Intrinsic Properties Defined

Peter Vallentyne, Virginia Commonwealth University

Philosophical Studies 88 (1997): 209-219

Intuitively, a property is intrinsic just in case a thing's having it (at a time) depends only on what that thing is like (at that time), and not on what any wholly distinct contingent object (or wholly distinct time) is like. A property is extrinsic just in case it is non-intrinsic. Redness and squareness are intrinsic properties. Being next to a red object is extrinsic.

Distinguishing intrinsic from extrinsic properties is important for at least two reasons. First, we want to distinguish real change from mere Cambridge change. A change in intrinsic properties is a real change in an object, whereas change in extrinsic properties isn't. Second, we want to distinguish qualitatively, but not numerically, identical objects (i.e. duplicates) from numerically identical objects. Distinct duplicate objects, we want to say, share all their intrinsic properties, but not all their extrinsic properties. (For reasons given below, this second desideratum is reasonable only if somewhat modified.)

Giving a precise and adequate definition of intrinsicness has turned out to be extremely difficult. David Lewis, for example, has criticized a definition of intrinsic properties developed by Jaegwon Kim (who was building on one by R.M. Chisholm), and rightly finds it lacking.[1] He conjectures that no adequate definition is possible within the usual logical framework. We need, he suggests, to expand our framework by recognizing an irreducibly new primitive notion of intrinsicness or something related to it (such as naturalness).

I agree. I shall argue, however, that an enlightening definition of intrinsicness can be given

in terms of the notion of a contraction of a world (roughly a world obtained by removing some of the objects in the original world). Although this concept is not part of the usual logical framework, it is an intuitively familiar concept, and appealing to it, I claim, permits an adequate definition of intrinsicness.[2]

To motivate the definition I give, I shall first review Lewis's criticism of Kim's definition, and then suggest and criticize an imperfect improvement. Then I shall give the final definition.

Let A be the property of being accompanied in the world by at least one distinct object. Here and below, for brevity, understand references to a distinct object as a reference to an object that is wholly distinct (i.e., having no parts in common) and contingent (i.e., that exists in some but not all possible worlds).

Kim's definition, Lewis shows, comes to the following:

1. P is intrinsic =df Px is compatible with ~Ax.

The intuitive idea is that P can be had by an object even in a world with no other distinct objects.

Lewis criticizes this characterization on the grounds that it classifies ~A (i.e., being unaccompanied in the world by any wholly distinct contingent object) as intrinsic, but intuitively ~A is extrinsic. After all, an object has that property only if there are no other distinct objects.

It might seem that Lewis's counterexample could be sidestepped with a little fiddling with Kim's definition. And indeed it can. But, as I shall show, this still won't free Kim's account of its troubles. In fact, by seeing that Kim's definition cannot be salvaged with a few changes to avoid

these counterexamples, we will see that it contains a fundamental flaw in its understanding of "independence".

Kim's definition can be improved so as to avoid Lewis's counterexample as follows:

2. P is intrinsic =df Px is compatible with Ax and with ~Ax, and so is ~Px.

That is, P is intrinsic just in case neither the presence nor absence of P entails the presence, or the absence, of some wholly distinct contingent object.

~A is rightly classified as extrinsic on this account, since it is not compatible with A. And similarly, A is rightly classified as extrinsic. Redness and squareness are rightly classified as intrinsic. But there is still a problem. Let S be squareness and R be redness. Then (S&A)v(R&~A) is wrongly classified as intrinsic, since any accompanied square (non-square) object has (lacks) it, and any unaccompanied red (non-red) object has (lacks) it. But intuitively this property is extrinsic, since a square, non-red object has it only if accompanied. The having of this property depends on whether there are other objects present, and is thus extrinsic. The above definition gets it wrong.

The property of being the only red object is also wrongly classified as intrinsic. For it is compatible with being accompanied (by non-red objects) and with being unaccompanied, and its negation is compatible both with being accompanied and with being unaccompanied (when not red).

