VOL. 55 NO. 220 JULY 2005

The Philosophical Quarterly

CONTENTS

BLACKWELL PUBLISHING
FOR
THE SCOTS PHILOSOPHICAL CLUB
AND THE
UNIVERSITY OF ST ANDREWS

The Philosophical Quarterly, Vol. 55, No. 220 *July 2005*
ISSN 0031–8094

DISCUSSION

DO CATEGORICAL ASCRIPTIONS ENTAIL COUNTERFACTUAL CONDITIONALS?

BY SUNGHO CHOI

Stephen Mumford, in his book on dispositions, argues that we can distinguish between dispositional and categorical properties in terms of entailing his 'conditional conditionals', which involve the concept of ideal conditions. I aim at defending Mumford's criterion for distinguishing between dispositional and categorical properties. To be specific, no categorical ascriptions entail Mumford's 'conditional conditionals'.

I. DISPOSITIONAL AND CATEGORICAL PROPERTIES

The thesis that there is a certain distinction between dispositional and categorical properties enjoys a great deal of plausibility. It seems that the ascriptions of dispositional properties like fragility and water-solubility imply some powers or potentialities, whereas the ascriptions of categorical properties like being triangular and being two-legged do not. It has been widely agreed that power or potentiality can be understood in terms of entailing a counterfactual conditional. Hence the thesis boils down to the claim that dispositional ascriptions entail counterfactual conditionals, whereas categorical ascriptions do not. For example, '*x* is fragile' entails something like '*x* would break if struck', whereas '*x* is triangular' entails no such counterfactual conditionals.

A *caveat* is in order here. Not every entailment of a counterfactual conditional serves as a criterion for the distinction between dispositional and categorical properties. For example, since the counterfactual conditional 'If it were the case that *p*, then it would be the case that *p*' is a logical truth, it is trivially entailed by '*x* is triangular'.[1] Even if 'triangular' were to have a different meaning, the entailment would still hold. This suggests that for every dispositional property *P*, the ascription of *P* entails a counterfactual conditional where the meaning of the predicate '*P*'

[1] Here I am indebted to Alexander Bird.

plays an essential role; but that for any categorical property *P*, the ascription of *P* does not do so. It is clear that '*x* is fragile' entails something like '*x* would break if struck', and that the meaning of the predicate 'fragile' plays an essential role in the entailment: if 'fragile' were to have a different meaning, the entailment would not hold.

Like almost every thesis in philosophy, the thesis that there is a distinction between dispositional and categorical properties has faced strong challenges. One of them is that dispositional ascriptions do not uniquely entail counterfactual conditionals. This challenge starts with Hugh Mellor's[2] observation to the effect that

1. *x* is triangular

entails

2. If the corners of *x* were correctly counted the result would be three

where 'correctly' refers to the method of counting, not the result of counting. (As Alexander Bird correctly points out,[3] the counting should be understood not as an abstract mathematical operation but as an intellectual and psychological operation, because there must be a causal or nomic connection between the antecedent and consequent of a counterfactual conditional whose entailment gives a criterion for distinguishing dispositional and categorical properties.) It is clear that the meaning of the predicate 'triangular' plays an essential role in this alleged entailment. Hence if Mellor is right, we would have to say either that given that triangularity is a categorical property, even a categorical ascription entails a counterfactual conditional in the right way, or that according to the criterion under consideration, there would be no categorical properties, because one of the most likely categorical ascriptions entails a counterfactual conditional, both of which can be good reasons for rejecting that criterion.[4]

However, Elizabeth Prior properly objects to Mellor's observation that given that 'correctly' refers to the method of counting, the entailment does not hold, because the result of counting may vary according to the laws of nature.[5] Suppose in a possible world it is a law of nature that when one starts to count the corners of a triangular object, the object is caused to change the number of its corners. In this world, it is not true that if the corners of a triangular object were correctly counted the result would be three. Then (1) does not entail (2), and therefore Mellor's observation is mistaken.

