What is a Negative Property?

SAM BARON, RICHARD COPLEY-COLTHEART,[1]
RAAMY MAJEED AND KRISTIE MILLER

Abstract
This paper seeks to differentiate negative properties from positive properties, with the aim of providing the groundwork for further discussion about whether there is anything that corresponds to either of these notions. We differentiate negative and positive properties in terms of their functional role, before drawing out the metaphysical implications of proceeding in this fashion. We show that if the difference between negative and positive properties tabled here is correct, then negative properties are metaphysically contentious entities, entities that many philosophers will be unwilling to countenance.

1. Introduction

There has been a resurgence of interest in negative properties.[2] For example, in a recent paper Zangwill argues that negative properties

[1] This paper is dedicated to the memory of Richard Copley-Coltheart (1964–2000). Richard was born and grew up in Sydney, Australia. His PhD thesis, which he was writing at the time of his death, examined the logical and metaphysical notions of identity. Central to his analysis was a discussion of negative states of affairs. His final conclusion was that identity statements posit negative facts about the world and he was developing a system of formal logic to demonstrate the consistency of his thesis. Richard's passing was a loss for Australian philosophy and he is sorely missed by all who knew him.

[2] J. M. E McTaggart, *The Nature of Existence*. (Cambridge: Cambridge University Press, 1921), § 62; D. M. Armstrong, *A Theory of Universals*. (Cambridge: Cambridge University Press, 1978), 25–27; James Van Cleve, Supervenience and Closure. *Philosophical Studies* **58** (1989), 225–238; Trenton Merricks, *Truth and Ontology*. (New York: Oxford University Press, 2007), 43–59; George Molnar, 'Truthmakers for Negative Truths', *Australasian Journal of Philosophy* **78** (2000), 72–86; Nick Zangwill, 'Negative Properties, Determination and Conditionals', *Topoi* **22** (2003), 127–134; Zangwill, 'Negative Properties', *Noûs*, **45** (2011), 528–556. This literature is related to work on negative facts. For discussion of negative facts, see Stephen Barker and Mark Jago, 'Being Positive

doi:10.1017/S0031819112000526 © The Royal Institute of Philosophy, 2013

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

are less real than positive properties, thereby reviving the ancient notion of 'degrees of reality'.[3] Similarly, Armstrong argues against the existence of negative properties on the grounds that such properties lack causal powers.[4] But while discussion of negative properties is underway, it has thus far proceeded without a commonly agreed-upon understanding of the difference between negative and positive properties. Indeed, when pressed for an account of the difference, philosophers tend to demur. Zangwill, for example, writes:

> 'I shall not define what it is for a property to be positive or negative. I rely on an intuitive sense of which properties are NPs. I shall not attempt to give a non-circular definition of negativity. Some philosophers say that they do not understand the distinction between PPs and NPs, and that they have no intuitive grasp on which is which. I don't believe them! Perhaps they can view this paper as an attempt to give sense to this distinction.'[5]

About Negative Facts', *Philosophy and Phenomenological Research*, (forthcoming); Colin Cheyne and Charles Pigden, 'Negative Truths from Positive Facts', *Australasian Journal of Philosophy* **84** (2006), 249–265; Julian Dodd, 'Negative Truths and Truthmaker Principles', *Synthese* **156** (2007), 383–401; Stephen Mumford, 'The True and the False', *Australasian Journal of Philosophy* **83** (2005), 263–269; D. M. Armstrong, *Truth and Truthmakers*. (Cambridge: Cambridge University Press, 2004), 79–80; Armstrong, 'Reply to Simons and Mumford', *Australasian Journal of Philosophy* **83** (2005), 271–276.

[3] Zangwill, 'Negative Properties', 528–556.

[4] Armstrong, *A Theory of Universals*, 25–27. Armstrong argues that although we say things like 'lack of water caused him to die', which seems to impute to the negative property *not being hydrated* certain causal powers, we should not take such remarks seriously. This is because we do not generally treat claims like 'lack of poison caused him to remain alive' with the same seriousness as 'lack of water caused him to die' and yet *prima facie* they make the same kind of causal claim. Moreover, Armstrong argues that science has already provided us with a rough guide to the kinds of *positive* properties and relations that exist and the properties and relations identified by science are sufficient to explain the causal outcome of any situation. So there is no *need* to suppose that there are negative properties with causal powers. Following David Braun, 'Causally Relevant Properties', *Philosophical Perspectives* **9** (2005), AI, Connectionism and Philosophical Psychology, 447–475, we disagree with Armstrong on this point: negative properties (if there are any) *do* have causal powers (see §3 for a full account of the causal powers of negative properties).

[5] Zangwill, 'Negative Properties', 531.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

We are sad to say that we are in the class of philosophers that Zangwill has in mind. We lack a pre-theoretic understanding of the distinction between a negative and a positive property. Moreover, we find nothing in Zangwill's work that might help us to resolve this conceptual shortfall. True, Zangwill tells us that negative properties are less real than positive properties, but that does not help us to grasp what negative properties are. If one concedes that reality comes in degrees one might find it plausible that holes are less real than hole-linings, that non-fundamental entities are less real than fundamental entities, that shadows are less real than shadow casters. But that some phenomena are less real than others is of no help in distinguishing positive from negative properties *per se*, as opposed to the difference between any two things that differ in their respective degrees of reality.

