

The Dispositional/Categorical Distinction

Abstract: Following the demise of the simple subjunctive conditional “analysis” of dispositional concepts, a satisfactory account of the conceptual distinction between the dispositional and the categorical is needed. I argue that attempts to characterize the distinction due to Stephen Mumford, D. H. Mellor, and Elizabeth Prior, Robert Pargetter and Frank Jackson all fail. My new take on the old idea of grounding the distinction in conditional entailments avoids the problems that plague these other accounts. I propose that disposition ascriptions entail a certain kind of *modal* conditional, whereas categorical ascriptions do not.

My goal in this paper is to defend a new account of the dispositional/categorical distinction. In so doing, I will criticize three other accounts, principally that given by Stephen Mumford, which is a centrepiece of his recent book.¹ My new account is not a radical one. Like Mumford and many others, I believe the distinction lies in the fact that disposition ascriptions entail a type of conditional, whereas categorical ascriptions do not. I suggest replacing failed attempts with an account of the distinction based on the entailment of a particular kind of *modal* conditional.

I - The failure of analysis

The prospects for analysing the concept of a disposition in terms of conditional statements about occurrences seem rather dismal.² Reductionists about dispositions³ ought to find this preliminary result discouraging. If analysis fails, we lose one important reason to believe in the reduction of dispositions to occurrences.

Many thanks to C. B. Martin, John Heil, William G. Lycan, Zena Ryder, and Mark Changizi.

¹ *Dispositions*, Oxford UP, 1998.

² At least, that is how I see the results of the recent debate: See C. B. Martin, 'Dispositions and Conditionals', *Philosophical Quarterly*, 44 (1994), pp. 1-8; David Lewis, 'Finkish Dispositions', *Philosophical Quarterly*, 47 (1997), pp. 143-58 (a response to Martin); Jonathan Kvanvig, 'Lewis on Finkish Dispositions', *Philosophy and Phenomenological Research*, 59 (1999); Alexander Bird, 'Dispositions and Antidotes', *Philosophical Quarterly*, 48 (1998), pp. 227-34 (a response to Lewis); Lars Bo Gundersen, 'Bird on Dispositions and Antidotes', *Philosophical Quarterly*, 50 (2000), pp. 227-9; Alexander Bird, 'Further Antidotes: a Response to Gundersen', *Philosophical Quarterly*, 50 (2000), pp. 229-33; George Molnar, 'Are Dispositions Reducible?', *Philosophical Quarterly*, 49 (1999), pp. 1-17; Wolfgang Malzkorn, 'Realism, Functionalism and the Conditional Analysis of Dispositions', *Philosophical Quarterly*, 50 (2000), pp. 452-469; Stephen Mumford, 'Realism and the Conditional Analysis of Dispositions: Reply to Malzkorn', *Philosophical Quarterly*, 51 (2001), pp. 375-8.

³ There are two types of reductionists: Those of a Humean or Rylean stripe wish to reduce dispositions to (possible) events, while functionalists wish to reduce dispositions to (possible) events plus causation, i.e. (possible) processes. (Lewis is a Humean in functionalist clothing.) In the main text, I use “occurrences” to cover both events and processes.

There is an alternative reason to believe in reduction, but it offers no solace to the reductionist about dispositions. If we have independent reason to believe that entities of type *A* are composed of entities of type *B*, then we have reason to believe that *A* reduces to *B*, even in the absence of analysis or translation. For instance, we have explanatory reasons to believe that genes are composed of DNA nucleotides strung together in certain patterns, so that genes are nothing over and above DNA. (This is sometimes called “ontological reduction.”⁴) However, we lack any similar evidence that dispositions are composed of occurrences. Indeed, *prima facie* they seem to belong to entirely different ontological categories, properties on the one hand, vs. events or processes on the other. Since properties cannot be composed of events or processes, dispositions cannot be composed of occurrences, so we find no reason here to believe in an ontological reduction of the one to the other.

Thus, if successful analysis and evidence for composition are the only two reasons to believe in reduction, it seems unlikely that dispositions reduce to (possible) occurrences. But what about those of us who are happy to include dispositions, as intrinsic properties, amongst the basic or near-basic furniture of the world? One might think that we need not be disturbed by the lack of an analysis for disposition concepts or the lack of evidence for an ontological reduction, since our goals are not reductive. Mumford correctly emphasizes that we cannot rest content with such a blasé attitude.⁵ Those of us⁶ who want dispositions to play an important role in our ontology are obliged to give *some* account of dispositional concepts, even if this falls short of an analysis. Further, this account should ideally exhibit the link between dispositions and conditionals, for there is clearly *some* important connection to be had between e.g. being fragile and breaking if struck.⁷ Like Mumford and others, I believe that some variety of conditional entailment distinguishes dispositional from categorical concepts. But I do not

⁴ C. B. Martin, 'On the Need for Properties: The Road to Pythagoreanism and Back', *Synthese*, 112 (1997), pp. 193-231; John Heil, *Philosophy of Mind: a contemporary introduction* (Routledge, 1998), pp. 188-192; Molnar, 'Are Dispositions Reducible?', p. 8.

⁵ *Dispositions*, pp. 63-65.

⁶ Mumford, Martin, Sydney Shoemaker, 'Causality and Properties' in *Time and Cause*, Peter van Inwagen (ed.) (Dordrecht: D. Reidel, 1980), and possibly D. H. Mellor, *Matters of Metaphysics* (Cambridge UP, 1991), Introduction, and 'The Semantics and Ontology of Dispositions', *Mind* 109 (2000), pp. 757-80.

think that anyone has yet put a finger on the form this conditional entailment takes, which is that of a very general “modal conditional.”

