases (Prior, Pargetter, and Jackson 1982, p. 251). That is to say, for any particular disposition of some object, there must be some quality of the object that is causally responsible, alongside other relevant stimulus conditions, for the disposition's manifestation. Consider the fragile glass. We might say that what it means for the glass to be fragile is for it to be the case that it will break if struck. Some property

of the glass must be the causal basis for its dispositional character. The causal basis provides us with a causal explanation of the manifestation of the disposition to shatter; without it, there would be nothing to appeal to when searching for an explanation for why the glass shattered.<sup>2</sup> This must hold for all dispositions, since all dispositions will have some stimulus conditions that must be fulfilled in order for the disposition to follow through.

The second thesis tells us that dispositions must be distinct from their causal bases (Prior, Pargetter, and Jackson 1982, p. 253). The argument in defense of this concerns the transitivity of identity. Assume that dispositions are identical with their causal bases. Now imagine two fragile objects: one made of glass and the other of porcelain. The glass object is fragile because it is made of glass, and the porcelain object because it is made of porcelain. If fragility is identical with its causal basis, and if it's true that the glass and porcelain objects are both fragile, then it follows that porcelain and glass are identical. Yet, porcelain and glass are not identical. As such, it cannot be the case that fragility is identical with its causal bases. But this is too hasty. The mere fact that we call the fragility of a glass and the fragility of a porcelain teacup by the same name need not commit us to the belief that they actually are the same disposition. Indeed, this is what Heil argues (Heil 2004, p. 247).

Consider an analogy. We may be presented with one thousand white vases. Closer inspection could reveal that the vases are not exactly the same shade—perhaps some are closer to a cream color, while others are slightly grayer. But it would be overly demanding to insist that we name every single shade; it is better to simply capture them all under the term 'white'. Nonetheless, it is *true* that the vases all *really are* different colors. They are different shades of white. And if we identified the whiteness of each vase with the molecular structure of the paint coating them all, we would not be led to conclude

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<sup>2</sup> Jennifer McKittrick provides an argument for bare dispositionality, though it seems that the kinds of dispositions that could be bare are far more fundamental than fragility (e.g., charge). See McKittrick (2003).

that the material on the surfaces of all of the vases must be of the same type. Indeed, the whiteness of one vase, however apparently similar to the whiteness of another, is not the exact same color. The same holds true for the fragility of the glass and that of the teacup. They may be apparently similar, and it would be taxing to ask that we utilize a different term for every variety of fragility, but they are actually different (dispositional) properties. Given that we conceive of the fragility of the glass as a different disposition than the fragility of the teacup, we can easily avoid identifying glass with porcelain or any other material responsible for similar shattering events.

The final thesis defended by Prior, Pargetter, and Jackson is that dispositions themselves are causally inert (1982, p. 255). This stems from the intuition that overdetermination, while harmless in small doses, is fatal if overindulged. When considering the shattering of a glass, all we need to look at is the causal basis of the object and the event that it was caught up in: all of these physical facts are sufficient for providing a complete explanation of the shattering. The disposition to shatter is another property of the glass, but we know by the second thesis that it is distinct from its causal basis, and, additionally, it need not come up in an explanation of the shattering event. If it did, then there would be two sufficient causes for the shattering. Thus, the disposition is causally inert.

Heil remarks that the thought of causally inert dispositions is absurd, and I agree. It is strange to go through the trouble of arguing for the genuine existence of dispositions just to keep them entirely out of the equation.<sup>3</sup> The third thesis tells us that dispositions play no role in the causal story that explains, say, a glass shattering. Yet, if this is the case, then we have little reason to call the disposition expressed by the counterfactual “were the glass struck, it would break” a disposition at all. If the causal bases prove sufficient in providing a satisfying explanation of the shattering, then we can just look at

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<sup>3</sup> McKittrick, who goes a very different route from Heil, gives reason to believe that dispositions are causally relevant in “The Bare Metaphysical Possibility of Bare Dispositions” (2003) and “Are Dispositions Causally Relevant?” (2005).

the causal bases and draw an identity—we can call the stuff that matters the disposition, and we should (Heil 2004, p. 231).

It isn't all that strange to think of qualities and dispositions as identical. A baseball has the power to roll and make semi-spherical concave impressions in a lump of clay in virtue of its sphericity (Heil 2005, p. 346). The sphericity of the baseball is not some detached property that could come apart from this particular power; it is built into being spherical (and built into being made of clay) that certain dispositions will obtain, and this is true in all worlds.