That there is no account of the distinction between negative and positive properties on offer stymies any progress that might be made in this area, since there is no guarantee that all parties to the debate are talking about the same thing. Worse than this, it might turn out that there is no way to make sense of the distinction between negative and positive properties and so all discussion of the topic is moot. In this paper we attempt to differentiate negative from positive properties. We go on to suggest that a proper understanding of the difference reveals that negative properties are metaphysically contentious entities, entities that many philosophers are unlikely to countenance. That negative properties are contentious posits is something that ought to be addressed before discussion in this area continues any further.

This paper is structured as follows. In §2 we discuss current attempts to differentiate negative from positive properties and in §3 we differentiate negative from positive properties in terms of their functional roles. In §4, we draw out the metaphysical consequences of the difference so construed and in §5 we conclude by considering the implications of what we say here for the debate surrounding negative properties.

2. Defeating some proposals

Before considering options for differentiating negative from positive properties,[6] it is important to identify three desiderata that should be

[6] What is a property? This is a thorny issue. For present purposes we conceive of properties as the entities that ground causal powers and similarity relations. Our discussion is therefore framed in terms of a

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

met. First, the difference between negative and positive properties should be capable of supporting metaphysical seriousness about that difference. This is to say that any pair of definitions of negative and positive properties must be such that according to those definitions negative and positive properties are metaphysically distinct kinds of entities. It is not the case that there is just one kind of property and there are, for instance, two different ways of characterising that one kind of property: one negative and one positive. It is not that negative properties are just positive properties 'in disguise' (or *vice versa*).

Second, the manner in which the distinction is drawn should be capable of supporting ontological seriousness about negative and positive properties. In general, one is ontologically serious about P, just in case one's definition of P does not rule out that P exists. Thus one should not rule out, by definition, the existence of either negative or positive properties. Third, any way of characterising the difference between positive and negative properties ought to be sensitive to our intuitive judgements, if we have any, regarding whether a property is negative or positive. This is not to say that our intuitions are not defeasible, only that *ceteris paribus* an account that preserves more of our intuitive judgements is better than one that does not, and that our intuitions are data that should either be accommodated or explained away.

Taken together, these desiderata support a non-deflationary approach to the difference between negative and positive properties. A deflationary approach, by contrast, has it that there is a class of entities – the properties – all of which have the same intrinsic, internal, or essential nature *qua* properties. But when we come to try and pick out, or characterise, those properties there are various ways to do so. Some of those ways involve characterising a certain property in a negative manner while others of those ways involve characterising a property in a positive manner. If some properties are more naturally characterised the former way, we call them negative properties, and if

---

metaphysically substantive conception of properties, rather than say a conception according to which properties are mere shadows of language and where their ontic status can be determined by examination of our predicative practices given our actual languages (or our predicate practices given any possible language). Although we adopt this position, we do not defend it here and nor do we have to: assuming a metaphysically substantive view of properties is needed to make sense of the present debate surrounding negative properties.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

others are more naturally characterised the latter way, we call them positive properties. This, however, reflects nothing substantive about the nature of the properties themselves. We do not doubt that in this sense there are positive and negative properties. But this sense does not support metaphysical seriousness.

Each of the above desiderata are motivated by the current debate over negative properties which takes for granted a robust, metaphysical distinction between negative and positive properties; assumes that the question of whether negative properties exist is, at the very least, an open one; and assumes that our intuitions are some sort of guide to which properties are which. Our aim is to try to make sense of the notions of a positive and negative property as these are currently deployed in the debate. One might, of course, be sceptical of the current debate precisely because it takes seriously the distinction between negative and positive properties. Indeed, should it turn out that no pair of definitions meets all of the desiderata in question, such a view would have much to recommend it. So even the sceptic ought to welcome our attempt to pin down these notions since in the end it may be her own view that is vindicated.

2.1 Negative Facts

It could be argued that there is already available a quite natural account of negative properties in terms of negative facts.[7] Although the nature of negative facts is controversial, we suppose that, minimally, negative facts are the truthmakers for negative truths. From an acceptance of negative facts it is not a large leap to an acceptance of negative properties. Some negative truths are not negative existentials, but instead appear to attribute negative properties to existing objects. The true proposition <the giraffe is not stripy> is of that kind, since it alludes to the existence of a giraffe that is not stripy (and thus might involve the predication of *being not stripy* to the giraffe), as opposed to the non-existence of a stripy giraffe (as in the proposition <there is no stripy giraffe>).

Rather than arguing from the existence of negative facts to the existence of negative properties, however, our interest lies in using negative facts to derive a definition of negative properties. To that

[7] That said, Zangwill, 'Negative Properties', 532–533, proceeds in the other direction, defining certain negative facts in terms of negative properties.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

end we presuppose a particular conception of facts. First, facts have as constituents objects, properties and relations. Second, facts are individuated by their parts: F_1 and F_2 are the same fact iff F_1 and F_2 have the same constituents. Third, facts can be complex or atomic, where a complex fact is the result of Boolean composition and so is the result of conjoining, disjoining or negating some atomic fact. A fact can be atomic in the Boolean sense without thereby being atomic in the compositional sense.

Given this conception of facts, one can define positive and negative properties in terms of their respective roles in being constituents of facts. Thus:

Definition (1a): P is a negative property iff: (i) P is a property and (ii) P is a constituent of a negative fact.

