The Varieties of Intrinsicality[1]

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Intrinsicality is a central notion in metaphysics that can do important work in many areas of philosophy. It is not widely appreciated, however, that there are in fact a number of different notions of intrinsicality, and that these different notions differ in what work they can do. This paper discusses what these notions are, describes how they are related to each other, and argues that each of them can be analysed in terms of a single notion of intrinsic aboutness that relates states of affairs to the things they are intrinsically about.

1. Introduction

Intrinsicality is a central notion in metaphysics that can be used to do important work in many areas of philosophy.[2] It is often not appreciated, however, that there are in fact a number of different notions of intrinsicality, and that these different notions differ in what work they can do.[3] In this paper, I will discuss several intuitive characterisations of intrinsicality that are often assumed to characterise a single notion of intrinsicality and argue

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[2] Examples of work intrinsicality has been used to do (or attempt to do) include: i) analysing distinctions, such as the distinction between real change and mere Cambridge change (Humberstone, 1996, pp. 207–208) and the distinction between intrinsic value and extrinsic value (Moore 1922); ii) analysing notions, such as the notion of a dispositional property (Lewis 1997); iii) formulating theses, such as internalism about mental states (Kim 1993); and iv) formulating arguments, such as the argument from temporary intrinsics against endurantism (Lewis, 1986, sec 4.2).

[3] Moore 1922 and Sider 1996 have also argued that there is more than one notion of intrinsicality. Moore and Sider both argue that there are two notions of intrinsicality, one which can be characterised in terms of duplication and on which all intrinsic properties are qualitative, and another on which some non-qualitative properties, such as the property of being Obama, are intrinsic. I will argue that there is a greater number of notions of intrinsicality than this, even if, as I will argue in section 5, there is no notion of intrinsicality characterised in terms of duplication.

that they instead characterise a number of different notions. I will also argue that, among those notions that best deserve being called "notions of an intrinsic property", each can be analysed in terms of a single notion of intrinsic aboutness relating states of affairs to the things they are intrinsically about.[4] Given this is correct, philosophers need to be careful to distinguish which notion of intrinsicality they are employing when they use 'intrinsic' to do philosophical work. They also need to take care to distinguish which notion of intrinsicality they are concerned with when they attempt to give an analysis of intrinsicality, since a proposed analysis might work for one notion of intrinsicality but not others. Finally, the fact that each notion of intrinsicality can be analysed in terms of a single notion of intrinsic aboutness raises the possibility that we might be able to analyse each of the notions of intrinsicality by first analysing them in terms intrinsic aboutness and then providing an analysis of intrinsic aboutness.[5]

The following four intuitive characterisations of 'intrinsic property' are a representative sample of the different ways in which philosophers have characterised 'intrinsic property':

> A sentence or statement or proposition that ascribes intrinsic properties to something is entirely about that thing; whereas an ascription of extrinsic properties to something is not entirely about that thing, though it may well be about some larger whole which includes that thing as part (Lewis, 1983a, p. 111).

> A thing has its intrinsic properties in virtue of the way that thing itself, and nothing else, is. Not so for extrinsic properties, though a thing may well have these in virtue of the way some larger whole is (Lewis, 1983a, pp. 111).

> If something has an intrinsic property, then so does any perfect duplicate of that thing; whereas duplicates situated in different surroundings will differ in their extrinsic properties (Lewis, 1983a, pp. 111–2).

> An intrinsic property is a property that is *internal* in the sense that whether an object has it depends entirely on what the object is like *in itself* (Author's italics) (Francescotti, 1999, p. 590).

In sections 2–4, I will discuss the first three characterisations above, which are all due to David Lewis, and I will argue that, pace Lewis, the notions characterised by suitably precisified versions of these characterisations are

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[4]   More carefully, I will argue that each notion that is best called a notion of an intrinsic property is at least necessarily coextensive with a notion of intrinsicality that can be analysed in terms of intrinsic aboutness. I will also argue that, not only are there multiple notions of intrinsicality, but that there are multiple notions of intrinsicality that fail to be coextensive.

[5]   I attempt to give such an analysis in Marshall, (MS).

distinct.[6] In particular, I will argue that Lewis's second characterisation characterises a number of different notions corresponding to different readings of 'in virtue', and that each of these notions are distinct from the distinct notions characterised by his first and third characterisations.[7] In section 5, I will then discuss variants of Lewis's characterisations, including the fourth characterisation above, which is due to Robert Francescotti. I will discuss how the notions characterised by these variants and Lewis's originals are related to each other, and argue that, of those notions that best deserve being called notions of intrinsicality, each can be analysed in terms of intrinsic aboutness.[8]

2. Lewis's First Characterisation

Lewis's first characterisation is:

> A sentence or statement or proposition that ascribes intrinsic properties to something is entirely about that thing; whereas an ascription of extrinsic properties to something is not entirely about that thing, though it may well be about some larger whole which includes that thing as part (Lewis, 1983a, p. 111).

The expression 'about' can be understood in different ways. The sense of aboutness intended in Lewis's first characterisation may be taken to be

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[6]   Lewis also gives the following intuitive characterisation of intrinsicality, which I take to be equivalent to his second characterisation above: "The intrinsic properties of a thing depend only on that thing; whereas the extrinsic properties of something may depend, wholly or partly, on something else" (Lewis, 1983a, p. 111). Characterisations that are equivalent to Lewis's second and fourth characterisation are arguably the most commonly used intuitive characterisations of intrinsicality in the literature. Examples include: "[A]n intrinsic property of an object is a property that the object has by virtue of itself, depending on no other thing" (Dunn, 1990, p. 178); "[T]he idea of an intrinsic property is the idea of a property a thing has in and of itself" (Humberstone, 1996, p. 229); and "[A]n intrinsic property is one an object has in virtue of itself alone" (Eddon, 2011, p. 315).

[7]   A number of other philosophers have in effect argued that Lewis's second characterisation characterises a different notion than Lewis's third characterisation. The first such philosopher was G. E. Moore 1922, who considered similar characterisations to Lewis's second and third characterisations. Other philosophers include Dunn 1990 and Humberstone 1996.

[8]   Between them, Lewis's and Francescotti's characterisations plausibly capture the different notions philosophers typically use 'intrinsic property' to express. There are also more peripheral uses of 'intrinsic property' on which it expresses notions not captured by these characterisations. For example, 'intrinsic property' is sometimes used to mean 'essential property', where i) p is an essential property iff, necessarily, anything that has p has it essentially, and ii) x has p essentially iff, necessarily, if x exists then x has p. These and other peripheral uses of 'intrinsic property' are normally recognised to express notions distinct from those philosophers typically use 'intrinsic property' to express and I will not discuss these uses here.

intrinsic aboutness, where intrinsic aboutness can be intuitively character-
ised by (1).[9]

    1.   A state of affairs s is intrinsically about a thing x iff s (either truly
         or falsely) describes how x and its parts are and how they are
         related to each other, as opposed to how x and its parts are related
         to other things and how other things are.

Using the notion of intrinsic aboutness, Lewis's first characterisation can be
more precisely stated by the schema (2).

    2.   The property of being F is intrinsic iff, necessarily, for any x, the
         state of affairs of x being F is intrinsically about x.

For any predicate F expressing a property p, and any name n referring to an
x, define the ascription of p to x to be the state of affairs expressed by
$\ulcorner Fn \urcorner$. Using this definition of an ascription of a property to something, we
can replace the schema (2) with the sentence (3).

    3.   For any property p, p is intrinsic iff, necessarily, for any x, the
         ascription of p to x is intrinsically about x.