II - The value of characterizing the dispositional/categorical contrast

Consider the predicates “is yellow”, “is black”, “is red” and “is light grey.” Consider also the predicates “is white”, “is green”, “is blue” and “is dark grey.” Now suppose I told you that each predicate in the first group falls under the determinable “is gleb”, while each in the second group falls under the determinable “is strack.” Suppose I asked you: does “is medium grey” fall under “is gleb” or under “is strack”? What about “is purple”? You would have no idea what to say, because the exemplars I have given you do not allow you to grasp any contrast between “is gleb” and “is strack.” And there would be a way I could fill out the list of predicates that fall under each determinable so that you *still* could not discover the contrast between “is gleb” and “is strack.” You would likely conclude that “is gleb” and “is strack” do not pick out genuine determinables, and you would doubt that they drew a genuine distinction. They are mere collections of random predicates that characterize object surfaces visually. Neither “is gleb” nor “is strack” seem to pick out any objective similarity.

But suppose I gave you the following two lists: “is orange”, “is red”, “is green”, and “is blue.” Then: “is black”, “is dark grey”, “is light grey”, and “is white.” One immediately suspects that these two groups fall under concepts that express genuine determinables, namely chromatic and achromatic. The predicates picking out these two determinables seem to draw a genuine contrast; they each pick out objective similarities.

Of course, it could turn out that the contrast between chromatic and achromatic is a subjective one. Its ontological basis may be in our perceptual systems rather than in coloured objects, such that chromatic objects are not more similar to each other than they are to achromatic objects, independent of us. Even if this is true, the concept of chromaticity is not confused like the concepts of glebness and strackness. This is something we can know in a relatively *a priori* manner. By contrast with chromaticity, we can know *a priori* that there is no point even *investigating* whether the distinction

⁷ This is acknowledged by pretty much everyone who has had anything to say about dispositions, including those who have challenged the conditional analysis (most radically, Martin) and the conditional entailment

between glebness and strackness is a subjective or objective one. (There could be such an ontological distinction, but it would be a fluke.) I suggest that the value of the *a priori* attempt to characterize the distinction between the concept of the dispositional and the concept of the categorical lies in showing that these concepts are not confused in the way that the concepts of glebness and strackness are. If they are so confused, there is no point even embarking on an investigation of whether the conceptual distinction is also reflected in ontology. Sorting out the conceptual issue is prior to sorting out the ontological one.⁸

III - Mumford

Despite the failure of the straightforward subjunctive conditional analysis, dispositions are clearly somehow linked with subjunctive conditionals. If we are told something is fragile, we expect it to break if struck. Categorical properties - Mumford uses determinate shapes and structures as his examples - are not, at least not to the same extent, “full of threats and promises” (in Nelson Goodman’s phrase⁹). Thus a suggestion: though they are not equivalent, perhaps dispositional ascriptions *entail* conditional statements, while categorical ascriptions do not. This would constitute a robust contrast of the sort we are looking for.

Mumford defends an account of the dispositional/categorical distinction of just this sort. There are two ways one might object to such an account. First, disposition ascriptions might fail to entail conditionals, and second, categorical ascriptions might entail conditionals just as much as disposition ascriptions do. I contend that Mumford’s responses to these two sorts of objections are not mutually consistent.

D. H. Mellor offers an objection of the second sort.¹⁰ Mellor assumes that dispositional ascriptions entail conditionals, but argues that categorical ascriptions also entail conditionals. For example, he says that something’s being triangular entails that if its corners are counted correctly (where “correctly” refers to the method, not the result), the answer must be three. Since the ascription of triangularity entails a conditional, either

account of the dispositional/categorical distinction (e.g. Mellor).

⁸ Mumford agrees (*Dispositions*, p. 65).

⁹ *Fact, Fiction and Forecast*, 4th ed. (Cambridge, Mass.: Harvard University Press, 1983) p. 40.

¹⁰ D. H. Mellor, ‘In Defense of Dispositions’, *Philosophical Review*, 83 (1974), pp. 157-81, and ‘Counting Corners Correctly’, *Analysis*, 42 (1982), pp. 96-7.

“is triangular” is not a categorical predicate or the dispositional/categorical distinction cannot be drawn using conditional entailment.

Mumford’s response is that there is no *conceptual* entailment of a conditional in the case of categorical ascriptions, though there may be some kind of *a posteriori*, natural entailment. What he means by this is that the entailment does not go through without supplementing a categorical ascription with some claim about the laws of nature. Dispositional ascriptions, on the other hand, need no such supplementation (for the right sort of conditional). The laws of nature are contingent, and the result of a particular counting method depends upon the laws of nature. A counting method that works perfectly well to count the corners of a triangle for the set of laws L_1 might systematically deceive if the laws were set L_2 . If optics were different, triangles might appear to have four corners, and/or if physics were different, a touch on any one corner might cause a triangular object to gain a corner. Similarly, if the laws of electrostatic attraction were different, square pegs might fit snugly into round holes.

Thus categorical ascriptions, Mumford claims, do not have “as part of their meaning”¹¹ the entailment of particular conditionals. There are possible worlds, having different laws of nature, where the same categorical property naturally necessitates the truth of different conditionals. By contrast, there *is* a conceptual connection between dispositional ascriptions and particular conditionals. No matter what the laws of nature are, the truth of a dispositional ascription always entails the truth of the same conditionals. But which conditionals? Not straightforward ones, as Martin’s finkishness cases demonstrate.¹²

Martin imagines cases where the “triggering conditions” of some disposition also cause the loss of that very disposition. His example is of an “electrofink,” which defeats the following proposed conditional entailment for the disposition to be electrically live:

- (1) “The wire is live” entails that if the wire were touched by a conductor, current would flow from the wire to the conductor.