The problem with this second definition is that it is formulated in terms of logical independence (compatibility), and this fails to capture the relevant notion of independence. It fails,

for example, to capture the idea that being the only red object in the world depends on what other objects are present and what they are like. It fails to capture the idea that an object can cease to be the only red object in the world by the "mere addition" of a red object to the world.[3]

In order to capture the relevant notion of dependency, we shall appeal to the notion of a contraction of a given world, which is to be understood as a world "obtainable" from the original one solely by "removing" objects from it. For example, starting with a world that contains just two red squares, the world "obtainable" by "removing" one of the squares is a contraction of the original world. Although the idea of contractions is not part of the standard logical framework, it is a notion with which we are intuitively familiar.

We shall appeal to certain sorts of maximal contractions, which contract as much as possible while still leaving a specified object existing at a specified time. More specifically, we shall appeal to the notion of an x-t-contraction of a given world, where x is an object and t is a time. The intuitive idea is that such a contraction is a world "obtainable" from the original one by, to the greatest extent possible "removing" all objects wholly distinct from x, all spatial locations not occupied by x, and all times (temporal states of the world) except t, from the world. An x-t-contraction of a world is typically a small world if x and t are small. It typically has just one time, t, and just one object (and its parts). As will be noted below, the qualifications "to the greatest extent possible" and "typically" are needed to cover some cases where it may not be metaphysically possible to remove all wholly distinct objects.

Intrinsic properties are those the having, or lacking, of which does not depend on what the rest of the world is like. The notion of an x-t contraction will help us capture this notion, but if it is

to do so, it must be understood as also involving the "removal" of any laws of nature governing the behavior of objects. For the intrinsic properties of an object in a given world do not depend on what the laws of nature happen to be in that world. For laws are part of the "rest of the world". Because an object can have an exact duplicate in a world with different laws of nature, x-t contractions must be understood as involving the removal of laws, as well as wholly distinct objects, and times. An x-t contraction will thus typically be a lawless world.

It should be noted that we are not presupposing that there is a unique x-t contraction. It may be that the existence of x at t requires the existence of other objects or times without requiring the existence of any <u>particular</u> other objects or times. In such a case, there will be several distinct ways of maximally removing objects (or times or laws) from a world. We shall return to this point below.

We are now ready for the final definition of intrinsicness:

3. P is intrinsic =df for any world w, any time t, and any object x: (a) if Px at t in w, then Px at t in each x-t contraction of w, and (b) likewise for ~P.[4]

Redness (R) and squareness (S) are rightly classified as intrinsic, since contractions don't change an object's color. Being accompanied by a wholly distinct contingent object (A), and its negation (~A), are rightly classified as extrinsic, since at least sometimes (and typically) objects lack A in contracted worlds. The property (R&A)v(S&~A) is rightly classified as extrinsic, since at least sometimes (and typically) an R&A object will lack it in contracted worlds. And being the

only red object in the world is rightly classified as extrinsic, since its negation (i.e., not being red or being accompanied by a distinct red object) is lost in some contractions for a red object accompanied by other red objects.[5]

That completes the development of the basic idea. The idea is that by appealing to x-t contractions we can identify those properties the having or lacking of which does not depend on the presence or absence of other objects or times. This, of course, presupposes that we have a grasp of the notion of x-t contractions, and I claim that we do. We know what a given world would be like if nothing changed except that certain objects were removed. The notion of an x-t contraction is simply the limiting case where as many objects are removed as possible compatibly with x existing at t.

It should be emphasized, however, that the definition of intrinsicness given in terms of x-t contractions is completely inadequate as a reductive definition of intrinsicness in terms of standard logical notions. For the idea of a contraction is not a standard logical notion, nor is it definable in such terms. For one world is a contraction of second world just in case it is exactly like it except that first has some objects in it that the second doesn't. This notion is obviously very close to the notion duplication (it's duplication minus some objects). So the definition fails as a reductive definition. Nonetheless, the idea of a contraction is intuitively clear and familiar, and the definition of intrinsicness in terms of contractions is enlightening because it captures some connections that have not been adequately appreciated.

I turn now to some complexities and problems with the account.