An example of a property that is not intrinsic according to (3) is the prop-
erty of being an uncle. This property is not intrinsic, according to (3), since
its ascription to a man does not only describe how he is, but also how he is
related to things wholly distinct from him.[10] For instance, the ascription of
the property to Obama, which is the state of affairs of Obama being an
uncle, does not only describe how Obama is, but also describes how Obama
is related to other people. Examples of properties that are intrinsic according
to (3) are more controversial. Two examples of properties that are at least

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9   I take a state of affairs to be a way things are or a way things fail to be, a property to
    be a way a thing is or fails to be, and an n-place relation (where $n > 1$) to be a way n
    things are related to each other or fail to be related to each other. A 0-place relation is a
    state of affairs and a 1-place relation is a property. For simplicity, I will assume an
    abundant necessitarian theory of relations, according to which: i) all well-defined
    sentences and predicates express relations; ii) for any sentence φ expressing a state of
    affairs s referred to by a name a, $\ulcorner \Box(\varphi \equiv (a \text{ obtains})) \urcorner$ is true (when ϕ does not contain
    any rigidification devices such as 'actually'); and ii) for any n-place predicate predicate
    F expressing a relation p referred to by b, $\ulcorner \Box \forall x_1 \ldots \forall x_n(Fx_1 \ldots x_n \equiv (x_1, \ldots, x_n \text{ instanti-}$
    ates $b)) \urcorner$ is true (when F doesn't contain any rigidification devices). For simplicity, I
    will also assume that the so called simplist quantified modal logic, SQML, is valid,
    according to which, for example, modal operator expressions and quantifier expressions
    commute. See Menzel 2008 for a discussion of SQML.

10   x is wholly distinct from y iff x and y have no part in common.

prima facie plausibly intrinsic according to (3), however, are *being cubical* and *being made of tin*, and, for expositional purposes, I will assume they are intrinsic in this paper.

Let us call the notion characterised by (3) *aboutness* intrinsicality. We then have the following definition of an aboutness intrinsic property (or an a-intrinsic property, for short):

4.   For any property p, p is a-intrinsic iff, necessarily, for any x, the ascription of p to x is intrinsically about x.

The characterisation of intrinsic aboutness given by (1) above is meant to be understood so that a state of affairs s counts as "describing how x and its parts are and how they are related to each other" if it describes how at least one part of x is or how at least two parts of x are related to each other. It is therefore not required for s to be intrinsically about x that, for each part z of x, s describe how z is. It follows from this that, if x is part of y, and s describes how x and its parts are and how they are related to each other (as opposed to how x and its parts are related to other things and how other things are), then s also describes how y and its parts are and they are related to each other (as opposed to how y and its parts are related to other things and how other things are). The relation of intrinsic aboutness therefore satisfies the principle of merelogical dominance (MD).

MD.   If a state of affairs s is intrinsically about x, and x is part of y, then s is also intrinsically about y.

It follows from (MD), for example, that if a is a piece of tin that is part of Mars, and the state of affairs of a being made of tin is intrinsically about a, then this state of affairs is also intrinsically about Mars. It also follows from (MD) that, if a and b are both parts of Mars, and the state of affairs of a being 1 m away from b is intrinsically about the mereological sum of a and b, then the state of affairs of a being 1 m away from b is also intrinsically about Mars.

The relation of intrinsic aboutness also plausibly satisfies the principles (C), (D) and (N) concerning conjunction, disjunction and negation.

C.   For any states of affairs s and s', for any x, if s is intrinsically about x, and s' is intrinsically about x, then the conjunction of s and s' is intrinsically about x.

D.   For any states of affairs s and s', for any x, if s is intrinsically about x, and s' is intrinsically about x, then the disjunction of s and s' is intrinsically about x.

N. For any states of affairs s, for any x, if s is intrinsically about x, then the negation of s is intrinsically about x.

It is important to distinguish the notion of intrinsic aboutness from another notion of aboutness which we might call *haecceistic concern*. Some states of affairs are qualitative, or general, in the sense that they don't haecceistically concern any particular things. For example, the state of affairs of there being an electron and the state of affairs of every emerald being green are both qualitative in this sense. Other states of affairs, on the other hand, do haecceistically concern particular things. Examples include the state of affairs of Obama being president, which haecceistically concerns Obama, and the state of affairs of Obama being next to Clinton, which haecceistically concerns both Obama and Clinton. This notion of haecceistic concern is orthogonal to the notion of intrinsic aboutness. For example, the state of affairs of Obama being taller than most men haecceistically concerns Obama but is not intrinsically about him, whereas, given (MD), the state of affairs of a being made of tin is intrinsically about Mars, given a is part of Mars, but it does not haecceistically concern Mars.

The relation of haecceistic concern applies to properties and relations, as well as states of affairs. The property of being Obama, for example, haecceistically concerns Obama, whereas the property of being a friend of both Obama and Clinton haecceistically concerns both Obama and Clinton. A qualitative property or relation is a property or relation that does not haecceistically concern any particular thing. The property of being an electron, for example, is a qualitative property. A non-qualitative property or relation, on the other hand, is a property or relation that haecceistically concerns at least one particular thing. The property of being Obama, for example, is a non-qualitative property.

An important feature of the a-intrinsic properties is that they are all qualitative. This can be established as follows. Suppose a property p is not qualitative. Then, for some x, p haecceistically concerns x (and perhaps some other entities as well). Let y be some object that is either a proper part of x or is wholly distinct from x. If y is wholly distinct from x, then the ascription of p to y fails to be intrinsically about y, since it will not only be describe how y and its parts are and how they are related to each other, but also in part describe x. For example, if p is the non-qualitative property of being identical to x, and y is wholly distinct from x, then the ascription of *being identical to x* to y at least partly describes x, and hence is not intrinsically about y. Similarly, if y is a proper part of x, then the ascription of p to y will again fail to be intrinsically about y, since it will again not only describe how y and its parts are and how they are related to each other, but will also partly describe a non-part of y, namely x. For example, if p is the

property of being identical to *x*, and *y* is a proper part of *x*, then the ascription of *being identical to x* to *y* will again partly describe *x*, and hence fail to be intrinsically about *y*. Since, for any *x*, there is some *y* that is either a proper part of *x* or wholly distinct from *x*, it follows that *p* is not a-intrinsic.[11] Hence, all a-intrinsic properties are qualitative.

3. Lewis's Second Characterisation

Lewis's second characterisation is the following:

> A thing has its intrinsic properties in virtue of the way that thing itself, and nothing else, is. Not so for extrinsic properties, though a thing may well have these in virtue of the way some larger whole is (Lewis, 1983a, p. 111).

Lewis's second characterisation can be stated more precisely by schema (5), where 'how *x* is intrinsically' abbreviates 'how *x* and its parts are and how they are related to each other, as opposed to how *x* and its parts are related to other things and how other things are'.

5. Being *F* is intrinsic iff, necessarily, for any *x*, if *x* is *F* then *x* is *F* in virtue of how *x* is intrinsically.

An important question is what meaning 'in virtue' is meant to have in (5). One possible answer is that it is meant to have a reading corresponding to metaphysical grounding, where metaphysical grounding is a non-causal explanatory relation on states of affairs, such that, if one state of affairs metaphysically grounds another state of affairs then it metaphysically necessitates it.[12] Under such a reading of 'in virtue', (6) is necessarily true.

6. 'φ in virtue of it being the case that ϕ' is true iff the state of affairs expressed by ϕ metaphysically grounds the state of affairs expressed by φ.