¹¹ *Dispositions*, p. 77.

¹² ‘Dispositions and Conditionals’.

The electrofink is constructed so as to ensure that, whenever the wire is touched by a conductor, the current in the wire stops. So the wire is live *unless* it is touched by a conductor. If the wire were to be touched by a conductor, current would not flow from the wire to the conductor. The subjunctive conditional is false, even though the wire is live, so the dispositional ascription does not entail this conditional.

After considering and rejecting a number of proposals (including his own earlier attempt¹³) for the sort of conditional that disposition ascriptions do in fact entail, Mumford settles on a replacement. He suggests that a disposition ascription, for example “the replicas of the Crown Jewels are fragile,” entails a “conditional conditional” of the following form:

(2) If the conditions are ideal, then if the replicas are knocked or dropped (stimulus event) then they break (manifestation event).

How are the “ideal conditions” for a specific disposition ascription determined? Mumford says they are determined by the *context* of the ascription; they are not part of the meaning of the disposition term.

How is this supposed to help? Note that Mumford's “conditional conditional” (2) is arguably equivalent to:

(3) If the conditions are ideal *and* the replicas are knocked or dropped, then they break.

So adding *specific* ideal conditions as part of the meaning of a disposition ascription can be seen as merely further specifying the antecedent stimulus event. Any such further specification, if finite, fails to get the required entailment for familiar reasons: there is always the possibility of defeating conditions (e.g. finkish conditions, or antidotes¹⁴) that have not been specified. (Ruling out the defeating conditions in one fell swoop with something akin to a *ceteris paribus* clause renders the conditional vacuous, as Martin,

¹³ 'Conditionals, Functional Essences and Martin on Dispositions', *Philosophical Quarterly*, 46 (1996).

¹⁴ Bird, 'Dispositions and Antidotes'.

Lewis, Mumford, and Molnar have noted or implied.¹⁵) Mumford wants to keep the semantically implied conditions non-specific - simply as "ideal conditions" - to keep the conditional flexible enough so the entailment cannot be defeated. That is why he chooses to make them context dependent, and discovered *a posteriori*.¹⁶

Thus Mumford's account of the conceptual distinction between the dispositional and the categorical is this: disposition ascriptions, but not categorical ascriptions, entail that in ideal conditions, if a particular antecedent is realized, a particular manifestation follows.¹⁷ He further explicates "ideal conditions" as "ordinary conditions for the present context." Just "ordinary" or "normal conditions" would be unsatisfactory, because in a scientific context, the ideal conditions for the manifestation of a disposition might be far from ordinary or normal, e.g. at the centre of a star. Disposition ascriptions are used when, in the context of the ascription, it is reasonable to expect the manifestation when the antecedent is realized. If the manifestation does not occur, one wants an explanation for why not. This practice, Mumford claims, is evidence that there is a tacit appeal to ideal or ordinary conditions in disposition ascriptions.

However, it is not clear that this practice is suggestive of a distinction between dispositional and categorical predicates. If it constitutes evidence that there is a tacit appeal to ideal conditions in disposition ascriptions, it is also evidence that there is such an appeal in categorical ascriptions. If we counted the corners of a triangle according to a reliable method, and the result failed to be three, we would certainly require an explanation. So perhaps categorical ascriptions *also* entail Mumford's "conditional conditional."

If the *laws of nature* are included among the conditions that may be lassoed by the "ordinary conditions for the present context" clause, then it seems categorical ascriptions *will* entail Mumford's conditional. "The gem is triangular" would entail "if the gem's corners were correctly counted and the conditions were ordinary for the present context

¹⁵ Martin, 'Dispositions and Conditionals', pp. 5-6, Lewis, 'Finkish Dispositions', pp. 157-8, Mumford, *Dispositions*, p. 87, Molnar, 'Are Dispositions Reducible?', p. 7.

¹⁶ Alexander Bird ('Dispositions and Antidotes',) makes a similar suggestion (p. 234).

¹⁷ *Dispositions*, p. 89. Mumford actually says "usually follows," but I can only make sense of the "usually" as a repeat of the appeal to ordinary conditions. That is, the "usually" just means that if the manifestation does not follow, the conditions weren't ordinary. (Mumford's further discussion in section 4.9 strongly encourages this interpretation.)

(including the actual laws of nature obtaining), then the result would be three."¹⁸ Mumford's response to Mellor's original objection that categorical ascriptions entailed conditionals was by appeal to the contingency of the laws of nature. That is, Mumford contended that the simple conditionals Mellor claimed to be entailed by categorical ascriptions were not really entailed, because in some possible worlds with different laws of nature, the ascription could be true but the conditional false. I have just laid a Mellor-style objection on Mumford's doorstep, claiming that his new conditional is also entailed by categorical ascriptions. An appeal to the contingency of the laws of nature is unavailable to Mumford in order to defend against this new Mellor-style objection, given that the relevant laws of nature are among the "ordinary conditions for the present context."¹⁹ So allowing the laws of nature to be lassoed by the ideal conditions clause will leave him without a viable dispositional/categorical distinction – both types of ascriptions will entail his "conditional conditional."

