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Redefining 'Intrinsic'*

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Several alleged counterexamples to the definition of 'intrinsic' proposed in Rae Langton and David Lewis, 'Defining "Intrinsic"', are unconvincing. Yet there are reasons for dissatisfaction, and room for improvement. One desirable change is to raise the standard of non-disjunctiveness, thereby putting less burden on contentious judgements of comparative naturalness. A second is to deal with spurious independence by throwing out just the disjunctive troublemakers, instead of throwing out disjunctive properties wholesale, and afterward reinstating those impeccably intrinsic disjunctive properties that are not troublemakers. (The second of these changes makes the first more affordable.) A third, suggested by Brian Weatherson, would be to invoke the general principle that the intrinsic and the extrinsic characters of things are independent, rather than relying just on one special case of this principle; but it is none too obvious how to do this.

I. Introduction

In our paper "Defining 'Intrinsic'" (for short, 'DI'), Rae Langton and I offered a proposal such that the classification of properties as intrinsic or non-intrinsic depended on the classification of properties as disjunctive or non-disjunctive, which in turn depended on comparisons of the naturalness of properties.[1] It is our reliance on comparative naturalness that has drawn criticism, in this issue and elsewhere.

Dan Marshall and Josh Parsons[2] have misgivings about the very idea of judging comparative naturalness. Well, anyone should prefer to do without these judgements, since they rest either on contentious ontology or on a primitive distinction. But such judgements are in fact made, often with confidence, and if you had to do without them, inability to define 'disjunctive

* I thank Rae Langton, Brian Weatherson, and John Hawthorne for valuable comments. Note that here, except when I discuss our jointly authored papers, I speak for myself and not for Langton; I do not know how far she would agree with me.

1 Rae Langton and David Lewis, "Defining 'Intrinsic'," *Philosophy and Phenomenological Research* 58 (1998): 333–45; reprinted in David Lewis, *Papers in Metaphysics and Epistemology* (Cambridge University Press, 1999).

2 Dan Marshall and Josh Parsons, "Langton and Lewis on 'Intrinsic'," *Philosophy and Phenomenological Research* 63 (2001): 347–51. Misgivings about judgements of comparative naturalness are expressed also in Stephen Yablo, "Intrinsicness," *Philosophical Topics* 26 (1999): 470–505.

property' or 'intrinsic' would be the least of your worries. Despite their misgivings about judging comparative naturalness, Marshall and Parsons are nevertheless willing to do so; and sometimes plugging their judgements into the DI definitions would yield incorrect classifications of properties. Langton and I disagree with their judgements, and there isn't much more to be said.[3]

Ted Sider[4] has no general misgivings about judging comparative naturalness. But he notes that we wanted to be neutral between various conceptions of what makes properties natural, including even a 'vegetarian' conception on which the natural properties are those that play some special role in our thinking. He argues, rightly, that there is one vegetarian conception, one on which naturalness amounts to familiarity, which yields judgements that make the DI definitions fail. But he also notes, again rightly, that another vegetarian conception, one of those mentioned in the paper by Barry Taylor that we cited in DI as our example of vegetarianism, would meet our needs.[5]

The upshot is that Langton and I remain confident that the DI definition, unamended, correctly classifies properties as intrinsic or not. But there may still be reasons for dissatisfaction and room for improvement.

II. Independence

Property P is *compatible* with property Q iff it is possible that something has both P and Q. Intrinsic properties[6] are compatible with *accompaniment*: the property of coexisting with a wholly distinct contingent thing. ('Distinct' here means 'nonoverlapping', not 'nonidentical'.) But not every property compatible with accompaniment is intrinsic, as witness the property of

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3 Rae Langton and David Lewis, "Marshall and Parsons on 'Intrinsic'," *Philosophy and Phenomenological Research* 63 (2001): 353–55.

4 Theodore Sider, "Maximality and Intrinsic Properties," *Philosophy and Phenomenological Research* 63 (2001): 357–64.

5 Barry Taylor, "On Natural Properties in Metaphysics," *Mind* 102 (1993): 83–100. The vegetarian conception that meets our needs is one in which properties are natural to the extent that they—more precisely, predicates expressing them—play the central and fundamental classificatory role within regimented physics (or perhaps within future unified science). Another conception Taylor mentions, one that might or might not turn out to meet our needs, is one in which properties are natural to the extent that they play the central and fundamental classificatory role within some reasonable formalization of common sense.

By 'our needs' I mean needs arising from commitments that Langton and I share. My own needs, or hers, might be more demanding.

6 I tacitly restrict my attention to purely qualitative properties, as opposed to non-qualitative properties such as being the particular cat Matilda, or feeding Matilda. The latter properties divide indiscernibles. If ours is a world of two-way eternal recurrence, for instance, still the property of being Matilda belongs only to a cat of this epoch, not to the indiscernible but nonidentical cats of other epochs.

I also ignore necessarily universal or empty properties. Intuition is silent about how to classify them. Calling them intrinsic (as Langton and I did), or calling them non-intrinsic, or leaving them unclassified, all require inconvenient exceptions to various things I shall say.

accompaniment itself. Likewise, intrinsic properties are compatible with *loneliness*: the property of being unaccompanied, as the entire universe is, and as it would still be even if it consisted only of one tiny thing. But not every property compatible with loneliness is intrinsic, as witness the property of loneliness itself.

