2-2013

Analyses of intrinsicality without naturalness

Daniel Graham MARSHALL
University of Hong Kong

Analyses of Intrinsicality without Naturalness

Dan Marshall

October 24, 2012

Abstract

Over the last thirty years there have been a number of attempts to analyse the distinction between intrinsic and extrinsic properties. This article discusses three leading attempts to analyse this distinction that don't appeal to the notion of naturalness: the duplication analysis endorsed by G. E. Moore and David Lewis, Peter Vallentyne's analysis in terms of contractions of possible worlds, and the analysis of Gene Witmer, William Butchard and Kelly Trogdon in terms of grounding.

1 Introduction

An intrinsic property is roughly a property something has in virtue of how it is, as opposed to how it is related to things wholly distinct from it, or how things wholly distinct from it are.[1] More carefully, what it is for a property to be intrinsic can be intuitively characterised by (1).[2]

(1) Being F is an intrinsic property $=_{\mathrm{df}}$ necessarily, anything that is F is F in virtue of how it is, as opposed to how it is related to things wholly distinct from it or how things wholly distinct from it are.

A plausible example of an intrinsic property is being made of tin. Plausible examples of extrinsic properties, where an extrinsic property is a property that is not intrinsic, are being an uncle and being popular.[3]

The distinction between intrinsic and extrinsic properties is a central distinction in metaphysics and has been used to formulate many important theses and arguments in philosophy. Examples include the distinction between intrinsic and instrumental value, the distinction between genuine change and mere Cambridge change, and David Lewis's argument against endurantism from temporary intrinsics.[4]

As noted in the companion to this paper, (Marshall, 2012), one reason to seek an analysis of intrinsicality in addition to (1) is that (1) appears to be circular. For (1) to be true, the phrase 'how it is' must be understood to mean 'how it is intrinsically'. If it instead means 'how it is both intrinsically and extrinsically', then the analysis will falsely classify all properties as intrinsic. (1) therefore essentially analyses intrinsicality in terms

of itself.[5] It would be good if we could instead give an analysis that only appeals to notions distinct from that we are trying to analyse.

In (Marshall, 2012), I discussed three leading attempts to analyse the notion of an intrinsic property in terms of naturalness. In this paper, I will instead discuss three leading attempts to analyse intrinsicality that do not appeal to naturalness. In section 2, I will discuss the analysis of intrinsicality in terms of duplication endorsed by G. E. Moore and David Lewis.[6] In section 3, I will discuss Peter Vallentyne's analysis of intrinsicality in terms of contractions of possible worlds.[7] Finally, in section 4, I will discuss the analysis of Gene Witmer, William Butchard and Kelly Trogdon in terms of grounding.[8][9]

As I am using the word 'analysis', an analysis of intrinsicality is an account of what it is for something to be intrinsic. More precisely, an analysis of 'intrinsic property' will be taken to be a true sentence of the form 'For any p, p is an intrinsic property $=_{df} F(p)$', where '$\phi =_{df} \psi$' abbreviates 'For it to be the case that ϕ is for it to be the case that ψ'.[10]

Before proceeding, it is important to recognise that one might have different aims in seeking an analysis of intrinsicality. One aim might be to determine whether there is a single precise and coherent notion of intrinsicality, or whether instead there are multiple such notions, or indeed whether there is any coherent notion of intrinsicality at all. Given there is a single precise and coherent notion of intrinsicality, there are at least four further aims one might have. First, one might want an analysis to clarify what it is for a property to be intrinsic. Second, one might want an analysis to clarify our concept of intrinsicality, where an analysis that succeeded in this aim would need to be conceptually necessary, in the sense of it being in principle possible for someone to see that it was true purely on the basis of reflection.[11] Third, one might want an analysis of intrinsicality to help determine whether intrinsicality is a fundamental feature of reality. If intrinsicality is analysable in terms of more fundamental aspects of reality then it is not fundamental. Fourth, we might want an analysis for epistemic reasons, to help us determine whether certain difficult to classify properties are intrinsic. These different aims might be called the vindicatory, clarificatory, conceptual, reductive and epistemic aims respectively. When evaluating the attempted analyses below, it should be kept in mind that a particular analysis might succeed in some of these aims while failing in others.

2 The duplication analysis

G. E. Moore and David Lewis both endorsed analyses of intrinsicality in terms of duplication. Lewis's version is (2).[12]

(2) For any p, p is an intrinsic property $=_{df}$ i) p is a property, and ii) for any x and y such that x is a duplicate of y, x has p iff y has p

This version of the duplication analysis, however, fails if there are things that don't have duplicates (other than themselves). For example, suppose I fail to have a duplicate (other than myself). Then any extrinsic property that I alone have, such as the property of being Dan and having two sisters, will be falsely classified as intrinsic according to the analysis,

since no duplicates will differ over whether they have this property. (2) is therefore only plausible given a theory like Lewis's, according to which each thing has multiple duplicates (many of which, in Lewis's case, are parts of non-actual worlds).[13] Philosophers who think objects might fail to have distinct duplicates, and who wish to endorse the duplication analysis, need to replace (2) with (3), which is effectively the analysis given by Moore.[14]

(3) For any p, p is an intrinsic property $=_{df}$ i) p is a property, and ii) for any x and y, and for any worlds w_1 and w_2 such that x at w_1 is a duplicate of y at w_2, x has p at w_1 iff y has p at w_2

(3), unlike (2), does not require each thing to have a duplicate (distinct from themselves). Suppose, again, that I don't have any duplicates (other than myself). While I have two sisters at the actual world, there is a possible world w at which I am intrinsically the same as I am at the actual world, but at which I don't have two sisters. It follows from this that, while Dan has two sisters at the actual world, and fails to have two sisters at w, Dan at the actual world is a duplicate of Dan at w. Hence, (3) gives the right result that being Dan and having two sisters is an extrinsic property.