While 'in virtue' plausibly has such a metaphysical grounding reading, (5) plausibly fails to characterise a notion of intrinsicality when 'in virtue' has this reading. That this is so follows from the necessity of (7), together with the fact that (8) should be true on any notion of intrinsicality.[13]

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[11] I am assuming here that there are at least two wholly distinct things.

[12] For the relevant notion of metaphysical grounding, see Rosen 2010 and Audi 2012.

[13] Strictly, I should replace 'is true' in (7) with 'is true under a variable assignment that maps '*x*' to *x*. For simplicity, I will ignore such use mention niceties here.

7. 'φ in virtue of how x is intrinsically' is true iff there is a sentence ϕ that expresses a true state of affairs that is intrinsically about x such that 'φ in virtue of it being the case that ϕ' is true.

8. It is possible for there to be a sentence 'a is F', where F expresses an intrinsic property and 'a is F' expresses a foundational fact in the sense of being a fact that is not metaphysically grounded by any other fact.

The argument is the following. Suppose, for reductio, that (5) characterises a notion of intrinsicality when 'in virtue' has its metaphysical grounding reading. It follows from this, and the necessity of (6) and (7), that (9) is necessarily true.

9. Being F is intrinsic iff, necessarily, for any x, if x is F then there is a true state of affairs s that is intrinsically about x such that s metaphysically grounds x being F.

By (8), it is possible for a sentence 'a is F' to express a foundational fact, where F expresses an intrinsic property. Hence, it follows from (8) and the necessity of (9) that (10) is possibly true.

10. a being F is a foundational fact and there is a state of affairs s that is intrinsically about x such that s metaphysically grounds x being F.

However, (10) is necessarily false, since foundational facts can't be metaphysically grounded by any facts.[14] Hence, the assumption that (5) characterises a notion of intrinsicality when 'in virtue' has its metaphysical grounding reading is false.[15]

The above problem arises because metaphysical grounding is not reflexive. The problem can therefore be avoided if we interpret 'in virtue' as having the reading corresponding to the reflexive relation of *weak* metaphysical grounding, where s_1 weakly metaphysically grounds s_2 iff either s_1 metaphysically grounds s_2 or $s_1 = s_2$.[16] It strikes me as plausible that 'in virtue' has such a weak metaphysical reading and that (5) characterises a notion of intrinsicality when 'in virtue' has this reading. However, it also strikes me

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[14] By definition, a foundational fact is not grounded by any distinct fact. Such a fact is also not grounded by itself since facts cannot ground themselves. Facts cannot ground themselves, since grounding is an explanatory relation and facts can't explain themselves.

[15] This argument is also given in Marshall 2015.

[16] Cf. Fine 2012, pp. 51–53.

as plausible that 'in virtue' has a number of other readings, and that each of these readings give rise to a notion of intrinsicality in (5) provided the relation on states of affairs corresponding to it is also reflexive.[17] Three relations that correspond to such readings are metaphysical necessitation, nomic necessitation and identity on states of affairs. On the reading corresponding to metaphysical necessitation, 'φ in virtue of ψ' is true iff the state of affairs expressed by ϕ metaphysically necessitates the state of affairs expressed by φ. On this reading, something is made of tin in virtue of how it is intrinsically iff it being made of tin is metaphysically necessitated by how it is intrinsically. On the reading corresponding to nomic necessitation, 'φ in virtue of ψ' is true iff the state of affairs expressed by ϕ nomically necessitates the state of affairs expressed by φ, where s_1 nomically necessitates s_2 iff, necessarily, if s_1 and the actual natural laws obtain, then s_2 obtains. On this reading, something is made of tin in virtue of how it is intrinsically iff it being made of tin is nomically necessitated by how it is intrinsically. Finally, on the reading corresponding to identity on states of affairs, 'φ in virtue ϕ' is true iff the state of affairs expressed by ϕ is identical to the state of affairs expressed by φ. On this reading, something is made of tin in virtue of how it is intrinsically iff it being made of tin just is how it is intrinsically.[18]

For each reflexive relation r on states of affairs, say that a property is r-intrinsic iff it is classified as intrinsic by (5) when 'in virtue' has the reading corresponding to r. Insight into which properties are r-intrinsic for different reflexive relations r can be obtained by employing (7) above. Let us first consider the case where r is the identity relation on states of affairs (or I for short). Given (7), 'φ in virtue of how x is intrinsically' is true on the reading corresponding to I iff φ expresses a true state of affairs that is intrinsically about x. It therefore follows from the necessity of (7) that, under the reading of 'in virtue' corresponding to I, (5) classifies a property p to be intrinsic iff, necessarily, for any x, if x instantiates p, then the ascription of p to x is intrinsically about x. Since the properties characterised by (5) when 'in virtue' has this reading are the I-intrinsic properties, we have (11).

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[17]   A reflexive relation is a relation that relates each member of its domain to itself.

[18]   Other readings of 'in virtue' that arguably give rise to notions of intrinsicality when employed in (3) correspond to weak causal grounding and various logical entailment relations on states of affairs. s_1 weakly causally grounds s_2 iff either $s_1 = s_2$ or s_1 is causally responsible for s_2. A logical entailment relation is a logical entailment relation for some logical system L, where the logical entailment relation for a logical system L is the relation r_L such that, for any states of affairs s_1 and s_2, s_1 stands in r_L to s_2 iff there are sentences ϕ_1 and ϕ_2 in the language of L such that ϕ_1 entails ϕ_2 in L, and ϕ_1 expresses s_1 and ϕ_2 expresses s_2 under some interpretation of the non-logical expressions in L.

11.   For any p, p is I-intrinsic iff, necessarily, for any x, if x instantiates p, then the ascription of p to x is intrinsically about x.

Let us next consider which properties are r-intrinsic for any reflexive relation r. Let 'entails$_r$' express a reflexive relation r on states of affairs, and suppose that 'in virtue' has the reading corresponding to r, under which 'φ in virtue of it being the case that ϕ' is true iff the state of affairs expressed by ϕ entails$_r$ the state of affairs expressed by φ. It then follows from (7) that 'φ in virtue of how x is intrinsically' is true iff there is a true state of affairs s that is intrinsically about x such that s entails$_r$ the state of affairs expressed by φ. It therefore follows from the necessity of (7) that, under the reading of 'in virtue' corresponding to r, (5) classifies a property p as intrinsic iff, necessarily, for any x, there is a true state of affairs s that is intrinsically about x such that s entails$_r$ the ascription of p to x. Since the properties that are classified as intrinsic according to (5) when 'in virtue' has the reading corresponding to r are the r-intrinsic properties, we have (12) for each reflexive relation r.

12.   For any property p, p is r-intrinsic iff, necessarily, for any x, if x instantiates p, then, for some true state of affairs s that is intrinsically about x, s entails$_r$ the ascription of p to x.

