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Do Extrinsic Dispositions Need Extrinsic Causal Bases?

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In this paper, I distinguish two often-conflated theses—the thesis that *all dispositions* are intrinsic properties and the thesis that *the causal bases of all dispositions* are intrinsic properties—and argue that the falsity of the former does not entail the falsity of the latter. In particular, I argue that extrinsic dispositions are a counterexample to first thesis but not necessarily to the second thesis, because an extrinsic disposition does not need to include any extrinsic property in its causal basis. I conclude by drawing some general lessons about the nature of dispositions and their relation to their causal bases.

I

Most philosophers today believe that objects have dispositions. This porcelain teacup, for example, is fragile. Many also agree that every disposition has a causal basis—i.e. a cluster of properties that “underpins” the disposition. The teacup, for example, is fragile in virtue of its being made of porcelain (and not of, say, its being white). Finally, quite a few seem to follow David Lewis in believing that dispositions are “an intrinsic matter” (Lewis 1997, p.147 and p.155).¹

In this paper, I first distinguish two theses, which I shall call the *Intrinsic Dispositions Thesis* (or IDT) and the *Intrinsic Bases Thesis* (or IBT) and then argue that the falsity of the first does not entail the falsity of the second. In particular, I argue that contrary to what is usually assumed, extrinsic dispositions are not necessarily a counterexample to IBT. I conclude by drawing some more general morals about dispositions and their relation to their causal bases.

¹ The notion of intrinsicness is one of those philosophical notions that is as intuitive as it is elusive. It is beyond the scope of this paper to probe the tenability of the distinction between intrinsic and extrinsic properties. Here, I will assume that we can make philosophical sense of that distinction and that our intuitive judgements about paradigmatic cases of intrinsic and extrinsic properties are typically correct—so that properties such as the shape, the mass and the material an object is made of are all intrinsic properties of that object, while, say, its relative position is not.

II

Lewis' remark that dispositions are "an intrinsic matter" seems to be amenable to at least two readings.² On the first reading, which I will refer to as the *Intrinsic Dispositions Thesis* (IDT), 'dispositions are intrinsic properties of their bearers' (Molnar 1999, p.3). On the second reading, which I shall call the *Intrinsic Bases Thesis* (IBT), it is *the causal bases* of dispositions (and not necessarily the dispositions themselves) that are intrinsic properties of their bearers. The underlying idea is that, as John Heil puts it, 'what an object is disposed to do depends on its overall intrinsic make-up' (Heil 2003, p.131 n.8).

IDT and IBT have often been conflated and most philosophers seem to agree that, *if* there are any extrinsic dispositions, *then* they are a counterexample to both IDT and IBT.³ This, I suspect, is mainly due to the fact that it is widely assumed that (i) an extrinsic disposition would be one that an object can acquire or lose without undergoing any change in its intrinsic properties and that (ii) a disposition cannot be extrinsic unless its causal basis includes some extrinsic property. This last assumption, however, is false, or so I shall argue in this paper—the causal basis of a disposition does not need to include any extrinsic property in order for the disposition to be extrinsic. In the rest of this paper, I shall focus on what has become a standard example of an extrinsic disposition and argue that its basis does not contain any intrinsic properties.

III

In arguing that some dispositions are extrinsic, Jennifer McKittrick (2003) considers an example originally due to Sidney Shoemaker (see (Shoemaker 1980))—i.e. the disposition of one of the keys on Shoemaker's key-ring (call it 'Key') to open the front door to Shoemaker's house (call it 'Door').⁴ More specifically, the relevant disposition is not the disposition Key has to unlock the type of lock (call them 'K-locks') to which the particular lock that happens to be installed on Door (call it 'Lock') belongs, but the disposition Key has to unlock whatever lock happens to be installed on Door—a disposition which Key would lose if Lock were to be replaced by a lock that is not a K-lock. In the rest of this paper, I shall call this disposition 'the disposition to open Door' (as opposed to 'the disposition to unlock K-locks') and I shall assume that its stimulus condition is *Key's being inserted in the lock on Door and turned* and that its manifestation is *Door's opening*.