Suppose, on the other hand, that the relevant laws of nature do not number among the conditions determined as ordinary for the context. Then even a disposition ascription may fail to entail Mumford's conditional. There will be possible worlds (with different laws) in which the disposition's activating stimulus is applied and all the "ordinary conditions for this context" obtain, but where the manifestation does not. There are many examples of such worlds. In some worlds with different laws, sudden accelerations toward the ground cause the release of just enough heat to soften glass and stop it from shattering; in others, under some different restricted conditions, sudden accelerations produce an electromagnetic field in a configuration that tends to prevent glass from breaking. Nevertheless, in such worlds, the Crown Jewel replicas may still be fragile. The explanation for the failure of the disposition to manifest itself in these conditions will appeal to the different laws of nature. Thus in order for Mumford's "conditional conditional" to be entailed by a disposition ascription, the relevant laws of nature *must* be included in the ideal conditions clause. This takes Mumford back to the first horn of the dilemma, where, as we saw, he is impaled on a variant of Mellor's objection.

¹⁸ On a construal of "P entails Q" as "It is impossible for P to be true and Q false." I suppose relevance logics might provide Mumford with a way out of this problem. Out of the frying pan...

¹⁹ On p. 156 of *Dispositions*, Mumford seems to suggest that the laws of nature *are* included in the ideal conditions clause; either that, or he is making the same suggestion as in the quotation in my next footnote.

Mumford might avoid the dilemma between having categorical ascriptions entail his conditional conditional and having dispositional ascriptions fail to do so, but at a great price. He could adopt the view that a particular disposition concept can be applied sensibly only to objects in worlds having the same laws of nature as the world in which ordinary conditions are contextually determined for that concept.²⁰ This would have the absurd consequence that a world in which the gravitational constant differed by a fraction from its value in the actual world contained no fragile objects, nor any soluble objects, nor any inflammable objects, etc. Even if Mumford could somehow non-circularly specify the *relevant* laws of nature that needed to be the same as the actual ones in order for a particular disposition to be sensibly ascribed to objects in a possible world, thus restricting the sensible application of disposition concepts would still fail. A law such that sudden accelerations toward the surface of the earth cause the release of just enough heat to soften glass and stop it from shattering is certainly *relevant* to fragility, yet the Crown Jewel replicas could still be fragile in that world. (There could still be many circumstances in which they would break if struck, for instance.) At the very least, the following disposition could easily apply to them in the possible world with different laws of nature: the disposition to break when struck (which may or may not be the same thing as fragility).

Another problem for Mumford arises from his claim that the ordinary conditions that are contextually determined may be discovered *a posteriori*. How would an *a posteriori* investigation into these ideal conditions go? Presumably, something like this: We start off with the concept of a dispositional property that mediates between stimulus event A and manifestation event B. We find, in the world, successive events A and B involving an object to which we therefore ascribe the disposition. We then investigate what conditions obtain in the preponderance of cases where A really does lead to B in a context we judge to be common to some set of cases. These conditions are then considered to be “ideal”, i.e. ordinary for that context.

²⁰ In ‘Ellis and Lierse on Dispositional Essentialism’, *Australasian Journal of Philosophy*, 73 (1995), pp. 606-12, Mumford leans in this direction (p. 607): “...when we, in the actual world, speak of the dispositions of fragility and non-fragility we refer to the dispositions of fragility and non-fragility in the actual world, which will be shared by all possible worlds which share the laws of the actual world.” He endorses this portion of the paper on pp. 236-7 of *Dispositions*.

Would it not be possible for us to find out that, as a matter of fact, ordinarily the conditions required for the mediation between A and B were finkish, or at least highly unusual? We might, for instance, discover that all the substances we take to be poisonous are in fact highly beneficial, except when ingested along with a cofactor that renders them toxic. This cofactor happens to be present, unbeknownst to us, in our drinking water. Ordinary conditions presumably include that we drink water, and ordinarily the water contains the cofactor. So on Mumford's account, these substances count as poisonous, where the ordinary conditions for the manifestation of this disposition turn out to include the ingestion of the cofactor. It seems to me that, on the contrary, if we found out about the cofactor, we would not call these substances poisonous. If we filtered out the cofactor from our drinking water, it would be beneficial for us to ingest these substances. Dispositions are intrinsic, and it is the intrinsic nature of these substances to make us healthier. So there must be built into the concept of a poison that the ideal conditions for its manifestation do not include such cofactors. We are only able to decide that these substances are not poisonous because we have some *a priori* grasp of this disposition's manifesting conditions.

Mumford could accept the point, but claim that only *some* of the manifesting conditions for a particular disposition are discovered *a posteriori*. However, it is unlikely that we discover any of the manifesting conditions for dispositions in the way Mumford believes we do, that is, by fixing on a property or class via a manifestation event, and then discovering what conditions are important for the occurrence of the manifestation in paradigm cases. This involves a reference fixing for the disposition term, followed by a discovery of something about that to which reference has been fixed. This scenario is not plausible because for most disposition terms, it is doubtful that there is any such reference fixing.

When there is genuine reference fixing, e.g. when we fix the reference of "water" to H₂O, we cannot subsequently discover that water is not H₂O. However, for any dispositional paradigm that is a candidate for that to which we have fixed the reference of a dispositional term, we *could* discover that that thing lacks the disposition. The poison/cofactor case is but one of many examples. For another example, we might discover that glass is not really fragile – it's as strong as steel – but it breaks when struck

due to the interference of some powerful aliens. Indeed, if occasionalism is true, it could be that nothing except God has any dispositions at all! Disposition terms are rarely if ever the sort of terms that involve any genuine reference fixing, and thus it is not possible to make *a posteriori* discoveries of their manifesting conditions in the way Mumford needs for his account of the dispositional/categorical distinction to work.

