

# RECENT WORK

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## *Recent Work: Dispositions*

TROY CROSS

Controversy about dispositions ranges over the following four domains: (i) the semantics of disposition ascriptions; (ii) the distinction between dispositional and categorical properties; (iii) the metaphysical status of dispositions, i.e. their fundamentality, naturalness and intrinsicness; and (iv) the various dispositional analyses of philosophical notions like causation, laws, modality, counterfactuals, chance, knowledge, freedom, belief, desire and colour. While the proper order of investigation among these areas is itself a matter of dispute (Heil 2003: 51), the semantics of disposition ascriptions is the *de facto* point of entry.

The traditional approach to disposition ascriptions found, for instance, in Ryle (2000) and Goodman (1983), evaluates ascriptions of conventional dispositional predicates by appeal to a corresponding subjunctive conditional. The approach may be broken down into two distinct steps (Lewis 1997). In the first, a conventional dispositional predicate, *D*, is associated with characteristic stimulation conditions, *C*, and manifestation conditions, *M* such that an object *x* has *D* iff *x* is disposed to *M* in *C*. In the second, this overtly dispositional locution is analysed in terms of a subjunctive conditional: if *x* were in *C*, *x* would *M*. Taking the two steps together one might, for example, first associate ‘... is fragile’ with the disposition to break when struck, and then analyse an object’s disposition to break when struck as its being such that if it were struck, it would break.

This orthodoxy about disposition ascriptions influenced the dominant views in the related areas (ii)–(iv) mentioned above as well. The special connection between dispositions and subjunctive conditionals suggested a criterion for distinguishing dispositional from categorical properties: the former but not the latter were necessarily tied to the truth of certain subjunctive conditionals (Prior 1982). Further, if, as it was hoped, subjunctive conditionals could be given truth conditions in purely categorical terms, dispositions could be eliminated from fundamental ontology and replaced with purely categorical properties, or perhaps categorical properties together with laws of nature (Armstrong 1996: 15–18). Finally, it was a working assumption, hardly worth mentioning, that dispositional analyses of various philosophical concepts should be judged by appeal to the relevant subjunctive conditionals.

This traditional approach and all of its associated views came under attack in the nineties. C.B. Martin (1994) imagined a dead wire, one that is not disposed to conduct electricity, which is connected to what he calls an ‘electro-fink’ device. The electro-fink senses whether the wire is about to be touched. If it is about to be touched, the device makes the wire conductive. Thus, when untouched, the wire is, intuitively, not conductive, even though if it was touched, it would conduct electricity. Martin imagined, further, that the electro-fink can be thrown into reverse, so that it keeps a wire live only until it senses that the wire is about to be touched, creating problems for the traditional analysis in both directions.

Martin’s counter-examples were joined by another sort, due to Smith (1977), Johnston (1992) and Bird (1998), known as ‘maskers’ and ‘mimickers’. Whereas Martin’s so-called ‘finkish’ cases featured an object gaining (or losing) a disposition when the activation conditions for that disposition obtain, masking and mimicking cases made use of the external factors to interfere with the connections between dispositions and their associated conditionals. For example, a glass packed in styrofoam would not break if dropped, even though the glass is fragile and would remain fragile if dropped: the packing materials thus ‘mask’ the glass’s fragility. Likewise, if a concrete block is guarded by someone who would smash it with a sledgehammer if it was dropped, the block would break if dropped, even though it is not fragile. The smasher thus ‘mimics’ fragility.

Recent literature on dispositions can be characterized helpfully, if imperfectly, as a continuing reaction to this family of counter-examples. One popular response, Martin’s (1997) own, is to start afresh in areas (ii)–(iv), for instance, building dispositions directly into fundamental ontology and then attempting to analyse other key metaphysical notions in terms of them, opposite the usual practice.<sup>1</sup> Call this the ‘dispositions first’ reaction.

Recent book-length exercises in dispositions-first ontology include Mumford (1998, 2004), Ellis (2001), Bird (2007), Molnar (2007) and Martin (2008), and recent collections of essays on dispositions such as Kistler and Gnessounou (2007), Damschen et al.(2009), Handfield (2009) and Marmodoro (2010) are also composed, in large part, of contributions in the ‘dispositions-first’ spirit, though some contributors also criticize the movement. Views typical of a dispositions-first ontology include dispositional essentialism, the thesis that at least some fundamental properties

1 Note that while the demise of the traditional subjunctive conditional analysis triggered the emergence of *dispositions-first* ontology, the connections I have made between areas (i) and (ii)–(iv) are historical, not logical. As Manley (2011) notes, to say that dispositions and conditionals are linked by necessary biconditionals is not yet to endorse a reduction in either direction. Moreover, if there is no such linkage, it may still be that dispositions supervene on the distribution of categorical properties and laws.

have dispositional, causal or nomic essences (Ellis 2010) and dispositional monism, the view that all fundamental properties have such essences (Bird 2007; Bostock 2008; McKittrick 2003).