Property P is *independent* of property Q iff four different cases are all possible: (a) something has both P and Q, (b) something lacks P and has Q, (c) something has P and lacks Q, and (d) something lacks both P and Q. Intrinsic properties are independent of accompaniment (equivalently, of loneliness)—for short, 'independent'. But, as will soon be shown, not every property that is independent of accompaniment is intrinsic.

As Brian Weatherson points out, intrinsic properties are independent not only of *whether* their bearers are accompanied, but also of *how* they are accompanied, if they are.[7] Unfortunately, 'how' here has to mean 'how intrinsically'. If P and Q are intrinsic properties, and if *Q-accompaniment* is the property of being accompanied by something that has Q, then indeed P is independent not only of accompaniment *simpliciter* but also of Q-accompaniment.[8] All six cases are possible: (a) some P is lonely; (b) some non-P is lonely, (c) some P is Q-accompanied, (d) some non-P is Q-accompanied, (e) some P is accompanied but not Q-accompanied, and (f) some non-P is accompanied but not Q-accompanied. But if P is an intrinsic property, and Q is the non-intrinsic property of not being P-accompanied, P is not independent of Q-accompaniment, because a P cannot be Q-accompanied.

Unlike the special case invoked in DI, independence of accompanient, the general independence principle just stated is a necessary condition for *two* properties to be *both* intrinsic, not a necessary condition (still less, necessary and sufficient) for a single property to be intrinsic. I shall return later to the question whether such a principle can somehow be incorporated into a definition of 'intrinsic'.

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7 Brian Weatherson, "Intrinsic Properties and Combinatorial Principles," *Philosophy and Phenomenological Research* 63 (2001): 365–80. Weatherson notes that when he says 'independent', he means something 'very informal': whether a thing has a property "is entirely determined by the way [that thing] itself, and nothing else is." What is called 'independence' here, and in DI, is one way—not the only way—of spelling that out.

8 Weatherson adds a proviso: we have independence only if the sizes and shapes of P's and Q's are such that something with the size and shape of a P (or of a non-P) can be accompanied by something with the size and shape of a Q (or of a non-Q). I omit this proviso, in part for the sake of simplicity, in part because I think it will always be satisfied. It is automatically satisfied if there is no upper limit on the dimensionality of spacetime, so that even if P's and Q's are too big to fit together in n-dimensional spacetime, they can nevertheless accompany one another in $(n+1)$-dimensional spacetime. (For an argument against upper limits, see Daniel Nolan, "Recombination Unbound," *Philosophical Studies* 84 (1996): 239–62.) It is also automatically satisfied if it is possible, as I think it is, for two distinct things to occupy overlapping regions of spacetime.

The general independence principle is a special case of an even more general independence principle: intrinsic character is independent of purely extrinsic character. If P is intrinsic and R is purely extrinsic, then P and R are independent. Accompaniment and loneliness, for instance, are purely extrinsic properties; so is Q-accompaniment, where Q is intrinsic; so also is the property of being accompanied by a distinct Q that is exactly a mile away. Beware: there is a terminological difficulty here. Often, for instance in DI, 'extrinsic' is used as a synonym for 'not intrinsic'; but some properties, for instance the property of being a cube accompanied by another cube, are neither intrinsic nor purely extrinsic. In general, something has an intrinsic property solely in virtue of how that thing itself is; it has a purely extrinsic property solely in virtue of how accompanying things, and its external relation to these accompanying things, are; and it has a non-intrinsic but not purely extrinsic property in virtue partly of the former and partly of the latter. (If we had a clear enough understanding of 'solely in virtue of', we would need no further definition of 'intrinsic'.) It is of course not true that intrinsic properties are independent of non-intrinsic properties that are not purely extrinsic; for instance, being a cube is not independent of being a cube accompanied by another cube.

III. Spurious Independence and Disjunctive Properties

It may happen that properties P and Q are independent for an unintended reason: because P is a disjunctive property, and one of its disjuncts provides for two of the four cases, and the other one provides for the other two. Call this *spurious independence*. That is how a property can be independent of accompaniment, and hence of loneliness, and yet not intrinsic. For instance, let P be the disjunctive property of being either a lonely cube or an accompanied non-cube. P is not intrinsic; yet it is independent of accompaniment, or of loneliness. A lonely thing can be either a P, if it is a cube, or a non-P, if it is a non-cube. Here I have used only the first disjunct. Likewise, an accompanied thing can be either a P, if it is a non-cube, or a non-P, if it is a cube. Here I have used the second disjunct.

The same problem of spurious independence arises for the general independence principle that if P and Q are intrinsic then P is independent both of accompaniment and of Q-accompaniment. (And likewise for the still more general principle that intrinsic character is independent of purely extrinsic character.) This time, let P be the disjunctive property of being either a cube unaccompanied by a sphere or a non-cube accompanied by a sphere. P is not intrinsic; yet it is independent of being accompanied by a sphere. Something lonely can be either a P, if it is a cube, or a non-P, if it is a non-cube (first disjunct). Something accompanied by a sphere can be either a P, if it is a non-cube, or a non-P, if it is a cube (second disjunct). Something accompanied, but not accompanied by a sphere, can be either a *P*, if it is a cube, or a non-*P*, if it is a non-cube (first disjunct again).

Since the troublemakers that cause the problem of spurious independence are disjunctive properties, a remedy is to disregard any independence that involves disjunctive properties. You could say, as Langton and I did in DI, that when *P* is independent of accompaniment or loneliness, *P* is thereby shown to be intrinsic only if it is not disjunctive. (Presumably it goes without saying that accompaniment and loneliness are not themselves disjunctive.) Likewise we could say that when *P* is independent of being accompanied by a sphere, *P* is thereby shown to be intrinsic only if it is not disjunctive.