Say that a notion is an entailment notion of intrinsicality if it is characterised by (12) for some reflexive relation r. The set of r-intrinsic properties plausibly differs for different choices of r. For example, let M be the reflexive relation of metaphysical necessitation. Then, given numbers necessarily exist, the property of being made of tin and such that there is a number is plausibly M-intrinsic but is plausibly not I-intrinsic.[19] Since the different entailment notions of intrinsicality differ in this way, Lewis's first characterisation, which characterises aboutness intrinsicality, cannot accurately characterise them all. In fact, as I will now argue, Lewis's first characterisation fails to accurately characterise any of them. Consider the property of being identical to Obama. This property is not a-intrinsic since there is an x such that the ascription of *being identical to Obama* to x is not intrinsically

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[19]   Philosophers who endorse the coarse grain theory of properties, according to which necessarily coextensive properties are identical, will reject this claim, since, according to them, given numbers necessarily exist, the property of being made of tin and such that there is a number is identical to the I-intrinsic property of being made of tin, and hence is I-intrinsic. However, the fact that the former property appears to be not I-intrinsic, while the latter property appears to be I-intrinsic, is a good reason to reject the coarse grain theory of properties. In the following I will assume the coarse grain theory is false. If the coarse grain theory is instead true, then there will be fewer distinct notions characterised by Lewis's and Francescotti's characterisations and their variants than I allege.

about x. For instance, the ascription of *being identical to Obama* to Clinton, which is the state of affairs of Clinton being Obama, is not intrinsically about Clinton, since it does not describe how Clinton herself is, but rather describes how Clinton is related to someone wholly distinct from her, namely Obama. For any reflexive relation r, however, the property of being identical to Obama is r-intrinsic. This is because: i) the state of affairs of Obama being Obama is intrinsically about Obama, and ii) necessarily, for any x, if x instantiates *being identical to Obama*, then x is Obama, and the hence the state of affairs of x being Obama is intrinsically about x. It follows that, for any reflexive relation r, necessarily, for any x, if x instantiates *being Obama*, there is a true state of affairs that is intrinsically about x (namely, the state of affairs of x being Obama itself) that entails$_r$ the state of affairs of x being Obama. It follows that the property of being Obama is r-intrinsic, for each reflexive relation r. Hence, for each reflexive relation r, aboutness intrinsicality is not r-intrinsicality.[20]

Given the existence of these multiple notions of intrinsicality, it is important to clearly distinguish the different theses and arguments that can be formulated using these notions, since their plausibility may depend on which notion of intrinsicality is being employed. As an example, consider internalism about mental states, which can be formulated as the thesis that every mental property (or perhaps every explanatorily important mental property) is intrinsic.[21] Given there are multiple notions of intrinsicality, internalism so formulated is ambiguous, with some of its disambiguations given by (13–15), where N is nomic necessitation.

13. Every mental property is I-intrinsic.

14. Every mental property is M-intrinsic.

15. Every mental property is N-intrinsic.

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[20] It might be claimed that, since 'how x and its parts are and how they are related to each other, as opposed to how x and its parts are related to other things and how other things are' has a restricted reading on which it means 'how x and its parts are *qualitatively* and how they are *qualitatively* related to each other, as opposed to how x and its parts are *qualitatively* related to other things and how other things are *qualitatively*', (5) has a reading on which it only classifies qualitative properties as intrinsic. (Cf. Sider, 1996, p. 6). Such a restricted reading, however, if it exists, plausibly only arises in contexts where we are making a distinction among only qualitative properties, between those qualitative properties that are intrinsic and those qualitative properties that are not intrinsic. Such a reading is therefore not applicable when (5) is being used unrestrictedly, as it is in this paper, to make a distinction among all properties, between those that are intrinsic and those that are not intrinsic.

[21] See, for example, Kim 1993, p. 183.

The versions of internalism given by (13–15) differ in what views they are compatible with. For example, (13) is arguably incompatible with popular role functionalist theories of mental states, according to which each mental property is the second order property of having a property that fulfils a certain causal and nomological role. To illustrate this, consider the version of role functionalism that endorses (16) for some formula φ, where '$\phi =_{df} \psi$' is true iff the state of affairs expressed by ϕ is identical to the state of affairs expressed by ψ.

16. x is in pain $=_{df}$, for some I-intrinsic properties m, m_1, ..., m_n, i) x has m, and ii) it is a natural law that $\varphi(m, m_1, ..., m_n)$.

One reason why (16) is incompatible with the version of internalism given by (13) is that the right hand side of (16) quantifies over properties, which are entities creatures in pain might instantiate but, at least given standard theories of properties, don't have as parts. As a result, if x is in pain, the state of affairs expressed by the right hand side of (16) will fail to be intrinsically about x, since it will also be partly about properties, which are entities that are not part of x. As a result, being in pain will fail to be I-intrinsic given (16).

The version of internalism given by (14) is also plausibly incompatible with role functionalism given standard contingentist theories of natural laws, such as Lewis's best systems account and Armstrong's account in terms of relations between universals.[22] The version of role functionalism given by (16) can again be used to illustrate why this is the case. According to standard contingentist theories of natural laws, the states of affairs expressed by sentences of the form 'It is a natural law that ϕ' are contingent and are not metaphysically necessitated by facts intrinsically about x, even when the state of affairs expressed by ϕ is intrinsically about x.[23] (16) therefore plausibly entails that *being in pain* is not M-intrinsic given such theories of laws, since, given such theories of laws, whether x satisfies the right hand side of (16) is at best necessitated by facts intrinsically about x together with facts about what the laws are, rather than being necessitated by only facts intrinsically about x.

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[22] Armstrong's 1983 account of laws holds that 'It is a law that all Fs are Gs' expresses the state of affairs that f stands in a certain law making relation to g, where F expresses f, G expresses g, and it is a contingent matter whether f stands in this relation to g. Lewis's 1983b best systems account of laws holds that 'It is a law that all Fs are Gs' expresses the state of affairs that the state of affairs that all Fs are Gs is both contingently true and is a theorem in every true deductive system that maximises simplicity and strength.

[23] This may not be the case given a primitivist theory of laws according to which 'It is a law that' expresses a fundamental operator. Given such a theory, 'It is a law that ϕ' is arguably intrinsically about x if ϕ expresses a state of affairs that is intrinsically about x.

(13), then, is plausibly incompatible with role functionalism, while (14) is also plausibly incompatible with role functionalism given standard contingentist theories of laws. The version of internalism given by (15), on the other hand, is compatible with both role functionalism and such contingentist theories of laws. For example, given what *I*-intrinsic properties a thing has is necessitated by facts that are intrinsically about that thing, the version of internalism given by (16) is not only compatible with *being in pain* being an *N*-intrinsic property, it entails that it is.[24] An internalist about mental states who is a role functionalist and endorses a standard contingentist theory of laws, should therefore endorse the version of internalism given by (15) rather than that given by (13) or (14).

The above discussion shows that, if we want internalism about mental states to be compatible with role functionalism and standard contingentist theories of laws, then the job of formulating internalism about mental states is better done by *N*-intrinsicality than by either *I*-intrinsicality or *M*-intrinsicality.[25] Another example of a job that some notions of intrinsicality can do better than others is that of providing a powerful test of distinctness among necessarily coextensive properties. The notion of an *I*-intrinsic property can accomplish this job by providing the following test: two properties are distinct if one is *I*-intrinsic while the other is not *I*-intrinsic. The notions of *M*-intrinsicality and *N*-intrinsicality, in contrast, cannot provide such a test since any two properties that differ in whether they are *M*-intrinsic, or in whether they are *N*-intrinsic, fail to be necessarily coextensive.

The above test can, for example, be used to argue against theories of properties that endorse the schema (17).[26]

> 17.   The property of being *F* = the property of instantiating the property of being *F*.

According to (17), the property of being made of tin, for example, is identical to the property of instantiating the property of being made of tin. The argument against (17) is that, while *being made of tin* is *I*-intrinsic, the property of instantiating the property of being made of tin is not *I*-intrinsic, since the ascription of latter property to something is not intrinsically about

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[24]   What *I*-intrinsic properties a thing has is necessitated by facts intrinsically about that thing given the theory of properties assumed in footnote 2.