An objection to both these versions of the duplication analysis is that the notion of duplication is unclear. In response to this kind of objection, Lewis pointed out that the notion of a duplicate is a familiar one, writing:

> We are familiar with cases of approximate duplication, e. g. when we use copying machines. And we understand that if these machines were more perfect than they are, the copies they made would be perfect duplicates of the original. (Lewis, 1983b, p. 355)

We therefore have some understanding of the notion of duplication. It is not obvious, however, that this understanding is very good, or that the notion of duplication is determinate. It is even less obvious that we have a good understanding of the world relative notion of duplication used in (3).

One way of fleshing out this objection is to consider the disposition p to explode if one's atomic parts are closer than 1 nanometre to each other. Suppose an object a has the same non-modal qualitative properties at w_1 as an object b has at w_2.[15] Suppose also that a has p at w_1, while b lacks p at w_2, as a result of the natural laws being different at w_1 and w_2. In this case, it is not at all clear that there is a determinate answer to the question of whether a at w_1 is a duplicate of b at w_2.

A second objection to the duplication analysis is that it takes sides on controversial metaphysical disputes. For example, the duplication analysis is incompatible with an absolutist anti-substantivalist theory of space, according to which spatial position properties are both qualitative and intrinsic. According to absolutist anti-substantivalism, spatial position properties are qualitative and intrinsic since: i) where an object is isn't a matter of its relation to any particular spatial point (since there are no spatial points), and ii) where it is isn't a matter of how it is related to other wholly distinct objects (contra relationalism).[16] Duplicates, or "exact copies", however, can be differently located. It therefore

follows from the duplication analysis that (contra absolutist anti-substantivalism) spatial position properties are extrinsic.[17]

A third objection to the duplication analysis is that it falsely classifies non-qualitative intrinsic properties as extrinsic. Some non-qualitative properties, such as being Obama, are plausibly intrinsic. Being Obama is plausibly intrinsic since, necessarily, anything that is Obama is plausibly Obama in virtue of how it is, as opposed to how it is related to things wholly distinct from it, or how things wholly distinct are. Since duplicates can differ in whether they have the property of being Obama, however, the duplication analysis falsely classifies being Obama as extrinsic.[18][19]

A fourth objection to the duplication analysis is that it falsely classifies all indiscriminately necessary properties as intrinsic, where p is indiscriminately necessary iff, necessarily, for any x, x has p. Consider, for example, the property of being such that there is a number. Given numbers necessarily exist, this property is indiscriminately necessary. It is therefore classified by the duplication analysis as intrinsic since it can never differ between duplicates. Intuitively, however, this property is extrinsic, since any non-number that has it, has it in virtue of how things wholly distinct from it are, rather than in virtue of how it itself is.[20]

The intuition that *being such that there is a number* is extrinsic can be bolstered by considering (4), which is an alternative intuitive characterisation of intrinsicality to (1).[21]

(4) p is an intrinsic property iff, necessarily, any true ascription of p to a thing x describes only how that thing is, as opposed to how x is related to things wholly distinct from it, or how things wholly distinct from x are

The ascription of *being such that there is a number* to something doesn't only describe how that thing is, but also describes how things wholly distinct from it are. Given (4), then, *being such that there is a number* would be appear to be extrinsic, contra the duplication analysis.

The duplication analysis has one further drawback. As Lewis acknowledges, since the notion of duplication is closely related to that of intrinsicality, the degree of illumination an analysis of intrinsicality in terms of duplication can provide is limited. Even if the above objections to the duplication analysis can be overcome, and the duplication analysis is true, it would therefore still be good to provide an alternative analysis that uses notions that are more distant from intrinsicality than the notion of duplication.

3   Vallentyne's analysis

Instead of appealing to the notion of duplication, Vallentyne's analysis appeals to the notion of one possible world being a "contraction" of another. The basic idea behind Vallentyne's analysis is that the intrinsic properties of an object x are those that x would retain no matter what wholly distinct objects are added to or subtracted from the world. A simplified version of Vallentyne's analysis is (5), where 'x-contraction' is defined by (6).[22]

(5) For any p, p is an intrinsic property $=_{\mathrm{df}}$ i) p is a property, and ii) for any x, for any world w, and for any world u that is an x-contraction of w, x has p at u iff x has p at w

(6) For any x, for any worlds u and w, u is an x-contraction of w $=_{\mathrm{df}}$ u is obtainable from w by removing to the greatest possible extent all objects wholly distinct from x, while keeping everything else the same

Vallentyne argues that the notion of an x-contraction is familiar (or at least, that it can be characterised in terms of familiar notions). He writes:

> [W]e know what a given world would be like if nothing changed except certain objects were removed. The notion of [an x-contraction] is simply the limiting case where as many objects are removed as possible compatible with x existing...(Vallentyne, 1997, p. 213)