The usual objection to this is that an object in a different world could have the same causal basis but lack the disposition. To return to the case of the glass, it seems to be true that we can imagine the glass having the same microstructural qualities, being knocked over, and failing to break. But this is just to imagine a world in which the property we're looking at is a different property. Let's look closely at what exactly it is that we're being asked to imagine. To say that a glass has a certain microstructure is to say, roughly, that its microscopic components bear certain relations to one another. Molecules are bonded to one another in such a way that gives rise to the shape, color, and fragility of the glass. These bonds are presumably held together by certain fundamental properties such as charge. When the glass gets struck, some of these bonds are broken, meaning that the strength of the bonds was overcome by some external force. What, then, would it be to imagine this exact same microstructure without the fragility that it gives rise to in our world? It would be to say that the exact same molecules bonded in the exact same ways are present, yet they fail to behave in the same ways when struck. But this is just to deny that the exact same bonds hold. Part of what it means for the glass to have the same microstructure in both worlds is for the bonds to act upon one another in the same ways, otherwise

we're dealing with a different microstructure.<sup>4</sup> To believe that two qualitative duplicates could behave differently in different worlds under identical circumstances is simply to deny that they are qualitative duplicates.<sup>5</sup> An electron that is disposed to attract negatively charged particles could be of only positive charge, even if in some other world it bears some other name.

Given the above, the possibility that qualities are identical with their dispositions is a live option. If the two are identical, then, as said before, we can collapse things further. I now shift my attention to the substance-property distinction. My hope is to defend the plausibility of the claim that substances are identical with their properties. Before progressing, it is worth taking a moment to spell out precisely what I mean. The claim is not that “substance” and “property” *mean* the same thing; clearly, there exists a conceptual distinction. But conceptual distinctions do not entail metaphysical ones—the terms “water” and “H<sub>2</sub>O” pick out different concepts, but they refer to only one type of thing. Rather, to say that a substance is identical with some property, *x*, is to say that *x* exhausts its nature. To be that substance is to be *x* without remainder, and to do away with *x* is to annihilate that substance. Furthermore, I am not promoting the elimination of either substances or properties. A substance is a particular entity, and the view I defend does not deny them existence, so the term “substance” has a referent. A property is the character of a substance—the way a substance *is*—and, on my view, substances are ways.<sup>6</sup> So, the term “property” also has a referent. The surprising bit is only that both terms are satisfied by the same referent. The nature of substance *x* is its character—the way it

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<sup>4</sup> Note that appealing to a difference in laws does little to help, for if the laws between the worlds are different, then so are the bonds and therefore the qualities and dispositions.

<sup>5</sup> Prior, Pargetter, and Jackson utilize this exact same line of reasoning on page 252 of their (1982) paper in defending their causal thesis, with the only difference being that the qualitative duplicates they're concerned with occupy the same world. Yet, their intuitions are driven purely by the characteristics of the objects at issue.

<sup>6</sup> That substances are ways is an ambiguous phrase, but I do mean to express both propositions: (1) substances are identical with their ways, and (2) substances are propertied.

is—and the way  $x$  is is all there is to its being substance  $x$ . If you remove the substance, you remove the character; remove the character, remove the substance.

### III. Collapsing the Substance-Property Distinction

Imagine the following scenario. There are two worlds,  $w_1$  and  $w_2$ . Each world is a vacuum in which there are only two simple substances present. In  $w_1$ , the two simples present repel each other; in  $w_2$ , the two simples present attract each other. To paint a clearer picture, we can imagine that both worlds run like so. In  $w_1$ , the two simples start off one spatial unit apart (we can posit that these are the starting conditions of the universe, so there was nothing prior to this), and they instantly accelerate away from one another. In  $w_2$ , there are two simples that also start off one spatial unit apart, and they instantly accelerate toward each other, meeting in the middle. We'll further posit that the explanation for the behavior present in  $w_1$  is repulsion and that in  $w_2$  attraction. That is the full constitution of each world. Now consider the following question: what do the constituents of the two worlds have in common?

The first response one might offer is that both worlds are wholly dissimilar. This is to concede that properties and substances must be identical. If there is nothing that holds the same between both worlds, then all there is to consider are the properties of attraction and repulsion. Ex hypothesi, we cannot say that we are dealing with a substanceless world. Yet, if these are worlds with two substances present in each and we say that there are no similarities between the worlds, then properties must be identical with their substances; otherwise, there would be a similarity. One might object that this line of reasoning presupposes that to distinguish between substances and properties is to treat bare substances as homogenous, thereby fabricating a similarity between  $w_1$  and  $w_2$ : the substances

themselves. Perhaps one could argue that this is unwarranted. Consider the following redescription of our two worlds: w1 contains substances A and B, which repel, and w2 contains substances C and D, which attract.<sup>7</sup> A and B, this redescription hints, are different *types* of substances from C and D. Thus, we seem to have a scenario in which w1 and w2 are nothing alike, and yet we are not compelled to identify substances with their properties. But I think this description is misleading. We are led away from the identity claim because we have used different labels for the substances in each world, but the difference in label is only that—a difference in *label*. It does not entail any metaphysical difference between the substances. So, we must now ask: can we find a difference between the substances of w1 and those of w2? I argue no, at least not without conceding substance-property identity.