Another challenge against the distinction between dispositional and categorical properties is that dispositional ascriptions do not entail counterfactual conditionals, which is due to Charlie Martin's well known arguments against the simple conditional analysis of dispositions: a finkishly fragile glass G_{martin} is struck but does

[2] H. Mellor, 'In Defence of Dispositions', *Philosophical Review*, 83 (1974), pp. 157–81, at p. 171, and 'Counting Corners Correctly', *Analysis*, 42 (1982), pp. 96–7.

[3] See A. Bird, 'Structural Properties', in H. Lillehammer and G. Rodriguez-Pereyra (eds), *Real Metaphysics* (London: Routledge, 2003), pp. 154–68, at p. 161.

[4] I thank Alexander Bird for helping me to get this point right.

[5] E. Prior, 'The Dispositional/Categorical Distinction', *Analysis*, 42 (1982), pp. 93–6.

not break because it is protected by a sorcerer who detects when G_{martin} is about to be struck and reacts by instantaneously casting a spell that renders G_{martin} no longer fragile.[6] In this case, 'G_{martin} is fragile' is true, but 'G_{martin} would break if struck' is false. This means that the former does not entail the latter.

Martin's counter-example does not immediately undermine the criterion for distinguishing dispositional and categorical properties in terms of entailing a counterfactual conditional, because it does not show that '*x* is fragile' entails no counterfactual conditionals at all. In fact, Stephen Mumford, who admits that Martin's counter-example is well taken, argues that '*x* has a disposition *D*' entails the following counterfactual conditional: if the ideal conditions obtain, then if *x* were to undergo the stimulus appropriate to *D*, it would exhibit the manifestation appropriate to *D* – a 'conditional conditional'.[7] Mumford (p. 89) takes it that what counts as an ideal condition is relative to a specific context of a dispositional ascription. As I have said elsewhere, the reference to ideal conditions is intended to preclude various extrinsic sundries, like the sorcerer in Martin's counter-example, which might interfere with a causal process from the stimulus appropriate to *D*.[8]

G_{martin} has the extrinsic property of being protected by the sorcerer. Mumford (p. 90) suggests that this extrinsic property should be excluded from the ideal conditions relative to an ordinary context of the ascription of fragility. In addition, the following counterfactual conditional is true: if G_{martin} were under the ideal conditions, where it is not protected by the sorcerer, then it would break if struck. Therefore Mumford holds that though '*x* is fragile' does not entail the simple conditional '*x* would break if struck',

3. *x* is fragile

entails

4. If *x* were under ideal conditions, *x* would break if struck.

So Mumford asserts that we can distinguish between dispositional and categorical properties in terms of entailing his conditional conditionals.

However, Mumford's criterion seems to be troubled with a variant of Mellor's observation, as is shown by the 'conditional conditional' version of Mellor's counterfactual conditional

5. If *x* were under ideal conditions, if *x*'s corners were correctly counted then the result would be three.

Dan Ryder has argued that if the ideal conditions include the requirement that the actual laws of nature obtain, (5) is true of a triangle even in Prior's possible world, since if its corners were correctly counted under the actual laws of nature then the result would be three, and therefore that (1) entails (5).[9] If so, Mumford's conditional

[6] C.B. Martin, 'Dispositions and Conditionals', *The Philosophical Quarterly*, 44 (1994), pp. 1–8.

[7] S. Mumford, *Dispositions* (Oxford UP, 1998), pp. 88–90.

[8] S. Choi, 'The Simple *vs* Reformed Conditional Analysis of Dispositions', *Synthese* (forthcoming).

[9] D. Ryder, 'The Dispositional/Categorical Distinction' (unpublished manuscript).

conditional would no longer provide an adequate criterion for the distinction between dispositional and categorical properties, because one of the most likely categorical ascriptions entails Mumford's conditional conditional.

II. INTRINSICALLY FINKISH PROPERTIES

Ryder is right that given that the ideal conditions include the requirement that the actual laws of nature obtain, the claim that (1) entails (5) is not in trouble with Prior's possible world. But it does not follow from this that (1) entails (5). In fact the entailment does not hold.