Valentyne's analysis also avoids a number of objections that face the duplication analysis. In particular, the notion of an x-contraction appears to be determinate (provided the notion of intrinsicality is determinate), the analysis allows non-qualitative properties, such as being Obama, to be intrinsic, and his analysis is compatible with absolutist anti-substantivalism.[23]

Vallentyne's analysis, however, does share two drawbacks with the duplication analysis. First, Vallentyne's analysis falsely classifies all indiscriminately necessary properties as intrinsic. Given numbers necessarily exist, for example, it is not possible to remove the numbers that exist at a possible world and obtain another possible world. As a consequence, the property of being such that there is a number is falsely classified as intrinsic by Vallentyne's analysis.[24] Second, the notion of an x-contraction used in Vallentyne's analysis is very close to the notion of intrinsicality being analysed, as Vallentyne himself acknowledges.[25] That these notions are close can be seen by noting that the phrase "keeping everything else the same" used in the above definition of 'x-contraction' must mean "keeping everything else *intrinsically* the same", since one cannot remove an object from a world without changing how other objects extrinsically are. As in the case of duplication, therefore, it would be good to give an analysis of intrinsicality using notions that are further removed from intrinsicality.[26]

The simplified version of Vallentyne's analysis we have been discussing faces a further problem: given typical primitivist views about laws, the analysis falsely classifies all nomic properties as intrinsic, when at least some nomic properties are extrinsic. Consider, for example, the property, q_1, of being such that it is a law that all emeralds are green. q_1 is plausibly extrinsic since, whether something is such that it is a law that all emeralds are green, concerns not only that thing, but also how things wholly distinct from it are. Given typical primitivist views about laws, however, (5) classifies q_1 as intrinsic since, according to these views, removing entities from the world doesn't alter what the laws are.[27]

In order to avoid this problem, Vallentyne complicates his analysis by adding a clause about laws in the definition of 'x-contraction'. The revised definition is (7).

(7) For any x, for any worlds u and w, u is an x-contraction of w $=_{\text{df}}$ u is obtainable from w by removing to the greatest possible extent all objects wholly distinct from x and removing all the laws, while keeping everything else the same

On the revised definition, if u is an x-contraction of w, then u is a lawless world. Unfortunately, Valentyne's analysis with this more complicated definition of x-contraction still faces problems with nomic properties given primitivism about laws. Consider, for example, the nomic property, q_2, which is had by x iff it is a law that if x is an emerald then x is green. q_2 is intrinsic given typical primitivist views about laws since, according to these views, whether it is a law that if x is an emerald then x is green is not to be a matter of how x is related to things wholly distinct from it, or how things wholly distinct from it are. Vallentyne's more complicated analysis given by (5) and (7), however, classifies q_2 as extrinsic. Both the simplified version of Vallentyne's analysis, and the more complicated official version, therefore fail given typical primitivist theories about laws.

4   The WBT analysis

The final analysis I will discuss is the analysis of Witmer, Butchard and Trogdon (or the WBT analysis, for short). Define x to be accompanied iff there is some contingently existing thing that is wholly distinct from x, and define x to be lonely iff x is not accompanied. Like the Langton and Lewis analysis discussed in the companion to this paper, the WBT analysis starts from the idea that every intrinsic property is independent of accompaniment, where a property p is independent of accompaniment iff it is i) possible for a lonely thing to have p, ii) possible for an accompanied thing to have p, iii) possible for a lonely thing to lack p, and iv) possible for an accompanied thing to lack p. While every intrinsic property is independent of accompaniment according to Langton, Lewis, and Witmer et al., they all acknowledge that some extrinsic properties are also independent of accompaniment. While Langton and Lewis's analysis appeals to the distinction between disjunctive and non-disjunctive properties in order to weed out the extrinsic properties that are also independent of accompaniment, the WBT analysis appeals to the notion of grounding, where the state of affairs that ϕ grounds the state of affairs that ψ iff it is the case that ψ in virtue of it being the case that ϕ. In particular, Witmer et al. hold that what distinguishes the extrinsic properties that are independent of accompaniment from the intrinsic properties that are independent of accompaniment is the following: if p is an extrinsic property that is independent of accompaniment, then it is possible to have p (at least partly) in virtue of having another property that fails to be independent of accompaniment; whereas if p is an intrinsic property that is independent of accompaniment, then this is not possible. Consider, for example, the extrinsic property q_3 of being either cubical and lonely, or else non-cubical and accompanied, which is independent of accompaniment provided being cubical is independent of accompaniment.[28] Witmer et al. claim that q_3 is extrinsic since it is possible for something to have q_3 in virtue of having the property of being cubical and lonely, which is not independent of accompaniment. In contrast, Witmer et al. claim that being cubical is intrinsic since this property is independent of accompaniment, and it

is not possible for something to have this property (either partly or wholly) in virtue of having another property that is not independent of accompaniment. As a result of this, Witmer et al. propose analysis (8).[29]

> (8) For any p, p is an intrinsic property $=_{df}$ i) p is a property, ii) p is independent of accompaniment; and iii) necessarily, for any x, if x has p at least partly in virtue of having a property q, then q is independent of accompaniment.

