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Too Many Dispositional Properties

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Abstract:

This paper identifies an overdetermination problem faced by the non-reductive dispositional property account of disposition ascriptions. Two possible responses to the problem are evaluated and both are shown to have serious drawbacks. Finally it is noted that the traditional conditional analysis of disposition ascriptions escapes the original difficulty.

During the last decade there has been an ongoing debate between proponents of the conditional analysis and proponents of the non-reductive dispositional property account of disposition ascriptions.[1] In this paper I shall point out a problem afflicting the non-reductive dispositional property account, a problem which has not been noted in the debate.

I believe that philosophers who reject the conditional analysis and who adopt the non-reductive dispositional property account of disposition ascriptions would state the truth condition for a typical disposition ascription such as "sugar is water-soluble" roughly as follows:

> "sugar is water-soluble" is true iff sugar has a dispositional property such that it would cause sugar to dissolve if it were put in water (in ideal conditions).[2]

[1] Disposition ascriptions are ascriptions such as "x is soluble", "x is fragile" and "x is flexible" (these are the paradigm examples). For the debate between the two camps mentioned above, see e.g. Martin (1994), Lewis (1997), Bird (1998), Mumford (1998), and Molnar (1999).

[2] I have abstracted the truth condition from what is argued by non-reductionists such as Martin (1994) and Mumford (1998, pp. 91–92, *passim*). Note that conditionals cannot be totally eliminated

But if "sugar is water-soluble" is true, it seems, at least *prima facie*, that "water is sugar-dissolvable" is also true.[3] And given the non-reductive dispositional property account it appears, again *prima facie*, that the truth-condition for the latter proposition would be:

> "water is sugar-dissolvable" is true iff water has a dispositional property such that it would cause sugar to dissolve if sugar were put in water (in ideal conditions).

Now, dispositional properties are supposed to be real and intrinsic properties. It therefore seems to follow that if we hold that both propositions are true, and if we accept the given truth conditions for the propositions, then we are committed to the reality of two types of intrinsic dispositional properties which are both responsible for the dissolving of sugar in water: one in the sugar and one in the water. That is, we then seem to be committed to a situation where there is a dispositional property of the sugar which causes, as it were, the "self-destruction" of the lump of sugar when the lump is placed in water, and where there is a dispositional property of the water which causes the lump of sugar to "*be* destroyed" when the sugar is placed in water. This looks like a case of causal overdetermination. And since analogous situations arise for other disposition ascriptions as well, as is easily checked,[4] I conclude that proponents of the non-reductive account are facing a general threat of causal overdetermination.

I see two possible escape routes out of this predicament, both of which are afflicted with new difficulties. (I take it that it is a predicament to anyone with

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on the non-reductive account. Conditionals specify or characterise what kind of causal power the dispositional property has to have or be in order for the disposition ascription to be true (not *any* dispositional property will do). The "in ideal conditions" clause is there to handle the so-called finkish cases (see Mumford, ibid.).

[3] That disposition ascriptions often come in tandem like this has been noted before (see e.g. Lewis, 1997, pp. 144–145), but that this constitutes a problem for the non-reductive dispositional property account has not been noted.

[4] Think e.g. of a magnet and a piece of iron: it seems true to say of the magnet that it is disposed to attract the piece of iron but it seems equally true to say of the piece of iron that it is disposed to move towards the magnet.

Ockhamist tastes, i.e. to anyone who dislikes a threat of a systematic generation of redundant causation.)

The first is to claim that actually there is only one dispositional property out there (regarding our example above) and that this single disposition should serve as the truthmaker for both propositions. The truth conditions can then be made identical for the two propositions, involving only one intrinsic dispositional property, although we are, at face value, predicating different dispositional properties to different things or substances in the two propositions: to sugar and to water, respectively.

The problem with this proposal is that there appears to be no rational way by which the realist can decide, non-arbitrarily, where this single disposition is, so as to make good his claim that there is only one dispositional property out there. And if this cannot be done then the response is suspiciously *ad hoc*.

Let me illustrate the general difficulty by considering Mumford's *behavioural difference test*. Mumford reasons as follows:

1. For some test *F* and a set of background conditions *Ci*, there exists at least one *x* and one *y* for which reaction *G* is true of *x* and false of *y*.

2. This difference in behaviour of *x* and *y* is best explained by the possession by *x* (or *y*) of some causally relevant property or property complex *P*, not possessed by *y* (or *x*).