Now, call a disposition 'extrinsic' if something can acquire it or lose it without undergoing any change in its intrinsic properties. Since, if Lock were to be replaced by a different lock that is not a K-lock (call it 'Lock*'), Key would seem to lose the disposition to open Door without undergoing any change in its intrinsic properties, Key's disposition

² The distinction between IBT and IDT has already been noted, among others, by Micheal Fara (2008).

³ As Michael Fara (2008) notes, Lewis himself oscillates from one reading to the other (favouring the IDT reading on one occasion (Lewis 1996, p.147) and the IBT reading on the other (Lewis 1997, p.155)) and ultimately seems to endorse both IDT and IBT.

⁴ It is worth noting that Shoemaker did not intend this to be as an example of an extrinsic disposition but as an example of what he called a "mere Cambridge" property.

to open Door (unlike its disposition to unlock K-locks) would seem to be an extrinsic disposition and, as such, a counterexample to IDT.

In order to avoid the above conclusion, the supporters of IDT (as well as those of IBT) may be tempted to deny that Key's disposition to open Door is a genuine disposition. In particular, they may be tempted to claim that Key is not genuinely disposed to open Door—it is only disposed to unlock K-locks—and that, although, as long as a K-lock is installed on Door, it may look like Key is also disposed to open Door, this is no genuine disposition of Key—it is only a “pseudo-disposition”. But how can such a differential treatment of the dispositions to unlock K-locks and to open Door be justified?

I think it can't, but, since the main purpose of this paper is to argue that IBT can be true even if IDT is false and not to argue that IDT is false, I shall only discuss my reasons for thinking so briefly here (only to suggest that IBT should not be defended by defending IDT and to support some of the more general conclusions about dispositions and their bases that I want to draw from my defense of IBT).

Before discussing how one may try to justify the differential treatment of that Key's dispositions to unlock K-locks and to open Door, however, it is important to distinguish between moderate and extreme realists about dispositions. *Extreme realists* maintain that dispositions are properties of the objects that have them and think that, if true, $\langle o$ is disposed to M when $S \rangle$ is made true by (something along the lines of) o 's instantiating a certain property—that of *being disposed to M when S* .

Moderate realists like me, on the other hand, deny that dispositions are properties and maintain that, if true, $\langle o$ is disposed to M when $S \rangle$ is made true by something other than o 's having the alleged dispositional property *being disposed to M when S* .^{5,6} Moderate realists may think that this “something” includes the properties of o that act as the causal basis of o 's disposition to M when S and, although I favor a different view of the truthmakers of disposition ascriptions, for the sake of simplicity, I shall adopt this view here.

From this brief outline of the two positions, it should be already clear that those who want to subject the disposition to unlock K-locks and that to open Door to differential treatment are likely to favor extreme realism over moderate realism, for moderate realism would not seem to provide us with any principled reason for taking Key's disposition to open Door any less seriously than its disposition to unlock K-locks. Moderate realists like me think that all there is to o 's being disposed to M when S is that something makes it true that o is disposed to M when S and, since it is no less true of Key that it is disposed

⁵ Some may protest that what I call “moderate realism about dispositions” is no realism about dispositions at all. Whether or not that is the case, of course, depends on what it takes for one to be a realist about the F s. I think that what I call moderate realism is a form of realism about disposition insofar as it assumes that there is a fact of the matter as to whether or not o is disposed to M when S . If one were to insist that this is not enough to be a realist about dispositions and that realism about disposition requires ontological commitment to dispositional properties, I would be happy to give up what I ultimately consider nothing more than a convenient label for the position I hold.