Consider: Either substances are ontologically distinct from their properties or they are not. If they are ontologically distinct, then there is nothing about the substances in w1 in themselves to distinguish them from those in w2. Their properties are different, but they themselves are all the same type of thing: bare particulars.<sup>8</sup> If they are not distinct, then the metaphysical line between substance and property is blurred. Could we make use of some partial identity? No, though even if we could, it wouldn't help. Partial identity requires parts, and the substances we're considering are simples and thereby have no parts. Even if we drew a partial identity, we would still have a similarity between the worlds: the parts of the substances that are not identical with their properties. Only total distinctness or total identity are coherent, and in this scenario the only way to claim that nothing holds the same between both worlds is to buy identity. So, I conclude that to claim that w1 and w2 are nothing alike is to concede that substances are identical with their properties. But, of course, we needn't make this claim.

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<sup>7</sup> I am grateful to [redacted] for this objection.

<sup>8</sup> There is more to say about the similarities between bare substances; I return to the point a little later on.



An alternative response one might offer is that there is something that is the same between both worlds: the substances themselves. It might be the case that these substances have different properties, but the substances themselves, without reference to their properties, are what holds the same between the worlds. Thus, w1 and w2 are different insofar as the entities in w1 feature repulsion and those in w2 feature attraction, but both are similar in that the entities of w1 and w2 are the same type of thing: substances. But what is it about the substances in virtue of which these entities are propertyed? There are two responses that one might offer. The first is that substances are the kinds of things that are disposed to be propertyed; the second is the contradictory: that there is nothing in virtue of which substances are propertyed, meaning that their role may be something like being the loci of properties. Let's consider each of these responses in turn.

If we accept that substances are the kinds of things that are disposed to be propertyed, then we run into different problems depending on how we cash this out. One way is by saying that substances naturally come along with a disposition that allows them to grab onto other properties, so to speak.<sup>9</sup> Such a disposition, however, would be a further property, and we need to account for what allows a substance to have that disposition. We can see the problem now: this will result in an infinite regress.<sup>10</sup> For every dispositional property that needs to be latched onto a substance, we need a further dispositional property that allows for this to happen, and so on ad infinitum.

We don't have to accept that substances must have properties tacked onto them pincushion-style in order to allow for substances to be propertyed. We could cash out this dispositionality of substances by saying that the substances themselves are inherently disposed to have

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<sup>9</sup> This language is more illustrative than substantive. Whether they 'grab onto', 'give rise to', 'come along with', etc., isn't essential to my arguments here.

<sup>10</sup> A similar regress problem is mentioned by Blackburn in "Filling in Space" (1990) for laws concerning properties and dispositions. These regresses are reminiscent of Bradley's regress.

properties. It is simply in their nature. The problem, however, is that this erases the ontological line between substance and property once again and thereby concedes the point. Remember that we are operating under the assumption that dispositions and qualities are the same thing. Thus, to say that a substance can be inherently dispositional is the same as saying that it is inherently qualified.

Furthermore, as just mentioned, the property isn't merely *tacked on*, the relation between the two must be more intimate. We cannot have partial identity, and I argued above that total distinctness results in an infinite regress. Therefore, we have total identity. The substance just is its quality/disposition. Yet, if we're allowing for inherently propertyed substances, then it would be ad hoc to gerrymander substances such as to allow only some of them to be inherently dispositional while others are distinct-from-yet-attached-to their properties. . If it is possible for any substance to be inherently propertyed, then it is possible for every substance to be inherently propertyed. So there's no good reason to posit that substances must have a dispositional property that allows them to possess further properties.

These problems follow only if we say that substances must have some dispositional character that allows them to have their properties. Another avenue we can pursue is to say that substances truly are bare particulars. There is nothing about substances that makes them have properties; this is just the way the world is. My first concern is just that—that this is just the way the world is. A substance is nothing more than the locus as which properties manifest themselves. It is of the structure of the universe that substances are where the action happens. This raises the question of the possibility of property-less substances. Yet this seems like a peculiar consequence. What would a property-less substance be like? Clearly, like nothing at all! Yet, this is absurd. This would mean that substances are neither homogenous with one another nor heterogenous; neither solid nor penetrable; without shape,

size, or any other mode of being; incapable of cause, and incapable of effect. Such an entity is unworthy of any kind of existence. It may be theoretically possible to live with empty substances—the world would look the same—though it's unclear that our ontology would be meaningfully different or better off.

My second concern is just that of theoretical parsimony. It seems that the addition of a substance that has no intrinsic character whatsoever that could even allow it to be disposed to have properties just results in the creation of an excess entity in our ontology. The view I forward—that substances and properties are one and the same—can allow us to have a locus of property-having without positing excess entities. Furthermore, such a view would do away with empty substances that simply float around hoping to be like something.