Definition (1b): P is a positive property iff: (i) P is a property and (ii) P is a constituent of a positive fact.

Consider the proposition <the giraffe is not stripy>. Its truthmaker is a negative fact (the fact that the giraffe is not stripy), which is partly constituted by a negative property: the property of not being stripy. Note that the truthmaker for <the dog is not stripy> is a negative fact that is in part constituted by the selfsame negative property as the fact that the giraffe is not stripy: the two facts overlap. This nicely explains what the giraffe and the dog have in common.

But there are two worries with (1a) and (1b). The first is that not all properties that are constituents of negative facts are good candidates to be negative properties. Consider the true proposition <the stripy dog is not square>. This proposition allows us to define a negative property of being striped, since the property of being striped is a constituent of the negative fact that is the truthmaker for this proposition. Insofar as we can appeal to intuition as a guide to which properties are negative (if any are), this would seem an unintuitive consequence.

What to do? Well the fact that the stripy dog is not square could be represented as a *complex* fact, as the conjunction of the fact that the dog is stripy and the fact that the dog is not square. If we examine each of these facts in the light of (1a) and (1b), we will be inclined to say that we have a positive fact of the dog being stripy, and hence a positive property being a constituent of that fact, and we have a negative fact of the dog not being square, and a negative property that is the constituent of that fact. This suggests that we amend (1a) and (1b) such that:

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

Definition (2a): *P* is a negative property iff: (i) *P* is a property and (ii) *P* is a constituent of an *atomic* negative fact.
Definition (2b): *P* is a positive property iff: (i) *P* is a property and (ii) *P* is a constituent of an *atomic* positive fact.

But now we are faced with the second problem. Given (2a), the negative fact that is the truthmaker for the proposition <there is no stripy hippo in the room> turns out to be partly constituted by a negative property. One might worry at this outcome. On the assumption that there is *no* hippo in the room, <there is no stripy hippo in the room> *appears* to predicate a positive property (being striped) to a non-existent hippo. That is, the thing that is not in the room is *a stripy hippo*. So (2a) mistakenly characterises a positive property as a negative property and therefore cannot serve as a general definition.

Now, <there is no stripy hippo in the room> will *also* be true if there is a hippo in the room, but it is not striped and so one might wonder if there are two distinct kinds of phenomena at play, a distinction obscured by (2a). One might attempt to address this issue by contending that we have two different facts in each case, since what appears to be the same fact is really composed of different atomic facts. In the one case we have a complex fact composed of the fact that there is a room, and the fact that there is a hippo and the fact that the hippo is not striped. In that case there is an atomic fact that has a negative property as a constituent, just as intuition would have it. In the second case we have the fact that there is a room and the fact that there is no hippo in the room and the fact that there is no stripy hippo in the room, which involves a positive attribution.

But this will not help, since we still end up with a negative atomic fact of there being no stripy hippo in the room, and thus end up with there being a negative property of not being stripy, where really we want there to be a positive property of *being a stripy hippo*, which is not instantiated by anything in the room. However, under the proposal just considered it is very difficult to see how to achieve that.

There is a general moral to be drawn. If one defines negative properties in terms of atomic negative facts then those facts cannot have, as constituents, positive properties. For by definition any constituent of an atomic negative fact that is a property is a negative property. One could simply bite the bullet and say that any intuition to the contrary is mistaken. But given our third desideratum this would either be a significant cost to the view, or one would need to explain away the mistaken intuitions. As it stands then, this approach does not meet all three desiderata.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

2.2 Shadows of Language

The account of the difference between positive and negative properties in terms of negative facts is, therefore, unsatisfactory. Before proceeding to our own account there are two others already available that ought to be discussed. The first derives the distinction between positive and negative properties from features of natural language. One might have thought that the syntactic structure of a sentence in which a property attribution is expressed cues us into the fact (if there is one) that we are attributing either a positive or a negative property. For instance, perhaps we have evidence that P is a negative property if the language we use in attributing P to some object involves negation or some relevantly similar term. Thus the phrases 'not being a dog', 'failing to be a cat', 'Pierre being absent' would all pick out negative properties if there are any. One might then define a negative property as any property that can be described with sentences that deploy syntactic structures of the relevant kind.

But this won't do. Unless we have some independent reason to think that the relationship between the structure of our predicative language and the structure of reality is so close that we can read off the latter from the former – what we call *the mirroring principle* – we should reject this proposal (we are broadly following Dyke).[8] Of course, there are those, such as Schiffer, who endorse the mirroring principle.[9] For Schiffer, there are properties corresponding to all possible predicative sentences in a language. For any sentence of the form 'x is P', we can trivially transform that sentence into 'x has the property of being P', and thus for every sentence of the former kind, there is some property P that corresponds to the predicate 'P'. Schiffer thus concludes from 'x is not P' that there is some property P (even if for all x in w, x is not P). Inferring the existence of property P from 'x is not P' requires that we transform that sentence into 'it is not the case that x has the property of being P'. But it seems open that we transform 'x is not P' into 'x has the property of not being P'. The second transformation however, apparently yields a commitment to the negative property of not being P. Arguably then Schiffer's account gives us reason to suppose that there are negative properties, if the previous kind of transformation is licit.

[8] Heather Dyke, *Metaphysics and the Representational Fallacy*. (New York: Routledge, 2008).