⁶ I should note that, as I use the terminology here, the denial of the existence of dispositional properties is compatible with the view, which I also happen to hold, that the fundamental sparse properties are powers—i.e. they are such that their possession necessitates the truth of certain counterfactual conditionals.

to open Door than it is true of it that it is disposed to unlock K-locks, any differential treatment of these two dispositions would seem to be unwarranted. Moderate realism, thus, gives us no grounds for denying that some dispositions are extrinsic (where, according to moderate realists, *o*'s disposition to *M* when *S* is extrinsic if and only if the truth-value of $\langle o \text{ is disposed to } M \text{ when } S \rangle$ could change without *o* undergoing any intrinsic change) and, so, moderate realists (at least *qua* moderate realists) should have no qualms about rejecting IDT as false.⁷

Extreme realists, on the other hand, may seem to be able to justify the differential treatment of the disposition to unlock K-locks and that to open Door by simply claiming that Key has the dispositional property of *being disposed to unlock K-locks* but not that of *being disposed to open Door*, because there is no such dispositional property to be had. But how can one plausibly support such a claim?

At first, it might seem possible to defend it by maintaining that Key's disposition to open Door is entirely "parasitic" on its disposition to unlock K-locks. However, when one tries to spell this proposal out in more detail, it does not seem to stand up to scrutiny. For example, one may think that the disposition to open Door is parasitic on the disposition to unlock K-locks because Key is disposed to open Door only if it is also disposed to unlock K-locks. However, strictly speaking, this is not true. In principle, it would be possible for Key to be disposed to open Door without being disposed to unlock K-locks. If, for example, Lock were to be replaced by Lock* and Key underwent a suitable change in shape, Key would seem to retain its disposition to open Door while losing its disposition to unlock K-locks and acquiring the disposition to unlock K*-locks.

One may be tempted to claim that the disposition to open Door is parasitic because it always needs to "piggyback" on some intrinsic disposition. Key, for example, cannot be disposed to open Door without having a disposition to unlock whatever lock happens to be installed on Door. However, on the one hand, if this was the case, it would not be clear why one would have to think that the disposition to open Door "piggybacks" on the disposition to unlock the lock that is installed on Door rather than thinking that both dispositions "piggyback" on those properties of Key that act as the common causal basis of both dispositions. On the other hand, it would seem that pretty much the same could be said of the disposition to unlock K-locks—after all, just like Key cannot be disposed to open Door without being disposed to unlock the lock that happens to be installed on Door, it cannot be disposed to unlock the lock that happens to be mounted on Door without, say, being sufficiently rigid so as to retain its shape when inserted in the lock and turned.

In any case, even if extreme realists were able to provide us with principled reasons, their claim that no dispositional property corresponds to the predicate 'x is disposed to open Door', there still seem to be an obvious sense in which Key would seem to satisfy that predicate. For example, it seems to be true of Key, that (assuming no finks, masks, or antidotes are operating), if it were to be inserted into the lock on Door and turned, Door would open and, therefore, if something along the lines of the conditional analysis of

⁷ And not just because dispositions are not properties, then *a fortiori* they are not intrinsic properties.

disposition ascriptions is true, there would seem to be no good reason to deny that it is true after all that Key is disposed to open Door.

But if it is true and if, as extreme realists think, disposition ascriptions are made true by the possession of dispositional properties, what would make it true that Key is disposed to open Door? As far as I can see, extreme realists would either have to deny that it is true that Key is disposed to open Door (a move which would seem to be *ad hoc*) or they would have to maintain that what makes it true is something other than a dispositional property (in which case it is not clear why think that the ascription of an intrinsic disposition to an object cannot also be made true by something other than a dispositional property).

The above arguments are far from conclusive but, since, as I said, the main purpose of this paper is to argue that IBT does not stand or fall with IDT and *not* to argue against extreme realism or IDT, I shall assume that they provide us with some *prima facie* reasons for thinking that extrinsic dispositions should be taken as seriously as intrinsic ones and that, therefore, it is not advisable to try to defend IBT by denying that dispositions can be extrinsic. But how can IBT be defended then?

IV

IDT is false, or so I have argued, but does the falsity of IDT entail the falsity of IBT? *Prima facie*, there would seem to be good reasons to think so. According to the original definition of ‘causal basis’, which I shall refer to as CB,

The causal basis of a “sure-fire” disposition is ‘[...] the property or property-complex of the object that, together with [the stimulus conditions of the disposition] is the causally operative sufficient condition for the manifestation [of the disposition]’ (Prior, Pargetter and Jackson 1982, p.251).