It might be objected that in my cases above, the reason there is no genuine reference fixing for the disposition term is not because disposition terms are unsuited to reference fixing. In my cases, Mumford's defender might say, reference fixing just fails. One reason that reference fixing can fail is if the reference fixing event itself involves a failure of reference. If the reference fixing is an official dubbing, e.g. if I decide "that stuff" is to be called "water," I might fail to pick out a re-identifiable stuff at all with my dubbing sword. In this case, "water" will not have a determinate reference in any possible world; it would be a confused term. However, this is not the situation when a disposition term turns out to fail to apply to some paradigm, as in my examples above. If occasionalism is true, there will still be plenty of fragile things in other possible worlds; "fragile" would not be a confused term. It is not that disposition terms are apt for reference fixing, but that (of course) sometimes there is no genuine reference fixing because there is nothing suitable to which one might fix reference. Rather disposition terms, in general, are simply not suited to reference fixing. (Some scientific disposition terms, e.g. charge, may be important exceptions.) If they are not, there can be no *a posteriori* discovery of their manifesting conditions, and Mumford's ideal conditions clause is completely out of place.

IV - Mellor

D. H. Mellor has recently updated his views on dispositions.²¹ In the context of a discussion of dispositional vs. categorical properties, he claims (p. 767) that "dispositionality is a feature not of properties but of predicates, namely of those whose application conditions can be stated in reduction sentences." This suggests the following account of the dispositional/categorical distinction: dispositional predicates are those whose application conditions can be stated in terms of reduction sentences, while

categorical predicates are those whose application conditions cannot be so stated. I shall argue that this strategy is no more successful than Mumford's. And in any case, it is not a strategy that is open to Mellor, given his other commitments.

The reduction sentence for “*x* is fragile” is “if *x* were stressed *without ceasing to be fragile*, *x* would break.”²² Note that if this conditional gives the application conditions for “*x* is fragile,” then it must be entailed by “*x* is fragile.” The clause “without ceasing to be fragile” is added in order to preserve the conditional entailment in the face of the finkishness problem, which involves precisely a loss of the disposition upon the occurrence of its manifesting conditions. The obvious complaint is that this statement of the application conditions for “fragile” also *uses* the term “fragile,” so there is a problematic circularity. Mellor denies that the circularity is problematic, since the reduction sentence is not meant to give the full meaning of fragile, but simply the application conditions of fragile. Why does that help? When our application condition is a conditional involving a circularity, all this shows “is that there must be some other – demonstrative or otherwise observational – aspect to factual meaning, which our conditionals rely on but none states” (p. 762). Presumably, the reduction sentence is meant to be saved from vacuity by this extra element to the meaning of dispositional terms. If we already understand the demonstrative or observational part of the meaning of “fragile,” we will be able to grasp the application condition given by the reduction sentence. More importantly for our purposes, it would then give us a viable candidate for conceptually distinguishing between the dispositional and the categorical. However, the strategy does not hold up under closer scrutiny.

Since the (unmanifested) disposition itself is not directly observable or demonstrable, the extra element to the meaning of a disposition term must be provided through demonstration or observation of the disposition's manifestation and its surrounding circumstances. One comes to understand the meaning of “fragile” by observing something breaking when stressed, and observing or demonstrating the circumstances in which this event occurred.

²¹ ‘The Semantics and Ontology of Dispositions.’

²² Mellor, p. 763.

If the extra element to the meaning of a disposition term is *observational*, then it would make the corresponding concept a *recognitional* one. In this case, the application conditions of a dispositional concept would include, for instance, some range of non-conceptual perceptual contents that would make the application of the dispositional concept “primitively compelling.”²³ It is hard to see how this sort of move can help. Nonconceptual perceptual content is helpful when the application conditions for a term or concept are stated in terms for which the speaker need not have the corresponding concepts. For instance, the application conditions of “magenta” might be stated in terms of ratios of surface reflectance or cone activations; but one can be competent in the use of the term/concept “magenta” without possessing concepts of surface reflectance or cone activations. However, the problem with conditional application conditions for disposition concepts is not of this sort. The problem here is not whether the application conditions for a dispositional term can be stated using only terms for which the speaker has the corresponding concepts. The problem is that it is not clear that a disposition term’s application conditions *can be stated at all*, due to the problems of finkishness and antidotes. If the application conditions cannot be stated at all, nonconceptual, recognitional, or observational content is not going to help. If you cannot list the possible defeating conditions for a subjunctive conditional linguistically, you won’t be able to “list” them with your eyes either.

So perhaps the additional element to the meaning of a disposition term is provided by the alternative Mellor mentions, namely demonstration. The suggestion would be this: “x is fragile” means (and entails that) in *these* circumstances, if x were stressed, it would break. Now, demonstratives determine a content given a context, so we must ask what the relevant type of context is, and what content it determines. The context cannot be the present context of disposition ascription, since the disposition may be unmanifested in this context due to the lack of one or many of the disposition’s manifesting conditions (besides its “activating stimulus”, e.g. stress). That is, a context in which the disposition remains unmanifested may well be one that does *not* guarantee manifestation of the disposition even if the activating stimulus is applied. Such a context could not provide,

²³ Christopher Peacocke, *A Study of Concepts*, (Cambridge, Mass.: MIT Press, 1992), pp. 6-7, 134-8, 151-7, 184-90.

via demonstration, conditions that will guarantee manifestation of the disposition, and thus the required entailment of a conditional. So it must be that the relevant context is the context of past occasions of having observed the manifestation of the disposition. If x is fragile, then in *those* sorts of circumstances, if x were stressed, it would break.