Suppose a sorcerer is in the vicinity of a finkishly triangular object and plays a role similar to that of the sorcerer in Martin's counter-example. If the corners of the triangular object were counted, straight away this sorcerer would render it rectangular. In this case the object is triangular, and so (1) is satisfied. But (2) is not satisfied, because if its corners were counted correctly, the result would be four, not three. Therefore this case undermines the claim that (1) entails (2). It is clear, however, that it spells no trouble for the claim that (1) entails (5). The ideal conditions relative to an ordinary context of the ascription of triangularity can be taken as including the requirement that no such sorcerers as described above are operative. In addition, if no such sorcerers were operative and if the corners of the object were correctly counted, then the result would be three. Then (5) is satisfied, and therefore the case under consideration poses no threat to the claim that (1) entails (5).

I can modify this case: let a *tricky triangle* be an object *T* with exactly the same intrinsic properties as an ordinary triangle except that it is made up of a material such that it has the intrinsic disposition to become rectangular soon enough if its corners were counted.[10] If *T*'s corners were correctly counted, the result would not be three, because it would quickly become rectangular. In this case, unlike the above case, the sorcerer is not operative; instead, one of *T*'s own intrinsic dispositions, to be specific, the disposition to become rectangular if its corners are counted, takes the place of the sorcerer. It is clear that (1) is satisfied because *T* is currently triangular. Then is (5) satisfied, or not? The ideal conditions relative to an ordinary context of the ascription of triangularity are background conditions where there are no *extrinsic* sundries that might interfere with a causal process from counting. Even in those ideal conditions, therefore, if *T*'s corners were correctly counted, the result would not be three, because its own disposition would join with the counting to render it rectangular. Then (5) is not satisfied. This means that (1) does not entail (5). If so, Mumford's criterion is not troubled with the variant of Mellor's observation.

With a tricky triangle, no non-actual laws of nature are assumed. A particular triangular object is assumed to be such that if its corners are counted, it will become rectangular. I believe that the existence of such an object is compatible with our

[10] Let a 'nomic duplicate' of *x* be a perfect duplicate of *x* subject to the same laws of nature as *x*. Then what I mean by an (nomically) intrinsic disposition is this: *D* is a (nomically) intrinsic disposition iff for every pair *x* and *y* of nomic duplicates, *x* has *D* iff *y* has *D*.

actual laws of nature. Accordingly, that the ideal conditions include the requirement that the actual laws of nature obtain makes no difference to my argument that (5) is not satisfied.

Unfortunately, my defence of Mumford's criterion invites another strong objection to it, which goes as follows: it is easy to construct a counter-example similar to a tricky triangle that can serve against the claim that (3) entails (4) – *tricky sturdiness*. Imagine that an actual object *S* has exactly the same intrinsic properties as a fragile glass except that it has the intrinsic disposition to lose soon enough, if struck, the microstructure *M* it shares with a fragile glass. This case is the same as Martin's counter-example except that *S*'s intrinsic disposition takes the place of the sorcerer. It is clear that for tricky sturdiness, (4) is not satisfied. First of all, there are no extrinsic factors that might interfere with a causal process from striking. Secondly, no non-actual laws of nature are assumed. Therefore if *S* were struck in ideal conditions, it would not break, because its own disposition would join with the striking to throw away *M*. Consequently (4) is not satisfied. However, (3) is satisfied because *S* is fragile. If so, (3) does not entail (4). This being the case, we have to say that Mumford's criterion does not hold, since even the ascription of fragility does not entail Mumford's conditional conditional.

I disagree with this objection, because there is a sharp disparity between the two cases. On the one hand, I shall argue, tricky triangularity spells trouble for the claim that (1) entails (5) because *T* is triangular and therefore (1) is satisfied; on the other hand, tricky sturdiness spells no trouble for the claim that (3) entails (4), because *S* is not fragile and therefore (3) is not satisfied.