P is independent of accompaniment, or of accompaniment by a sphere, just in case not-*P* is likewise independent. So you should likewise disregard any independence that arises when not-*P* is disjunctive (for short, when *P* is 'co-disjunctive').

Accordingly, Langton and I said that *P* is *basic intrinsic* iff *P* is independent of accompaniment, and neither disjunctive nor co-disjunctive. Unfortunately, some intrinsic properties really are disjunctive (or co-disjunctive): for instance, the property of being either a cube or a sphere, or the property of being either a cube or made of titanium, or the property of being a non-cube that is not made of titanium. So no sooner had we thrown out the disjunctive (and co-disjunctive) candidates for being intrinsic properties than we had to bring many of them back in again. So we defined *intrinsic* properties, roughly, as truth-functional compounds of basic intrinsic properties; or, more precisely, as properties that supervene upon the basic intrinsic properties of their bearers. (We could instead have provided for infinitely complex truth-functional compounding.)

Here is a reason for dissatisfaction. It seems unduly roundabout to throw out the disjunctive candidates wholesale, and then reinstate most of them at the final step. It would be nicer to apply a more selective test, throw out only the troublemakers that we really want to keep out, and stop there.

IV. Redefining 'Disjunctive'

Any property whatever has countless disjunctive expansions: something is a *P* iff it is a $[(P \,\&\, Q_1) \vee \ldots \vee (P \,\&\, Q_n)]$, where the Q_i's jointly exhaust *P*—for instance, if it is a $[(P \,\&\, Q) \vee (P \,\&\, {-Q})]$. So it will not do to say that a disjunctive property is one that is equivalent to some disjunction. Rather, it is one that is equivalent to some *bad* disjunction. Which disjunctions are bad?

Here an analogy affords guidance. A property is a region in some sort of similarity space of actual and possible things. An unnatural property is like an irregularly shaped region of the plane: a continent with lots of promontories and inlets, or an archipelago. A natural property is like a regular region: a disc, a square, or a straight stripe (in the right sort of direction) across the entire plane. Naturalness, like regularity, is a matter of degree. In many cases, a miscellaneous sum of several regions is less regular than any of the summed regions. But if the regions fit together neatly, the sum can be more regular than any of the summed regions. For instance, a jigsaw puzzle may be square, and a square is more regular than any of the pieces. But a sum of scattered pieces out of different jigsaw puzzles, however arranged, is a miscellaneous sum, less regular than any of the pieces.

Similarly, if *P* is a fairly natural property, *P* can be at least as natural as either of (P & Q) or (P & -Q). More generally, *P* can be at least as natural as any of (P & Q_1), ..., (P & Q_n). The pieces can fit together. If they do, *P* is not a disjunctive property, though of course it has a disjunctive expansion. But when *P* is equivalent to some miscellaneous disjunction, a sum of pieces that do not fit together, *P* will be much less natural than any of the disjuncts, even if the disjuncts are already fairly unnatural. In that case, *P* is a disjunctive property.

The DI definition of 'disjunctive' was as follows. A property is disjunctive iff it is equivalent to some bad disjunction; a disjunction is bad iff each disjunct is much more natural than the whole disjunction.

In effect. However, we did not break our definition into these two steps; and we began with a special case, in which the disjuncts are natural *simpliciter* and the disjunction is not. The special case is subsumed under the general case, given the plausible assumption that if any property is natural *simpliciter*, it is 'much more natural' than any property that is not.

The DI definition of 'disjunctive' plugs into our definition of 'basic intrinsic', which in turn plugs into our definition of 'intrinsic'. As noted, we find none of the alleged counterexamples to our definitions convincing. Nevertheless, there are two further reasons for dissatisfaction. One reason, of course, is vagueness: how much more is 'much more'? Another is that we would have done better to set a higher standard of non-disjunctiveness, thereby making it harder for an independent property to qualify as basic intrinsic. It does not matter if you are too quick to throw properties out of the class of basic intrinsics, provided that the intrinsic properties thrown out are truth-functional compounds of those that are left in, and hence are reinstated at the final step. Saying 'much more', and thereby setting a low standard of non-disjunctiveness, may have helped us to capture some intuitive conception, but that was not our aim. Non-disjunctiveness was only a step on our way to defining 'intrinsic'. And setting a low standard of non-disjunctiveness increased our reliance on contentious judgements of comparative naturalness, which seems unfortunate even if all our contentious judgements were correct. It runs a risk (especially in the hands of someone who is reluctant to make judgements of comparative naturalness at all) of passing some candidates for the status of basic intrinsic that should have been flunked.

So I now favour the following amendment. (At least. But this will not be my final proposal.) It raises the standard of 'non-disjunctiveness' (if that is still the appropriate term); and it diminishes the vagueness. A property is disjunctive iff it is equivalent to some bad disjunction; a disjunction is bad iff each disjunct is more natural than the whole disjunction. The word 'much' has been deleted.

Weatherson suggests a different amendment, also meant to raise the standard of non-disjunctiveness. He considers a special kind of disjunctive expansion: a disjunction of conjunctions. A property P is disjunctive iff it is equivalent to some bad disjunction of conjunctions:

$$[(A_{11} \,\&\, \ldots \,\&\, A_{1n}) \vee \ldots \vee (A_{k1} \,\&\, \ldots \,\&\, A_{km})].$$

A disjunction of conjunctions is bad iff, in each disjunct, at least one conjunct is much more natural than P. So for Weatherson, the property of being a grue cube or a non-grue sphere would come out disjunctive because it is much less natural than being cubical or spherical—the unnaturalness of grue and non-grue does not enter into it.