After building dispositions in the ontological foundation, disposition-first types put them to work. They typically take the laws of nature to be metaphysically necessary, mere reflections of the dispositional essences of fundamental properties (Bird 2005; McKittrick 2010).<sup>2</sup> Causation is then analysed in terms of the manifestation of dispositions (Mumford 2011). Counterfactuals are typically given a dispositional semantics (Ellis 2001: 282; Handfield 2004).<sup>3</sup> More ambitious still, possibility and necessity generally are analysed in terms of actual dispositions and capacities (Borghini and Williams 2008; Pruss 2002; Jacobs 2009).

The other main reaction to the Martin-style counter-examples was to save the traditional conditionals-based approach, usually in modified form. This strand of the dialectic began with Lewis's (1997) so-called 'reformed conditional analysis' according to which, very roughly, an object  $x$  is disposed to  $M$  in  $C$  just in case it has an intrinsic property  $P$  which, if it were retained by  $x$  for a sufficiently long period and  $x$  were in  $C$ ,  $x$  would  $M$  in virtue of  $P$ . Lewis's (1998) proposal was widely taken to fail in the face of Bird's masking cases, called 'antidotes'.<sup>4</sup> A poison taken with its antidote may fail to kill when ingested, and without any change in its intrinsic character.

Lewis's gambit on behalf of conditional analyses was soon followed by another sort that invokes a qualifier of some kind to rule out the offending cases; call them 'qualified conditional analyses'. Malzkorn (2000) restricts the conditions under which a fragile object, say, would break when struck to *normal conditions*, where masks, mimics, finks and the like are taken to be abnormal. Mumford (1998) proposes, similarly, that the relevant restriction is to *ideal conditions*, while Steinberg (2010) invokes a *ceteris paribus* clause. The standard complaint against all such attempts at qualification is that they must either leave their qualifications bare and then face the charge of triviality – the abnormal or non-ideal or non-normal seems to be nothing more than the cases where if  $x$  were in  $C$ ,  $x$  would

2 Though Mumford (2004) thinks the upshot is that there are no laws, since laws must, by their very nature, govern the unfolding of events, and dispositions do not require governance.

3 For criticisms of the dispositional essentialist analysis of counterfactuals see Eagle (2009) and for criticism of the dispositional analysis of laws see Corry (2010) and Lange (2009a, b). I lack the space to discuss these, as well as general objections to dispositions-first ontologies, e.g. the regress problem or the objection from unmanifested dispositions (Psillos 2006; Bauer 2010; Bird 1998; Blackburn 1990).

4 Lewis's account still figures prominently in the literature, and has found a recent defence in Lee (2010).

not  $M$  – or else they must flesh out the qualification into a substantive proposal, and thereby risk further counter-examples that come in endless varieties (Martin 1994: 5–6; Yli-Vakkuri 2010). Whether the dilemma is genuine or whether context resolves it remains a matter of controversy (see footnote 6).

A related approach defends, in unqualified form, the second step of the traditional analysis, which gets called the ‘simple conditional analysis’:

(SCA):  $x$  is disposed to  $M$  in  $C$  iff  $x$  would  $M$  if  $x$  were in  $C$ .

Gundersen (2002) and Bonevac et al. (2006) defend (SCA) by appeal to non-standard semantics for subjunctive conditionals. According to Gundersen (2002: 391), when we consider whether  $x$  would  $M$  if  $x$  were in  $C$ , we already understand this conditional relative to a set of standard background conditions and thus, there is no need to add an explicit *ceteris paribus* clause. Even if an object with a masked disposition is *actually* put into its characteristic stimulus conditions  $C$  and fails to manifest  $M$ , on semantics like Gundersen’s, the subjunctive conditional, ‘If  $x$  were put in  $C$ , it would  $M$ ’ is true. Semantics that underwrite such a strategy, and to which Bonevac et al. appeal (Gundersen 2004; Murreau 1997), have some odd consequences, noted in Manley and Wasserman (2011), and it is unclear that they make any real headway on the dilemma faced by the qualified analyses simply by building the qualifier into the semantics for the conditional itself. But apart from their imperfect fit with ordinary usage, these semantics do suffice to address the original finkish and masking cases.

