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How to Define Intrinsic Properties

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An intrinsic property is a property that is *internal* in the sense that whether an object has it depends entirely upon what the object is like *in itself*. As Lewis (1983, p. 197) puts it, "[a] thing has its intrinsic properties in virtue of the way that thing itself, and nothing else is." Many are content with this rough characterization, and despite the lack of agreement on a precise definition, they continue to employ the intrinsic/extrinsic distinction in a variety of philosophical arenas. They still wonder whether sentient organisms have intrinsic moral value, whether colors are intrinsic features of objects, to what extent mentality depends upon intrinsic bodily features, and whether beauty can be intrinsically defined. Others are more suspicious of the notion, agreeing with Dennett (1988) that "[i]f even such a brilliant theory-monger as David Lewis can try and fail, by his own admission, to define the extrinsic/intrinsic distinction coherently, we can begin to wonder if the concept deserves our further attention after all" (p. 67).

I am more optimistic than Dennett. Lewis and others continue to struggle for an acceptable definition, and I believe their efforts are well-motivated. The terms 'intrinsic' and 'extrinsic,' for all the unclarity, still seem to capture an important and useful philosophical distinction. Whenever we wonder what it is about an object x that gives it some property F, one issue we must address is whether (i) x has F solely by virtue of the way that x is in itself or (ii) x has F partly by virtue of how it relates to external items. Since the terms 'intrinsic' and 'extrinsic' are meant to capture the difference between (i) and (ii), a difference that appears metaphysically significant, rather than rejecting the terms, it seems more appropriate to retain them and try to reveal their meanings by making precise the distinction between (i) and (ii). This is what I attempt in sections IV and V. But to get clear on how to proceed in this endeavor, it will help to first review the problems with earlier accounts of intrinsic properties.

I. Duplicates

"To say that a kind of value is 'intrinsic'," Moore claims, "means merely that the question whether a thing possesses it, and in what degree it possesses it, depends solely on the intrinsic nature of the thing in question" (1922, p. 260). But what is it to say that having a property depends on an object's *intrinsic nature*? Moore proposes that part of what is meant is: "[i]t is impossible that of any two exactly similar things one should possess it and the other not, or that one should possess it in one degree and the other in a different one" (p. 261). This answer seems plausible enough. Suppose that Jack has feature F, and suppose that all of Jack's duplicates also have F regardless of how their environments differ from that of Jack. In this case, there is a clear sense in which Jack has F by virtue of how he is in himself, and not because of how he relates to anything external.

As an initial attempt, then, we might characterize an intrinsic property as a property that is had by all of one's duplicates. That is,

(1) F is an intrinsic property of item x $=_{df}$ x has F, and for any item y, if y is a duplicate of x, then y has F.

The conditional will need to express strict implication to ensure that within *any* possible world any two duplicates have all the same intrinsic properties. But we also need to ensure that intrinsic properties are shared by duplicates *across* (as well as within) possible worlds. Otherwise, notes Moore, "we could prove any particular kind of value [to be intrinsic], by merely proving that there never has in fact and never will be anything exactly like any one of the things which possess it" (1922, p. 266). Suppose, for example, that Jill is the only individual inhabiting her world. Then either there are no duplicates of Jill, or if the duplicate relation is reflexive, Jill has only herself as a duplicate. In either case, it trivially follows from (1) that Jill has all of her properties intrinsically. However, there is at least one property that is clearly not an intrinsic feature of Jill—i.e., the property of being the only individual.

To guarantee that intrinsic properties are shared by duplicates across possible worlds, we should modify (1) to read

(2) F is an intrinsic property of item x in world $w_m =_{df}$ x has F in w_m, and for any item y in any world w_n, if y in w_n is a duplicate of x in w_m, then y has F in w_n.

Now we get the right result that having no world-mates is an extrinsic feature of Jill, for some of her duplicates in other possible worlds lack this property.

Dunn notes that "there is a difference between *being an intrinsic property* (as a kind), and *intrinsically being a property of a given individual* (as a specific happening)" (1990, p. 183). Even if a property is had intrinsically by one individual, the property might not be intrinsic as a kind, or *simpliciter*, for another individual might have that property extrinsically. Co-existing with the number 21, for example, is an intrinsic feature of the number 21 (assuming that the co-existence relation is reflexive), but it is not intrinsic *simpliciter*, since other objects (in this case, *all* other objects) have this property extrinsically. Given Dunn's distinction, we should add to (2) the following definition:

(3) F is an intrinsic property *simpliciter* $=_{df}$ for any worlds w_m and w_n, and any items x and y, if x in w_m is a duplicate of y in w_n, then x has F in w_m if and only if y has F in w_n.

Of course, the analysis is not complete until we define what it is for two objects to be *duplicates*. Duplicates, by definition, share the same properties. However, we cannot require that they share *all* the same properties. Since no individual other than Jill has the property of being identical with Jill, Jill would then have only one duplicate (i.e., herself). So if we require that duplicates share all the same properties, then definitions (2) and (3) yield the implausible result that no two individuals can share any intrinsic properties.

To avoid this difficulty, Moore urges that we use the expression 'intrinsic nature' in such a way that "the mere fact that two things are two, or differ numerically, does *not* imply that they have different intrinsic natures" (1922, p. 263). So items x and y are duplicates, according to Moore's proposal, just in case they are exactly alike, *apart from any numerical difference*. If we adopt this proposal, we can allow that numerically distinct items might share intrinsic properties. Unfortunately, this weaker definition of 'duplicate' is still too strong. Suppose that some object x sits five yards away from Jill and is thought about by Jack at midnight. Something might be a duplicate of x, in Moore's sense, even if it is numerically distinct from x, but if it is a duplicate of x, then it must sit five yards away from Jill and be thought about by Jack at midnight. Thus, sitting five yards away from Jill and being thought about by Jack at midnight turn out to be intrinsic features of x.