(I assume that Weatherson tacitly requires that the A's are all different. Else almost any property P would come out disjunctive in virtue of the expansion $[V \,\&\, P \,\&\, Q_1) \vee \ldots \vee (V \,\&\, P \,\&\, Q_n)]$, where the Q's are any properties that jointly exhaust P, and where V is the—presumably highly natural—necessarily universal property.)

I am unconvinced that Weatherson's redefinition disagrees much with the DI definition. Consider a not-too-special case. I note first that a highly unnatural property can be expected to be equivalent to a finite disjunction of many properties far more natural than itself. (Just as the irregular shape of a jigsaw puzzle piece is a sum of many much more regular shapes, each a convex almost-polyhedron with at most one slightly curved side.) I note second that a conjunction of two highly natural properties can be expected to be itself fairly highly natural. Now let P be a middling-natural property, and let P be equivalent to the expansion

$$[(N_1 \,\&\, U_1) \vee (N_2 \,\&\, U_2)],$$

where the N_i's are highly natural and the U_i's are highly unnatural. (You could if you like have more than two disjuncts.) Suppose that the $(N_i \,\&\, U_i)$'s do not fit together in such a way that their unnaturalness cancels out. Then this is a bad disjunction of conjunctions on Weatherson's definition, so P is classified as disjunctive. However, it is far from clear that the two $(N_i \,\&\, U_i)$'s are much more natural than their disjunction P, so it is far from clear that the DI definition would classify this disjunction as bad. So far, Weatherson's standard of non-disjunctiveness looks to be higher than ours. But are we really left with no way to classify P as disjunctive? No. For each of the highly unnatural U_i's can be expected to be equivalent to some very long, but finite, disjunction of highly natural properties:

U_1 is equivalent to $(N_1^1 \vee \ldots \vee N_1^{17})$,

U_2 is equivalent to $(N_2^1 \vee \ldots \vee N_2^{137})$.

(If you doubt that 17 or 137 disjuncts are enough, feel free to take vastly greater finite numbers.) Then *P* is equivalent not only to the short disjunction just considered, but also to the long disjunction:

$[(N_1 \& N_1^1) \vee \ldots \vee (N_1 \& N_1^{17}) \vee (N_2 \& N_2^1) \vee \ldots \vee (N_2 \& N_2^{137})]$.

The short disjunction is bad on Weatherson's definition, but perhaps not on ours. However, provided that the $(N_i \& N_i^j)$'s are still much more natural than *P*, the long disjunction is bad on both definitions. So *P* is disjunctive on both definitions, and Weatherson does not disagree with us about this case. (That is not to say that he agrees with us about all possible cases. If I had chosen the grades of naturalness just right, I could have made the short disjunction come out just barely bad on Weatherson's definition, and the long disjunction come out just barely not bad on ours; in which case Weatherson would classify *P* as just barely disjunctive and we would classify it as just barely non-disjunctive.[9])

Weatherson's amendment can be combined with mine: delete the word 'much' in his definition of a bad disjunction of conjunctions. It turns out again, for the same reason as before, that his amendment makes far less difference than meets the eye. Let's set it aside.

After adopting my first amendment, there is another you might also adopt that would raise the standard of non-disjunctiveness still higher, and make it still harder for a property to pass as basic intrinsic. Instead of requiring that *each* disjunct of a bad disjunction be more natural than the disjunction itself, you could require only that *some* disjunct be more natural than the disjunction itself. But, for now, that would raise the standard unaffordably high; *any* property with a subproperty more natural than itself would come out disjunctive. No less-than-perfectly natural property, and no property with a less-than-perfectly natural negation, would stand much chance of coming out basic intrinsic. If you limit your attention to disjunctive expansions of some

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9 Here is an example on which we agree. Grade the naturalness of properties on a scale from A+ to F. Let all the N_i's and all the N_i^j's have grades of A or above; let a conjunction of two properties with grades of A or above have grade A- or above; let the $(N_i \& U_i)$'s have grades of B- or below; let 'much less' mean 'less by at least one full letter' and let *P* have a grade of B-. Here is an example on which we disagree: the same, except that *P* has a grade of B.

special kind—as I soon shall—this further amendment might well become affordable. But only then.

You might well doubt that even my first amendment is affordable. As Weatherson notes, the less disjunctive a property is, the more disjunctive its negation is. So a property must strike a delicate balance if it is to be neither disjunctive nor co-disjunctive. The higher you raise the standard of non-disjunctiveness, the harder this balance gets; so the harder it is to pass as basic intrinsic. Will *anything* pass? This difficulty too is much reduced if you limit your attention to disjunctive expansions of some special kind.

V. Throwing Out Just the Troublemakers

A previously noted reason for dissatisfaction with the DI definition is that it works in a roundabout way. Not all disjunctive properties are troublemakers, independent of accompaniment but not intrinsic. Some disjunctive properties are impeccably intrinsic. Yet we dealt with the troublemakers by throwing out disjunctive properties wholesale, only to reinstate many of them at the final step when we passed from 'basic intrinsic' to 'intrinsic' *simpliciter*. Why not throw out just the troublemakers, and skip the final step?