According to CB, in order to determine what the causal basis of Key’s disposition to open Door is we need to determine what, together with the obtaining of the stimulus, would be part of the causally operative sufficient condition for the manifestation of the disposition if those stimulus conditions were to obtain (and, we should add, the disposition manifested itself).

Since I have assumed that the stimulus condition of Key’s disposition to open Door is *Key’s being properly inserted in the lock on Door and turned* and its manifestation is *Door’s opening*, the question then becomes: ‘Assuming that Key is properly inserted in the lock on Door and turned on some particular occasion and that, as a result, Door opens, what is the causally operative sufficient condition for *Door’s opening* on that particular occasion?’

To see what the answer to this question may be, consider a rough explanation of the workings of a regular pin-and-tumbler lock. Whenever a key is inserted in a pin-and-tumbler lock, the notches on the key cause the pins inside the lock to move up in their casing. If, in doing so, the pins align at the shear point (see Figure 1), then the tumbler will be able to turn inside the casing pulling the bolt inside the door and leaving the door free to open. If, on the other hand, the notches on the key are such that, when the key is inserted in the lock, the pins do not align at the shear point (see Figure 2), the pins will prevent the tumbler from turning in the tumbler casing and the bolt will prevent the door from opening.

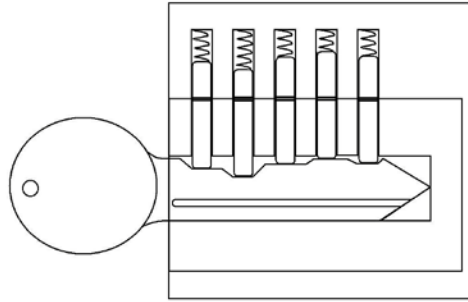


Figure 1

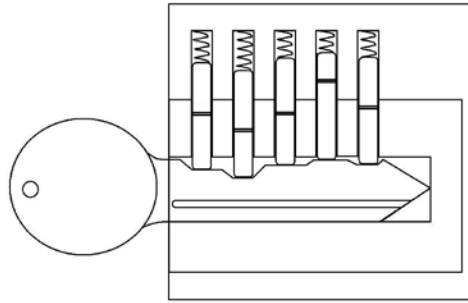


Figure 2

As this rough explanation of the workings of a pin-and-tumbler lock suggests, insofar as Key is disposed to open Door, this is largely due to its shape (call it 'K') (and its rigidity). As long as Key is disposed to open Door, any (sufficiently rigid) object with (roughly) the same shape as Key, no matter how unlike Key in other respects, would also seem to be disposed to open Door. Since I take it that shape is a prototypical example of an intrinsic property⁸ (and that rigidity is an intrinsic disposition whose causal basis encompasses only intrinsic properties), it is tempting to think that all the properties that act as the causal basis of Key's disposition to open Door are intrinsic properties.

Call the view that all the properties that act as the causal basis of Key's disposition to open Door are intrinsic, 'the intrinsic view' and assume, for the sake of simplicity, that Key's shape is the only intrinsic property that is part of the causal basis of Key's disposition to open Door (ignoring any other intrinsic properties of Key that are part of the causal basis of its disposition to open Door).

Now the problem for the intrinsic view is that *Key's having shape K* together with the stimulus condition—*Key's being inserted in the lock on Door and turned*—do not form a sufficient condition for *Door's opening*, because, if the lock on Door was not a K-lock, Key's having shape K and being inserted in the lock on Door and turned would not be sufficient for Door to open. So, any sufficient condition for *Door's opening* would seem to have to include also something along the lines of *the lock on Door's being a K-lock*. But, if this is the case, then according to CB, Key's disposition to open Door would not seem to have a causal basis, for there would be no set of properties of Key such that Key's having those properties together with the obtaining of the stimulus condition would be sufficient for the disposition to manifest itself.

⁸ This, at least, seems to be the general consensus among analytic metaphysicians (see, e.g., (Lewis 1986: 205)). For a dissenting voice, see (Skow 2007), whose arguments I cannot address here.