One might appeal to the notion of a *purely qualitative* feature. A purely qualitative feature is one whose specification need not make reference to any particular individual, place, or time.[1] The predicates 'sits five yards away from Jill' and 'is thought about by Jack at midnight' do not denote purely qualitative features, since they refer to specific individuals, times, and distances. If we now define duplicates as those that are indistinguishable in terms of purely qualitative features, then definitions (2) and (3) correctly classify the properties denoted as extrinsic.

However, consider the predicate 'is thought about by *some* individual at *some* time.' Unlike 'is thought about by Jack at midnight,' this denotes a purely qualitative feature, since it makes no reference to a specific time or individual. So if an object is thought about by some individual at some time, then (assuming that duplicates have all the same purely qualitative features) so, too, will all of the object's duplicates, in which case, being thought about by some individual at some time incorrectly counts as intrinsic. Thus, even if we appeal to purely qualitative features, (2) and (3) still render too many properties intrinsic.

The definition of 'duplicate' we need, of course, is one that ensures that all and only duplicates share *intrinsic* properties—that is, *for any x and any y, x is a duplicate of y if and only if x and y have all the same intrinsic properties*. Together with (2) and (3), this definition gives all the right results, but it also provides an undesirably "tight little family of interdefinables" (as Lewis calls it (1983, p. 197)). To successfully break into this circle, we need an account of the duplicate relation that correctly honors our intuitions without characterizing duplicates directly in terms of intrinsic properties.

However, there are at least two general worries that threaten any attempt to characterize intrinsicality with the notion of a duplicate. Dunn (1990, p. 185) notes that whatever else the duplicate relation amounts to, it would seem to be a transitive relation; if x is a duplicate of y, and y is a duplicate of z, then x is a duplicate of z. Now suppose that Marla is a duplicate of Carla. Then, by transitivity, all of Marla's duplicates are duplicates of Carla. So defining intrinsicality in terms of duplicates yields the implausible result that being a duplicate of Carla is an intrinsic property of Marla. Since it is unclear how to construe the notion of a duplicate without making the relation transitive, we have reason to doubt whether any account in terms of duplicates could provide sufficient conditions for intrinsicality.

It is also questionable whether an appeal to duplicates could ever provide necessary conditions. Dunn (1990, pp. 186–187) notes that being identical with oneself is intrinsic since it is not a feature that anything has by virtue of its relation to anything else. However, none of Jill's duplicates (other than Jill herself, assuming reflexivity) has the property of being identical with Jill. So being identical with Jill is wrongly classified as an extrinsic feature of Jill.[2]

The reason for thinking that our duplicates will have all of our intrinsic properties is that having an intrinsic property does not depend on how one relates to any other individuals. How do we decide whether something has some property F by virtue of how it relates to others? One way to decide is to consider whether it would still have F even if all other individuals were absent. Moore, for example, suggests that when we describe a state of affairs as having intrinsic value, we are saying "that that state of things should exist, *even if nothing else were to exist besides*" (1912, p. 65). So perhaps we can avoid reference to duplicates by characterizing intrinsic properties as those that could be had in the absence of other individuals.

II. Loneliness and Accompaniment

Borrowing from Chisholm's notion of properties "rooted outside times at which they are had" (1976, p. 127), Kim (1982) introduces the idea of a property rooted outside of objects that have it. Let us say that an object y is *wholly distinct* from an object x just in case y is not identical with x or with any of x's proper parts. Then, according to Kim, a property G is rooted outside of the objects that have it just in case "[n]ecessarily any object x has G only if some contingent object wholly distinct from x exists" (p. 59). A property is *not* rooted outside of objects that have it just in case objects could have that property in the absence of wholly distinct contingent beings. (The word 'contingent' is meant to allow that necessary beings exist.)

Saying that a property is not rooted outside of objects that have it comes very close to saying that the property is intrinsic. Thus, Kim's discussion inspires the following analysis:

(4) F is an intrinsic property $=_{df}$ necessarily, for any item x that has F, it is possible both that x has F and that there is no contingent item y such that y is distinct from x.

And relativizing to individuals, we get

(5) F is an intrinsic property of item x $=_{df}$ x has F, and it is possible both that x has F and that there is no contingent item y such that y is distinct from x.[3]

As they stand, these definitions are too weak. Lewis (1983, p. 199) notes that there are features that intuitively count as extrinsic, but turn out to be intrinsic according to Kim's analysis. Consider the property, loneliness—i.e., being the only contingent object in the world. Whether something has this feature depends on how it relates to distinct individuals. So the property qualifies as extrinsic. However, according to (4) and (5), loneliness is an intrinsic feature of the objects that have it, since lonely objects may be (and, by definition, are) unaccompanied by distinct contingent beings.

Vallentyne (1997) provides a solution. If a property is intrinsic, then having that property does not depend on the presence of distinct contingent beings. However, it seems that *not* having that property is also independent of whether other contingent beings exist. Thus, Vallentyne suggests that

(6) P is intrinsic $=_{df}$ Px is compatible with Ax and with $\sim$Ax, and so is $\sim$Px (p. 210),

where A is the property of being accompanied by at least one distinct contingent object. This means that "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" (p. 210). Langton and Lewis (1998) express the same idea when they say that a property is intrinsic just in case "having or lacking the property is *independent* of accompaniment and loneliness" (p. 334), meaning that neither having nor lacking the property entails either loneliness or accompaniment. Being lonely is compatible with, and in fact requires, the absence of distinct contingent objects. However, not being lonely is incompatible with the absence of distinct contingent objects. So now we have the correct result that the property of being lonely is an extrinsic feature of the objects that have it.

There are some remaining worries. Vallentyne (1997, pp. 210–211) notes the problematic disjunctive property, square-and-accompanied *or* circular-and-unaccompanied. Since each disjunct is extrinsic, the disjunction itself is extrinsic. However, (6) makes it an intrinsic property. Its presence is compatible with accompaniment (consider square and accompanied objects) and also compatible with loneliness (lonely circular objects). Likewise, its absence is compatible with accompaniment (consider accompanied circular objects) and with loneliness (lonely square objects). Another problem with (6) is that the property of being the *only* square object turns out to be intrinsic, since being the only square object is compatible both with accompaniment (by non-square objects) and with loneliness, and *not* having the property of being the only square object is compatible both with accompaniment and with loneliness (when the object is not square).[4]

To improve upon (6), Vallentyne introduces the notion of a *contraction* of a world, "which is to be understood as a world 'obtainable' from the original solely by 'removing' all objects from it" (p. 211). A *maximal contraction* involves contracting as much as possible from the world while leaving a certain object existing at a specified time. An *x-t contraction* of a given world is obtained "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" (p. 211). With the notion of an x-t contraction, Vallentyne proposes that

(7) 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 (p. 212).