The WBT analysis, unlike the duplication analysis, arguably correctly classifies the non-qualitative property of being Obama as intrinsic (given intrinsic properties are independent of accompaniment) since (given this assumption) the property is independent of accompaniment, and arguably it is not possible for something to have this property in virtue of having a property that fails to be independent of accompaniment. Given numbers necessarily exist, the WBT analysis, unlike both the duplication analysis and Vallentyne's analysis, also correctly classifies the indiscriminately necessary property of being such that there is a number as extrinsic, since this property fails to be independent of accompaniment. Another advantage of the WBT analysis over the duplication analysis and Vallentyne's analysis is that the notion of grounding it employs is much further from the notion of intrinsicality than the notions of duplication and contraction employed by these other analyses. The WBT analysis therefore promises to be more illuminating with respect to the nature of intrinsicality than either the duplication analysis or Vallentyne's analysis.

One objection to the WBT analysis is that the notion of grounding it employs is obscure and is in urgent need of analysis itself.[30] A related objection is that the judgements about what holds in virtue of what required by the WBT analysis are contentious. For example, in explaining how the WBT analysis correctly classifies the properties of being the only red thing and being such that there is a cube as extrinsic, Witmer et al. claim that something can have the former property in virtue of being a lonely red thing, while something can have the latter property in virtue of being wholly distinct from a cube. But these claims can be questioned.[31]

A third objection to the WBT analysis is that it falsely classifies all indiscriminately necessary properties as extrinsic. Consider, for example, the property of being self-identical, which Witmer et al. discuss. Since this property is indiscriminately necessary, it is not independent of accompaniment, and is therefore classified as extrinsic by the WBT analysis. However, intuitively, this property is intrinsic since, necessarily, if an object is identical to itself, it is identical to itself in virtue of how it is, as opposed to how it is related to things wholly distinct from it or how things wholly distinct from it are.[32]

A fourth objection is that the WBT analysis falsely classifies the extrinsic property q_1 of being such that it is a law that all emeralds are green as intrinsic, given a typical primitivist theory about laws, and given the further thesis that laws can only be grounded by other laws. The reason is that, while q_1 is independent of accompaniment (given typical primitivism, and provided the law that every emerald is green is contingent), it doesn't appear possible for something to have this property in virtue of having a property that fails to be independent of accompaniment, given laws can only be grounded by other laws.

The final objection I will discuss is that, like Langton and Lewis's analysis, which also appeals to independence of accompaniment, the WBT analysis is incompatible certain metaphysical views that posit necessary connections between contingently existing entities. For example, according to many realists about sets, for any x, necessarily, x exists iff there is a singleton set $\{x\}$ which is wholly distinct from x. Given this theory, the WBT analysis falsely classifies any intrinsic property that can only be had by contingently existing entities as extrinsic, since anything having such a property will have to be accompanied. For example, given this theory, and given only contingently existing things can be gold, being gold will be falsely classified as extrinsic by the WBT analysis, since anything that is gold will be accompanied by its contingently existing singleton.[33]

5   Conclusion

Each of the three analyses of intrinsicality discussed here have been found to have serious problems. If we want to have a successful analysis, therefore, more work will have to be done. The search up to this point, however, has not been completely in vain. Knowledge of how these analyses fail might help us find a more successful analysis in the future. Perhaps more importantly, understanding the extent to which these analyses succeed and fail teaches us much about the nature of intrinsicality and how intrinsicality relates to other notions. For this reason, even if at the end of the day we cannot come up with a fully satisfactory analysis of intrinsicality, the search for one will still have been of value.

Notes

[1]For any x and y, x is *wholly distinct* from $y =_{df} x$ has no proper parts in common with y.

[2]Different philosophers have used different intuitive characterisations of intrinsicality. (See (Eddon, 2011, fn. 2) for a list.) While most of these are essentially tivial variants on (1), some aren't and might perhaps characterise alternative notions of intrinsicality. This paper is only concerned with the notion (or perhaps notions) of intrinsicality characterised by (1).

[3]For simplicity, I am going to assume both a purdurantist theory of persistence, and a reductionist theory of tense. According to the purdurantist theory, things persist through time by having temporal parts located at the different times at which they exist. According to reductionism about tense, tense expressions like 'will' and 'was' can be analysed in terms of non-tense expressions such as 'before' and 'at 2012', and non-temporal expressions. (See (Sider, 2001) for more discussion.) I will also assume the classical theory of possible worlds assumed in (Marshall, 2012), according to which the same things can exist at multiple worlds, and there are things that exist at non-actual worlds that don't exist at the actual world. (See (Marshall, 2012, fn. 7) for more details.) Finally 'possible world' will often be shortened to 'world'.

[4]For further important philosophical applications of the notion of intrinsicality, see fn. 1 of (Marshall, 2012) and the references listed there.

[5]This kind of criticism against intuitive characterisations like (1) has been levelled by (Yablo, 1999, p. 479).

[6]See (Moore, 1922) and (Lewis, 1983b).

[7]See (Vallentyne, 1997).

[8]See (Witmer et al., 2005).

[9]Due to limitations of space, there are a number of attempted analyses of intriniscality that I can't discuss. These include Michael Dunn's analysis (Dunn, 1990) in terms of relevance, Robert Francescotti's analysis (Francescotti, 1999) in terms of relationality, Stephen Yablo's sophisticated contractionist analysis (Yablo, 1999), David Denby's analysis (Denby, 2006), (Denby, 2010) in terms of instantiation under relations, Vera Hoffman-Kolss's anlaysis (Hoffmann-Kolss, 2010b) in terms of relationality, Kelly Trogdon's analysis (Trogdon, 2009), (Trogdon, 2010) in terms of grounding, Gideon Rosen's analysis (Rosen, 2010), also in terms of grounding, and my own analysis in terms of positivity. For discussion of some of these analyses see (Sider, 1996), (Weatherson, 2006), (Parsons, 2007), (Hoffmann-Kolss, 2010a), (Bader, 2010), (Skiles, 2009) and (Marshall, MS).