One objection is that it seems to classify secondary qualities, such as redness, as extrinsic, which

seems wrong. For secondary qualities are response-dependent, and if the responders are removed from the world, objects will cease, it seems, to have the secondary qualities. We need, however, to distinguish between two sorts of response-dependence. On a rigid response-dependent account, the responses of some fixed set of beings not necessarily in the world of the object (e.g., us as we are here and now) determines what secondary qualities are had. On this account objects have secondary qualities even in worlds in which there are no responders. For the relevant responders are not beings in the world in question, but rather some independently specified and fixed set of responders. So there is no problem here. If, however, the response-dependence of secondary qualities is understood non-rigidly and as requiring responders in the same world, then the proposed account does indeed classify such secondary qualities as extrinsic. But so understood, they are intuitively extrinsic. For the having of such a property depends on what the rest of the world is like. So, there is no problem in this case either.[6]

A second objection to the contraction account of intrinsicness concerns law-constituted properties such as water-solubility. An object with a particular chemical composition (e.g., a sodium particle) that is water-soluble in a given world need not be water-soluble in a world that has different laws. Water and sodium may not be nomically related in the second world in the requisite manner. More specifically, an object, x, that is water-soluble in a given world at a time t, need not (and typically is not) water-soluble in an x-t contraction of the given world (since there are no, or very few, laws). Consequently, water-solubility is not classified as an intrinsic property on the proposed account. And more generally, law-constituted properties are not classified as intrinsic.[7]

Is this a problem? Initially, water-solubility and the like might seem like intrinsic

properties, but once one recognizes the dependence on what the laws of nature are, it seems more correct to classify such properties as extrinsic. A more serious worry, however, comes from the idea that all properties are law-constituted. This idea requires a more careful discussion than I can give it here, but a few remarks will at least help place the issue in perspective. First, although it is plausible that all, or at least most, properties are law-governed in the sense that the laws of nature control how they interact with other properties, it is far from clear that all are law-constituted in the sense that there are no properties if there are no laws. Of course, one might hold this view for a special sense of properties (e.g., as logically sparse natural properties or as universals, as opposed to logically abundant attributes), but that is not at issue here. Here we are concerned with properties in the logically abundant sense of anything that can be instantiated or which has a negation that can be instantiated. Even in lawless worlds there are properties in this sense (e.g., the property of being in a lawless world). So, it's doubtful that all properties are law-constituted.

Furthermore, even if all properties are law-constituted, the proposed account seems to be right in claiming that in such a case no properties are intrinsic. For in that case, all properties depend on what the rest of the world is like (namely what the laws of nature are). So, law-constituted properties are not counter-examples, at least not clear and compelling ones, to the proposed account.

A third objection to the account concerns non-qualitative properties such as being at a particular spatial or temporal location, or being identical to a particular individual. These are classified as intrinsic on the proposed account, since having them does not depend on whether any other objects exist, or what they are like. If any object, x, has in a given world, w, and at given

time, t, the property of being located at a particular time, or of being identical with George Washington, then it will have those properties in any x-t contraction of w.[8] Thus the contraction account classifies them as intrinsic. This seems, however, mistaken. For it is generally held that intrinsic properties are shared by duplicates, but duplicates cannot share the sorts of properties just listed. An exact duplicate of George Washington does not have the property of being (numerically) identical to George Washington.

What this shows, I claim, is that we need to distinguish between two senses of intrinsicness. In the broad sense, a property is intrinsic just in case having it is appropriately independent of the existence of other objects. The above definition, I claim, captures this notion. This notion captures what is relevant for distinguishing real change from Cambridge change. In the narrow sense, a property is intrinsic just in case it is intrinsic in the broad sense and is a qualitative property. The property of being (numerically) identical to George Washington, and the like, are not qualitative properties in that they "involve", or "make an essential reference to" particular objects, times, or spatial locations. With this distinction, we can say that duplicate objects share all their broadly intrinsic qualitative properties, but not all their broadly intrinsic non-qualitative properties.[9]

It turns out that giving a rigorous and enlightening definition of qualitativeness is extremely difficult. I do not know how to do any better than the hand-waving characterization just given. Consequently, I do not know how to give an enlightening and rigorous definition of intrinsicness in the narrow sense. Still, intrinsicness in the broad sense is an important notion. Changes in spatial or temporal location are more genuine changes in a thing, than changes in the status of being the only red object.