3. There are circumstances in which this property *P* can be correctly described as a dispositional property. (Mumford, 1998, pp. 119–120)

Mumford mentions *being soluble* as an example of a dispositional *P* (ibid.). Now it is indeed the case that sugar dissolves when immersed in water and that there are other substances that do not. But to hold that this difference in behaviour of sugar and, say, diamonds is best explained by the possession by sugar of some dispositional property not possessed by diamonds is, under the proposal we are now considering, not justified. It might just as well be argued that the result of the experiment is best explained if the background condition, i.e. water, possesses a dispositional property to dissolve sugar but not a dispositional property to dissolve

diamonds (while sugar and diamonds may be held to contain only categorical properties or dispositional properties to do other things than dissolving in water). So without a clear motivation of the "is best explained by" clause, the location of the single disposition is not indicated by such a test.[5]

It is sometimes claimed, though, e.g. by Mellor, that a real property must display itself in more ways than one.[6] If this is right then the prospect for the singular disposition response might appear somewhat brighter, because then the single disposition should be identifiable by other means than by the detection of its typical manifestation-display in tests such as the one above. The principal difficulty remains however. For how does the proponent of the singular disposition alternative establish what these other displays are without first detecting or taking for granted that the relevant disposition is there to have these multiple displays? Suppose, for example, that it is argued that *being water-soluble* (or *being sugar-dissolvable*) is identical with a categorical property[7] *Q* or a dispositional property *R* of the sugar (or the water) which is identifiable through other displays than the dissolving of sugar in water (e.g. can be directly *seen* through a microscope), then it is plain that the identification of *being water-soluble* with *Q/R* proceeds on the assumption that *being water-soluble* is there to be identified with *Q/R*. But it is precisely its existence -- contra the reality of *being sugar-dissolvable* -- that is at issue.

The second way out of the overdetermination problem is to concede that there are two dispositional properties but argue that they should be understood as

[5] I do not mean to suggest that Mumford himself is actually adopting the singular disposition ontology (I use his behavioural difference test simply for the purpose of illustrating the general difficulty), but it should be noted that he does not explicitly consider the possibility that water might have the property of *being sugar-dissolvable* while sugar has the property of *being water-soluble*.

[6] See Mellor (1974, pp. 174–175). Mellor cites, approvingly, Ernest Nagel: "…to characterise as physically real only things that can be identified in ways other than, and independently of, the procedures used to define those things." (ibid.)

[7] That the dispositional and the categorical should be identified is argued e.g. in Mumford (1998, ch. 7). Armstrong, however, is sceptical: "If anything is a category mistake, it is a category mistake to identify a quality – a categorical property – and a power [i.e. a disposition realistically construed], essentially something that points to a certain effect. They are just different, that's all. An identity here seems like identifying a raven with a writing desk." (Armstrong, unpublished manuscript)

interacting and only mutually causing the manifestation.[8] But then the truth conditions given above are misleading, if not false. We should rather say, regarding the first proposition, that sugar is water-soluble iff sugar has a dispositional property *and* water has a dispositional property such that, if sugar were put in water, the two dispositional properties would jointly cause the sugar to dissolve (in ideal conditions). But if this revised truth-condition is accepted, then it has to be acknowledged that if water (extrinsic to sugar) did not have its disposition, then sugar would not be water-soluble. And then it becomes dubious to hold that "*being water-soluble"* expresses an intrinsic property of sugar.[9]

I end by noting that the original problem does not arise for the traditional conditional analysis. According to it, our propositions have, in a straightforward way, the same truth condition, and it does not involve any intrinsic powers that have to exist somewhere:

> "sugar is water-soluble" is true iff, if sugar were placed in water, the sugar would dissolve (in ideal conditions);[10]
>
> "water is sugar-dissolvable" is true iff, if sugar were placed in water, the sugar would dissolve (in ideal conditions).

I believe that this is a genuine merit of the conditional analysis.[11]

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[8] This is the view that Martin adopts in his (1996, pp. 62–63), although not as an explicit solution to the overdetermination problem.

[9] It is of no help to claim that *being water-soluble* is an intrinsic property of the system, consisting of water + sugar, since the system is not water-soluble.

[10] Notice that if the proponents of the non-reductive account are allowed to insert in-ideal-conditions clauses in order to avoid the so-called finkish cases (see Mumford, 1998, pp. 91–92), then so should the proponents of the conditional analysis.

[11] An anonymous reviewer has raised the worry that an overdetermination problem may still arise if a categorical property + law view is being defended. Perhaps so (although that needs to be shown explicitly), but notice that the defenders of a categorical property + law view may quite happily adopt a strategy analogous to the escape route two described above, since they have in effect already given up the idea that dispositions are intrinsic: they have reduced dispositions to categorical properties plus laws which are "external" to the categorical properties and only contingently governing them. But more importantly, the categorical property + law view is not *entailed* by the traditional conditional analysis, so

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the defenders of the conditional analysis are under no obligation to propound such a view. They are free e.g. to adopt a Humean regularity view and to evaluate their conditionals in the "closest" possible worlds (cf. Lewis, 1973, p. 38, *passim*), or in "ideal" possible worlds, given the in-ideal-conditions clause.