

Natural Properties: A Guide for the Perplexed

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1. 'New Work for a Theory of Universals'

<i>Supervenience</i>	All facts supervene on the facts about which things have which PNPs ¹
<i>Independence</i>	The PNPs are mutually independent ²
<i>Duplication</i>	Necessarily, x and y are duplicates iff some function from the parts of x to the parts of y preserves all PNPs and negations of PNPs
<i>Empiricism</i>	The right method for identifying instantiated natural properties is empirical
<i>Laws</i>	The laws are the propositions that achieve the best fit between strength and simplicity of definition in terms of PNPs
<i>Length</i>	The more natural a property is, the simpler its definition in terms of PNPs
<i>Similarity</i>	The more natural a property is, the more it makes for similarity among things that share it
<i>Dissimilarity</i>	The more natural a property is, the more it makes for dissimilarity among things divided by it
<i>Magnetism</i>	The more natural a property is, the easier it is to refer to
<i>Necessity</i>	Facts about how natural a given property is are non-contingent

2. Bad question 1: are some properties more natural than others?

3. Bad question 2: is resemblance "objective"?

Silly idealism: If our practices had been different, then the facts about resemblance would have been systematically different throughout the universe.

Trivial semantic conventionalism: If our practices had been different, then the extension of 'resembles' would have been different.³

Mysterious claim, unintelligible within an intensional theory of properties: Facts about resemblance obtain in virtue of facts about our *actual* practices.

4. Bad question 3: are some properties easier to refer to than others?

One might think not, on the basis of some Quinean or Putnamian argument that reference is wildly indeterminate. But whatever one's attitude towards naturalness, one should regard these arguments as *reductios* of their premises. And once these extremely revisionary posi-

¹ Alternatively: all [purely qualitative] facts supervene on the pattern of instantiation of PNPs: "truth supervenes on being" (*Parts of Classes*).

² This comes in various strengths, from the relatively weak claim that no perfectly natural property supervenes on all the others, to the very strong 'Combinatorialism' of 'Ramseyan Humility', or the perhaps even stronger claim that there are no nonlogical metaphysically necessary truths at all about PNPs.

³ Friends of two-dimensional semantics have another option for articulating the claim of anthropocentrism: the *primary intension* of 'resemble' involves dependence on us and our standards, even though the *secondary intension* does not. But it is not clear what would motivate such a claim, or why it would correlate one way or another with enthusiasm for Lewisian naturalness.

tions are off the table, it is hard to see why one would doubt that in some cases, our referring to a given property with a word is robust under small changes in the use of a word, while in other cases small changes in use would result in its referring to something else.

5. Good question 1: How much of the total Lewisian package is satisfiable?

Some fragments of the package for which there are distinctive reasons for doubt whether anything satisfies them:

(i) Supervenience + Magnetism

- Perhaps *all* supervenience bases involve properties that are very hard to refer to.

(ii) Supervenience + [strong versions of] Independence

- Perhaps the maximum possible number of equivalence classes of duplicate atoms is finite but not a power of 2.

(iii) Supervenience + [strong versions of] Independence + Magnetism

- Perhaps the only supervenience bases that are reasonably easy to refer to are non-independent.

(iv) Supervenience + Duplication \rightarrow + Magnetism

- Perhaps the only supervenience bases that are reasonably easy to refer to involve properties which need not be shared by duplicates.

(v) Supervenience + Dissimilarity

- Perhaps every supervenience base has to include some properties division by which is compatible with any degree of similarity less than perfect similarity. (For example: determinate masses, e.g. *having a mass of 3.184748 grams*) One possible reason to believe this: commitment to the possibility of a world just like the actual world but where all the masses are multiplied by n .

(vi) Duplication \leftarrow + Magnetism

- Suppose point particles with different masses are never duplicates. Then it looks like we will need determinate masses to be among the PNPs. But they are not very easy to refer to.

(vii) [strong versions of] Independence + Duplication \leftarrow

- Determinate properties like *having a mass of 3.184748 grams* seem to be necessarily pairwise incompatible.
- Suppose the universe is mirror-symmetric, except that the mirror images have opposite charges. And suppose that oppositely charged objects are never duplicates. We might still think that objects and their mirror images share all their *qualitative* properties. (We could get around this by counting certain *haecceitistic* properties as PNPs; but this will be ruled out by some versions of Independence)..

(viii) [strong versions of] Independence + Empiricism

- Perhaps dispositional essentialists are right to claim that it is necessary that properties like *being negatively charged* and *being an electron* play certain causal/nomic roles.