The known troublemakers are properties equivalent not to just any old bad disjunction—those include many disjunctive intrinsic properties—but to bad disjunctions of a special form, namely [(*P* & accompanied) v (*P* & lonely)]; or else they are negations of such properties. If we restrict ourselves to disjunctions of this special kind, we can afford to take both steps in my redefinition of badness. Let's do so. A disjunction of the special form will now be called bad iff at least one disjunct is more natural than the whole disjunction; a property independent of accompaniment is now classified as intrinsic iff neither it nor its negation is equivalent to a bad disjunction of the special form. So my redefinition goes as follows: *P* is *intrinsic* iff

(1) *P* is independent of accompaniment;

(2) (*P* & accompanied) is no more natural than *P*;

(3) (*P* & lonely) is no more natural than *P*;

(4) (-*P* & accompanied) is no more natural than -*P*;

(5) (-*P* & lonely) is no more natural than -*P*.

I hope that this redefinition will work as well as the DI definition. I also hope—a little less confidently—that it will still work even if clauses (4) and (5) are dropped.

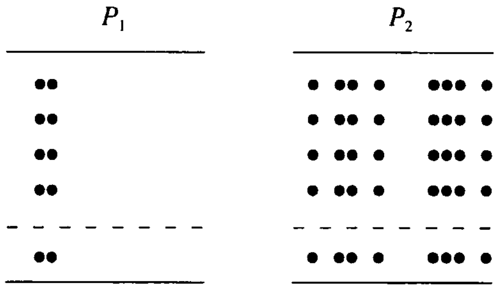
You might think that raising the standard of non-disjunctiveness will make it all the easier to throw out properties that should have been kept in, and therefore will make it all the more necessary to have a final step to reinstate them. Or you might think that throwing out bad disjunctions only when they are of a special kind will make it harder to throw out properties that should have been kept in. It is not obvious which effect predominates. I think the second does: given the present redefinition, the final step is no longer needed. But that is a question to be investigated by examining particular cases.

VI. Examining Examples

Fortunately, all of us have a good working mastery of the definiendum: we can confidently classify properties as intrinsic or not. We have a still better mastery of the notion of (intrinsic) duplication, which is instantaneously interdefinable with 'intrinsic' itself. (Two things, actual or possible, are duplicates iff they have exactly the same intrinsic properties; an intrinsic property is one that can never differ between duplicates.) We even have some mastery of degrees of intrinsic and (purely) extrinsic similarity. So we can start with judgements of duplication and similarity and see what judgements of comparative naturalness are needed to make my proposed redefinition work. Such judgements cannot be used, on pain of circularity, to define 'intrinsic'. But they can be used to see whether a definition succeeds, as it must if it is to be adequate, in rendering judgements of comparative naturalness harmonious with judgements of intrinsic and extrinsic similarity.

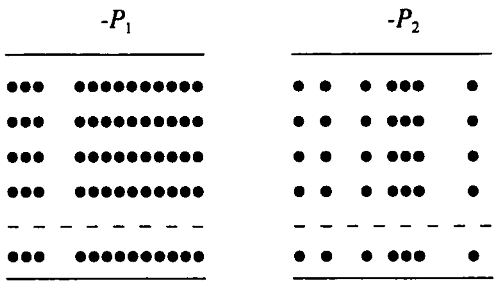
It will be helpful to draw dot-matrix pictures of properties, as follows. The dots in the matrix, both the visible black dots and the invisible white dots, are actual or possible things. (There are far too few of them.) Black dots are things which have the property depicted, white dots are things which lack it. The dashed border divides lonely things, below, from accompanied things, above. Horizontal distance measures intrinsic dissimilarity. Dots on the same column are therefore intrinsic duplicates (that is, they will be so classified if my redefinition works correctly). So an intrinsic property is one that consists of one or more complete columns, and nothing else. Vertical distance measures (purely) extrinsic dissimilarity. Dots on the same row are therefore extrinsic duplicates. (Dots in exactly the same place would be intrinsic and extrinsic duplicates, hence qualitatively indiscernible. My pictures show none of those, not because I have any wish to uphold identity of indiscernibles, but because the page has no third dimension. Since I have restricted my attention to purely qualitative properties that never differ between indiscernibles, it is harmless to ignore nonidentical indiscernibles.) Since lonely things have no opportunity to differ extrinsically, the lower 'half' of the matrix, below the border, is only one row high.

The first two properties are intrinsic, as is shown by the fact that they consist entirely of complete columns. P_1 is intuitively not disjunctive; it is the sort of property that DI classifies as basic intrinsic. P_2 is intuitively disjunctive; it is the sort of property that DI classifies as intrinsic but not basic intrinsic, the sort of property that is first thrown out and then reinstated



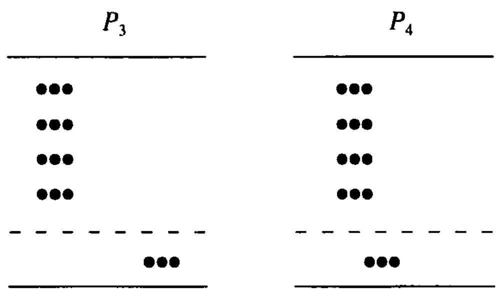
at the final step. Both these properties are independent of accompaniment, as all the properties to be examined here will be, because they fill some but not all of the upper (accompanied) half and some but not all of the lower (lonely) half. The reason why P_2 is disjunctive and P_1 is not is that P_2 is equivalent to the bad disjunction of basic intrinsic properties like P_1 (except that some are a little wider and some are a little narrower). Horizontal spread and scatter detract from the naturalness of P_2 but not from that of the disjuncts, and not from that of P_1. By *spread* I mean the maximum dissimilarity distance between instances; and by *scatter* I mean the way non-instances are interspersed with instances. But, given my amendments in the previous section, what matters to being intrinsic is not that kind of badness, but only how the whole property compares with its upper and lower halves. Between P_1 and its halves, and likewise between P_2 and its halves, there is nothing to choose so far as horizontal spread and scatter go. What does detract from the naturalness of the halves but not the whole is that the halves divide intrinsic duplicates. What detracts from the naturalness of the whole more than the halves is the greater vertical spread of the whole. I judge that the first effect (however small it may be) outweighs the second. If so, neither P_1 nor P_2 is a bad disjunction of its halves; in other words, both of them satisfy clauses (2) and (3). So, at least if clauses (4) and (5) are ignored, both P_1 and P_2 are correctly classified as intrinsic.