[10]For definiteness, I will assume that '$\phi =_{df} \psi$' is true iff the states of affairs expressed by ϕ and ψ are identical. The discussion in this paper is compatible with other accounts of '$=_{df}$' provided they accept that, if '$\phi =_{df} \psi$' is true, then the state of affairs expressed by ϕ is necessarily equivalent to the state of affairs expressed by ψ. See (Rosen, 2010, sec. 10) for an alternative account which satisfies this condition. I use 'state of affairs' to mean 'way things are or fail to be' and 'property' to mean 'way a thing is or fails to be'.

[11]Arguably, not all analyses are conceptually necessary in this sense. For example, while 'There are water molecules $=_{df}$ there are H2O molecules' is arguably true, it is not conceptually necessary.

[12]See (Lewis, 1983b, p. 353).

[13]Depending on how Lewis's theory of possible worlds is developed, (2) might also fail given his theory, since the fusion of all the possible worlds might fail to have any duplicates (other than itself).

[14]See (Moore, 1922, Ch. 8).

[15]A non-qualitative property is intuitively a property that concerns particular individuals, whereas a qualitative property is intuitively a property that doesn't concern particular individuals. Being Obama, and being next to Obama, for example, are both non-qualitative properties, whereas being cubical and being next to a tin are qualitative properties. A non-modal property is a property that can be expressed by non-modal vocabulary. I am taking modal vocabulary to include nomic and causal vocabulary. Cf. (Sider, 2003).

[16]Absolutist anti-substantivalism has a claim on being the "naive" or "common-sense" theory of space.

[17]The duplication analysis also appears to require mereological universalism, where mereological universalism is the thesis that, for any set S, there is a mereological fusion of all the members of S. The reason for this is that any analysis of intrinsic properties must be able to be extended to apply to relations with multiple places. The duplication analysis can be so extended given mereological universalism, but it is not at all obvious how to extend it without mereological universalism.

Multiple place relations, just like one-place properties, can be intrinsic or extrinsic. Roughly, an n-place intrinsic relation is a relation things stand in in virtue of how they are and how they are related to each other, as opposed to how they are related to things wholly distinct from them or how things wholly distinct from them are. More precisely, we have the following generalisation of (1).

(A) Being R is an intrinsic n-place relation $=_{df}$ necessarily, for any $x_1,\ldots, x_n$, if $Rx_1 \ldots x_n$, then $Rx_1 \ldots x_n$ in virtue of how $x_1, \ldots, x_n$ are and how they are related to each other, as opposed to how they are related to things wholly distinct from them or how things wholly distinct from them are

The natural extension of the duplication analysis to n-place relations employs the notion of an n-duplicate. The definition of an n-duplicate is given by (B), where $I_n = \{1, \ldots, n\}$, and, for any non-empty set S, Fusion(S) is the mereological fusion of the members of S.

(B) For any n-sequences $< x_1, \ldots, x_n >$ and $< y_1, \ldots, y_n >$, for any worlds w_1 and w_2, $< x_1, \ldots, x_n >$ at w_1 is an n-duplicate of $< y_1, \ldots, y_n >$ at $w_2 =_{df}$ for any subset S of I_n, Fusion($\{x_i | i \in S\}$) at w_1 is a duplicate of Fusion($\{y_i | i \in S\}$) at w_2.

The generalised version of the duplication analysis can now be stated as (C). (Note that 'instantiates' is a multigrade predicate. For example, x_1, x_2 instantiates the relation of being 1 m from iff x_1 and x_2 stand in this relation to each other, which they do iff x_1 is 1 m from x_2.)

9

(C) For any p, p is an intrinsic n-place relation $=_{\mathrm{df}}$ i) p is an n-place relation, and ii) for any $x_1, \ldots, x_n$, for any $y_1, \ldots, y_n$, and for any worlds w_1 and w_2 such that $< x_1, \ldots, x_n >$ at w_1 is a n-duplicate of $< y_1, \ldots, y_n >$ at w_2, $x_1, \ldots, x_n$ instantiates p at w_1 iff $y_1, \ldots, y_n$ instantiates p at w_2

(C) requires mereological universalism, since, without it, n-sequences which need to be n-duplicates for the analysis to work will fail to be n-duplicates for lack of fusions. For example, if there are no fusions at all, there will not be any n-duplicates for $n > 1$.

[18]This objection has been discussed by a number of philosophers including Moore. Moore's response was to claim that, while there is a broad sense of 'intrinisc' according to which some non-qualitative properties are intrinsic, there is a another more narrow sense of 'intrinsic' according to which all non-qualitative properties are extrinsic (Moore, 1922, pp. 262-263). See (Sider, 1996) and (Eddon, 2011) for further discussion.

[19]Given mereological universalism, it is possible to modify the duplication analysis so that it classifies at least some non-qualitative intrinsic properties as intrinsic. The first step towards formulating this analysis is to modify (C) in fn. 17 by replacing 'intrinsic' with 'qualitative intrinsic', thereby obtaining (D).