The disjunctive property, square-and-accompanied *or* circular-and-unaccompanied, is now classified as extrinsic. An x-t contraction will often leave x unaccompanied. So square objects that are accompanied will often lack the disjunctive property in x-t contractions, in which case, condition (a) is not satisfied. Being the only square object is also correctly classified as extrinsic. Consider a square object accompanied by other square objects. This object lacks the property of being the only square object. But in some x-t contractions, the object will be left unaccompanied, and thereby become the only square object. So condition (b) is not satisfied.

Langton and Lewis (1998) choose a different route. First they define *basic intrinsic* properties as "those properties that are (1) independent of accompaniment or loneliness; (2) not disjunctive properties; and (3) not negations of disjunctive properties" (p. 336).[5] Then they propose that "two things are (intrinsic) *duplicates* iff they have exactly the same basic intrinsic properties" (p. 337), which allows them to characterize intrinsic properties, in general, as those that can never differ between duplicates. Thus,

(8) F is an intrinsic property $=_{df}$ for any worlds w_m and w_n, and any items x and y, if x in w_m and y in w_n have all the same basic intrinsic properties (i.e., properties that are independent of loneliness and accompaniment, not disjunctive, and not negations of disjunctive properties), then x has F in w_m if and only if y has F in w_n.

(8) correctly classifies the property of being square-and-accompanied *or* circular-and-unaccompanied as extrinsic. It is a non-basic property, and it might differ between duplicates (e.g., some duplicates of a square object will be unaccompanied, and therefore lack the disjunctive property). Being the only square object is also a non-basic property that can differ between duplicates; a duplicate of the only square object might be accompanied by many square objects.

Unfortunately, there is a general worry that remains for any attempt to analyze intrinsic properties in terms of loneliness and accompaniment. It would be a mistake to equate the notions "intrinsic" and "essential." An item might have some property F in itself (i.e., not by virtue of how it relates to anything else), even if F is not an essential feature of that item. For instance, the internalist regarding mental content believes that the content of one's mental states is an intrinsic feature of that individual. The externalist, on the other hand, claims that mental content is extrinsic since it is partly a function of the external environment; e.g., whether I have a water-thought or a twater-thought depends on whether I am suitably causally related to liquid that is H_2O or to liquid that is XYZ. The debate, here, is not whether the mental content one has is an essential feature of that individual, but whether one's inner features alone determine the content of one's mental states. So even if the content of my thought were an intrinsic feature of me, it would certainly not follow that the content of my thought is an essential feature of me. Thus, the fact that a property is intrinsic does not entail that it is essential.

Conversely, essential properties need not be intrinsic. Suppose that numbers exist and are necessary beings. Then the property of being accompanied by the number 21 is an essential feature of all objects. Although this property is essential, it also seems to be extrinsic. Facts about what we are like in ourselves guarantee that we have this property, but this is simply because *any* set of features ensures that we have this property. All of (4)–(8), however, misclassify the property as intrinsic. Being accompanied by the number 21 is compatible with the presence and absence of distinct *contingent* beings; and since its negation cannot be had by any object, it is vacuously true that anything that has this negative property can have it in the presence or absence of distinct contingent beings. Being accompanied by the number 21 is also a property had by any object in any x-t contraction of any world, and the same is true (vacuously) for its negation. Likewise, all other universally essential properties that consist in relations to distinct individuals (e.g., being such that 7 is odd, or being accompanied by God—assuming God exists and is a necessary being) are misclassified as intrinsic by (4)–(8).

Langton and Lewis, and Vallentyne as well, are willing to accept this consequence. Essential properties, Vallentyne notes, are "metaphysically glued" to objects that have them, and therefore, "in an important sense, there is no dependence (since there is no room for variation) on what the rest of the world is like" (1997, p. 217). However, when it comes to essential relations to distinct individuals, rather than saying there is no dependence on what the rest of the world is like because there is no room for variation, it seems more accurate to say that because there is no room for variation, there is a dependence on what the rest of the world is like, and a dependence of the strongest possible sort—i.e., a necessary dependence. It is preferable, then, to search for a definition which classifies these properties as extrinsic, and this requires abandoning any attempt to characterize intrinsic properties in terms of loneliness and accompaniment.

Note that universally essential relations to distinct objects are also problematic for duplication theories. If numbers exist and are necessary beings, then any object in any possible world is accompanied by the number 21. In particular, any possible duplicate of any object is accompanied by the number 21; so the property turns out to be an intrinsic feature of all objects.

A brief review of Dunn's account of intrinsic properties reveals one more problem we need to avoid.

III. Relevance

Suppose that Jack has the property of being such that Jill is wise. Assuming that Jill is distinct from Jack (i.e., not a part of Jack), being such that Jill is wise certainly qualifies as an extrinsic feature of Jack, for Jack's having this property is not only partly, but wholly dependent on a distinct individual. On the other hand, Jill's having the property of being such that Jill is wise has everything to do with Jill herself, which would seem to make it an intrinsic feature of Jill. Dunn (1987, 1990) would express the difference by saying: 'being such that Jill is wise' is *relevantly* predicated of Jill, but not of Jack.