III. REFINEMENTS

What we are inclined to say about dispositional ascriptions is guided by two tests: the conditional test and the nomic duplicate test. The conditional test is roughly that whenever the following counterfactual conditional is true, we are inclined to believe that *x* has *D*: if *x* were to undergo the characteristic stimulus of *D*, it would exhibit the characteristic manifestation of *D*. Why are we inclined to think that a windowpane is fragile? The reason is that if it were struck, it would break. This conditional test should not be confused with the conditional analysis of dispositions or something like it. It is not intended to provide an analysis of what it means to say that *x* has *D*. It is merely intended to make it clear what guides what we say about dispositional ascriptions.

Sometimes the conditional test is misleading. For instance, G_{martin} would not break if struck. But it is clear that G_{martin} is fragile. Here comes in the nomic duplicate test, which I think trumps the conditional test when the two tests conflict.[11] It goes roughly that for most ordinary dispositions, when it is *clear enough* that a perfect

[11] I am sure that when Quine says, in *Word and Object* (MIT Press 1960), p. 224, that we can paraphrase '*x* is fragile' into 'There exists an object that stands in the relation of "alike in molecular structure" to *x* and breaks', he has something like the nomic duplicate test in mind. This point was brought to my attention by Stephen Mumford.

duplicate of *x* subject to the same laws of nature as *x* (a 'nomic duplicate of *x*') has *D*, we are inclined to believe that *x* has *D*; and that when it is *clear enough* that a nomic duplicate of *x* does not have *D*, we are inclined to believe that *x* does not have *D*.

Why are we inclined to believe that an iceberg on a distant planet is disposed to melt if heated? The reason is that it is sufficiently clear that its nomic duplicates on earth are disposed to melt if heated. This nomic duplicate test is particularly useful in such a tricky case as Martin's. As noted above, the conditional test delivers the verdict that G_{martin} is not fragile. However, the nomic duplicate test that trumps the conditional test delivers the contrary result, because it is clear enough that an unprotected nomic duplicate of G_{martin} is fragile. Therefore we are inclined to think that G_{martin} is fragile. Likewise, in Martin's case of reverse fink, where if a piece of steel were to be struck, straight away a sorcerer would render it fragile so that it would break, the conditional test delivers the verdict that it is fragile; yet this is overturned by the nomic duplicate test, since it is clear enough that a nomic duplicate of the steel in the vicinity of which no such sorcerer is operative is not fragile.[12]

I maintain that both the conditional and nomic duplicate tests are the two main sources of our judgements concerning dispositional ascriptions. Suppose that we try to determine if *x* has *D*. If the nomic duplicate test advises us to believe that *x* has *D*, then we are inclined to think that *x* has *D*, whatever the result of the conditional test may be. By the same token, if it advises us to believe that *x* does not have *D*, then we are inclined to think that *x* does not have *D*, whatever the result of the conditional test may be. What if it does not advise us to believe that *x* has *D* nor that *x* does not have *D*? Then the conditional test holds sway and our verdict depends on the result of this. Hence if the conditional test delivers the verdict that *x* has *D* and if the nomic duplicate test does not deliver to the contrary, then we must believe that *x* has *D*. Similarly, if the conditional test delivers the verdict that *x* does not have *D* and if the nomic duplicate test does not deliver to the contrary, then we must believe that *x* does not have *D*.

In the case of tricky sturdiness, *S* would not break if struck, because straight away it would lose *M*. This means that the conditional test gives the verdict that *S* is not fragile. One might think that the nomic duplicate test that trumps the conditional test gives the contrary verdict, since *S* is supposed to have almost the same intrinsic properties as a fragile glass. But this is not the case. *S* is not disposed to retain the microstructure *M* in response to being struck. But this disposition is essential for ordinary glasses to be fragile. Therefore, given the plausible assumption that it is an intrinsic disposition, no ordinary glass can be a nomic duplicate of *S*, because if two objects are different with respect to an intrinsic disposition, then they cannot be nomic duplicates of each other.