(D) For any p, p is a qualitative intrinsic n-place relation $=_{\mathrm{df}}$ i) p is an n-place relation, and ii) for any $x_1, \ldots, x_n$, for any $y_1, \ldots, y_n$, and for any worlds w_1 and w_2 such that $< x_1, \ldots, x_n >$ at w_1 is a n-duplicate of $< y_1, \ldots, y_n >$ at w_2, $x_1, \ldots, x_n$ instantiates p at w_1 iff $y_1, \ldots, y_n$ instantiates p at w_2

Given (D), a duplication theorist can offer (E) and (F) as an analysis of intrinsicality.

(E) For any x and y, for any worlds w_1 and w_2, x at w_1 is a super-duplicate of y at w_2 $=_{\mathrm{df}}$ x's parts at w_1 are the same as y's parts at w_2, and, for any n, for any qualitative intrinsic n-place relation p, and for any $x_1, \ldots, x_n$ all of whom are parts of x at w_1, $x_1, \ldots, x_n$ instantiates p at w_1 iff $x_1, \ldots, x_n$ instantiates p at w_2.

(F) For any p, p is an intrinsic property $=_{\mathrm{df}}$ i) p is a property, and ii) for any x and y, and for any worlds w_1 and w_2 such that x at w_1 is a super-duplicate of y at w_2, x has p at w_1 iff y has p at w_2

Due to proper parthood being a qualitative intrinsic relation that is transitive, if x at w_1 is a super-duplicate of y at w_2, then $x = y$. As a result, the modified duplication analysis classifies properties like being Obama, and having Obama as a part, as intrinsic. The modified analysis, however, still faces the other objections described in the main text. It also arguably falsely classifies some non-qualitative properties as intrinsic. For example, the modified duplication analysis classifies being non-identical to Obama as intrinsic, when it is arguably extrinsic.

[20]This objection, like some of those above, also apply to the analyses of intrinsicality in terms of naturalness discussed in (Marshall, 2012). This objection is discussed, for example, by (Sider, 1996) and (Eddon, 2011).

[21]See (Lewis, 1983a) for a similar characterisation.

[22]I have simplified Valentyne's analysis by assuming reductionism about tense and a perdurantist theory of persistence (see fn. 3). I have also deleted the "removal of laws" clause in Vallentyne's original formulation, which is discussed below. Vallentyne's original analysis is (G), where a world u is an x-t-contraction of world w iff u is obtainable from w by removing to the greatest possible extent all objects wholly distinct from x, all times except t, and all laws, while keeping everything else the same. (See (Vallentyne, 1997, pp. 211-212).)

(G) For any p, p is an intrinsic property $=_{\mathrm{df}}$ i) p is a property, and ii) for any x, for any time t, for any world w, and for any world u that is an x-t-contraction of w, x has p at t at u iff y has p at t at w

[23]It can also be generalised to apply to multiple place relations without requiring mereological universalism, unlike what appears to be the case with the duplication analysis. See fn. 17.

[24]In order to avoid this problem, a proponent of Vallentyne's analysis might modify his analysis by appealing to impossible worlds. On this modification, (5) would be understood so that 'world' means 'either

possible or impossible world', and u would be defined to be an x-contraction of w iff u is the possible or impossible world that would result if all objects wholly distinct from x were removed from w and everything else remained the same. (A similar modification might also be possible for the duplication analysis.) One objection to this proposal is that its definition of 'x-contraction' requires counterpossibles to have non-trivial truth conditions, contra the leading analyses of counterfactuals due to Lewis and Stalnaker. (See (Lewis, 1973) and (Stalnaker, 1968). See (Nolan, 1997) for an analysis that allows counterpossibles to have non-trivial truth conditions.) This modified analysis also faces the other problems faced by Vallentyne's original analysis.

[25]See (Vallentyne, 1997, p. 213).

[26]Vallentyne's analysis, like the modified duplication analysis formulated in fn. 19, also faces the objection that it falsely classifies being not Obama as intrinsic.

[27]It doesn't strictly follow from primitivism that entities can be removed from the world without altering the laws. The claim that they can be so removed, however, is both intuitive and compatible with primitivism, and as a result it is natural for primitivists to endorse it. Since this claim is also natural to endorse given Michael Tooley's theory of laws, Vallentyne's analysis is also incompatible with Tooley's theory. Other theories, such as Humean theories of laws and David Armstrong's theory of laws, in contrast, have the consequence that, if certain objects are removed from the world, then the laws will be different. See (Beebee, 2000) for a discussion of these theories of laws.

[28]For simplicity, I am assuming shape properties such as being cubical are intrinsic. For arguments that they are not, see (Bricker, 1993) and (Skow, 2007).

[29]The formulation of the WBT analysis given by Witmer et al. themselves contains 'in virtue of' without the qualifier 'at least partly'. I have added this qualifier in my statement of the WBT analysis because Witmer et al. mean 'either partly in virtue of or fully in virtue of' when they use the unadorned 'in virtue of' in their analysis, while I have used the unadorned 'in virtue of' in (1) to mean 'fully in virtue of'. (Witmer and Trogdon have both confirmed to me in personal correspondence that they meant 'at least partly in virtue of' by their use of 'in virtue of' in their paper.)