One final concern for the view of substances in general is that of likeness. We cash out similarity in terms of properties. Well, when we first started this section, the question that was posed was: what is the same between both  $w_1$  and  $w_2$ ? We saw that saying that nothing is the same is to concede the point. Yet, to say that something is the same is to say that substances can be similar. It seems strange, though, to speak of substances as being similar or different if they have no properties, except perhaps in the degenerate case of having no properties in common by virtue of having no properties at all. The only way we can make sense of saying that the substances are similar is by saying that they have all of the same properties; namely: none. Yet, two things that are alike in not being like anything don't really appear to be things at all. It would be no different from assuming that there is no distinction between substances and properties, looking at both of the worlds I presented, and saying "these things are similar in that they have nothing in common" or "the thing that they share is this thing that is like nothing at all."

Given the above, I submit that identifying substances and properties is a plausible view worth taking seriously.

#### IV. Potential Concerns

One might object that substances cannot be identical with properties on the grounds that this would lead to absurd consequences when considering the possession of multiple properties. Objects are more than one way. This issue is analogous to the one addressed by Prior, Pargetter, and Jackson in defending their distinctness thesis. The worry goes like this. Suppose there is some substance that has two properties: redness and cubicity. By the law of transitivity, it would appear that we need to draw an identity between redness and cubicity. But, this is clearly absurd, and so we have reason to hold properties as distinct from their substances.

Note, however, that the view on offer is not that *objects* are identical with their properties. We're specifically concerned with substances, and it may be the case that not all objects are substances. Indeed, this is the view that Heil endorses. Objects are propertied only derivatively, and the true bearers of properties—substances—are the fundamental constituents of macroscopic objects (Heil 2012, p. 286). Thus, tomatoes may be red, but the redness of the tomato is explained in terms of the properties of photons, molecular bonds, reflection, refraction, etc. The properties of tomatoes on this view are not genuine properties. The only things that are truly propertied are the simples that constitute the tomato, whatever they may be (perhaps particles). This is not to say, however, that the properties that we're familiar with do not exist at all. Surely, there are things that are red, even if simples themselves cannot be red. It is just that the redness of this tomato is fully explained in terms of the composing parts of the tomato and how those parts interact. A tomato is red, after all, because of the way photons

interact with the microstructure of the tomato, to ultimately reflect photons that will collide with our retinal cells to cause some phenomenal experience. The properties with which we are familiar can be explained by appeal to lower-level properties. It may turn out that, on this view, properties are truly scarce, and it takes only a few properties to create the complex world we're familiar with.

So, the simple response to this worry is to say that substances can be only single-propertyed. First, I believe that whatever the fundamental properties may be, they won't be anything like cubicity. Perhaps at the lowest level, all we can expect to find is charge, mass, and spin, though it isn't clear that these are necessarily different dispositions as opposed to a single disposition with varying manifestations.

The second concern is this: how can it be that single-propertyed substances can have varying behaviors? Furthermore, how can we account for macroscopic complexity given such simple particulars? In response to the first question, I appeal to the identity between dispositions and qualities. Whatever the substances may be, it's likely that there's more than one property at the bottom level. If this is true, then we can expect different substances to interact differently with other substances. For instance, an electron might have only the property of negative charge, and a proton might have only positive charge, but it is these very selfsame properties that result in different behaviors. An electron is disposed to repel other electrons and attract protons. The singular property of negative charge gives rise to two different behavioral manifestations. Furthermore, the negative charge, spin, and mass of the electron could possibly all be accounted for by a single property, some *x*-factor, since mass is nothing more than a certain resistance to acceleration, and it may very well be that this *x*-factor of the electron that's no more charge than it is mass is responsible for these varying behaviors. This provides part of the response to the second question. Given that we have enough kinds

of substances at the bottom level, we can generate an exponential number of behaviors that can account for the multitude of properties that we're familiar with at the macro level.

One last problem I consider is that we don't have an explanation for the properties of substances that equals the explanation for macro objects. When we have a red tomato, we can appeal to its components to explain why the tomato is red. Yet, it appears that at the ground level, we run out of explanation. We no longer have anything that tells us what it is about a particular substance that makes it propertyed as it is. Here, I must simply say that I don't have a response. I don't know what it is about the fundamental stuff of the universe that makes it as it is. Yet, this is not merely a problem for my view. Sooner or later, all of these views hit metaphysical bedrock, and I believe that is what is occurring here. A view about tropes will not tell us why a red trope is red and not blue; a theory of universals will not tell us why the universals are as they are. Similarly, this view cannot tell us why any particular substance is the way that it is, but it can tell us how it is that substances come together to give us the world around us.

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