To understand the sense of relevance he has in mind, note that 'Jill is wise' entails 'If x = Jill, then x is wise,' given the indiscernibility of identicals, '$Fa \rightarrow ((x = a) \rightarrow Fx)$.' From 'Jill is wise,' we can also infer 'If x = *Jack*, then Jill is wise,' but this inference has nothing to do with the antecedent. The inference takes the form '$Fa \rightarrow ((x = b) \rightarrow Fa)$,' which is simply an instance of the irrelevancy principle, '$A \rightarrow (B \rightarrow A)$.' In this sense, Jill relevantly has the property of being such that Jill is wise, but Jack does not have this property relevantly. In general, if it is true that $\forall x\ ((x = a) \rightarrow \phi x)$, then a has property ϕ relevantly. Dunn adds that since relevant predication captures the idea "that an object x's being a is sufficient (by itself) for the condition ϕ to hold of x" (1990, p. 180), the notion of an intrinsic property can be understood in terms of relevant predication.[6]

We need not enter the formal details of Dunn's relevance logic to see that a's relevantly having the property of being ϕ does not ensure that a has ϕ intrinsically. As Humberstone (1996, p. 247) suggests, there are cases in which an object relevantly has a certain property, but only by virtue of how that object relates to distinct individuals. Suppose that Jill is the mother of Jack. Being the mother of Jack is a property that Jill has relevantly, since 'Jill is the mother of Jack' takes the form '$\forall x((x = a) \rightarrow \phi x)$,' where *a* = Jill and ϕ = is the mother of Jack. 'Jill is the mother of Jack' more specifically fits a form that expresses what Dunn (1990, p. 192) calls a *relevant relational property*—i.e., $\forall x((x = a) \rightarrow \phi xb)$. Thus, an object can have a property relevantly even when the property is had by virtue of how the object relates to distinct individuals.

Relevant predication comes closer to highlighting the distinction between "genuine" properties and *mere Cambridge* properties. An object has a property relevantly just in case its having that property has something to do with the object's own features. An object fails to have a property relevantly when we can infer that the object has that property without even considering features of the object itself. For instance, we can conclude that Jack is such that Jill is wise without knowing anything about Jack himself. Despite our ignorance regarding Jack, we can also infer that he is accompanied by the number 21 and he is such that 7 is odd. Dunn's account correctly classifies these Cambridge properties as extrinsic. But many extrinsic features qualify as genuine properties of the objects that have them (e.g., Jill's being the mother of Jack), which is why Humberstone concludes "whether or not relevant predication is the way to register genuine property possession," we should not identify "genuineness with any of the notions of intrinsicness we have been exploring" (p. 247). Instead, we need an account which allows that extrinsic properties may be had "genuinely"—i.e., not as mere Cambridge properties.[7]

IV. Relational Properties

For something to have a property intrinsically (by virtue of nothing other than itself) means, roughly, that it has that property independently of its relations to other things. This idea was explained, though unsuccessfully, in terms of whether the property is had by all of one's duplicates, whether it would still be had in the absence of distinct contingent beings, and whether it is a property that one has relevantly. To avoid the flaws of these accounts, one might be tempted to define the extrinsic/intrinsic distinction directly in terms of the distinction between *relational* and *non-relational* properties. The suggestion would be that a property is intrinsic just in case it is non-relational.

Unfortunately, there is a problem with this straightforward identification. Being identical with Jill would seem to be an intrinsic property of Jill. However, to be identical with Jill is to bear the identity relation to Jill. Being a vertebrate also seems intrinsic, but to be a vertebrate is to bear the containing relation to a vertebral column. Thus, even intrinsic properties can be construed as relational. In section V, I show how to modify the non-relationality view to avoid this worry. However, to fully appreciate the problem and better access the strength of the solution proposed, it will help to first get clear on the different varieties of relational property.

Khamara (1988) distinguishes between *pure* and *impure* relational properties. Being a pupil of Plato is an impure relational property, "for it consists in the having of a relation (being a pupil of) to one particular individual, namely Plato" (p. 145). Being a pupil of *some* individual is a pure relational property, since it "is a property which consists in the having of a certain relation, not to one particular individual, but to some one or other of a group of individuals" (p. 145). The difference between the two may be expressed as follows: if

(a) there is a relation R, and an item y, such that x's having F consists in x's bearing R to y—i.e., $(\exists R)(\exists y)$(Fx consists in Rxy),[8]

then F is an *impure* relational property of x, but if

(b) there is a relation R, and a class of items C (e.g., the class of individuals, philosophers, or musicians), such that x's having F consists in there being some member of C to which x bears R—$(\exists R)(\exists C)$[Fx consists in $(\exists y)(y \in C$ & Rxy)],

then F is a *pure* relational property of x. For example, suppose that Jack is larger than some musician. Then there is a relation R (the larger-than relation) and a class of items C (the class of musicians), such that Jack's being larger than some musician consists in there being some member of C to which Jack bears R.

How should we understand the *consists-in* relation mentioned in formulations (a) and (b)? One might be tempted to explain the relation in terms of *logical equivalence*; i.e., having property F consists in having property G just in case, necessarily, for any item x, x has F if and only if x has G. However, Khamara (1988, pp. 145–146) warns against this interpretation. He notes that the expression 'consists in,' which appears in his description of pure and impure relations, "is intended to mean something stronger than a necessary biconditional" (p. 145). He wishes to preclude the following counter-example (which he attributes to Tom Karmo). Suppose there is a necessary being, God, who is necessarily omniscient (i.e., necessarily, for any true proposition, God knows that the proposition is true). Then for any object x, and any property F, x has F if and only if x is known by God to have F. So if we understand the consists-in relation only in terms of logical equivalence, then all properties turn out to be (impure) relational. To avoid this problem, I propose that we view the consists-in relation as being nothing less than identity; the event or state, x's having F, consists in the event or state, x's having G, just in case *x's having F is the very same event or state as x's having G.*

Humberstone reminds us (1996, p. 212) that an *existential* relational property has a *universal* counterpart; one can be larger than some musician or one can be larger than every musician. In general, F is a *universal relational* property of an item x if

(c) there is a relation R, and a class of items C, such that x's having F consists in x's bearing R to every member of C—$(\exists R)(\exists C)[Fx = (\forall y)(y \in C \supset Rxy)]$.

Suppose that Jack is larger than every musician. Then there is a relation R (the larger-than relation) and a class of items C (the class of musicians), such that Jack's being larger than every musician consists in Jack's bearing R to every member of C.