I think that this is a good reason for thinking that CB needs to be (slightly) modified (as I propose in §VII below) so as to accommodate cases such as the one we are considering. Others, however, may take this to be a good reason for rejecting the intrinsic view in favor of what I shall call ‘the extrinsic view’. According to the extrinsic view, the causal basis of Key’s disposition to open Door includes some extrinsic property such as *being such that the lock on Door is a K-lock*. In the next two sections, I argue that the intrinsic view should be preferred to the extrinsic view.

V

According to the extrinsic view, the causal basis of Key’s disposition to open Door includes not only *having shape K* (and whatever other intrinsic properties both sides can agree are part of it) but also some extrinsic property of Key. For the sake of definiteness, I will focus on one possible candidate for the job—the alleged extrinsic property of *being such that the lock on Door is a K-lock*—and argue that it is unfit for the job.

Ultimately, I believe that what makes *being such that the lock on Door is a K-lock* unfit for the job is that, as anyone who holds a moderately sparse conception of properties would agree, there is no such property. However, since this is not the place to argue against abundant conceptions of properties, let me put my main worry to the side and focus instead on another worry—the worry that, even if such a property existed, it would not be causally efficacious and, more specifically, that it would not be included in the causally operative condition for Door’s opening as a result of Key being inserted in the lock on Door and turned.

The argument goes like this. In order to maintain that the causal basis of Key’s disposition to open Door includes *being such that the lock on Door is a K-lock*, the advocate of the extrinsic view would have to argue *either* that (a) the causally operative sufficient condition of *Door’s opening* includes *Key’s being such that the lock on Door is a K-lock* alongside *the lock on Door’s being a K-lock* or that (b) the causally operative sufficient condition of *Door’s opening* includes *Key’s being such that the lock on Door is a K-lock* instead of *the lock on Door’s being a K-lock*. Both alternatives, however, seem to be highly implausible.

Consider (a) first. I take it that the causally operative sufficient condition for *Door’s opening* is a minimal condition for it. If this was not the case, then the causally operative sufficient condition for *Door’s opening* may well include causally irrelevant factors such as *Key’s having a small rust spot on its bow*, *Shoemaker’s neighbor’s being bald*, and *its being Tuesday*. But then, if the causally operative sufficient condition for *Door’s opening* includes *the lock on Door’s being a K-lock*, it cannot include also *Key’s being such that the lock on Door is a K-lock*, for, since the latter cannot obtain unless the former obtains, any sufficient condition for *Door’s opening* that includes both would fail to be minimal.

Those who wish to maintain that the causally operative sufficient condition for *Door’s opening* includes *Key’s being such that the lock on Door is a K-lock* would therefore seem to have opt for (b) and argue that the minimal sufficient condition that is causally operative is one that includes *Key’s being such that the lock on Door is a K-lock* but not *the lock on Door’s being a K-lock*. But I cannot see any good reasons for thinking that the causally operative sufficient condition for *Door’s opening* would include the former rather than the latter. In fact, as far as I can see, there seem to be good reasons for thinking the opposite.

One of them is that *Key's being such that the lock on Door is a K-lock* seems to be entirely parasitic on the more fundamental *the lock on Door's being a K-lock*. *Key's being such that the lock on Door is a K-lock* depends on *the lock on Door's being a K-lock* but the latter does not depend on the former, for, whereas the former could not obtain without the latter obtaining, the latter could obtain without the former obtaining (if Key did not exist).

Another (somewhat related) reason is that, insofar as the lock on Door is a K-lock, *everything* would instantiate the alleged property of *being such that the lock on Door is a K-lock*. So, why would the causally operative sufficient condition be one of those that includes *Key's* instantiating that property instead of the one including, say, this red tomato's instantiating it?