[25]   Similar observations apply to the popular thesis that all dispositions are intrinsic. Langton and Lewis have in effect conjectured that many philosophers who endorse this thesis employ 'intrinsic' to mean '*N*-intrinsic'. See Langton and Lewis, 1998, p. 339.

[26]   A recent proponent of such a theory is Rayo 2013. This kind of argument can also be applied against Pythagorian views that hold that scalar quantities, such as *being 5 kg*, are analysable in terms of relations to numbers. See Field, 1989, sec 5 and Sider, (MS).

that thing, since, in addition to being about how that thing is, it is also about the property of being made of tin.[27]

4. Lewis's Third Characterisation

In the previous two sections I have argued that Lewis's first and second characterisations of 'intrinsic property' characterise distinct notions. What about his third characterisation? Lewis's third characterisation is:

> If something has an intrinsic property, then so does any perfect duplicate of that thing; whereas duplicates situated in different surroundings will differ in their extrinsic properties (Lewis, 1983a, pp. 111–112).

This characterisation employs the notion of duplication, which Lewis explains in terms of copying machines. He writes:[28]

> 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)

Using 'L-duplicate' to express this notion of duplication, Lewis's third characterisation can be stated more precisely by (18).

18.   For any property p, p is intrinsic iff for any x and y, if x is an L-duplicate of y, then (x instantiates p iff y instantiates p).

Both (18) and Lewis's original formulation of his third characterisation require his theory of possible worlds, according to which the L-duplicates

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[27]   In addition to the predicate 'is intrinsic', philosophers often use predicates of the form 'intrinsically F', the meaning of which can be intuitively characterised by (A).

   A. x is intrinsically F iff x is F in virtue of how x is intrinsically.

Just as different readings of 'in virtue' give rise to different senses of 'intrinsic', it is plausible that different readings of 'in virtue' give rise to different senses of 'intrinsically F'. For each reflexive relation on states of affairs r, let 'r-intrinsically F' be the predicate modifier defined by (B) when 'in virtue' has its reading corresponding to r.

   B. x is r-intrinsically F iff x is F in virtue of how x is intrinsically.

It is then plausible that, for each reflexive relation r corresponding to a reading of 'in virtue', there is a reading of 'intrinsically F' under which it expresses the same operator as 'r-intrinsically F'.

[28]   For an argument that Lewis's notion of duplication is not sufficiently clear, see Marshall 2013, p. 188).

of ordinary things like chairs and tables include parts of merely possible worlds. This assumption can be avoided provided we can make sense of something relative to one world being an L-duplicate of something relative to another possible world. Given this world relative notion of L-duplication, we can replace (18) with (19).

19. For any property p, p is intrinsic iff for any x and y, for any world w_1 and w_2, if x relative to w_1 is an L-duplicate of y relative to w_2, then x instantiates p at w_1 iff y instantiates p at w_2.

Is the notion characterised by (19), which we might call L-duplication intrinsicality, identical to any of the notions of entailment intrinsicality? The answer is no. As I argued in section 3, the property of being Obama is r-intrinsic for each reflexive relation r. It is not, however, L-duplication intrinsic. This is because there might have been an L-duplicate of Obama—for example, Obama might have had a perfect identical twin—that was distinct from Obama, and hence did not have the property of being Obama. Since L-duplicates can therefore differ in whether they instantiate the property of being Obama, *being Obama* is not an L-duplication intrinsic property.[29]

L-duplication intrinsicality is also distinct from aboutness intrinsicality. The reason is that necessarily coextensive properties cannot differ in whether they are L-duplication intrinsic, but they can plausibly differ in whether they are a-intrinsic. Suppose, for example, that the number 1 necessarily exists. Then, necessarily, something is made of tin iff it is made of tin and coexistent with the number 1.[30] Hence, if L-duplicates (relative to worlds) don't differ between themselves over whether they are made of tin, they also don't differ between themselves over whether they are made of tin and coexistent with the number 1. It follows that, since *being made of tin* is L-duplication intrinsic, *being made of tin and coexistent with the number 1* is also L-duplication intrinsic. The ascription of *being made of tin and coexistent with the number 1* to any x wholly distinct from 1, on the other hand, is not intrinsically about x, since the ascription does not only describe how x itself is, but also in part describes how things wholly distinct from x are. Hence *being made of tin and coexistent with the number 1* is not a-intrinsic. So the property of being made of tin and coexistent with the number 1 is L-duplication intrinsic but not a-intrinsic.

The above argument that L-duplication intrinsicality is distinct from aboutness intrinsicality relies on the assumption that there are necessarily

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29 This argument is in effect given by Dunn 1990, p. 186.

30 I am assuming that *being made of tin* entails existence. If it doesn't, then we can replace the property of being made of tin and coexistent with the number 1 with the property of being made of tin and such that the number 1 exists.

existing entities, such as numbers. The argument, however, can be modified so that it doesn't rely on this assumption. Suppose, for example, that Obama is necessarily essentially human. Then the property of being made of tin is necessarily coextensive with the property of being made of tin and such that Obama is essentially human. Since the first property is *L*-duplication intrinsic, the second is as well. The second property, however, is intuitively not a-intrinsic since its ascription to something wholly distinct from Obama partly describes Obama. Given Obama is necessarily identical to Obama, it can similarly be argued that, while the property of being made of tin and such that Obama is identical to Obama is *L*-duplication intrinsic, it is not a-intrinsic, since its ascription to Clinton also partly describes Obama.[31]

While *L*-duplication intrinsicality is distinct from both aboutness intrinsicality and each entailment notion of intrinsicality, it might be thought possible to analyse it in terms of one or more of these notions. One account many philosophers will find attractive is (20).

> 20.   For any property *p*, *p* is *L*-duplication intrinsic iff *p* is qualitative and *p* is *M*-intrinsic.

While many philosophers might find (20) attractive, it is important to note that it should not be taken to be entirely uncontroversial, since it is incompatible with one important theory of space, location primitivism.[32] According to location primitivism, things that differ in their location don't just differ in how they are related to other material or spatial objects, they also differ in what fundamental location properties that have. Since copying machines can create copies that are differently located, it follows that, given location primitivism, *L*-duplicates can differ in what fundamental location properties they have. Since fundamental properties are both qualitative and *M*-intrinsic, however, it follows that, given location primitivism, *L*-duplicates can differ in what qualitative *M*-intrinsic properties they have.[33] Since *L*-duplicates can't differ in what *L*-duplication

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[31]   By 'Obama is necessarily essentially human' I mean 'It is necessary that, if Obama exists, then Obama is human'. 'Obama is necessarily essentially human' is a logical consequence of 'Obama is essentially human' in the modal logic SQML assumed in footnote 9, while 'Obama is necessarily identical to Obama' is a logical truth in SQML.

[32]   Horwich call location primitivism 'monadicism'. For discussion, see Horwich 1978 and Field 1989, sec 2.

[33]   For an argument that fundamental properties are qualitative and *I*-intrinsic, see Marshall, 2012. (If this argument is rejected, we can simply replace location primitivism with the view that things that differ in their location differ in what qualitative *I*-intrinsic properties they have in the above discussion.) Given location properties are *I*-intrinsic, it follows that they are also *M*-intrinsic.

intrinsic properties they have, it follows that (20) fails given location primitivism.[34]

5. Further Characterisations

In the previous three sections, I argued that Lewis's three characterisations characterise a number of distinct notions: aboutness intrinsicality, r-intrinsicality for different reflexive relations r, and L-duplication intrinsicality. In particular, I argued that each entailment notion of intrinsicality is distinct from both aboutness intrinsicality and L-duplication intrinsicality, since *being Obama* is r-intrinsic for each reflexive relation r, but is neither a-intrinsic nor L-duplication intrinsic. I also argued that L-duplication intrinsicality is distinct from aboutness intrinsicality, since *being made of tin and coexistent with the number 1* is L-duplication intrinsic (given the necessary existence of numbers), but it is not a-intrinsic. In this section, I will first discuss several natural variants of these characterisations. I will then discuss how the notions characterised by these variants and Lewis's originals are related to each other and what features they have. I will then finish by arguing that, with one exception, the notions characterised by these characterisations form a natural family and that it is this family that is best regarded as the family of notions of an intrinsic property.