Another defense of (SCA) is due to Choi (2008). Unlike Gundersen and Bonevac et al., Choi employs a standard ‘strongly centered’ semantics for disposition ascriptions, but he separately considers the two steps of the traditional approach. Choi grants that cases of finks, masks and mimics show that an object can be fragile even though it would not break if struck. Still, he says an object is disposed to break when struck if and only if it would break if it was struck (2008: 796–803). The culprit is not step two of the traditional approach, but step one: it is not the case that an object is fragile if and only if it is disposed to break when struck. While simple striking and breaking are the ‘characteristic’ stimulus and manifestation conditions for fragility, they are not the relevant test conditions for fragility; those are, rather, the *fragility-specific stimulating circumstances*, where fragility-specific stimulating circumstances are understood to be circumstances in which striking takes place ‘in the absence of fragility-antidotes, fragility-mimickers and so on’ (Choi 2008: 808). As (SCA) would have it, a disposition to break in the fragility-specific stimulating circumstances is tied down neatly to a corresponding conditional and it is, by design, free of Martin-style counter-examples. Again, though, one wonders how appealing to ‘fragility-specific stimulating circumstances’ avoids the triviality/falsehood

dilemma, and in particular the triviality horn, any better than the qualified accounts.<sup>5</sup>

Manley and Wasserman (2007, 2008) raise further difficulties for conditional analyses. First, they notice that dispositions come in degrees, e.g. we say an object is ‘somewhat’ or ‘very’ fragile and that dispositional predicates function as comparatives, e.g.  $x$  is ‘more fragile than’  $y$  (2007: 70). Subjunctive conditionals, by contrast, are neither gradable nor comparative. Relatedly, Manley and Wasserman draw attention to a new family of counter-examples. Non-fragile objects may be immune from breaking under most conditions, but when struck at just the right angle and pressure, they break (2008: 69–70). Likewise, fragile objects may fail to break if struck from a certain angle and with a certain force, though in almost all other circumstances they would break. It is hard to see how any specification of normal or ideal or *ceteris paribus* conditions, or of ‘fragility-specific stimulating conditions’ could rule them out; they are ordinary cases for testing fragility. But if not ruled out, they will foil conditional analyses, at least on the standard semantics for subjunctive conditionals. For, if in some ordinary conditions but not others a fragile glass would not break if dropped, then it seems wrong to say flatly that it would break if dropped in ordinary conditions. Manley and Wasserman (2008: 72) raise another worry: many dispositions, e.g. irascibility and loquaciousness, seem to lack characteristic stimulus conditions altogether, another poor fit with conditional analyses.

Instead of adding a qualifier to the standard conditional analysis, Manley and Wasserman (2008: 76) offer the following:

(PROP) Object  $x$  is disposed to  $M$  when  $C$  iff  $x$  would  $M$  in some suitable proportion of  $C$ -cases.

(PROP) addresses finkish and masking cases because the many possible non-finkish, non-masking  $C$ -cases overwhelm the masking and finkish  $C$ -cases in the final tally of possibilities. (PROP) is also easily transformed into a comparative or degree-theoretic formulation and can easily characterize dispositions with no stimulus conditions, by letting ‘ $C$ ’ cover all cases. Of course, (PROP) itself must be interpreted, and an interpretation is not straightforward. As Manley and Wasserman (2008: 78–82) note, whether an infinite set of possibilities constitutes a ‘suitable proportion’ or not

5 For reasons of space, I cannot discuss another important approach to disposition ascriptions, Michael Fara’s (2005), which gives a non-conditional analysis of disposition descriptions in terms of habituels: an object is disposed to  $M$  when  $C$  iff it has an intrinsic property in virtue of which it  $M$ s when  $C$ . For criticisms of Fara’s view, see Anthony (2010: 69–82) and Yli-Vakkuri (2010). Fara’s (2006) excellent overview of the dispositions debate also deserves mention here. Along with Bird (2010) it is a natural starting place for anyone new to the literature.

depends in complex and subtle ways on how we weight a number of factors, and will vary from context to context.<sup>6</sup>

The front line of the battle between conditional analysts and disposition firsters is the dispute over so-called ‘intrinsic finks’ and ‘intrinsic masks’ (Ashwell 2010; Clarke 2008; Clarke 2010; Everett 2009). In standard finking and masking cases the fink or mask (e.g. the electro-fink device or the styro-foam) is extrinsic to the object (e.g. the wire or the glass), but Ashwell, Everett and Clark argue that masks can be intrinsic features of the very object whose disposition is masked. Ashwell, following Johnston (1992), gives the following example of an intrinsic fink (Blushing Chameleon):

A chameleon may be green, yet be so shy (and remarkably intuitive) that it would blush bright red if someone were about to view it. Although in the dark the chameleon is green, it loses this dispositional property – this disposition is finked – should it enter into a viewing situation. The disposition associated with greenness is lost in virtue of interference from properties intrinsic to the chameleon – its shyness, intuitiveness, and ability to blush – so we have an intrinsic fink (Ashwell 2010: 642).