Next come the negations of the two properties just considered. For the same reasons as before, both are intrinsic and both are disjunctive. Both suffer from spread and scatter, $-P_2$ worse than $-P_1$, but again that is irrelevant to the comparative naturalness of the whole and the halves. Again the halves divide duplicates and the whole does not; again I judge that this outweighs the greater vertical spread of the whole; so $-P_1$ and $-P_2$ satisfy clauses (2) and (3); so if (4) and (5) are ignored, both $-P_1$ and $-P_2$ are correctly classified as intrinsic. But since $-P_1$ and $-P_2$ satisfy clauses (2) and (3), P_1 and P_2 satisfy clauses



(4) and (5). Likewise, since P_1 and P_2 satisfy (2) and (3), $-P_1$ and $-P_2$ satisfy (4) and (5). So these four properties are correctly classified as intrinsic regardless of whether clauses (4) and (5) are dropped or kept.

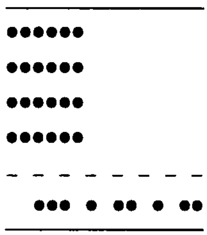
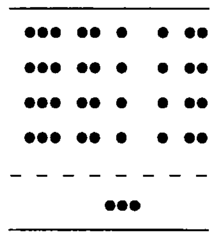
Next come two of the troublemakers that need throwing out. They are independent of accompaniment; they are not intrinsic, as witness their



incomplete columns; they are intuitively disjunctive. P_3 is a disjunction of the upper half of one basic intrinsic property with the lower half of another, where the two properties are incompatible. It could, for instance, be the property of being either an accompanied cube or a lonely sphere. P_4 is similar, except that the two properties are compatible. It could be the property of being either an accompanied hexahedron or a lonely pyramid. In each case, there is nothing to choose between the whole property and its upper and lower halves so far as dividing duplicates goes. But horizontal spread, and in the case of P_3 scatter, detract more from the naturalness of the whole than from that of the halves. The halves are more natural than the whole, so P_3 and P_4 fail to satisfy clauses (2) and (3), so they are classified correctly as not intrinsic.

Next come two more troublemakers, with an extra complication: in virtue of horizontal spread and scatter, one of the two halves is more natural than the other. P_5 and P_6 are independent of accompaniment, not intrinsic, and intuitively disjunctive. Horizontal spread and scatter detract from the naturalness both of the whole property and of its worse half. It is not clear

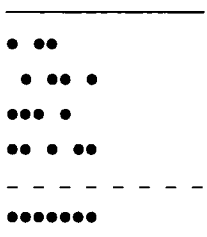
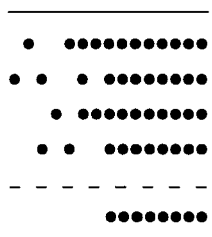
P_5 P_6

whether the worse half or the whole is worse—in the case of P_5, the whole property has more spread and less scatter, and in neither case is it clear that the differences in spread and scatter are enough to matter. But anyway, the better half is more natural than the whole property. So P_5 is correctly classified as not intrinsic because it fails to satisfy clause (2), and P_6 because it fails to satisfy clause (3). It still does not matter whether clauses (4) and (5) are dropped or kept; either way, P_3, ..., P_6 are all correctly classified as not intrinsic.

Last, P_7 and P_8, which are one another's negations, are troublemakers of a different sort. They are independent and not intrinsic, but it is not so obvious whether they are disjunctive. P_7 strikes me as disjunctive and, more obviously, co-disjunctive; and vice versa for P_8. Be that as it may, in both cases

P_7 P_8

scatter detracts from the naturalness of the upper half of the whole property, but not from that of the lower half. In the case of P_7 there is nothing to choose so far as horizontal spread goes, while in the case of P_8, the lower half suffers from spread less than the upper half or the whole property. There is nothing to choose so far as dividing duplicates goes. Both properties come out not intrinsic because they fail to satisfy clause (3).

The scatter that detracts from naturalness in these cases is not entirely the horizontal scatter we have considered hitherto. Neither is it entirely vertical scatter. We might best think of it as a kind of scatter in which a black dot is surrounded on several sides by white dots, and vice versa.