There are also *negative* relational properties to consider. Sitting next to Jill is a positive impure relational property. *Not* sitting next to Jill is negative impure, and satisfies the description

(d) there is a relation R, and an item y, such that x's having F consists in x's *not* bearing R to y—$(\exists R)(\exists y)[Fx = \sim Rxy]$.

Sitting next to some individual or other is a positive pure relational property; its negative counterpart is, not sitting next to some individual or other (i.e., there being some individual or other next to which one is not sitting). This negative property takes the form

(e) there is a relation R, and a class of items C, such that x's having F consists in there being some member of C to which x does *not* bear R—$(\exists R)(\exists C)[Fx = (\exists y)(y \in C \,\&\, \sim Rxy)]$.

A universal relational property (e.g., is larger than every musician) also has a negative counterpart (is not larger than any musician). In general, negative universal properties take the form

(f) there is a relation R, and a class of items C, such that x's having F consists in there being *no* member of C to which x bears R—$(\exists R)(\exists C)[Fx = \sim(\exists y)(y \in C \,\&\, Rxy)]$.

Note that every negative relational property can be construed as positive. Suppose that Jack is not sitting next to Jill. Then there is a relation R (the *not*-sitting-next-to relation), and an individual y (Jill), such that Jack bears R to y. Suppose that Jack is not sitting next to some individual or other—that is, there is some individual next to which Jack is not sitting. Then there is a relation R (again, the not-sitting-next-to relation), and Jack's having the negative pure property consists in there being some individual y, such that Jack bears R to y. Finally, suppose that Jack is not sitting next to any individual. Then for every individual y, Jack bears the not-sitting-next-to relation to y. In general, any property that takes form (d), (e), or (f) can be rephrased to fit form (a), (b), or (c), respectively.

There are many other types of relational property, but the structure of each can be explained in terms of the three basic forms, (a)–(c). For example, we can replace the universal quantifier in (c) with a 'most,' 'many,' or 'few' quantifier. We can easily modify (a)–(c) to describe relations that are not dyadic. Sitting between Ren and Stimpy, for example, fits the following modification of form (a): there is a relation R (the sitting-between relation) and individuals y and z (Ren and Stimpy) such that x's having F consists in x's bearing R to y and z. And compound relational properties (e.g., is larger than most musicians and sits between Ren and Stimpy) can be expressed in terms of truth-functional operations on properties of forms (a)–(c).

There are many more details about the different types of relational property and how they logically interrelate. But enough has been said here to judge the prospect of defining the intrinsic/extrinsic distinction in terms of relationality. First, recall the worry introduced at the start of this section. Being identical with Jill seems to be an intrinsic property of Jill, but it can be construed as impure relational. There is a relation R (the relation of identity) and an individual y (Jill), such that Jill's being identical with Jill consists in Jill's bearing R to y. Being a vertebrate also seems to be intrinsic, though it can be construed as pure relational; for any vertebrate x, there is a relation R (the containing relation), and a class of items C (the class of vertebral columns) such that x's being a vertebrate consists in there being some member of C to which x bears R. Likewise, being heavier than all of one's proper parts, though intrinsic, satisfies our description of a universal relational property. Finally, there are intrinsic properties that qualify as negative relational—e.g., not being larger than oneself, not containing a vertebral column, and not being smaller than any of one's proper parts.

Perhaps we can avoid these obstacles if we first isolate a special type of relational property, and then define intrinsic properties as those that are not of that special type.

V. D-Relationality

Call a relation that one bears to a distinct individual a *d-relational* property (where, again, y is distinct from x just in case y is not identical with x or with any of x's proper parts). Suppose, for example, that Jack is sitting next to Jill. Then sitting next to Jill is a d-relational property of Jack, provided that Jill is distinct from Jack. In general, F is a (positive, existential) *impure d-relational* property of an item x just in case

(a*) there is a relation R, and an item y, such that (i) x's having F consists in x's bearing R to y, and (ii) *y is distinct from x*.

Suppose that Jack is sitting next to some individual, and suppose that individual is distinct from Jack. Then sitting next to some individual is a *pure* d-relational property of Jack. If there is more than one individual next to which Jack sits, then sitting next to some (i.e., at least one) individual is d-relational provided that at least one of the individuals is distinct from Jack. For in that case, Jack would have the property at least partly by virtue of how he relates to distinct individuals. In general, F is a (positive, existential) *pure d-relational* property just in case

(b*) there is a relation R, and a class of items C, such that (i) x's having F consists in there being some member of C to which x bears R, and (ii) at least one member of C to which x bears R is distinct from x.

Now suppose that we define intrinsic properties as those that are not d-relational—i.e.,

(9) F is an intrinsic property of item x $=_{df}$ x has F, and F is not a d-relational property of x.

Then we can allow that some intrinsic properties are relational. There is a relation R (identity) and an item y (Jill), such that Jill's being identical with herself consists in Jill's bearing R to y. Thus, being identical with Jill is an impure relational property. However, it is not *d*-relational, since the item to which Jill bears the identity relation is not distinct from Jill. For any vertebrate x, there is a relation R (the containing relation) and a class of items C (the class of vertebral columns), such that x's being a vertebrate consists in x's bearing R to some member of C. So being a vertebrate is a pure relational property. But it is not d-relational since there is only one item to which x bears R and that item is not distinct from x. Since being identical with Jill and being a vertebrate are not d-relational, they qualify as intrinsic.

One might argue that (9) classifies far too many properties as extrinsic. Suppose that x is square. Then there is a relation R (exemplification) and an item y (the property, squareness), such that x's being square consists in x's bearing R to y. In general, for any property F, an object has F by virtue of standing in the *exemplifying* relation to F. So assuming that properties are distinct from the objects that have them, all properties end up being (impure) d-relational, in which case, none are intrinsic.

To avoid this problem, we might insist that an item can be d-related only to a *particular* (concrete or abstract) and not a *universal*. However, this gives the implausible result that *all* of our relations to universals (including, co-existing with squareness) count as intrinsic.