[12] The rationale of the nomic duplicate test is grounded in the fact that most ordinary dispositions such as fragility and water-solubility are intrinsic dispositions. Since some genuine dispositions are extrinsic, as J. McKitrick, 'A Case for Extrinsic Dispositions', *Australasian Journal of Philosophy* 81 (2003), pp. 155–74, correctly argues, the nomic duplicate test does not apply to every disposition. But I believe that most of those dispositions for which we have simple predicates in our natural language are intrinsic dispositions and that the nomic duplicate test applies to them.

Are there any other (actual or merely possible) candidates for nomic duplicates of *S* that are clearly fragile? Suppose an angel is operative in the vicinity of a nomic duplicate *S** of *S*, who would, if *S** were struck, get rid of its disposition to lose *M* before it manifests this. In this case, *S** would break if struck because it would retain *M*. Then is it clear enough that *S** is fragile? I am afraid not. Though *S** would break under its current circumstances, it would not break under the 'ordinary' circumstance where the angel is not operative. But we are familiar with ascribing fragility to objects that would break if struck under ordinary circumstances. Therefore *it is clear to us* that an object is fragile only if it would break under ordinary circumstances. (Here I do not mean to make the controversial claim that an object is fragile only if it would break under ordinary circumstances. What I mean is that *it is clear to us* that an object is fragile only if it would break under ordinary circumstances, which I think is much more acceptable.) Consequently, though *S** is a nomic duplicate of *S*, it is not clear enough that *S** is fragile. Hence *S** does not serve sufficiently well as a nomic duplicate *x* of *S* for it to be clear enough that *x* is fragile.

Suppose there is an object S^+ very similar to *S* except that it has a different microstructure M^+ such that it would break if struck because of M^+, regardless of whether it retains *M* or not. Because it would not only break if struck under its current circumstances but also if struck under ordinary circumstances, we would say that it is fragile. But it is obvious that it cannot be a nomic duplicate of *S*, because it must have M^+ to be fragile, while *S* is supposed not to have M^+. What if we modify tricky sturdiness so that *S* is supposed to have M^+? Then *S* would be a nomic duplicate of the hypothetical object S^+. Therefore the nomic duplicate test recommends us to believe that *S* is fragile. However, in that case tricky sturdiness would no longer threaten Mumford's criterion. When *S* is supposed to have M^+, if it were struck in the ideal conditions it would break because of M^+. Consequently (4) would be satisfied, and hence tricky sturdiness would pose no threat to the claim that (3) entails (4) nor to Mumford's criterion.

As a result, it is reasonable to say that *S* has no such nomic duplicate *x* for which it is clear that *x* is fragile. It follows that the nomic duplicate test does not decide that *S* is fragile. Given that the conditional test gives the verdict that *S* is not fragile, the two tests jointly recommend us to believe that *S* is not fragile.[13] However, G_{martin} gets a different verdict. As stated above, the conditional test delivers the verdict that G_{martin} is not fragile, a result overturned by the nomic duplicate test, which recommends us to believe that G_{martin} is fragile. Therefore the two tests, and in particular the nomic duplicate test, gives us a good discrimination between G_{martin} and *S*.[14]

[13] The same conclusion follows for cases of intrinsic masking discussed by G. Molnar, 'Are Dispositions Reducible?', *The Philosophical Quarterly*, 49 (1999), pp. 1–17, at p. 5.

[14] Simon Blackburn, in his 'Circles, Finks, Smells and Biconditionals', in J.E. Tomberlin (ed.), *Philosophical Perspectives, 7: Language and Logic* (Atascadero: Ridgeview, 1993), pp. 259–79, at p. 264, considers a case like tricky sturdiness, and draws the conclusion that *S* is not fragile. I believe, however, that his argument for it is less convincing than mine. On his view, *S* is not fragile since *S* is *naturally such as to* fail to break in a condition where it is struck. But it is not clear at all how to construe the phrase 'naturally such as to' so that it provides a good discrimination between tricky sturdiness and Martin's counter-example.

In tricky sturdiness, (3) is not satisfied, since *S* is not fragile. Then Mumford's criterion for distinguishing between dispositional and categorical properties is not troubled with the fact that (4) is not satisfied. Therefore the attempt to construct an analogue of the tricky triangle which can serve as a counter-example against the claim that (3) entails (4) fails.