P_7 might be Sider's property of being a rock, where a rock is something intrinsically rocklike which is not seamlessly embedded in any more inclusive intrinsically rocklike thing. Its lower half consists of rocklike lonely things; its upper half consists of rocklike things that are not seamlessly embedded in other rocklike things; the white dots in the spongy region are rocklike things that are seamlessly embedded in other rocklike things. Or P_7 might be Peter Vallentyne's property of being the only red thing; that is, being a red thing unaccompanied by another red thing.[10] (If you doubt that being red is itself intrinsic, replace 'red' by 'round', as Weatherson does.) In that case the lower half consists of lonely red things; the upper half consists of red things that are accompanied, but not by other red things; the white dots in the spongy region are red things accompanied by other red things. P_8 might of course be the property of being a non-rock; or of being either non-red or else red but not the only red thing. Or it might instead be the Marshall-Parsons property of being such that there is a cube; in other words, the property of being either a cube or else a non-cube coexisting with a cube (perhaps not distinct from itself). Whether the Marshall-Parsons property is intuitively disjunctive is disputed. (Langton and I find it so, Marshall and Parsons do not.) The undivided columns consist of cubes; the black dots in the spongy region of the upper half are non-cubes that coexist with cubes.

It may come as a surprise that P_7 is correctly classified as non-intrinsic on the basis of clause (3) alone. You might have thought that the trouble with it was that it was obviously co-disjunctive, and hence that to classify it as non-intrinsic you would be compelled to rely on clause (4) or (5). To get the correct classification under our original definitions, Langton and I would indeed invoke the badness of the disjunction of being not intrinsically rock-like or else rocklike but embedded in some more inclusive rocklike thing; or being not red or else red but accompanied by another red thing. Well, P_7 *is* obviously co-disjunctive; and it *does* fail to satisfy clause (5), though not because of the badness of the disjunctions just mentioned. But even here you do not need clauses (4) and (5), because clause (3) already suffices to give the right answer. It still does not matter whether (4) and (5) are dropped or kept.

In each case my redefinition classifies properties correctly. In no case does it rely on clauses (4) or (5). My redefinition of badness (for disjunctions of the special form) has proved affordable. Nor is there any need for a final step to reinstate properties that were needlessly thrown out. The required judgements of comparative naturalness seem to be based on plausible principles about what can detract from the naturalness of a property.

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[10] Peter Vallentyne, "Intrinsic Properties Defined," *Philosophical Studies* 88 (1997): 209–19. Langton and I mention this property in DI to illustrate the need to disqualify co-disjunctive as well as disjunctive properties from the status of basic intrinsic.

These principles are by no means the whole story about naturalness, of course; there are other aspects of naturalness that are not represented within the pictures, but rather determine the dimensions and metric of the similarity space in which the pictures are drawn. You well might think, therefore, that the structure of the similarity space carries information about what is intrinsic and what is extrinsic. And so it does, of course. If the structure of the space, together with plausible further principles about what can detract from naturalness given the structure of the space, implies conclusions about what is intrinsic, then premises about what is intrinsic, together with those same principles, will contrapositively imply conclusions about the structure of the space. What of it? The point of a definition is not to get something from nothing! Rather, it is to make connections between our judgements about none-too-obviously connected topics, in the hope that our initial opinions about the two sides of the connection will reinforce one another—just as, when we start out with some partial understanding of analyticity and synonymy, the virtuous Quinean circle improves our understanding of both. If we had started out completely in the dark, of course the round trip would leave us just as much in the dark as before. But that is not our predicament.

VII. The General Independence Principle

I return finally to Weatherson's point that independence of accompaniment is only one of the kinds of independence characteristic of intrinsic properties. The DI definition exploits one special case of a more general independence principle. Intrinsic properties are independent not only of *whether* their bearers are accompanied, but also of *how* (intrinsically) they are accompanied, if they are. If *P* and *Q* are intrinsic, then *P* is independent both of accompaniment and of *Q*-accompaniment.

The general independence principle amounts to Hume's familiar denial of necessary connections between (the intrinsic character of) distinct existences. Usually we take the notion of intrinsic character for granted, and use the principle as a guide to what is possible.[11] Weatherson's new idea—and a very good and fruitful idea it turns out to be—is to stand the principle on its head: take possibility for granted, and use the general independence principle, or something like it, as a guide to what is intrinsic.

P and *Q* are both intrinsic only if *P* is independent of *Q*-accompaniment. Sometimes this independence fails, and thus it is shown that *P* and *Q* are not

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[11] See, for instance, my *On the Plurality of Worlds* (Blackwell, 1986), section 1.8; and D. M. Armstrong, *A Combinatorial Theory of Possibility* (Cambridge University Press, 1989). Hume was not the first to propose such an independence principle; see Hastings Rashdall, "Nicholas de Ultricuria, a Medieval Hume," *Proceedings of the Aristotelian Society* 7 (1907): 1–27. I think it is safe to assume that Hume and Nicholas were implicitly ignoring the *extrinsic* character of things.

both intrinsic.[12] Well and good. But this is not yet a way to show that anything *is* intrinsic. In order to define 'intrinsic', it will be necessary to upgrade that 'only if' to an 'iff'. How might that be done?

Say that *Q endorses P reliably* (as intrinsic) iff *P* and *Q* are related in such a way that if *Q* is intrinsic, *P* must be too. Say that *Q presumptively endorses P* (as intrinsic) iff *Q* endorses *P* via the independence principle: that is, if *P* is independent both of accompaniment and of *Q*-accompaniment. The intrinsic properties presumptively endorse one another. If some properties presumptively endorse one another,[13] does it follow that they are intrinsic?