[9] Stephen Schiffer, 'Language-Created Language-Independent Entities' *Philosophical Topics* **24** (1996), 149–167.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

We see two problems for this approach. First, nothing about the structure of ordinary language tells us that we should transform *all* syntactically similar sentences in the same way if there are multiple possible transformations or, alternatively, that content or context should determine different transformation for syntactically similar sentences. For instance, ought we to transform '*x* is not empty' in the same way as '*x* is not blue'? Not being empty does not look like a good candidate to be a negative property, while not being blue arguably does. Nor does our language tell us that we should transform sentences of these kinds in just *one* of the two ways. But since the structure of our language does not seem able to determine that just one transformation is appropriate, nor determine *which* transformation is appropriate, this view seems to suggest that there is often no fact of the matter regarding whether a property is negative, or positive, or both (at least concerning linguistic structure, and in the absence of some further fact).

Second, and relatedly, Schiffer's proposal is best seen as deflationism across the board about properties. Properties are shadows cast by our language. What it means to say that property *P* exists is to say no more than that we make true claims of the form '*x* is *P*'. But if the nature of properties is that given by the structure of our language and the trivial ways we can transform that language, then it is hard to see how the distinction between positive properties and negative properties could support either metaphysical or ontological seriousness about such properties. Thus this account does not meet either the first or the second desideratum. Nevertheless, that the account is deflationary is, by its own lights, fortuitous given that the structure of language sometimes under-determines which transformations are permissible, and therefore whether an ordinary predicative sentence attributes a positive or a negative property. If the distinction between positive and negative properties is merely a distinction regarding the ways of *characterising* a property, then it fails to matter if some properties are both positive and negative. If being positive or negative is a feature of the property itself, this would be unfortunate.

2.3 Properties as Sets of Individuals

A third (quick) proposal for distinguishing positive from negative properties begins with the thought that properties are sets of possible individuals. If the property of blueness is just the set of possible blue individuals, *S*, then perhaps the property of not being blue is the set

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

of individuals in the complement class of *S*. We think this proposal, however, falls foul of the first desideratum. All properties are sets of individuals. Positive properties are not a metaphysically distinct kind from negative properties. What distinguishes positive from negative properties is that the former are more naturally *characterised* in terms of a set of individuals, *S,* while the latter are more naturally *characterised* indirectly in terms of a set of individuals, *S**, via referring directly to a set of individuals, *S,* and then referring to the complement class, *S**, of *S*.

Now, the friend of such a view might point out that there are important differences between *S* and *S**. Focus on contingent resemblances, that is, resemblances that are shared by proper subclasses of the class containing every possible individual. Then there is some contingent resemblance such that every member of *S* resembles every other member of *S* in that respect. But there is no contingent resemblance such that every member of *S** resembles every other member of *S** in that respect. Indeed it will always be true that there is some contingent resemblance shared by all individuals that share a positive property, and always true that there is no such contingent resemblance shared by all individuals that share a negative property. But that difference does not look like the sort of difference that meets our first desideratum. For it remains the case on this view that negative properties turn out to be sets of positive properties.

3. A Causal Story

Thus far we have considered three strategies for distinguishing negative from positive properties, none of which meet all three of our desiderata. In this section we offer a new way of differentiating negative from positive properties. This new account is motivated by consideration of a particular kind of causation, namely causation by *omission*. First, however, it is important to say something about how we are conceiving of property individuation.

We follow a number of philosophers in maintaining that properties are to be individuated functionally, in terms of their causal roles.[10] So, for instance, we think that the difference between *being red* and

[10] See for example Sydney Shoemaker, 'Causality and Properties', in *Identity, Cause and Mind* (Oxford: Oxford University Press, 2003), 206–233; Ann Whittle, 'A Functionalist Theory of Properties', *Philosophy and Phenomenological Research* **127** (2008), 59–82; and Brian Ellis, *Scientific Essentialism*. (Cambridge: Cambridge University Press, 2008).

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

being blue can be meaningfully articulated in terms of the causal roles that those properties play within a network of causal inputs, outputs and causal interactions with other properties. Although we individuate properties in terms of their causal roles, we leave it open whether the nature of a property is exhausted by its causal role. It is therefore compatible with this way of individuating properties that properties have a categorical nature and that which categorical nature they have is decided functionally. It is also compatible with the view that the nature of a property is exhausted by its functional characterisation: that there is, as it were, no underlying categorical nature to properties.

It is important, however, to differentiate two ways in which one might individuate properties functionally. First, one might individuate properties based on what they cause or what they are caused by. So, for example, the property of *being hot* might be individuated in terms of its tendency to cause burns and its tendency to be brought about by heating. Second, one might individuate properties based on *how* they cause something.

This second way of thinking about the causal role played by a property requires some elucidation. One useful way of proceeding involves the notion of causation by omission. Causation by omission is typically characterised as follows: if x causes y by omission then the cause or the effect (or both) consists in the non-occurrence of something. Thus, where we represent the obtaining of something by x, and the non-obtaining of something by not-x, we can represent the three varieties of causation by omission as:

(a) not-x caused y
(b) x caused not-y
(c) not-x caused not-y

We take (a) and (c) to be cases of causation by omission and (b) to be a case of causation by prevention. Contrast causation of both kinds with ordinary causation, whereby x simply brings about y.