According to Lewis's first characterisation, a property p is intrinsic iff, necessarily, any ascription of p to x is intrinsically about x. A natural variant of this is to consider only true ascriptions of properties to things. On this variant, a property p is intrinsic iff, necessarily, any *true* ascription of p to an x is intrinsically about x. Say that a property is *possession* aboutness intrinsic (or pa-intrinsic, for short) iff it satisfies this characterisation. We then have the following definition of the pa-intrinsic properties:

21. For any property p, p is pa-intrinsic iff, necessarily, for any x, if x instantiates p then the ascription of p to x is intrinsically about x.

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34   (20) is compatible with the more well known theories of substantivalism and relationalism since, given either of these theories, location properties are not qualitative. (Substantivalists hold that there are spatial objects, where a spatial object is either a spatial point or a spatial region, and that each location property can be expressed by a predicate '$\lambda x(x$ is located at $a)$' where a refers to either a material or spatial object. Relationalists deny that there are any spatial objects and hold that each location property can be expressed by a predicate '$\lambda x(x$ is located at $a)$' where a refers to a material object.) One important difference between location primitivism, on the one hand, and subtantivalism and relationalism, on the other, is that location primitivism is compatible with, while substantivalism and relationalism are incompatible with, there being a single point sized object that changes its location properties and thereby moves, despite it being the only existing concrete entity.

It follows from (11) and (21) that the pa-intrinsic properties are the *I*-intrinsic properties. Hence, while the *I*-intrinsic properties are not characterised by Lewis's first characterisation, they are characterised by a natural variant of it.

Lewis's second characterisation of intrinsicality can also be naturally modified. According to Lewis's second characterisation (once refined) the property of being F is intrinsic iff, necessarily, for any x, if x is F then x is F in virtue of how x is intrinsically. According to a natural modification of this characterisation, the property of being F is intrinsic iff, necessarily: i) for any x, if x is F then x is F in virtue of how it intrinsically is, and ii) if x is not-F then x is not-F in virtue of how x intrinsically is. This characterisation appears to be equivalent to Francescotti's characterisation of intrinsicality (at least once Francescotti's characterisation is precisified and refined in the same way that Lewis's second characterisation was in section 3):

> An intrinsic property is a property that is *internal* in the sense that whether an object has it depends entirely on what the object is like *in itself*. (Author's italics) (Francescotti 1999, p. 590).

Call a property an absolute *r*-intrinsic property (or an a*r*-intrinsic property, for short) iff it satisfies this modified characterisation when 'in virtue' has the reading corresponding to the reflexive relation r. The argument used in section 3 to show that the *r*-intrinsic properties can be characterised by (12) can be used to show that the a*r*-intrinsic properties can be characterised by (22).

22. For any property p, p is a*r*-intrinsic iff, necessarily, for any x: i) if x instantiates p, then for some true state of affairs s that is intrinsically about x, s entails$_r$ the ascription of p to x; and ii) if x does not instantiate p, then for some true state of affairs s that is intrinsically about x, s entails$_r$ the ascription of the negation of p to x.

It follows from (22) that the a*I*-intrinsic properties are characterised by (23).

23. For any property p, p is a*I*-intrinsic iff, necessarily, for any x: i) if x instantiates p then the ascription of p to x is intrinsically about x; and ii) if x does not instantiate p then the ascription of the negation of p is intrinsically about x.

Since, by (N) in section 2, a state of affairs is intrinsically about x iff its negation is intrinsically about x, it follows from (23) that the aI-intrinsic properties are characterised by (24).

24. For any property p, p is aI-intrinsic iff, necessarily, for any x, the ascription of p to x is intrinsically about x.

It follows from (4) and (24) that the aI-intrinsic properties are the a-intrinsic properties. Hence, while aboutness intrinsicality is not identical to any of the notions characterised by Lewis's second characterisation, it is identical to one of the notions characterised by a natural variant of it.

In order to clearly distinguish the aboutness intrinsic properties from the possession aboutness intrinsic properties defined above, let us call the former properties the *absolute* aboutness intrinsic properties (or the aa-intrinsic properties, for short). It follows from (3) and (24) that the absolute I-intrinsic properties are just the absolute aboutness intrinsic properties. Similarly, in order to clearly distinguish the r-intrinsic properties from the absolute r-intrinsic properties defined above, let us call the former properties the *possession* r-intrinsic properties (or pr-intrinsic properties, for short).

We therefore have two families of notions of an intrinsic property, which we may call the family of the possession entailment notions of an intrinsic property and the family of the absolute entailment notions of an intrinsic property. For each reflexive relation r, the notion of a pr-intrinsic property is a possession entailment notion of an intrinsic property while the notion of an ar-intrinsic property is an absolute notion of an intrinsic property. Moreover, one member of each of these families corresponds to an aboutness notion of an intrinsic property. In particular, the pI-intrinsic properties are the pa-intrinsic properties, while the aI-intrinsic properties are the aa-intrinsic properties.

A comparison of (12) and (22) reveals that, for any reflexive relation r, the ar-intrinsic properties are a subset of the pr-intrinsic properties. For some reflexive relations r, the ar-intrinsic properties are a proper subset of the pr-intrinsic properties. This is the case, for example, when r is I. For instance, while *being Obama* is pI-intrinsic, it is not aI-intrinsic, since its ascription to Clinton is not intrinsically about Clinton. For some other reflexive relations r, on the other hand, the set of ar-intrinsic properties is identical to the set of pr-intrinsic properties. This is the case, for example, when r is M. (This result is established in the appendix.)

Further variants of Lewis's characterisations can be obtained by taking the "mirror images" of (12) and (21), where instead of considering only cases where an object instantiates a property, we consider only cases where an object fails to instantiate the property. Call the properties characterised

by the mirror image of (21) the non-possesion aboutness intrinsic properties (or the na-intrinsic properties, for short). This type of property can be defined by (25).[35]

25.   For any property p, p is a na-intrinsic property iff, necessarily, for any x, if x does not instantiate p, then the ascription of p to x is intrinsically about x.

For each reflexive relation r, call the properties that are characterised by the mirror image of (12) the non-possesion r-intrinsic properties (or the nr-intrinsic properties, for short). This type of property is defined by (26).

26.   For any property p, p is a nr-intrinsic property iff, necessarily, for any x, if x does not instantiate p then, for some true state of affairs s that is intrinsically about x, s entails$_r$ the ascription of the negation of p to x.

Since states of affairs and their negations are intrinsically about the same things, it follows from (25) and (26) that the na-intrinsic properties are the nI-intrinsic properties. We therefore have a third family of notions of an intrinsic property, which we may call the family of non-possession entailment notions of an intrinsic property, and, as in the case of the family of possession entailment notions and the family of absolute entailment notions, one member of this family corresponds to an aboutness notion of an intrinsic property. Summing up, then, we have three families of notions of an intrinsic property—the family of possession entailment notions, the family of absolute entailment notions, and the family of non-possession entailment notions—and each family has one member that corresponds to an aboutness notion of an intrinsic property. In particular, the pI-intrinsic properties are the pa-intrinsic properties, the aI-intrinsic properties are the aa-intrinsic properties, and the nI-intrinsic properties are the na-intrinsic properties.