More generally, there are two independent distinctions at work in the discussion of intrinsicness and duplicates: (1) the distinction between those properties the having or lacking of which is independent of the presence or absence of other objects (for the genuine/Cambridge change distinction), and (2) the distinction between qualitative and non-qualitative properties. Redness is qualitative and independent, being larger than some red object is qualitative and dependent, being identical with George Washington is non-qualitative and independent, and coexisting with George Washington is non-qualitative and dependent. The contraction account captures the "independence" notion, but does not capture the notion of intrinsicness as that which perfect duplicates share. But it can capture this notion if we presuppose the distinction between qualitative and non-qualitative properties. For duplicates share all their qualitative, "independent" (as characterized by the contraction account) properties.

A fourth objection comes from considering essential properties of objects. Suppose, for example, that having a particular date of origin is essential to Smith. Then there is no world and time with Smith in it at that time that doesn't also have Smith in it on that earlier date of origin. Consequently, any Smith-t contraction will include Smith on that date. (This is an example of how contraction may not reduce to a single time. Other examples might show how they may not reduce to the single object specified.) This might make it seem that having a particular date of origin will turn out be an intrinsic property on the contraction account, since Smith loses neither it, nor its negation, on contraction.[10] But this need not be so. For, although having a given date of origin may be essential for people (let's say), it may not be essential for other sorts of objects (such as rocks). As long as there is some object for which the having of a particular date of origin is not

essential, then it can be lost on contraction. Because the contraction account of intrinsicness classifies a property as extrinsic (non-intrinsic) if it can be lost on contraction by some object, the property won't be classified as intrinsic.

We're not out of the forest yet, however. It all depends on whether there are any properties that are universally essential in the sense that every object either has it essentially or lacks it essentially. (Note that for lack of a better word, in the stipulated sense, universally essential properties can be lacked by some objects, but if they are, they are lacked essentially.) If there are universally essential properties, then such properties will indeed be classified as intrinsic on the contraction account. Thus, for example, if having a given date of origin is universally essential, then the contraction account classifies it as intrinsic (since neither it, nor its negation can be lost on contraction)—even though such a property relates to the past. This is admittedly most unsatisfying.

One line of defense would be to argue that there aren't any universally essential properties. Being of a particular species is, however, a fairly plausible candidate for being universally essential. Of course this particular universally essential property is not problematic for the proposed account, since intuitively it is intrinsic, and the account classifies it as intrinsic. The problematic universally essential properties are past-regarding, or future-regarding, universally essential properties, such as having a particular origin. Are there any such properties? Even here is seems that there are. For although having a particular origin may not be universally essential, something like being human and having a particular origin (e.g., date, or sperm and egg) may well be. The issues here are, of course, deep and murky, but it does not seem promising to answer the objection by denying the existence of such properties.

The best strategy, I think, is simply to acknowledge that if there are universally essential properties, it is not a mistake to classify them as intrinsic (even if past-regarding). For a universally essential property is such that either it, or its negation is "metaphysically glued" to every single object. If there are past-directed, or future-direct, universally essential properties, then times are not as independent as we intuitively think. For in that case, an object's existence at one time metaphysically requires that the object have certain features at another time. Consequently, in an important sense, there is no dependence (since there is no room for variation) on what the rest of the world is like. If this is right, then the problem of universally essential properties is a problem for any account of intrinsicness, and thus one that requires rethinking of our intuitive responses. Past-regarding, and future-regarding, universally essential properties are strange things, and once understood, it's not so crazy to classify them as intrinsic.

In closing, let us recall that the proposed definition of intrinsicness has two limitations. One is that it does not distinguish between qualitative and non-qualitative properties. So it fails to identify exactly those properties that exact duplicates share. Nonetheless, the definition captures the notion of being independent of what other objects there are and what they are like, and thus grounds an account of real (vs. Cambridge) change. The second limitation is that it does not yield of a reductive definition of intrinsicness solely in terms of standard logical notions. For it appeals to the notion of a contraction of a world, and that is not a standard notion. Still, the definition captures an important and underappreciated connection between intrinsicness and our intuitive idea of contractions. It is thus, I claim, an enlightening definition.[11]

Notes

1.See, David Lewis, "Extrinsic Properties," Philosophical Studies 44 (1983): 197-200, and Jaegwon Kim, "Psychological Superve Studies 41 (1982): 51-70.