The problem is that the presence of a fink or antidote is perfectly consistent with the circumstances being the same as those past circumstances in which manifestation of the disposition occurred. Finks and antidotes are *additional* to the positive circumstances that allow for manifestation of a disposition, and it is not plausible that what was demonstrated on previous occasions of the disposition's being manifested was the *absence* of an infinite list of finks and antidotes. Perhaps when one demonstrates a hole, one is pointing at the absence of matter in that position, since one's sensory apparatus can explicitly register this sort of absence. But only in very unusual circumstances could one be properly construed as demonstrating the absence of an electrofink. So it is not in general true that if x is fragile, then in the sorts of circumstances in which fragility was manifested in the past (*those* sorts of circumstances), if x were stressed, it would break. The entailment of this sort of conditional cannot be used to characterize the dispositional/categorical contrast.

A reduction sentence will not offer any help with this problem. Here is a reduction sentence with the demonstrative content made explicit:

(4) x is fragile iff if x were stressed in those sorts of circumstances (without ceasing to be such that if it were stressed in those sorts of circumstances it would break) it would break.

This is like saying:

(5) x is valuable iff if x were auctioned (without ceasing to be such that if it were auctioned it would fetch a million dollars) it would fetch a million dollars.

Something can be valuable even if it is not guaranteed to fetch a million dollars at auction, so the parenthesis has a false presupposition. Similarly, something can be fragile

even if it is not guaranteed to break in circumstances A, B, and C (“those” past sorts), so the parenthesis has a false presupposition. I am not sure exactly what these parentheses with false presuppositions do, but they certainly do not *rescue* the left to right entailment, thus supplying us with a basis for distinction between dispositional and categorical predicates.

One might supplement the demonstrative with some appeal to normal or ideal conditions, in order to rule out finks and antidotes. This move would be strikingly similar to Mumford’s appeal to “normal conditions for the present context,” if one thinks of “the present context” as demonstrating past circumstances, relevantly similar to the current ones, in which the disposition was manifested. Thus it would fail for the same reasons that Mumford’s proposal did.

All along, I have been supposing that Mellor wishes to distinguish dispositional from categorical predicates by way of reduction sentences. In fact, this strategy is not even open to him, given his other commitments. (I should point out that it is not entirely clear he wishes to pursue the reduction sentence strategy; he only *explicitly* says that dispositionality is a feature of predicates, not that it is a feature of predicates that may truly be distinguished from categoricity.) For he also says (p. 762) that “the only serious application condition for ‘triangular’ is a conditional, namely that ‘triangular’ applies to all and only things whose corners, if counted correctly, would add up to 3.” There is reason to think Mellor should turn this application condition into a reduction sentence. In a move analogous to Martin’s finkishness move against the conditional analysis of dispositions, Prior²⁴ has complained that Mellor’s conditional will not apply to triangles in worlds where counting *changes* the number of corners a triangle has. The natural move for Mellor to make in response is the same as the one he makes in response to finkishness, namely to go to a reduction sentence: *X* is triangular entails that if *X*’s corners were correctly counted without *X* ceasing to be triangular, the result would be three. So Mellor is committed to saying that both dispositional and categorical predicates have application conditions that can (must?) be stated using reduction sentences. Therefore reduction sentences cannot yield a way to distinguish them, even by his own lights.

V - Prior, Pargetter, and Jackson

Though they rely principally upon the standard, and now discredited, simple subjunctive conditional entailment account of how to distinguish between dispositional and categorical ascriptions, Prior, Pargetter, and Jackson²⁵ propose another strategy that might be used to draw the distinction. They suggest that dispositions (necessarily) have causal bases distinct from themselves, while categorical properties do not.

They do not actually argue for the thesis that categorical properties lack causal bases. (This is presumably because they think categorical properties do not carry with them any causal implications, since they assume that categorical ascriptions do not entail subjunctive conditionals. There are no causes and effects in nearby conceptual space to even raise the question of a need for bases.) However, they do argue that dispositions necessarily have causal bases distinct from themselves. On pain of infinite regress, it seems that causal bases must bottom out in properties that do not themselves have causal bases. A contrast between properties that necessarily have causal bases and properties that do not, i.e. those at the bottom of a causal basis hierarchy, would perhaps amount to a fair dispositional/categorical contrast. Except that Prior et al.'s argument for the necessity of causal bases for all dispositions is invalid.

Prior et al. spend most of their time trying to show that dispositions must have causal bases in indeterministic worlds, because they think they have a very simple argument for the necessity of causal bases in deterministic worlds. It is this simple argument that is flawed. If a disposition ascription is true, they say, then in a deterministic world any manifestation of the disposition of fragility will involve "a causally sufficient antecedent condition operative in producing the breaking." "Hence if A is fragile and Determinism is true, there must be a causal basis." They evidently take "there is a causally sufficient antecedent condition operative in producing the manifestation" to be equivalent to "there is a causal basis." But this is, at best, to beg the question against those of us who think there can be dispositions without bases. For if

²⁴ E. W. Prior, 'The Dispositional/Categorical Distinction', *Analysis*, 42 (1982), pp. 93-6.