Another option is to deny that properties are distinct from the objects that have them. X's having F at time t, one might think, does not consist in a relation that x bears to a universal; it consists only in the presence of a trope, *x's F-ness at t*. Since the trope is a concrete particular that resides *within* x, it may be considered a proper part of x. Thus, the argument goes, the mere fact that x has F does not guarantee that its having F consists in a relation it bears to a *distinct* object. However, even if some brand of nominalism is correct, an analysis of intrinsic properties should not imply that it is correct. The intrinsic/extrinsic distinction, after all, is equally useful to both the realist and the nominalist. Both can wonder, for example, whether objects have their color intrinsically, or whether we should be externalists regarding mental content. So relying on nominalist intuitions in order to preserve an analysis of intrinsic properties is unacceptable.

Fortunately, there is a simpler way to avoid the exemplification worry. Our analysis should remain ontologically neutral. In particular, when we ask whether F is an intrinsic feature of an object x, the answer should not rely on any general view about the nature of properties and how objects exemplify them. But if so, then the question "Is F an intrinsic property of x?" should be interpreted as "Does x's having F consist in a relation that x bears to a distinct item, *other than F itself*?" There is good reason, then, to view the relations specified by statements of forms (a*) and (b*), and those to follow, as relations other than mere exemplification.[9,10]

To ensure that (9) captures what is sufficient for intrinsicality, we must add to our list of d-relational properties. In particular, we need to add the d-relational analogue of universal form (c). Suppose that Jill is taller than *every* mathematician. This is certainly a relational property of Jill, but is it also d-relational? It would be d-relational if there were at least one mathematician that is distinct from Jill, for in that case Jill would have the property at least partly by virtue of how she relates to distinct individuals. So, as an initial attempt, we might characterize *universal d-relational* properties as taking the following form: *there is a relation R, and a class of items C, such that (i) x's having F consists in x's bearing R to every member of C, and (ii) there is at least one member of C that is distinct from x.*

But there is a problem with this suggestion. Suppose that Jack is a contingent item and there are no contingent items distinct from Jack. Then Jack has the property of containing every contingent item (i.e., having every contingent item as a part), and this property, according to the formulation above, does not count as d-relational (since condition (ii) is not satisfied). But containing every contingent item is d-relational. To determine whether Jack contains every contingent item, we would have to consider not only Jack and his parts, but also what the rest of the world is like; in particular, we would have to consider whether there are any contingent items distinct from Jack. Thus, whether Jack contains every contingent item partly depends on facts about the world external to Jack.

One might simply delete condition (ii) from the analysis above. However, consider the property, is heavier than all of one's proper parts. To determine whether Jack has this property, we need not consider those portions of the world distinct from Jack. So being heavier than all of his proper parts is clearly not a d-relational feature of Jack, though it would be classified as d-relational if we were to delete condition (ii). The difference between containing all contingent items and being heavier than all of one's proper parts lies in how the relevant class of items is described. It is possible (logically and nomologically) that the description 'contingent item' applies to items distinct from Jack; that is why we must consider portions of the world distinct from Jack to determine whether Jack contains all contingent items. However, the description 'a proper part of Jack,' by definition, could not apply to any item distinct from Jack. I propose, then, that we replace our initial characterization with the following. F is a (positive) *universal d-relational* property of an item x just in case

(c*) there is a relation R, and a class of items C, such that (i) x's having F consists in x's bearing R to every member of C, and (ii) it is possible that there is a member of C that is distinct from x.

The new condition (ii) also handles universal properties that are had vacuously. Suppose that Jill is taller than every mathematician simply because there are no mathematicians. It still seems that being taller than every mathematician is a d-relational property of Jill, since she has the property partly by virtue of what the rest of the world is like—that is, by virtue of the fact that it contains no mathematicians. Since it is possibly true (though not actually true) that there is a member of the class of mathematicians that is distinct from Jill, (c*) correctly classifies being taller than every mathematician as d-relational.

The negative counterparts of (a*), (b*), and (c*) are

(d*) there is a relation R, and an item y, such that (i) x's having F consists in x's *not* bearing R to y, and (ii) y is distinct from x,

(e*) there is a relation R, and a class of items C, such that (i) x's having F consists in there being some member of C to which x does *not* bear R, and (ii) at least one member of C to which x does not bear R is distinct from x,

and

(f*) there is a relation R, and a class of items C, such that (i) x's having F consists in x's *not* bearing R to *any* member of C, and (ii) it is possible that there is a member of C that is distinct from x,

respectively. However, as with negative relations generally, any property that fits (d*), (e*) or (f*) can be construed as positive. Suppose that Jack is not sitting next to Jill and Jill is distinct from Jack. Then not sitting next to Jill qualifies as negative d-relational. But there is a relation R (the not-sitting-next-to relation), and an item y (Jill), such that Jack's not sitting next to Jill consists in Jack's bearing

R to y. So, given that Jill is distinct from Jack, not sitting next to Jill also qualifies as positive d-relational.

Variations on (a*)–(c*) can be used to describe other types of d-relational property; for instance, the relation might be more than two-place, and we can employ quantification that is neither existential nor universal (e.g., with 'most,' 'many,' and 'several' quantifiers). But we have enough details already to show how (9) avoids the problems discussed in sections I-III. Suppose that Marla is a duplicate of Carla. By transitivity, all of Marla's duplicates are duplicates of Carla. So, according to duplication accounts, the property of being a duplicate of Carla would count as an intrinsic feature of Marla. According to (9), however, being a duplicate of Carla is an intrinsic feature of Marla only if Carla is not distinct from Marla. If Carla is distinct from Marla, then being a duplicate of Carla is an impure (type a*) d-relational feature of Marla; therefore, it is extrinsic.