The distinction between ordinary causation and causation by omission secures a grip on the different ways in which a property might do causal work. This, in turn, helps to reveal the difference between the two ways of individuating properties functionally. The properties *being blue* and *being red* might differ in terms of what they cause and what they are caused by and so, using the first method of individuation, differ functionally. However, they do not differ in *how* they bring something about: in both cases, the relevant properties bring about their effects in the ordinary fashion. Thus, using the second method of individuation, the two properties do not come apart.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

It is only the second way of functionally individuating properties that can usefully be applied to the distinction between negative and positive properties. The first way of individuating properties, in terms of what they cause or are caused by, does not appear to get us very far since both negative and positive properties are capable of causing and being caused by the same kinds of things. For example, consider the property *being blue* and the property *not being blue*. Both *being blue* and *not being blue* might be brought about in the same way, by applying paint to some object. Similarly, *being blue* and *not being blue* might reasonably cause the same kinds of emotional responses in different perceivers. Of course, the functional profiles of the two properties won't be identical (although they could be). But the point is that there doesn't seem to be anything about the causal inputs or outputs *per se* that might be used to drive a wedge between negative and positive properties.

The second way of individuating properties fares better, for the following reason: when thinking about negative properties, there appears to be a strong conceptual connection between the notion of a negative property and causation by omission. This conceptual connection is revealed in two ways. First, consider that the predication of negative properties is apt to describe the omission of some feature of the world. When we say that there is no cheese in the fridge, we can characterise this in property terms: the fridge has the property of *being cheese free*. This suggests that wherever an omission seems to be doing causal work, we might find a negative property or cluster of such properties that are crucial to the instance of causation at issue. Second, negative properties appear to be held in common between relevantly similar causal omissions. For example suppose that both Suzy and Billy forget to water their plants and their plants die. Arguably, in each case the plants have a property in common: the property of *not being hydrated* and *that* is why they die.

We propose to exploit this conceptual connection between negative properties and causation by omission by differentiating between negative and positive properties in terms of how they bring things about, as follows:

Definition (3a): P is a negative property iff: (i) P is a property and (ii) P causes by omission.

Definition (3b): P is a positive property iff: (i) P is a property and (ii) P does not cause by omission.

When we say that a property P causes by omission, we do not mean that P would bring something about were it not instantiated. This

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

would, arguably, classify all properties as negative properties. What we have in mind is a case in which a causally relevant omission can be characterised either partially or wholly in terms of a property or cluster of properties. Consider the following example. Suppose we pump all of the air out of a room, *R*, and that this kills all of the occupants of *R*. It is the *absence* of oxygen from the room that is doing the relevant causal work. But the absence of oxygen can be characterised in terms of a negative property possessed by *R*, the property of *lacking oxygen*. We think that this is a useful characterisation of the situation and, moreover, is representative of the sort of causal work done by negative properties. Thus a negative property is a property that can be seen to play a crucial role in the 'not-x' part of (a) and (c).

Definitions (3a) and (3b) allow us to draw a sharp distinction between positive and negative properties. However, one might worry that by couching our definitions in terms of how properties are causal we focus too narrowly on causes and have nothing to say about effects. Consider a (b)-type case: a paradigm case of causation by prevention. In (b)-type cases the relevant *effect* might be a negative property. For instance, that the man jumped into the water caused the child not to drown. Perhaps the effect is the child instantiating the negative property of *not being drowned*. But just because on some occasion a negative property partly constitutes an *effect*, rather than a *cause*, need pose no problem. For it can still be that the relevant negative property is one that causes by omission. For example, that the child did not drown might be cited as a cause of her parents having a party, and that the child did not drown might be cited as a cause of her parents not planning a funeral. Thus although we individuate negative properties in terms of causation by omission, this is consistent with it also being the case that such properties are sometimes the effects (or constituents thereof) in cases of causation by prevention.

Definitions (3a) and (3b) satisfy the three desiderata for differentiating negative from positive properties. First, the account allows for a metaphysically substantive distinction between negative and positive properties: it is not the case that negative properties are merely positive properties 'in disguise'. This can be seen by looking to the substantially different causal work that the two kinds of properties do. Second, the distinction makes room for ontological seriousness about negative properties. Nothing about the definitions rules it out that both sorts of property exist. Indeed, if there are the sorts of properties that play the relevant role in characterising causally relevant omissions then it follows that negative properties *do* exist. Third, the account correctly classifies the sorts of properties we

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

intuitively think of being negative as negative and *mutatis mutandis* for positive properties.

4. Metaphysical Implications

On our view negative properties are characteristic of certain causally relevant omissions. In this section we fill out this account by drawing out the metaphysical implications of differentiating negative from positive properties in this fashion. First, however, it is important to say a bit more about causation by omission.

4.1 Causation by Omission

It is commonly agreed that causation by omission poses a special problem for certain accounts of causation. In particular, causation by omission poses a problem for what Schaffer calls *connectionist* accounts of causation.[11] Roughly speaking, connectionist accounts of causation have it that intrinsic causal relations – relations that hold between, say, events at one time and events at another – are necessary for causation. The problem that causation by omission poses for connectionist views has two parts. First, relations are typically thought to be existence entailing,[12] where a relation R is existence entailing iff Rxy only if x and y both exist. Second, causation by omission appears to involve a relation between an *absence*, such as the non-occurrence of an event, and a *presence*, such as the occurrence of an event. But absences don't exist. So at least one of the relata in causation by omission is always missing, and so there cannot be any causal relations of this kind. If, however, there cannot be causal relations in cases of causation by omission, then there cannot be any such causation.