2. Throughout, I restrict my attention to monadic properties, but it is possible to extend the definition to relations. Followin Plurality of Worlds (Oxford: Basil Blackwell, 1986), p.62. we can say that a relation is intrinsic to its relata taken individually just the having of intrinsic properties of its relata (e.g., being taller is intrinsic in this sense, since it is entailed by intrinsic height pr intrinsic to its relata taken together just in case it meets the proposed definition with the relata being treated as an object (e.g., bei in this, but not the former, sense, since for any two objects it is unaltered in the contraction). The relation of having more sibling not intrinsic in either sense, since it depends on how many siblings (which are distinct objects) each of the relata has.

3. One possible way of capturing the relevant notion of dependence is to appeal to relevance logic (according to which, implies B only if A can be used non-vacuously to derive B). Michael Dunn defends this view in "Relevant Predication 2: I Internal Relations," Philosophical Studies 60 (1990): 177-206, and "Relevant Predication 1: The Formal Theory," Journal of P (1987): 347-381. Ted Sider criticizes (successfully, I believe) Dunn's approach in "Intrinsic Properties," Philosophical Studies f (Sider argues more generally in favor of Lewis's claim that no reductive definition of the intrinsicness is possible solely vocabulary.) Here I shall not attempt to assess the adequacy of this approach. Instead, I shall provide a definition that makes no and argue that it is adequate. I should mention also that Rae Langton and David Lewis are in the process a developing another ap second definition of intrinsicness as its starting and then appeals to an independent distinction between disjunctive and non-disjun paper "Defining `Intrinsic'" will be presented at the 1996 annual conference of the Australasian Association of Philosophy.

4.This definition captures the notion of being intrinsic relative to an instant of time, which is the most common notion. Being 10 y on this conception, since having it depends on existence at prior times. The definition could be modified to capture the notion of

to an object by dropping the temporal specification in the contraction condition, and replacing it with a temporal contraction to jus the specified object exists. Being 10 years old would be intrinsic in that sense. One could also capture other notions of intrinsic definition to make it relative to a duration of time, or a set of times.

5.Note that the definitions of intrinsicness given here are definitions of when a property is intrinsic–not of when a property is i object. Consequently, some extrinsic properties will in an intuitive sense be intrinsic to whole worlds. For example, containing s objects in the world is classified as an extrinsic property, even though the property is in a sense intrinsic (internal) to any wi Likewise, being in a world with certain sorts of laws is classified as extrinsic, even though when a world has that property, it depe that world.

6.For further discussion of the difference between the two types of response-dependence of see Peter Vallentyne, "Response-Depe and Objectivity," Erkenntnis 401 (1995): ??-??.

7.I owe this point to Walter Edelberg and Al Casullo.

8.Somewhat more precisely: On an absolutist conception of space and time, spatial and temporal location properties will turn ou proposed definition. On a relational conception of space and time, however, objects would (presumably) lack the property of beir in the contracted world, since the relevant relations to other temporal and locations will not hold. Consequently, on a relational will not be classified as intrinsic on the proposed account. The problem remains even here, however, for identity properties (suc George Washington).

9.A related objection is that grueness (green at t and t is before 2000 A.D., or blue at t and t is on or after 2000 A.D) is classi contraction account. Given the specific reference to 2000 A.D., this is a non-qualitative property as well. In "Intrinsic Properties

problem for defining intrinsicness in general, but then sets it aside as non-qualitative. He agrees that the independence not independent of the shared by duplicates notion.

10.I owe this point to David Braun and Ted Sider.

11.Thanks to David Braun, Albert Casullo, Walter Edelberg, David Lewis, Trenton Merricks, Gene Mills, Ted Sider, Ray anonymous referee for this journal for helpful comments.