Another problem with duplication accounts is that being identical with x turns out to be an extrinsic feature of x, since being identical with x is a property that is not had by all of x's duplicates. What verdict does (9) give? The answer depends on the type of object x is. First note that a relation x bears to its proper parts might be d-relational in character, for what makes it the case that x has that part might be a function of how x relates to some distinct thing. For example, if the externalist is correct, then although my belief that water is wet is an inner item, what makes it a belief that *water* is wet (rather than a belief that *twater* is wet) depends on my relation to the external environment (i.e., being suitably causally related to liquid comprised of H_2O rather than XYZ). So my having a water-thought is a d-relational feature of me. Relations that an object x bears to itself (e.g., being identical with x) might also count as d-relational, for it might be that what makes x the type of object it is has partly to do with how it relates to distinct items. Being identical with a key is a relation that any key bears to itself, but what makes something a key depends on its relation to the doors that it opens and/or the door-opening intentions of its designer. So, in some cases, being identical with x is a d-relational feature of x, and therefore extrinsic, according to (9). However, (9) also allows that many relations an object bears to itself and its proper parts are intrinsic features of that object. The property of being composed of aluminum is an intrinsic feature of an aluminum key, and so is the property of being identical with an item composed of aluminum, for neither are relations that the key bears to anything that is distinct from the key itself.

What about loneliness? Having this property consists in there not being any distinct contingent item to which one bears the accompaniment relation. Also, membership in the class of contingent items distinct from an object x allows (in fact requires) that one be distinct from x. Thus, according to (c*), loneliness is d-relational. Given (9), we can also say that loneliness is extrinsic.

The accounts of Vallentyne, and Langton and Lewis also classify loneliness as extrinsic, but they misclassify universally essential features. An individual can co-exist with the number 21 in the absence of distinct contingent items. However, since we co-exist with the number 21 by virtue of being related to a distinct (non-contingent) item, the property qualifies as a d-relational feature of us. Thus, (9) correctly classifies it as one of our extrinsic features.

Finally, unlike Dunn's analysis, (9) allows that some extrinsic properties are not mere Cambridge properties. Suppose that x has property F by virtue of standing in relation R to some distinct item y. Then, according to (9), F is an extrinsic feature of x. However, it does not follow that F is a Cambridge property. The fact that x bears R to y might not depend in any way on x's intrinsic features; for example, co-existing with the number 21 or being thought about by Jack at midnight does not depend on what we are like intrinsically. But it could also be that x's bearing R to y depends *partly*, but not wholly, on what x is like intrinsically. In that case, F is an extrinsic, though non-Cambridge, property of x. For example, Marla's being a duplicate of Carla depends not only on (i) Marla's own constitution, but also on (ii) how it compares with Carla's constitution. Assuming that Carla is distinct from Marla, (ii) is a d-relational feature of Marla. So having the conjunction of (i) and (ii) is not simply a matter of having internal properties. Thus, according to (9), being a duplicate of Carla is an extrinsic feature of Marla. However, since (i) is not a d-relational feature of Marla, it is also true that being a duplicate of Carla *partly* depends on what Marla is like in herself; so being a duplicate of Carla is not a mere Cambridge feature of Marla.

(9) correctly classifies conjunctive properties in general. Intuitively, a conjunctive property is intrinsic if and only if both conjuncts are intrinsic. Square-and-accompanied, for example, would seem to be extrinsic since accompaniment is extrinsic. We can express this intuition, in terms of (9), by noting that when a conjunct is d-relational, the conjunction itself is d-relational—e.g., an object's being square-and-accompanied consists in there being some distinct item to which it bears the square-and-accompanied relation. Thus, square-and-accompanied is (pure) d-relational, and therefore extrinsic.

But disjunctive properties are more problematic. Recall Dunn's distinction between being an intrinsic property (as a kind, or *simpliciter*), and intrinsically being a property of a given individual. As noted in section I, this distinction is important, since a property might be an intrinsic feature of one object, but an extrinsic feature of another. Consider, for example, the disjunctive property, square-or-accompanied (S v A). Whether S v A is had intrinsically, notes Dunn (1990, p. 183), depends on whether it is had by virtue of being square or by virtue of being accompanied. An accompanied circular object has S v A, but only because it has the extrinsic property of being accompanied. So, intuitively, S v A is an extrinsic property of that object. The lonely square, on the other hand, would seem to have the property intrinsically. Being square (we are assuming) is a property that an object has solely by virtue of what the object alone is like. So the lonely square has the disjunctive property solely by virtue of itself. However, in both cases, S v A can be construed as d-relational; in both cases, x's having S v A consists in x's bearing the square-or-accompanied-by relation to some distinct item. So if we accept (9), we are forced to say that the lonely square has the property extrinsically.

To handle disjunctive properties, I suggest that we modify (9) slightly. Call a property that is not a d-relational feature of item x an *internal* property of x. Then we can define intrinsic properties as follows:

(10) F is an intrinsic property of item x $=_{df}$ x has F, and there are internal properties $I_1,..., I_n$ had by x, such that x's having F consists in x's having $I_1,..., I_n$.

As before, the *consists in* relation is to be understood in terms of identity. X has F intrinsically just in case x has some internal properties $I_1,..., I_n$ such that the event (state), x's having F, is the very same event (state) as x's having $I_1,..., I_n$. Given this reading of 'consists in,' thesis (9) is stronger than (10). (9) entails (10); if F and G are the same property, then any instance of F is an instance of G. So if F is an internal (non-d-relational) property of x, then there will be some internal property I (namely, F itself), such that x's having F consists in x's having I. However, (10) does not entail (9) because an instance of one property might also be an instance of a different property. (For example, if the non-reductive physicalist is correct, then mental properties are not identical with physical properties, but every instance of a mental property is identical with some instance of a physical property—i.e., mental events are physical events). So even if x's having F is identical with x's having internal property I, F itself might not be an internal property.