Following Lewis, call this the problem of the missing relatum.[13] There are, broadly speaking, three ways of resolving the problem. First, one might simply reject the existence of causation by omission. This is a relatively popular option amongst those who endorse process

[11] Jonathan Schaffer, 'Causation by Disconnection', *Philosophy of Science* **67** (2000), 285–300.

[12] John Bigelow, 'Presentism and Properties' *Noûs* **30** (1996), Supplement: Philosophical Perspectives (10), 36.

[13] David Lewis, 'Void and Object', in *Causation and Counterfactuals*, John Collins, Ned Hall and Laurie A. Paul (eds) (Cambridge: MIT Press, 2004), 281.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

theories of causation, according to which the intrinsic causal relations involved in causation are cashed out in terms of causal processes of one kind or another (see, for example, Dowe and Salmon).[14] The trouble with this response, however, is that as Schaffer has argued, causation by omission is commonplace and so it is seriously costly to flatly deny its existence.

The second solution to the problem of the missing relatum is to 'reify' absences. The problem of the missing relatum has it that, in the case of causation by omission, one of the relata is always missing, because 'absences' (such as the failure of anyone to water the plants) don't exist and so aren't there to serve as the relata in causal relations. But one might simply deny that this is the case, arguing that absences are *sui generis* kinds of entities that exist, and are capable of standing in causal relations. So, for example, the failure of everyone to water the plants is an entity that exists and causes the death of the plants. As with the previous solution, this response to the problem of the missing relatum is typically thought to incur a heavy cost: in order to make sense of the view, one must be willing to reify absences by endorsing their existence as entities.

The third solution to the problem of the missing relatum is to simply give up on the necessity of intrinsic causal relations. One subsequently adopts an account of causation that (i) does not require causal relations and (ii) is capable of handling causation by omission. One such account of causation is Lewis' (1973) counterfactual theory of causation.[15] According to a counterfactual theory of causation, counterfactual dependence implies causation. Thus, consider the following counterfactual conditional:

(CF1) If Suzy had not thrown the rock, then the bottle would not have smashed

On Lewis' view, if (CF1) is true then it follows that Suzy caused the bottle to break, where, according to the standard Lewis–Stalnaker semantics for counterfactual conditionals, (CF1) is true iff in the closest possible world to the actual world in which Suzy does not throw the rock, the bottle does not break (assuming that Suzy actually throws the rock and that the bottle breaks actually). Although there is a

[14] Phil Dowe, 'Wesley Salmon's Process Theory of Causality and the Conserved Quantity Theory', *Philosophy of Science* **59** (1992), 195–216; Wesley Salmon, 'Causality without Counterfactuals', *Philosophy of Science* **61** (1994), 297–312.

[15] Lewis, 'Causation', *Journal of Philosophy* **70** (1973), 556–567.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

great deal to say about counterfactual theories of causation of this kind, we need not say it here. What is important for present purposes is that once we have secured the modal facts that support counterfactual conditionals, we have said enough to procure causation: no intrinsic causal relations between Suzy and the bottle's breaking are required.[16] Consequently, causation by omission is easily accommodated. Specifically, following Beebee, (a) and (c) offered in §3 can be analysed as follows:

(A) The non-occurrence of an event of type X caused event of type Y if and only if, had an X-type event occurred, a Y-type would not have occurred.
(C) The non-occurrence of an event of type X caused the non-occurrence of an event of type Y if and only if, had an X-type event occurred, then a Y-type event would have occurred.[17]

It is worth noting that these definitions render causation by omission vastly more prevalent than we usually suppose. Not only does one's failure to water one's own plants cause them to die, but everyone else's failure to water the plants in question also causes them to die. We think that everyone who endorses causation by omission will be committed to this consequence and so we deem it to be acceptable for present purposes.[18]

4.2 Omissions and Negative Properties

With these three responses to the problem of the missing relatum in mind, let us now return to the distinction between negative and positive properties outlined in §3, in terms of causation by omission. According to that account:

Definition (3a): P is a negative property iff: (i) P is a property and (ii) P causes by omission
Definition (3b): P is a positive property iff: (i) P is a property and (ii) P does not cause by omission

[16] Lewis, 'Void and Object', 282–283.
[17] Helen Beebee, 'Causation and Nothingness' in *Causation and Counterfactuals,* 293, suggests but does not endorse (A) and (C).
[18] Though for an attempt to restrict such cases see Sarah McGrath, 'Causation by Omission: A Dilemma', *Philosophical Studies* **123** (2005), 125–148.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

If this account is to provide a meaningful distinction between negative and positive properties some account must be provided of causation by omission. This, in turn, means that the distinction in question must be coupled with one of the three solutions to the problem of the missing relatum identified above. But which one?

Suppose one were to combine our definitions with the first response to the problem of the missing relatum. Then one maintains, on the one hand, that the distinction between negative and positive properties is to be understood in terms of causation by omission and, on the other hand, that there is no such thing as causation by omission. Now, of course, this need not render the distinction in (3a) and (3b) incoherent, since one might reasonably understand the definitions in a conditional sense: if there were any causation by omission, then these definitions would mark the distinction between positive and negative properties. However, this combination of views does run foul of our second desideratum, namely that the manner in which the properties are defined should not, by definition, rule it out that that there are any negative properties. This is exactly what combining (3a) and (3b) with the rejection of causation by omission would do.