²⁵ Elizabeth W. Prior, Robert Pargetter, and Frank Jackson, 'Three Theses About Dispositions', *American Philosophical Quarterly*, 19 (1982), pp. 251-7. See also Robert Pargetter and Elizabeth W. Prior, 'The Dispositional and the Categorical', *Pacific Philosophical Quarterly*, 63 (1982), pp. 366-370.

there can be (perhaps basic properties like mass and charge are baseless dispositions), then *the dispositions themselves* could be the “causally sufficient antecedent condition operative in producing the manifestation.” Just because the manifestation of a deterministic disposition requires causally sufficient antecedent conditions does not mean that those antecedent conditions cannot include the disposition itself. Prior et al. have not shown that dispositions must have causal bases that are distinct from themselves, and thus have not provided a way to draw the dispositional/categorical distinction.²⁶

VI - The modal conditional account of the dispositional/categorical distinction

Though I do not believe that anyone has yet offered an adequate account of the dispositional/categorical distinction, I believe there is a relatively simple one in the vicinity that has been overlooked. Consider the basic intuition that seems to motivate conditional accounts of the distinction. It is something like this: if the laws of nature were to change, the extension of categorical concepts would remain the same, but the extension of dispositional concepts need not. No matter how the laws of nature were to change, the Pyramids would still be pyramidal. By contrast, salt might no longer be soluble. However, the soluble things would still be those that tended to dissipate in water; perhaps steel would become soluble. That is, with a change in the laws of nature, disposition ascriptions would track the same stimulus and manifestation events (characterized categorically). So there is a conceptual connection between disposition ascriptions and stimulus and manifestation events, but there is no such connection for categorical ascriptions.

As he works towards his “conditional conditional” account of the distinction, Mumford often makes a similar point. He claims that some stimulus event type and the manifestation event type are known *a priori* for a dispositional ascription, but not for a categorical ascription. He says, “What is known *a priori* with a disposition term, because it is part of the meaning, is the causal role that is being ascribed when an ascription of that term is true.”

²⁶ It is their reliance on the subjunctive conditional analysis of dispositions that gets Prior et al. into trouble. They think that the truthmaker (“a causally sufficient antecedent condition”) for a dispositional ascription must be non-dispositional *because they think that dispositions are merely the obtaining of*

I think this observation, all by itself, can be parlayed into a fully adequate account of the dispositional/categorical distinction.²⁷ What is it for a type of stimulus event and a type of manifestation event to be “conceptually connected” with a disposition term? A disposition ascription entails that *in some circumstances or other* a particular type of manifestation event will ensue following a particular type of stimulus event. If the replicas are fragile, then in some circumstances or other, if struck they will break. This is clearly not a sufficient condition for being fragile, but all we are after is some criterion by which we may distinguish dispositional from categorical concepts. That is, what we want is a condition that is necessary for a concept’s being dispositional, and sufficient for its being non-categorical.

A better rendition of my proposed criterion is that a true disposition ascription to any object in any possible world entails that it is nomologically possible relative to that world for a particular type of manifestation event to follow a particular type of stimulus event. That is why I call it a modal conditional. More rigorously, it is:

MC: For all dispositions D there exists some stimulus S and some manifestation M such that for all worlds w, and all objects x, if x has disposition D in world w, then it is nomologically possible in w that if S is applied to x then x manifests M.²⁸

Or formally:

MC_f: $\forall D (\exists S \exists M [\forall w \forall x (D^w x \supset \diamond_n^w [Sx \supset Mx])])$

(The symbol “ \supset ” expresses a non-material conditional.) For short: It is nomologically possible that if the stimulus event occurs then the manifestation event occurs.

So, for example, “x is fragile,” said of any object x in any possible world w, entails that it is nomologically possible for x to break upon being struck in w. Not so for

subjunctive conditionals, and thus not suitable for truthmaking duties. But of course intrinsic dispositional *properties* are eminently suited for truthmaking duties.

²⁷ Mumford makes some assertions congenial to this view in his ‘Intentionality and the Physical: A New Theory of Disposition Ascription’, *Philosophical Quarterly*, 49 (1999), pp. 215-225.

²⁸ For some dispositions, like electric charge, the manifestation event involves a distinct object from the one that has the disposition, so read “x manifests M” so as to encompass this sort of situation.

a categorical concept; the modal conditional account blocks the Mellor style objection. Though "x is triangular" may entail that it is nomologically possible for *some* event to occur (if all properties must contribute causal powers to their possessors²⁹), no *particular* type of event is entailed in every possible world. Perhaps in the actual world, if y is triangular then it is nomologically possible that if y's corners are correctly counted, the result will be three. But this is not true in *every* world w. Above, we saw that in a world where the laws of nature are different, the conditional may fail to apply to something triangular. For any candidate "manifestation" event one can think of, there will be a possible world where the laws prohibit some triangular object from participating in/bringing about that event.³⁰ By contrast, in a possible world in which the laws prohibit some object from *breaking*, that object is not fragile in that world.

Though we distinguish "fragile" from "indestructible" with this device, we may not distinguish "fragile" from e.g. "highly durable." Both ascriptions to x entail that it is nomologically possible for x to break when struck. But this is a failing only if we expect what distinguishes dispositional concepts from categorical concepts also to individuate dispositional concepts. I see no need to insist on this additional requirement. MC expresses only a necessary condition for having a particular disposition. Once we have the dispositional/categorical distinction, we may distinguish between dispositional concepts by further specifying their activating stimulus, and their manifesting conditions. This need not be accomplished by using conditional entailments.