Since (10) does not entail (9), a property that (9) classifies as an extrinsic feature of some individual might be classified by (10) as an intrinsic feature of that individual. Suppose, again, that x is a lonely square object. In this case, it would seem that x has the property S v A intrinsically, since it has the property solely by virtue of what it is like in itself. Unlike (9), (10) gives the right result. There is an internal property I had by x (where I = S), such that x's having S v A consists in x's having I; in other words, x's having S v A is the same event (state) as x's having I. Suppose, on the other hand, that x is an accompanied circular object. In this case, x's having S v A consists in x's having the d-relational (non-internal) feature A. Given (10), we can say that x has S v A extrinsically.[11]

Recall the more complicated disjunctive property, square-and-accompanied *or* circular-and-unaccompanied. This was wrongly classified as intrinsic by the original analyses inspired by Kim (definitions (4) and (5)), but it is correctly labeled by Vallentyne's analysis and the Langton-Lewis account. (10) gives the right result as well. Having the property consists in having at least one of the two disjuncts. Since both disjuncts are d-relational, x's having the disjunction does not consist in what x is like internally (i.e., it is not the case that there are internal properties $I_1,..., I_n$, such that x's having the disjunction is x's having $I_1,..., I_n$).

Definition (9), we saw, avoids the problems of the earlier analyses. (10) does that, and it also correctly classifies disjunctive properties. So I close with the following definition of an intrinsic property *simpliciter*:

(11) F is an intrinsic property $=_{df}$ necessarily, for any item x, if x has F, then there are internal properties $I_1,..., I_n$ had by x, such that x's having F consists in x's having $I_1,..., I_n$.[12]

Notes

[1]For a thorough analysis of purely qualitative terms, see Goldstick (1986). Also see Rosenkrantz' (1979) discussion of pure vs. impure properties.

[2]However, as noted in section V, depending on what type of object x is, being identical with x might be an extrinsic feature of x.

[3]I choose the term 'distinct' instead of 'wholly distinct,' since the latter is misleading. To say that y is *wholly* distinct from x entails that (i) y is not identical with x or any of x's proper parts, and it also implies the stronger claim that (ii) x and y have no parts in common. An object can have a property extrinsically even if its having that property does not depend on the presence of objects that are distinct in sense (ii). Suppose, for example, that an object x is a proper part of some other object y. Then being a proper part of y would seem to be an extrinsic feature of x. However, if x were a proper part of y, then y would be distinct from x only in sense (i).

[4]I have modified Vallentyne's original examples only by replacing the properties, red and non-red, with two less controversially intrinsic properties. However, the assumption that squareness and circularity are intrinsic is not crucial. The goal here is to analyze the concept "intrinsic," not to determine which properties fall under that concept. So even if squareness and circularity were shown to be extrinsic, we could simply replace them with other candidates.

[5]They note that "[a]ny property can be expressed as a disjunction: something is G iff either it is G-and-H or else it is G-and-not-H" (1998, p. 335). Appealing to the difference between natural and non-natural properties, they characterize the disjunctive properties more narrowly as "those properties that can be expressed by a disjunction of (conjunctions of) natural properties; but that are not themselves natural properties" (p. 336).

[6]He offers the definition: "[a] predication is intrinsic iff either (1) it is a monadic relevant predication (i.e., determined by a formula involving only one term), or (2) it is a relevant pseudo-relational predication, i.e., a polyadic predication determined by a formula having more than one term, but relevant in only one particular position" (1990, 202).

[7]For details regarding how Dunn's relevant predication can help explain the notion of a mere Cambridge property, see Kremer (1997).

[8]For ease of exposition, I have deleted time-indices. But bear in mind that one might be related to an item that does not *currently* exist. Being a descendent of Jill is a relational property of the individuals who have it, even if Jill has ceased to exist, and being the future aunt of Jack's first child is also d-relational even though the child has yet to be born. Thus, formulation (a) should read: there is a relation R, and an item y at a time t^*, such x's having F at t consists in x's bearing R at t to y at t^*. The formulations that follow should be expanded in a similar fashion.

[9]It should be noted that the exemplification worry is not specific to the notion of d-relationality. It threatens relationality in general. If x's exemplifying F counts as a genuine relation that x bears to F, then all properties turn out to be relational (whether or not they are distinct from the objects that have them). To remain neutral on the nature of properties and how objects exemplify them, perhaps we should interpret the more general question "Is F a relational property of x?" as asking "Does x's having F consist in a relation that x bears to any item—other than F itself?"

[10]The exemplification worry was mentioned by the anonymous referees. Another problem was also noted. Having a spherical surface seems to be an intrinsic feature of a rubber ball, and definition

(9) classifies it as intrinsic—if we assume that the surface is not distinct from the ball. This assumption seems plausible. We think that the spherical surface is an intrinsic feature of the rubber ball because we think that the surface is a proper part of, and therefore not distinct from, the ball. Having a wooden frame, on the other hand, is an extrinsic feature of the window, since the frame is not a part of, and therefore is distinct from, the window that has it.

However, it might be argued that a surface is *not* a proper part of the object that has it. For example, Hoffman and Rosenkrantz (1994) argue that (i) surfaces are best viewed as limits and (ii) the limit of an object is not a proper part of that object, since "in the strict sense, the parts of a physical object are other physical objects or portions of physical stuff, and not limits" (p. 111). I am using 'part' in a not-so-strict sense; the parts of a physical object are those concrete particulars that neither lie nor extend outside the boundaries of the object. The parts, in this looser sense, may include limits, tropes, events (viewed as concrete particulars), and even regions of empty space.

[11] Suppose that x is both square and accompanied. Is S v A had intrinsically or extrinsically in this case ? It is unclear what to say. On the one hand, x's being square is enough to guarantee that x has S v A, which would seem to suggest that S v A is an intrinsic feature of x. On the other hand, although x has S v A by virtue of being square, it is also true that x has S v A by virtue of being accompanied. So the features by virtue of which x has S v A are precisely those features by virtue of which it has the conjunctive property, S & A. Since S & A is clearly an extrinsic feature of the accompanied square, it is plausible to think that S v A is also had extrinsically. If definition (10) is correct, then our indecision about how to classify S v A in this case is easy to explain. It is unclear whether x has S v A intrinsically because it is unclear, in this case, whether x's having S v A consists in—i.e., is identical with—(i) x's having S, (ii) x's having A, or (iii) x's having both S or A. If it consists in (i), then x has S v A intrinsically; otherwise, x has the property extrinsically.

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