[30]Witmer et al. respond to this objection in part by claiming that the employed notion of grounding is familiar since it is used in ordinary discourse when, for example, we say that "one has the right to vote in virtue of being a citizen", or "one has the power to expel a student from school in virtue of being a school principal". See (Witmer et al., 2005, p. 336). It is important to note that even if the notion of grounding used in the WBT analysis is less well understood and that of intrinsicality, an analysis of intrinsicality in terms of it might still be illuminating and able to satisfy the aims of analysis described in section 1. The same goes for the notions of duplication and contraction used in the duplication analysis and in Vallentyne's analysis.

[31]Witmer et al. provide an argument for at least the second of these claims. See (Witmer et al., 2005, pp. 346-7).

[32]Witmer et al. respond to this objection by, in effect, claiming that self-identical objects are neither self-identical in virtue of how they are, or self-identical in virtue of how they are related to things wholly distinct from themselves or how things wholly distinct from them are. (When giving this response, Witmer et al. use 'depends' rather than 'in virtue', writing that while "the property of being self-identical doesn't depend on anything outside the individual in question . . . it doesn't depend on anything inside the individual either" (Witmer et al., 2005, p. 348). Witmer, however, has informed me in personal correspondence that, in at least his case, he meant to use 'depends' with the same sense as 'in virtue'.) Witmer et al. don't provide any argument for this surprising claim. They might, however, have been motivated by the following kind of argument:

(H) 'In virtue' expresses a non-causal explanatory notion (where R expresses a non-causal explanatory notion iff, necessarily, $\ulcorner \varphi R \phi \urcorner$ is true only if the state of affairs expressed by ϕ non-causally explains the state of affairs expressed by φ).

(I) For any x, the true ascription of being self-identical to x is foundational (where an obtaining state of affairs, or a fact, is foundational iff it is not non-causally explained by any fact)

11

(J) If ⌜n is F invirtue of how n is (as opposed to how it is related to things wholly distinct from itself or how things wholly distinct from it are)⌝ is true, then there is a predicate G such that ⌜n is F in virtue of it being the case that n is G⌝ is true

---

(K) For any x, it is not the case that x is self identical in virtue of how x is (as opposed to how it is related to things wholly distinct from itself or how things wholly distinct from it are)

To see that (K) follows from (H-J), suppose that some object x is self identical in virtue of how x is. Given this supposition, it follows from (J) that there is a predicate G such that ⌜n is self-identical in virtue of it being the case that n is G⌝ is true, where n refers to x. By (H), it follows from this that the state of affairs expressed by ⌜n is self-identical⌝ is non-causally explained by the state of affairs expressed by ⌜n is G⌝. But by (J), there is no such state of affairs, since the state of affairs expressed by ⌜n is self-identical⌝ is foundational. Hence we have a contradiction, which establishes that (K) follows from (H-J).

One significant problem with this argument is that there is a good reason to reject (H), given (J) is true. The reason is that, given (H) and (J) are both true, the characterisation of intrinsicality given by (1) is either false, or has the highly contentious consequence that no ascription of an intrinsic property to a thing can be foundational. To see why, suppose that F expresses an intrinsic property p whose ascription to x is foundational. Then, it follows from (H) and (J) that (1) classifies p as extrinsic. Hence, given (H) and (J) are true, (1) is either false, or there are no intrinsic properties whose ascription to anything is foundational. That there are no intrinsic properties whose ascription to anything is foundational is implausible and is a consequence that an analysis of intrinsicality shouldn't be committed to (given a number of the aims of analysing intrinsicality described in section 1). Given there are intrinsic properties whose ascriptions to things are foundational, then, if (H) and (J) are true, then (1) is false. However, (1) has high plausibility, in large part because it, together with paradigmatic examples of intrinsic and extrinsic properties, fixes the meaning of 'intrinsic property'. This gives us a good reason to think that either (H) or (J) is false.

This argument that either (H) or (J) is false isn't decisive since (1) could conceivably be false, even though it partly fixes the meaning of 'intrinsic property'. In particular, it could be that, while (1) is strictly false, it, together with paradigmatic examples of intrinsic and extrinsic properties, is still able to get us to latch onto the notion of an intrinsic property. However, at least in my own case, the notion that (1) together with these examples gets me to latch onto appears to be one according to which being self-identical is intrinsic. Even if (1) is strictly false, then, there is still reason to think that being self-identical is intrinsic. Moreover, if (1) is false, then the claim made by Witmer et al. that self-identical things aren't self-identical in virtue of how they are (since they are not self-identical in virtue of anything at all), even if true, doesn't provide any reason to think that being self-identical is not intrinsic, since it would only provide such a reason if (1) was true. Hence, even if (H) and (J) are true, and (1) is false, we should still think that being self-identical is intrinsic.

A plausible diagnosis of what is going on is the following. 'In virtue' can express at least two different notions, a non-explanatory notion, which is the notion that is used in the true reading of (1), and an explanatory notion, which is the notion Witmer et al. use in their analysis of intrinsicality. While Witmer et al. might be right that a self-identical object is not self-identical in virtue of how it is in the explanatory sense of 'in virtue', a self-identical object is self-identical in virtue of how it is in the non-explanatory sense of 'in virtue', and this shows that, contra Witmer et al., being self-identical is intrinsic.