Let us expand the definition of an entailment notion of an intrinsic property given in section 3 so that it includes the absolute entailment and non-possession entailment notions of an intrinsic property, as well as the possession entailment notions. I will now address three important questions regarding these entailment notions of an intrinsic property: i) what are their inclusion relations to each other, ii) which of them only have qualitative instances, and iii) which of them satisfy analogues of (C), (D) and (N) discussed in section 2.

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35   Since states of affairs and their negations are intrinsically about the same things, (25) is equivalent to the result of adding 'the negation of' to (25) after 'the ascription of'.

First, it follows from (12), (22) and (26) that, for each reflexive relation r, the set of ar-intrinsic properties is the intersection of the set of pr-intrinsic properties and the set of nr-intrinsic properties. Hence, for any property p, p is ar-intrinsic iff p is both pr-intrinsic and nr-intrinsic. In the case where r is the identity relation, there are properties that are pI-intrinsic without being nI-intrinsic and properties that are nI-intrinsic without being pI-intrinsic. For example, *being Obama* is pI-intrinsic without being nI-intrinsic, while *being not Obama* is nI-intrinsic without being pI-intrinsic. As a result of this, the set of aI-intrinsic properties is a proper subset of both the set of pI-intrinsic properties and the set nI-intrinsic properties. In the case where r is the relation of metaphysical necessitation M, on the other hand, the set of pr-intrinsic properties is identical to the set of nr-intrinsic properties. (This result is established in the appendix.) It follows from this result that the set of aM-intrinsic properties is identical to both the set of pM-intrinsic properties and the nM-intrinsic properties. These relationships are described in figure 1.
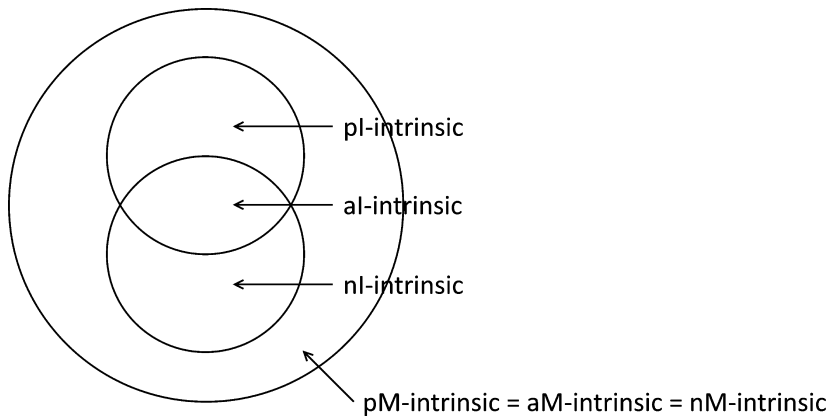

Figure 1.   Varieties of Intrinsicality

Second, as was shown in section 3, all aI-intrinsic (=aa-intrinsic) properties are qualitative. In contrast, not all pI-intrinsic properties and nI-intrinsic properties are qualitative, since, as noted above, the non-qualitative property of being Obama is a pI-intrinsic property, while the non-qualitative property of being not Obama is a nI-intrinsic property. Similarly, not all pM-intrinsic properties are qualitative, since both *being Obama* and *being not Obama* are pM-intrinsic properties.

Third, it has been widely held that the intrinsic properties satisfy the following principles concerning the operations of conjunction, disjunction

and negation, which are the analogues of the principles (C), (D) and (N) discussed in section 2:[36]

C-p.   For any properties p and q, if p and q are both intrinsic, then the conjunction of p and q is intrinsic.

D-p.   For any properties p and q, if p and q are both intrinsic, then the disjunction of p and q is intrinsic.

N-p.   For any property p, if p is intrinsic then the negation of p is intrinsic.

Despite their popularity, however, these principles are only satisfied by some of the notions we have discussed. For example, (C-p) is false for the n*I*-intrinsic properties, (D-p) is false for the p*I*-intrinsic properties, and (N-p) is false for both the p*I*-intrinsic properties and the n*I*-intrinsic properties.

Consider (N-p). (N-p) is false for the p*I*-intrinsic properties, since *being Obama* is p*I*-intrinsic, while its negation, *being not Obama*, is not p*I*-intrinsic. *Being not Obama* is not p*I*-intrinsic since, while Clinton instantiates *being not Obama*, the state of affairs of Clinton not being Obama is not intrinsically about Clinton. Similarly, (N-p) is false for the n*I*-intrinsic properties since *being not Obama* is n*I*-intrinsic, while its negation, *being not not Obama*, is not n*I*-intrinsic.

A similar argument shows that (D-p) fails for the p*I*-intrinsic properties and that (C-p) fails for the n*I*-intrinsic properties. (D-p) is false for the p*I*-intrinsic properties since, while *being Obama* and *being Clinton* are both p*I*-intrinsic, their disjunction *being Obama or Clinton* fails to be p*I*-intrinsic. *Being Obama or Clinton* fails to be p*I*-intrinsic since, while Obama instantiates this property, the state of affairs of Obama being identical to either Obama or Clinton is not intrinsically about Obama (since it is also partly about Clinton). Similarly, while *being not Obama* and *being not Clinton* are both n*I*-intrinsic, the conjunction *being not Obama and not Clinton* is not n*I*-intrinsic since, while Obama fails to instantiate this property, the state of affairs of Obama being not Obama and not Clinton again is not intrinsically about Obama (since it is also partly about Clinton).

While (C-p), (D-p), and (N-p) fail on some of the notions we have discussed, there are also notions on which they are true. In particular, (C-p) is true for p*I*-intrinsic properties, (D-p) is true for n*I*-intrinsic properties, and each of (C-p), (D-p) and (N-p) are true for the a*I*-intrinsic properties

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and the p*M*-intrinsic properties (which are also the a*M*-intrinsic properties and the n*M*-intrinsic properties). I will show that (C-p) is true for p*I*-intrinsic properties and that (N-p) is true for a*I*-intrinsic properties. The other cases can be established in a similar way.

To show that (C-p) is true for the p*I*-intrinsic properties, suppose *p* and *q* are p*I*-intrinsic properties, and suppose *x* instantiates their conjunction. Since *p* and *q* are p*I*-intrinsic, and *x* instantiates both *p* and *q*, the ascription of *p* to *x* and the ascription of *q* to *x* are both intrinsically about *x*. Hence, by (C), the ascription of the conjunction of *p* and *q* is also intrinsically about *x*. Hence, necessarily, for any *x*, if *x* instantiates the conjunction of *p* and *q*, the ascription of the conjunction of *p* and *q* is intrinsically about *x*, which establishes that the conjunction of *q* and *q* is p*I*-intrinsic, and hence establishes (C-p) for p*I*-intrinsic properties.

To show that (N-p) is true for the a*I*-intrinsic properties, suppose *p* is an a*I*-intrinsic property. Then, necessarily, for any *x*, the ascription of *p* to *x* is intrinsically about *x*, and hence, by (N), the ascription of the negation of *p* is also intrinsically about *x*. Hence the negation of *p* is an a*I*-intrinsic property, which establishes (N-p) for a*I*-intrinsic properties.