(ix) Empiricism + Magnetism

- Suppose dispositional essentialism is true. Then—perhaps—properties like *being negatively charged* and *being an electron* are members of large families of coextensive hard-to-refer-to properties, which differ as regards exactly which aspects of the nomic profile are essential to them.

(x) Similarity + (Length or Dissimilarity or Magnetism)

- Disjunctions do not score much worse than conjunctions on the score of Length or Dissimilarity, or easiness-to-refer-to; but often do not ‘make for similarity’ at all. Likewise for negations.

(xi) Empiricism + Length + (Similarity or Dissimilarity or Magnetism)

- Perhaps there are some similarity-relevant, or easy-to-refer-to, properties with very complex definitions in terms of the properties of interest to physics. (Possible examples: goodness, consciousness.)

(xii) Independence + Length + (Similarity or Dissimilarity or Magnetism)

- Perhaps some similarity-relevant, or easy-to-refer-to, properties are definable in terms of others, but only at great length. We could count them all as PNPs; but that would violate Independence, even in its weakest form.

(xiii) Length + (Similarity or Dissimilarity or Magnetism)

- Perhaps there are big differences in similarity-relevance or easiness-to-refer-to among properties which are far from the top of the similarity-relevance or easiness-to-refer-to scales, without significant differences in the length of their definitions in terms of things higher up the scale.

(xiv) (Similarity or Dissimilarity) and Magnetism

- We might think that easiness-to-refer-to does not line up well with anything resemblance-theoretic.

6. Good question 2: how vague is ‘natural’

Lewisians mostly regard ‘more natural than’ as quite vague, but often assume that ‘perfectly natural’ is precise.⁴ Are they right?

- This question crosscuts Good Question 1. ‘PNP’ could be precise even if much of the Lewis package is jettisoned. It could be vague even if the whole package is true on each precisification.
- However, unsatisfiability of the whole package is defeasible reason to regard ‘PNP’ as vague—that’s how it generally is with theoretical jargon. So we should also ask whether we could achieve precision by throwing out some parts of the package.

The appeal of positing some vagueness in ‘perfectly natural’: there are sets of properties which seem interdefinable, such that we might be tempted to claim that some member of the set is an PNP, but embarrassed by the question which one it is. Vagueness in ‘PNP’ lets us duck the embarrassing question.

⁴ Note that given Magnetism, perfect naturalness needs to be highly natural—but not necessarily perfectly natural—for it to be plausible that ‘perfectly natural’ is precise.

- Possible examples: *{Being a sphere, being a straight line}*; *{Topological openness, topological closedness}*; *{before, after}*; *{duplication, lack of duplication}*.

An argument that if ‘perfectly natural’ is at all vague, it is horribly vague:

- (i) If ‘perfectly natural’ is vague, then perfect naturalness is not perfectly natural.
- (ii) If so, its only definitions in terms of the perfectly natural properties involve extremely long lists. (iii) If so, it is extremely unnatural. (iv) If so, ‘perfectly natural’ is horribly vague.

- All four steps are quite resistible!

Q: Suppose ‘perfectly natural’ is vague. Is ‘duplicate’ vague too? ‘Intrinsic’?⁵

7. Bad question 4: is naturalness “metaphysically primitive”?

Or relatedly: ‘Do facts about duplication, lawhood, reference, etc. obtain *in virtue of* facts about naturalness, or is it the other way around? Which ground which? Which are metaphysically prior?

- These *might* be glossed as versions of the OK questions ‘How natural is *being perfectly natural*?’ and ‘How natural is *being more natural than*?’
- However, some who talk in these terms seem to be taking for granted *separate* notions of primitiveness of, or priority relations among, properties/ relations/ concepts/ notions/ predicates.
- The job descriptions for ‘metaphysically primitive’ and ‘perfectly natural’, and for ‘metaphysically prior’ and ‘more natural than’, are rather close. Those who want to theorize using both sets of expressions should first clarify how they take them to be different.
 - On one way of thinking about “priority”, it is governed by the principle that conjunctions, disjunctions, etc. are always “posterior” to their conjuncts, disjuncts, etc. Note that this is not available to intensionalists like Lewis.
- Also, they should explain how to think about questions like ‘Is the notion of metaphysical primitiveness metaphysically primitive?’, since *prima facie* one might expect the answer to ‘is naturalness metaphysically primitive’ to be the same.

⁵ One might take ‘duplicate’ to be precise without taking ‘intrinsic’ to be precise, assuming one were unwilling to follow Lewis in talking of duplication across possible worlds. This would be a natural position for some “nomic role essentialists”.