Such cases are heavily disputed, but if accepted, they pose serious problems for conditional analyses (Choi 2011; Cohen and Handfield 2006; Handfield and Bird 2007). In either ordinary, *ceteris paribus* or ideal conditions, the chameleon is still shy, intuitive and blushing, and thus would not look green, but red to ordinary observers. The proportion of cases in which the chameleon is viewed and looks green is also negligible, though perhaps the rare cases in which the chameleon loses its defensive mechanisms are somehow heavily weighted.<sup>7</sup>

More is at stake than the fate of conditional analyses, however. Returning to area (iv) mentioned above, unsolved cases of finks and masks like Ashwell’s not only foil conditional analyses but also our instinctive method of judging dispositional analyses by appeal to conditionals. Famous counter-examples to dispositional or counterfactual theories must be revisited and re-evaluated with this disconnect in mind: one might have the

6 Context dependence is a feature of earlier accounts as well, (Cross 2005: 325; Mumford 1998: 89; Prior 1985). An example due to Ryan Wasserman will illustrate the intuitive appeal: ‘Gulliver, returning from his travels, says “Lilliputian chairs are very fragile”. The Lilliputians, proud of their craftsmanship, say to each other: ‘Our chairs are not like those of our shoddy neighbors. They are not fragile at all’ (Hawthorne and Manley 2005: 182). Gulliver and the Lilliputians both speak truly while one affirms and the other denies the same sentence, a strong marker of context dependence. Yet mere contextualism alone does not obviously solve the problem of finks (Choi 2011).

7 This will depend, obviously, on the details of the contextual mechanism underlying (PROP). Note that this mechanism, if left unspecified, risks the kind of uninformative worry that haunted earlier qualified conditional analyses; it could allow any judgement whatsoever, after the fact, about whether the analysis is satisfied.

ability to do otherwise not only if a neuroscientist, but even some part of one's own brain, would prevent one from doing anything other than what one does (Clarke 2009; Fara 2008; Haji 2008). For in such a case, one's ability is merely masked. Thus, it is consistent to hold that free action requires the ability to do otherwise while also holding that there are cases, masking cases, in which one would be prevented from doing otherwise. Likewise, one might be disposed to add, even though one would actually perform 'quaddition' in ordinary conditions (Martin and Heil 1998). One's 'quadding' might not reflect one's dispositions, but rather, the interference of a fink. Finally, one might be disposed to believe  $p$  only if  $p$  even though if  $p$  were false, one would still believe it (Gundersen 2010). Gundersen argues that all of the counter-examples to Nozick's counterfactual theory of knowledge are cases of finks or masks and do not, therefore, apply to the corresponding dispositional analysis of knowledge, i.e. that knowledge is the manifestation of a disposition to believe truths (2010).

If cases like Ashwell's are incoherent and only extrinsic finks and masks are possible, as Choi (2011) argues, then the putative counterexamples can simply be used to tighten the subjunctive conditionals in the relevant analyses themselves, perhaps with *ceteris paribus* clauses. Such a restriction would also have direct consequences for the philosophical analyses in question. For instance, one might have the ability to do otherwise even if a neuroscientist was poised to prevent one from doing otherwise, but one would not have the ability to do otherwise if the preventing mechanism was a part of oneself. If intrinsic finks are allowed, however, then what one *would* do in various circumstances – presupposing, as all parties to the dispute do, that one is intrinsically the same in such circumstances – is not decisive on the question of what dispositions one has.

Traditionalists will protest that unmoored from conditionals, dispositional theories of freedom, meaning, belief and the like are impossible to evaluate. Putative counter-examples may be dismissed as finks, masks or mimics whenever convenient. Opponents of conditional analyses will no doubt reply that we have direct and substantive intuitions about dispositions and that we need no detour through subjunctive conditionals to reach our verdicts about dispositional theories. Such a debate will be put to rest only if some conditional-friendly theory is widely acknowledged to be free from counter-examples.<sup>8</sup>

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