No. Two problems arise, one discussed by Weatherson and the other not. The first problem is that presumptive endorsement is unreliable. As I noted in section III, the general independence principle can run into trouble with spurious independence. It can happen that *Q* is intrinsic, *Q* presumptively endorses *P*, but *P* is not intrinsic. Rather, *P* is a disjunctive troublemaker. The remedies for spurious independence are the same as they are in the simpler case where *P* is spuriously independent of accompaniment. You could imitate the DI definitions: *Q basically endorses P* iff *Q* presumptively endorses *P*, and if *P* is neither disjunctive nor co-disjunctive; *Q endorses P* iff *P* is a truth-functional compound of (or supervenes upon) properties basically endorsed by *Q*. That is what Weatherson does. Or you could instead imitate my redefinition in section V: identify the special kinds of disjunctions that are known troublemakers, throw out just those, and skip the final step in which properties needlessly thrown out are reinstated. (The second method might cut down reliance on contentious judgements of comparative naturalness.) I think it reasonable to hope that one or other of these remedies, most likely both of them, will allow you to define endorsement so that it is invariably reliable.

Suppose it done. The second, deeper problem remains. If some scholars reliably endorse one another as sound, maybe all of them really are sound. Or maybe all of them are ratbags. They are all one or all the other, because a sound scholar can never reliably endorse a ratbag. Likewise, suppose some properties reliably endorse one another as intrinsic. Maybe all these properties

12 Weatherson presents some very plausible closure principles for intrinsic properties: if these properties are intrinsic, so are those. If the closure principles tell us that if *P* is intrinsic, then so is *Q*, and the independence principle tells us that *P* and *Q* are not both intrinsic, that refutes the supposition that *P* is intrinsic. In this way Weatherson shows that $P_3, \ldots, P_8$ are not intrinsic. Well and good; but there is still no way to prove that any property is intrinsic without already knowing that some other property is. If no properties whatever were intrinsic, the closure and independence principles would all be vacuously satisfied.

13 Where I say 'some properties' Weatherson would say 'a set of properties'. Plural quantification is safer, in view of the risk that properties understood as classes of *possibilia* may be proper classes, ineligible to be members of anything. For a case that perfectly commonplace properties may have proper-class many instances, see Nolan, "Recombination Unbound."

really are intrinsic. Or maybe none are. If the second case ever arises, it would be wrong to say that a property is intrinsic iff it is one of some properties that reliably endorse one another.

I do not know whether the second case ever does arise. When you take precautions to prevent unreliability due to spurious independence, will those precautions have the welcome side effect of preventing the second case from arising? My guess, for what it is worth, is that they will not. But I do not know.

If presumptive endorsement were always reliable, there would indeed be some properties that presumptively endorse one another, but are not all intrinsic. (However, some of them are intrinsic. So here is another way to see that presumptive endorsement is not always reliable, without identifying any particular counterexample.)[14]

How else could you exploit the general independence principle to define 'intrinsic'? (You do not have to, if non-spurious independence of accompaniment already does the job, but you might doubt that it does. Or you might find it arbitrary to rest your definition on one special case of the independence principle.) Perhaps like this. Suppose you have defined endorsement so that it is always reliable. Say that *Q ancestrally endorses P* iff there is a finite chain

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14 *Proof.* Let properties be classes of (actual or possible) things. Some things are simples: they have no proper parts. Simples are sometimes intrinsic duplicates, sometimes not. Let p, q, r, be three simples such that p accompanies q, p and r are duplicates, p and q are not, and there is some fourth simple s that is not a duplicate of p or of q or of r.

There is some intrinsic property S such that anything that has it has both or neither of p and q as parts; for instance, S might be the property shared by all simples that are duplicates of s. Since p and q are not duplicates, there is also some intrinsic property T such that p has it, and so does r, but q does not.

Let the *image* x^* of a thing x be the result of swapping p and q within it. Thus x^* is $(x\text{-}p)+q$ if p is part of x and q is not; x^* is $(x\text{-}q)+p$ if q is part of x and p is not; x^* is x if both or neither of p and q are parts of x. It follows that p and q are each other's images; that y accompanies x if y^* accompanies x^*, and hence x is accompanied iff x^* is; and that z^* is z's image iff z is z^*'s image.

Let the *image* of a property be the property had by all and only images of things that have the original property. Some images of intrinsic properties are themselves intrinsic, some are not. S^* is intrinsic: anything that has it is its own image, so S is its own image and S is *ex hypothesi* intrinsic. T^* is not intrinsic: r^* has it, q^* does not, yet r^* and q^* (alias r and p) are *ex hypothesi* intrinsic duplicates.

It remains to show that images of intrinsic properties presumptively endorse one another. Suppose Q presumptively endorses P, as is the case whenever Q and P are intrinsic. Then Q^* presumptively endorses P^*. For all six cases are possible. (a) Some P^* is lonely: we are given that some lonely x has P, so lonely x^* has P^*. (b) Some non-P^* is lonely: the reason is similar. (c) Some P^* is Q^* accompanied: we are given that some x has P and some accompanying y has Q; so x^* has P^*, y^* has Q^*, and y^* accompanies x^*. (d) Some non-P^* is Q^*-accompanied: the reason is similar. (e) Some P^* is accompanied but not Q^*-accompanied: we are given that some x has P and is accompanied by some y, but is not accompanied by anything that has Q; so x^* has P^* and is accompanied by y^*; and if x^* were accompanied by some z that had Q^*, then x would be accompanied by z^* and z^* would have Q. (f) Some non-P^* is accompanied but not Q^*-accompanied: the reason is similar. This completes the proof.

of endorsements running from Q to P. Start with an original short list of uncontroversially intrinsic properties. (Now, *there* is arbitrariness for you!) Take the intrinsic properties to be those that are ancestrally endorsed by the original intrinsic properties. That captures only intrinsic properties. Whether it captures all of them probably depends on how well-chosen your original list was.