Consider the second option: one combines (3a) and (3b) with a Lewisian account of causation by omission in terms of counterfactual causation. Although this avoids the problem just outlined, when we connect Lewis' account of causation by omission back to our distinction between negative and positive properties, a further issue arises. On Beebee's (A) and (C) omissions are understood in terms of the non-occurrence of *events*. Consequently, there now appears to be a mystifying disconnect between the account of a negative property provided above and the notion of a causal omission: causal omissions involve the non-occurrence of events not the instantiation of negative properties, and so it is a mistake to individuate negative properties based on the role they play in causally relevant omissions.

There are two things to say here. First, it may be that Beebee's definitions are too restrictive and need to be expanded to include cases where causally relevant omissions involve properties. Indeed, there may be good reason for proceeding in this fashion, given that it is unclear how Beebee's definitions are supposed to cover cases such as the one in which we pump air out of room, *R*, killing its occupants. This appears to be a case of causation by omission, but not obviously in virtue of the non-occurrence of some event. Rather, what appears to be doing the causal work is something that can and should be characterised in property terms.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

Second, following Lewis, we can think of events themselves as certain *kinds* of properties, such as properties of cross-world classes of individuals.[19] If we think of events in this manner, then it is possible to recast Beebee's account of causation by omission in terms that are friendly to our analysis of the difference between negative and positive properties. On this account, we treat the non-occurrence of an event as a certain kind of property: a *negative* property that is possessed by cross-world classes of individuals. Of course, if we treat the non-occurrence of events as negative properties, then it appears natural to also treat the occurrences of events as positive properties. This is not to say that all negative properties are negative events and all positive properties are events of the ordinary kind. Rather, all we are saying is that, within the Lewisian framework, we can treat the occurrence of an event as a positive property and its non-occurrence as a negative property.

Either way, we must refine (A) and (C) to better reflect the role played by negative properties. The first thing to do is modify the antecedent of each counterfactual conditional to include such properties. For reasons to be outlined in a moment, we then modify the consequent in terms of the existence of some positive property. Specifically, for each negative property *NP* of type *X* that appears in the antecedent, we invoke a positive property *PP* of type *Y* for the consequent, such that *PP* is a positive corollary of the *NP* at issue. So, for example, if the antecedent makes reference to the negative property *lacking oxygen* the consequent will make reference to the positive property *containing oxygen*. This gives us:

(A*) *NP* of type *X* caused the existence/occurrence of *E* if and only if, had a *Y*-type *PP* existed, *E* would not have existed/occurred.
(C*) *NP* of type *X* caused the non-existence/non-occurrence of *E* if and only if, had a *Y*-type *PP* existed, *E* would have existed/occurred.

To see how these definitions work, consider again room *R* that is pumped free of oxygen. Above we suggested that it is *R*'s possession of the negative property *lacking oxygen* that causes the people in the room to die. Given (A*), we can now analyse this via the following counterfactual conditional:

(CF2) If *R* had possessed the property *containing oxygen*, the people in *R* would not have died.

[19] David Lewis, 'Events' in *Philosophical Papers, Volume 2* (New York: Oxford University Press, 1986), 241–269.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

Where (CF2) is true iff in the closest possible world to the actual world in which *R* possesses the property *containing oxygen*, the people in *R* do not die.

If the move from (A) and (C) to (A*) and (C*) is the correct way to combine (3a) and (3b) with Lewis' counterfactual theory of causation, then a problem arises. The trouble is that, on this view, although what it is to be a negative property is to feature in causation by omission, the way in which we understand causation by omission is in terms of *positive* properties in other possible worlds: what it means to say that *lacking oxygen* causes by omission involves reference to modal facts involving the closest possible world to the actual world in which the property *possessing oxygen* is instantiated. Negative properties therefore appear to be ultimately analysed in terms of modality plus positive properties. But this runs foul of our first desideratum: that an account of the difference between negative and positive properties should be metaphysically serious insofar as it supports the view that negative and positive properties are distinct *kinds* of properties.

One might try to avoid this problem by rejecting (A*) and (C*). But it is hard to see how *any* counterfactual analysis of causation by omission can ultimately avoid characterising negative properties in terms of positive properties. Suppose that *T* actually exists/occurs. Then counterfactuals that mention *T* in the antecedent tell us what things would be like in situations in which *T* does not exist/occur. So for counterfactuals involving negative properties we must be interested in worlds in which the relevant properties are 'missing'. But if a negative property fails to exist in a world *w*, then that must be because of some corollary positive property that does exist in *w*. For example, suppose that *O* possesses the negative property *not being blue*. If *O* did *not* possess *not being blue*, then that must be because it possesses a positive property, namely the positive property *being blue*. So counterfactuals involving negative properties will always draw our attention to counterfactual positive properties. Hence *defining* negative properties using counterfactuals that are capable of supporting causation by omission is always going to be a way of defining negative properties in terms of positive properties and thus will never meet the first desideratum we have outlined.