Here one might think that given that my argument that *S* is not fragile is successful, we can construct an analogous argument to the effect that *T* is not triangular, and therefore that tricky triangles pose no problem for the claim that (1) entails (5). To meet this objection, I need to reconsider the basic reason why we make the distinction between dispositional and categorical properties. When *x* has a categorical property, *x* has to exhibit some distinctive manifestation actually or occurrently without undergoing any stimulus. For example, a round object actually or occurrently exhibits a distinctive manifestation, i.e., its round shape, without undergoing any stimulus. Then we can say that *x* has a categorical property in so far as *x* actually or occurrently exhibits a certain distinctive manifestation. On the other hand, when *x* has a dispositional property, *x* does not have to exhibit a certain distinctive manifestation actually or occurrently. For example, a fragile object does not manifest fragility actually or occurrently without undergoing an appropriate stimulus; instead, it has to be such that it would exhibit a certain distinctive manifestation in response to being struck. Then we can say that *x* has a dispositional property in so far as it would exhibit a certain distinctive manifestation in response to an appropriate stimulus.

As noted above, *S* has exactly the same intrinsic properties as a fragile glass except that it has the intrinsic disposition to lose *M*, which it shares with a fragile glass, soon enough if struck. *S* has the intrinsic disposition to lose *M* if struck, in so far as it would exhibit a certain distinctive manifestation in response to being struck. Therefore this intrinsic disposition which *S* has, but a glass does not have, affects how *S* would respond to being struck. This means that *S* might exhibit a manifestation in response to being struck different from that which a fragile glass would exhibit. But *x* is fragile in so far as it would exhibit a certain distinctive manifestation in response to being struck. If so, it does not follow from the fact that *S* has almost the same microstructure as a fragile glass that *S* is fragile. In fact, I have pointed out above that *S* is not fragile, by the conditional and nomic duplicate tests.

The tricky triangle *T* is supposed to have exactly the same intrinsic properties as an ordinary triangle except that it has the intrinsic disposition to become rectangular soon enough if its corners are counted. *T* has the intrinsic disposition to become rectangular in so far as it would exhibit a certain manifestation in response to its corners' being counted. Therefore this intrinsic disposition which *T* has, but an ordinary triangle does not have, affects how *T* would respond to its corners' being counted. But it does not affect the actual or occurrent geometrical manifestations exhibited by *T*, because it is manifested only if *T*'s corners are counted. This means that *T* exhibits the same actual or occurrent geometrical manifestations as an ordinary triangle.

However, *x* is triangular in so far as it actually or occurrently exhibits a certain distinctive geometrical manifestation. Therefore it follows from the fact that *T* shares with an ordinary triangle the same actual or occurrent geometrical manifestations that *T* is triangular. If so, *T* is as triangular as an ordinary triangle is.

Here is a briefer version of my argument: *T* shares every intrinsic property with an ordinary triangle except its intrinsic disposition to become rectangular. But the intrinsic disposition to become rectangular is not itself a geometrical property but a disposition to gain a new geometrical property. This means that *T* shares every geometrical property with an ordinary triangle. If so, *T* is as triangular as an ordinary triangle is.

To conclude, *T* is triangular, and therefore this tricky triangle refutes the claim that (1) entails (5). It follows that no categorical ascriptions entail Mumford's conditional conditionals, since for every categorical property *P* it is easy to construct something like a tricky triangle which is such that the ascription of *P* does not entail the corresponding conditional conditional. So Mumford's criterion for distinguishing between dispositional and categorical properties is more defensible than has been thought by its critics.[15]

Seoul National University

[15] I have defended Mumford's criterion against the most likely objections, but this should not be taken as a final endorsement of it: see, for example, a further criticism by J. Carroll, review of Mumford's *Dispositions*, *Philosophical Review*, 100 (2001), pp. 82–4, at p. 83.

Thanks to Stephen Mumford, Ann Whittle and two anonymous referees for useful comments on the earlier drafts of this paper. Special thanks are due to Alexander Bird for his thoughtful advice and kind encouragement.