[33]This objection is discussed in (Cameron, 2009), although Cameron applies it to the Langton and Lewis analysis rather than to the WBT analysis. The WBT analysis is also incompatible with a number of other theories Cameron describes which posit necessary connections between contingent entities. In response to this objection, Trogdon has suggested to me that the WBT analysis should be revised by adding 'concrete' to the definition of loneliness, so that, necessarily, x is lonely iff there are no *concrete* contingently existing entities wholly distinct from x. One problem with this response is that the distinction between concrete and abstract objects is not entirely clear, and as a result it is not entirely clear whether sets of concrete objects are abstract, which is required for this response to work. A second problem is that, given Trogdon's suggested modification, intrinsic properties that can only be had by sets of concreta will still be falsely

classified as extrinsic by the WBT analysis, since sets of concreta will still be necessarily accompanied given the metaphysical view under consideration. A final problem is that this response does not appear to help with all of the other metaphysical theories Cameron points out are incompatible with the Langton and Lewis analysis, and by extension incompatible with the WBT analysis. For example, Cameron notes that the claim that all intrinsic properties are independent of accompaniment, which the WBT analysis requires to be true, is also incompatible with versions of substantivalism which hold that ordinary objects, like pieces of gold, are necessarily located in, but wholly distinct from, spacetime regions. Replacing 'contingently existing' with 'concrete' in the definition of loneliness does not appear to help avoid this problem since spacetime regions are presumably concrete, at least given substantivalism.

References

Bader, R. M. (2010). Review of Vera Hoffmann-Kolss: The metaphysics of extrinsic properties. *Notre Dame Philosophical Reviews*, 2010(10).

Beebee, H. (2000). The non-governing conception of laws of nature. *Philosophy and Phenomenological Research*, 61:571–94.

Bricker, P. (1993). The fabric of space: Intrinsic vs. extrinsic distance relations. *Midwest Studies in Philosophy*, 18(1):271–294.

Cameron, R. (2009). Intrinsic and extrinsic properties. In *The Routledge Companion to Metaphysics*. Routledge.

Denby, D. A. (2006). The distinction between intrinsic and extrinsic properties. *Mind*, 115(457):1–17.

Denby, D. A. (2010). Intrinsic and extrinsic properties: A reply to hoffmann-kolss. *Mind*, 119(475):773–782.

Dunn, J. M. (1990). Relevant predication 2: Intrinsic properties and internal relations. *Philosophical Studies*, 60(3):177–206.

Eddon, M. (2011). Intrinsicality and hyperintensionality. *Philosophy and Phenomenological Research*, 82(2):314–336.

Francescotti, R. (1999). How to define intrinsic properties. *Noûs*, 33(4):590–609.

Hoffmann-Kolss, V. (2010a). Denby on the distinction between intrinsic and extrinsic properties. *Mind*, 119(475):773–782.

Hoffmann-Kolss, V. (2010b). *The Metaphysics of Extrinsic Properties*. Ontos-Verlag.

Lewis, D. (1973). *Counterfactuals*. Blackwell, Oxford.

Lewis, D. (1983a). Extrinsic properties. *Philosophical Studies*, 44:197–200.

Lewis, D. (1983b). New work for a theory of universals. *Australasian Journal of Philosophy*, 61:343–77.

Marshall, D. (2012). Analyses of intrinsicality in terms of naturalness. *Philosophy Compass*, 7(8):531–542.

Marshall, D. (MS). Grounding and intrinsicality.

Moore, G. E. (1922). The conception of intrinsic value. In *Philosophical Studies*, pages 253–75. Routledge & Kegan Paul, London.

Nolan, D. (1997). Impossible worlds: A modest approach. *Notre Dame Journal of Formal Logic*, 38:535–72.

Parsons, J. (2007). Is everything a world? *Philosophical Studies*, 134(2):165–181.

Rosen, G. (2010). Metaphysical dependence: Grounding and reduction. In Hale, B. and Hoffmann, A., editors, *Modality: Metaphysics, Logic, and Epistemology*, pages 109–36. Oxford University Press, Oxford.

Sider, T. (1996). Intrinsic properties. *Philosophical Studies*, 83:1–27.

Sider, T. (2001). *Four-Dimensionalism*. Clarendon, Oxford.

Sider, T. (2003). Reductive theories of modality. In Loux, M. J. and Zimmerman, D. W., editors, *Oxford Handbook of Metaphysics*, pages 180–208. Oxford University Press, Oxford.

Skiles, A. (2009). Trogdon on monism and intrinsicality. *Australasian Journal of Philosophy*, 87(1):149–2013.

Skow, B. (2007). Are shapes intrinsic? *Philosophical Studies*, 133(1).

Stalnaker, R. (1968). A theory of conditionals. In *Studies in Logical Theory: American Philosophical Quarterly Monograph Series, No. 2*. Blackwell, Oxford.

Trogdon, K. (2009). Monism and intrinsicality. *Australasian Journal of Philosophy*, 87(1):127–2013.

Trogdon, K. (2010). Intrinsicality for monists (and pluralists). *Australasian Journal of Philosophy*, 88(3):555–558.

Vallentyne, P. (1997). Intrinsic properties defined. *Philosophical Studies*, 88(2):209–219.

Weatherson, B. (2006). Intrinsic vs. extrinsic properties. In *The Stanford Encyclopedia of Philosophy (Fall 2006 Edition)*.

Witmer, D. G., Butchard, W., and Trogdon, K. (2005). Intrinsicality without naturalness. *Philosophy and Phenomenological Research*, 70(2):326–350.

Yablo, S. (1999). Intrinsicness. *Philosophical Topics*, 26:479–505.