So much for the counterfactual understanding of causation by omission: if used in combination with (3a) and (3b) it fails to yield a distinction between negative and positive properties that meets all three of our desiderata. This brings us to the third option, whereby causation by omission requires the reification of absences. Call this the reification solution. If we understand causation by omission in this fashion, then there is no need to adopt Lewis' counterfactual

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

analysis of causation. Rather, one can maintain straightforwardly that causation by omission involves an intrinsic causal relation between an absence – which is an entity in its own right – and a presence. So, for example, when everyone fails to water the plants and the plants die, this is construed as a causal relation between one existing entity or event – the *absence* of being watered – and another existing entity or event: the death of the plants.

Combining this option with (3a) and (3b) yields a definition of negative properties, according to which negative properties are – like all causally relevant omissions – reified absences. Consider again that the lack of oxygen in room R caused the people in R to die. The omission in this case can be understood in terms of R's possession of a property, the property *lacking oxygen*. By (3a), this property is a negative property. But by the reification solution, the omission is also a reified absence. So by (3a) and the reification solution, the negative property *lacking oxygen* is a reified absence. This, of course, generalises: if negative properties are things that cause by omission and the things that cause by omission are reified absences, then it follows that negative properties are reified absences.

This combination of views boasts distinct advantages over the two combinations already considered. Unlike the counterfactual option, it satisfies the first desideratum, namely metaphysical seriousness. Positive properties and negative properties are distinct kinds of things – negative properties are *absences*; whereas positive properties are not. Similarly, unlike the flat denial of the existence of causation by omission, the combination under consideration also satisfies the second desideratum, namely ontological seriousness: given (3a), (3b) and the reification solution, it is an open question whether there are any negative properties. We have not defined negative properties out of existence. Or have we? One might contend that absences cannot exist and so by defining negative properties in terms of absences one *has* defined negative properties out of existence. But it is not clear that absences cannot exist. The existence of absences is not obviously incoherent and so is not ruled out *a priori*. Of course, we do not deny that there might be good arguments against the existence of absences. Our point is precisely that because *some* argument against the existence of absences is required, definition (3a) does not, on its own, rule out the existence of negative properties.

Finally, our account meets the third desideratum, insofar as it classifies the sorts of properties that intuitively seem to be negative as negative properties and *mutatis mutandis* for positive properties. If the account is counterintuitive in any way, it is because it admits the existence of absences. But while we think that many philosophers

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

will find this, if not counterintuitive, then distasteful, we are not so sure that the existence of absences itself runs contrary to general intuitions. If there are good reasons to reject absences, these will likely appeal to various theoretical virtues rather than to raw intuitions.

5. Conclusion

The best way to understand the definitions offered in §3 is to adopt an account of causation by omission according to which absences exist. This, in turn, leads to a view of negative properties as reified absences. Of course, we have not said enough to show that this is the *only* way to understand the notion of a negative property, and thus that negative properties *must* be thought of as reified absences. There is, however, cause for optimism regarding this stronger conclusion. In order to *deny* the stronger conclusion, one must reject the definitions supplied above of the difference between negative and positive properties. There are two ways to do this. First, one might accept, as we do, that properties are to be individuated functionally, but contend that our account of the functional difference between such properties is incorrect. Second, one might simply deny that properties are to be individuated functionally. One might then proceed to offer an entirely new account of the difference between negative and positive properties.

The first response fails to be compelling: there does not seem to be any further functional difference between negative and positive properties that we might call upon to pull them apart. This is because, as noted in §3, there is no way to differentiate negative and positive properties in terms of their causal inputs and outputs. Rather, one must differentiate the two kinds of properties in terms of *how* they bring things about. But the only way to make sense of the difference between negative and positive properties in terms of *how* they bring things about appears to make use of the distinction between causation by omission and causation of the ordinary kind, a distinction appealed to in §3.

The second response appears more promising, but only because we did not and could not hope to exhaustively rule out all other possible options here. However, we have ruled out the alternatives currently on offer and so, absent a further account of the difference between negative and positive properties, there is reason to doubt the viability of this response. Of course, one can always push the point further, to which we can only say: tell us more – provide us with an account of the

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press

difference between negative and positive properties that satisfies the three desiderata outlined in §2 and we'll go from there.

So (tentatively) negative properties are reified absences; this is important because the existence of absences is a contentious issue. It is therefore an issue that ought to be addressed before discussion of negative properties proceeds any further.[20] Now, one might argue that Zangwill has already gone some way toward addressing the controversial nature of negative properties by arguing that such properties are *less real* than positive properties. If one is going to believe in absences, perhaps the right thing to say is that such things have a lower degree of reality. At least, if one has independent reason to think that realness comes in degrees, then this would be a natural view to endorse.

While we wish to remain neutral regarding whether reality, or realness, comes in degrees, we note that it is an advantage of our view that it is consistent with Zangwill's contention that negative properties are less real than positive properties. We do think, however, that appealing to degrees of reality does little to render the notion of absences any less controversial or mysterious, especially in light of the fact that many will find degrees of reality equally so.

University of Sydney
samuel.baron@sydney.edu.au; kristie_miller@yahoo.com;
raamy@yahoo.com; aco9780@bigpond.net.au

[20] One might draw the even stronger conclusion that, therefore, negative properties don't exist, because absences don't exist. Although some of us are sympathetic to this further claim, we cannot defend it here; arguing the point against the existence of absences would take us too far afield.

https://doi.org/10.1017/S0031819112000526 Published online by Cambridge University Press