The most basic disposition attribution has the form: O is disposed to ϕ , where O is an object and ϕ is a manifestation event involving O. According to the modal conditional account, this entails that it is nomologically possible for O to ϕ .³¹ At a higher level of complexity, we have: O is disposed to ϕ *in response to S*, where S refers to some stimulus

²⁹ This principle, known as "Alexander's dictum," and is accepted by (among others) Mumford, Shoemaker, and B. Ellis and C. Lierse, 'Dispositional Essentialism', *Australasian Journal of Philosophy*, 72 (1994), pp. 27-45.

³⁰ This is even more obvious for what I consider to be a better paradigm for categorical concepts, the concept of a purely qualitative property, like a quale or a colour (in the manifest image). See Bertrand Russell, *The Analysis of Matter*, (London: Routledge, 1927); Martin, 'On the need for properties' and his entries in *Dispositions: A Debate*; John Heil, *The Philosophy of Mind*, (London: Routledge, 1998), Ch. 6; Peter Unger, 'The Mystery of the Physical and the Matter of Qualities', *Midwest Studies in Philosophy*, 23 (1999); and my 'The problem of geometrical causation' (in preparation).

³¹ Cf. *Dispositions* p. 88: "The minimal claim of a disposition ascription is that a particular *can* do something [in particular]."

event. This also entails that it is nomologically possible for O to ϕ , though we might optionally add: in response to S. The third level of complexity adds in some conditions, C: O is disposed to ϕ in response to S *in conditions C*. Again, this entails the simple modal conditional: it is nomologically possible for O to ϕ , but also, optionally: in response to S in conditions C.

Attributions using our ordinary disposition terms and concepts may be analyzed into disposition attributions at any of the three levels of complexity. Let us see how this applies to fragility and high durability. Fragility gets analyzed at the third level: “x is fragile” means that x is disposed to break when struck relatively lightly and suddenly.³² This entails that it is nomologically possible 1) for x to break, 2) for x to break when struck, and 3) for x to break when struck relatively lightly and suddenly. By contrast, “x is highly durable” means that x is disposed to break³³ only when struck relatively forcefully. This entails that it is nomologically possible 1) for x to break, and 2) for x to break when struck, but *not* 3) for x to break *only when struck relatively forcefully*. So there is no sure way to derive a unique modal conditional entailment from the meaning of a disposition term. But this does not matter, for we distinguish between different dispositional concepts by their manifesting conditions, not by the modal conditionals they entail. (That said, most dispositions may be distinguished by their corresponding modal conditionals. For example, fragility is conceptually connected with very different stimulus and manifestation events from being electrically charged.)

Finks and antidotes present no problem for the modal conditional account, because the modal conditional makes no claim about when a manifestation is *guaranteed* to occur, only that it must be nomologically possible for it to occur in some circumstances or other. If, in world w, glass *could not break* when struck relatively lightly and suddenly due to the laws of nature in w, glass simply would not be fragile. There is no question of “interference” brought about through a fink or antidote. If it is nomologically impossible for the manifestation to occur due to the laws of nature, there is simply no disposition/potential process to interfere with. For any disposition ascription, the entailment of the relevant modal conditional is secure.

³² Mellor, ‘The Semantics and Ontology of Dispositions.’

³³ Or more accurately, x has a high propensity (probabilistic disposition) to break only when...

It might be objected that masked dispositions provide a counterexample to my modal conditional account of the dispositional/categorical distinction. For example, a neuron might be disposed to fire upon the application of glutamate, but this disposition may be masked by a channel blocker. Is this a case where something has a disposition, but it is not nomologically possible for the manifestation event to occur upon application of the stimulus? (It should be noted that whether there are such things as “masked dispositions” is a matter of some controversy.³⁴ Some would maintain that, with the channel blocker in place, the neuron just lacks the disposition to fire upon glutamate being applied.) Will the presence of a mask block the entailment from “The neuron is disposed to fire upon the application of glutamate,” to “It is nomologically possible that if glutamate is applied the neuron will fire”? Obviously not. If there are no nomologically possible conditions *at all* that will remove the blocker, we would most certainly withhold the disposition ascription. The disposition counts as masked only because it is nomologically possible to remove its blocker, e.g. by the application of magnesium ions. So the modal conditional entailment will always hold, even when a disposition is masked.³⁵

Thus we have reason to believe that disposition ascriptions entail modal conditionals, while categorical ascriptions do not. This simple account of the dispositional/categorical distinction is not vulnerable to Mellor style complaints that categorical ascriptions also entail modal conditionals. Neither does it fall to counterexamples like finks and antidotes. In the end, our best fundamental ontology may tell us that dispositional concepts and categorical concepts do not correspond to a distinct dispositional and categorical properties (as Martin, Mumford, and Mellor have suggested).³⁶ But we may be secure in the knowledge that the conceptual distinction is a genuine one.

³⁴ Mark Johnston, ‘Objectivity Refigured’, in Mark Johnston and Crispin Wright (eds.), *Realism and Reason* (Oxford: Clarendon Press, 1992); Martin, ‘On the need for properties,’ Lewis, ‘Finkish Dispositions’ and Molnar, ‘Are Dispositions Reducible?’ are inclined to accept them. Simon Blackburn is skeptical: ‘Circles, Finks, Smells and Biconditionals’, *Philosophical Perspectives*, 7(1993), pp. 259-279.

³⁵ Whether we treat an object as having a masked disposition or not depends largely on whether we focus upon it as an undifferentiated whole, or rather as composed of parts, each of which contributes its causal powers to the whole.

³⁶ Martin, ‘On the need for properties’, Mumford, *Dispositions*, and Mellor, ‘The Semantics and Ontology of Dispositions’.