The set of all the entailment notions of an intrinsic property forms a natural family of closely related notions. Given this, it is natural to wonder how the notion of an *L*-duplication intrinsic property fits in with this family. The answer is that it doesn't fit in in any natural way. As argued in section 4, the *L*-duplication intrinsic properties do not coincide with either the absolute aboutness intrinsic properties or the p*r*-intrinsic properties for any reflexive relation *r*. Similar arguments show that the *L*-duplication intrinsic properties fail to coincide with any of the other types of intrinsic properties described above either. At best, if (20) in section 4 is true, the *L*-duplication intrinsic properties are the qualitative p*M*-intrinsic properties. Even if (20) is true, however, and the *L*-duplication intrinsic properties are the qualitative p*M*-intrinsic properties, the addition of the notion of an *L*-duplication intrinsic property to the set of entailment notions of an intrinsic property does not make for a very natural grouping of notions. The notion of an *L*-duplication intrinsic property, for example, doesn't belong with the other notions in this group any more than the conjunction of any of the other notions in this group with the notion of a qualitative property. As a result, even if (20) is true, the notion of an *L*-duplication intrinsic property is an outlier that doesn't belong in the same natural grouping as the other notions we have discussed.

Everything else being equal, it is good taxonomical practice to use words to pick out more natural divisions among things than less natural divisions. Given this, and given the fact that philosophers mostly use 'intrinsic property' to express different entailment notions of an intrinsic property, it is reasonable to adopt a taxonomy on which the set of entailment notions of an intrinsic property is regarded as the set of notions

of an intrinsic property, and the notion of an *L*-duplication intrinsic prop-
erty is not regarded as a notion of an intrinsic property.[37] Given this clas-
sification, it follows from (12), (22) and (26) that each notion that is best
regarded as a notion of an intrinsic property can be analysed in terms of
intrinsic aboutness.[38]

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[37] Given this classification, it might be advisable to change the name '*L*-duplication
intrinsic property' to '*L*-duplication preserving property'. Philosophers are often only
interested in some of the properties there are, such as the qualitative properties or the
categorical properties, rather than all the properties there are. In such contexts, 'There
is an intrinsic property that is *F*' might be used to say or communicate that there is a
qualitative (or categorical) intrinsic property that is *F*, rather than that there is an
intrinsic property *simpliciter* that is *F*. Someone might claim that this phenomenon of
tacit quantifier restriction shows that philosophers typically use 'intrinsic property' to
express notions other than those I have discussed. One response to this objection is
that, on many theories of quantifier restriction, the semantic values of lexical items
such as 'intrinsic property' and 'beer' does not vary when the domain of tacit quantifi-
cation varies. (See Stanley and Szabo 2000 for a discussion of the different theories of
quantifier restriction.) A second response is that, even if the semantic value of 'intrin-
sic property' or 'beer' does vary in such contexts, this does not mean we should adopt
a taxonomy of notions of an intrinsic property and types of beer that reflects this. The
reason for this is that such a taxomony would be too complicated and unwieldy to be
useful.

[38] Modulo the qualifications made in footnote 4. Note that, even if *L*-duplication intrinsical-
ity is counted as a genuine notion of an intrinsic property, this claim will still be true
provided (20) is true. Each of the notions of an intrinsic property discussed above can
be generalised to apply to relations. Say that a state of affairs *s* is intrinsically about
$x_1, \ldots x_n$ iff *s* (either trully or falsely) describes how the parts of *x* (and the fusions of
those parts) are and how they are related to each other, as opposed to how the parts of *x*
(and the fusions of those parts) are related to other things or how other things are. Then,
for each entailment relation *r*, we can define what it is for a relation to be absolute *r*-
intrinsic (or a*r*-intrinsic), possession *r*-intrinsic (or p*r*-intrinsic), or non-possesion *r*-intrin-
sic (or n*r*-intrinsic) by (E-G).

> E. For any relation *p*, *p* is a*r*-intrinsic iff, necessarily, for any *n* things $x_1, \ldots x_n$: i) if
> $x_1, \ldots x_n$ instantiates *p* then for some true state of affairs *s* that is intrinsically about
> $x_1, \ldots x_n$, *s* entails$_r$ the ascription of *p* to $x_1, \ldots x_n$; and ii) if $x_1, \ldots x_n$ instantiates the
> negation of *p*, then for some true state of affairs *s* that is intrinsically about $x_1, \ldots
> x_n$, *s* entails$_r$ the ascription of the negation of *p* to $x_1, \ldots x_n$.

> F. For any relation *p*, *p* is p*r*-intrinsic iff, necessarily, for any *n* things $x_1, \ldots x_n$, if
> $x_1, \ldots x_n$ instantiates *p* then for some true state of affairs *s* that is intrinsically about
> $x_1, \ldots x_n$, *s* entails$_r$ the ascription of *p* to $x_1, \ldots x_n$.

> G. For any relation *p*, *p* is n*r*-intrinsic iff, necessarily, for any *n* things $x_1, \ldots x_n$, if
> $x_1, \ldots x_n$ instantiates the negation of *p*, then for some true state of affairs *s* that is
> intrinsically about $x_1, \ldots x_n$, *s* entails$_r$ the negation of the ascription of *p* to $x_1, \ldots x_n$.

Each of the notions of an intrinsic relation defined by (E-G) have features analogous to
their property counterparts and stand in analogous relations to each other as their prop-
erty counterparts. For example, the p*I*-intrinsic relations, a*I*-intrinsic relations, n*I*-intrin-
sic relations and p*M*-intrinsic relations stand in the same inclusion relations as their
property counterparts do.

Appendix

Result For any property p, p is pM-intrinsic iff p is nM-intrinsic.

I will establish the left to right direction of this result. The argument for the right to left direction is similar.

Suppose p is a pM-intrinsic property. Suppose x instantiates the negation of p at a possible world w^*. I will show that, at w^*, there is an obtaining state of affairs s that is intrinsically about x and that entails$_M$ the ascription of the negation of p to x. This will establish the right hand side of the result. There are two cases to consider.

Case 1: Suppose it is possible for x to instantiate p. It follows from (12) in section 3 that, since p is pM-intrinsic, for each world w at which x instantiates p, there is an obtaining state of affairs s that is intrinsically about x and that entails$_M$ the ascription of p to x. For each world w at which x instantiates p, let s_w be a state of affairs that obtains at w, is intrinsically about x, and entails$_M$ the ascription of p to x. Let s^* be the negation of the disjunction of each such state of affairs: that is, let s^* be the state of affairs expressed by the negation of the infinite disjunction $\bigvee\{\varphi|$ For some world w at which x instantiates p,φ expresses $s_w\}$. Then: i) s^* obtains at w^*, ii) s^* is intrinsically about x (due to (D) and (N) in section 1), and iii) s^* entails$_M$ the ascription of the negation of p to x (since every world at which s^* obtains is a world at which x instantiates the negation of p).

Case 2: Suppose it is impossible for x to instantiate p. Then x instantiates the negation of p at all worlds. Let s be any state of affairs that obtains at w^* and is intrinsically about x. Then s is a state of affairs that obtains at w^*, is intrinsically about x, and entails$_M$ the ascription of the negation of p to x.

In either case, then, there is a state of affairs that obtains at w^*, is intrinsically about x, and entails$_M$ the ascription of the negation of p to x. It therefore follows from (26) that p is an nM-intrinsic property, which establishes the left to right direction of the result.

Corollary For any property p, p is aM-intrinsic iff p is pM-intrinsic.

It follows from (12), (22) and (26) that a property p is aM-intrinsic iff it is both pM-intrinsic and nM-intrinsic. It follows from this, and the above result, that p is aM-intrinsic iff p is pM-intrinsic.

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