One may be tempted to answer that the reason to prefer the one including *Key's being such that the lock on Door is a K-lock* over *this tomato's being such that the lock on Door is a K-lock* is that we are interested in determining what properties of *Key* (and not of the tomato) make *Key* disposed to open Door. But, in answering so, one would seem to be looking at the problem the wrong way around—in order to establish whether some property or other is part of the causal basis of *Key's* disposition to open Door, we seem to have to *first* establish what the causally operative sufficient condition for *Door's opening* would be (if the stimulus condition was to obtain and the disposition were to manifest itself) and *only then* determine which of *Key's* properties, if any, is part of it. So, it is not clear why our interests should determine which of various sufficient conditions for *Door's opening* would be the causally operative one on a particular occasion.

If our interests determined which of various sufficient conditions for *Door's opening* is the causally operative one, then it would seem that what the right answer to the question of which sufficient condition is the causally operative one would depend on whether, for example, we are interested in the causal basis of *Key's* disposition to open Door or in the causal basis of Door's disposition to be opened by *Key*. The supporters of the extrinsic view would seem to have to maintain that the causally operative sufficient condition for *Door's opening* on some particular occasion is the one including *Key's having shape K* and *Key's being such that the lock on Door is a K-lock* if we are interested in the causal basis of *Key's* disposition to open Door and the one including *Door's being such that Key has shape K* and *Door's having a K-lock installed on it* if we are interested in the causal basis of Door's disposition to be open by *Key*. But, what if we were not interested in the causal basis of either disposition and we were only interested in determining what the causally operative sufficient condition for *Door's opening* on some particular occasion is? Would there be a right answer to that question? If so, would the correct answer be the same as one of the above answers (and if so which one?) or would it be a different one? If not, why not? As far as I can see, the right answer to that question is always the same independently of whether we are interested in *Key's* disposition to open Door, Door's disposition to be opened by *Key*, or just the causally operative sufficient condition for *Door's opening* on a particular occasion—i.e. the causally operative sufficient condition for *Door's opening* is, in all three cases, the one that includes *Key's having shape K* and *the lock on Door's being a K-lock*.

These considerations seem to suggest that, even if there are extrinsic properties such as *being such that the lock on Door is a K-lock*, there is no good reasons to think that *Key's*

instantiating one of them is part of the causally operative sufficient condition for *Door's opening* or that one of them should be part of the causal basis of Key's disposition to open Door. Sympathizers of the extrinsic view, however, might still think that the extrinsic view has an explanatory advantage over the intrinsic view. In the next section, I shall argue that this is not the case.

VI

Those who are not entirely persuaded by the arguments in the previous section may think that the extrinsic view has still a considerable advantage over the intrinsic view when it comes to explaining how Key can lose the disposition to open Door without undergoing any intrinsic change. Suppose that Lock is replaced by Lock* (which is a K*-lock and not a K-lock) and that, as a result, Key loses its disposition to open Door. The extrinsic view could simply explain this loss by attributing it to the loss of one of the properties that were part of the causal basis of that disposition—the extrinsic property *being such that the lock on Door is a K-lock*.

On the intrinsic view, on the other hand, Key's losing its disposition to open Door cannot be attributed to the loss of any of the properties that used to act as the causal basis of that disposition, for according to the intrinsic view all such properties are intrinsic and, we have assumed, Key has undergone no intrinsic change. This may be taken to be evidence that those intrinsic properties are not the only properties that are part of the causal basis of Key's disposition to open Door, for, if they were, Key would retain that disposition as long as it has them.

I think this line of reasoning is based on a common misunderstanding of the notion of 'causal basis' (a misunderstanding that is encouraged by CB), but let me put this worry aside until the next section and argue instead that, although the extrinsic view may appear to have a better explanation of Key's losing its disposition to open Door in the lock-change scenario, on closer scrutiny, it is the intrinsic view that turns out to have the best explanation of Key's losing its disposition to open Door.

On the intrinsic view, the loss of the disposition to open Door is simply to be attributed to the fact that, as Lock is replaced by Lock*, the stimulus condition of the disposition to open Door is now satisfied by inserting Key in Lock* not in Lock, and that the very intrinsic properties of Key that caused the pins in Lock to align at the shear point and Lock to unlock when Key was inserted in it (most notably, Key's having shape K) are the properties that now cause the pins in Lock* not to align at the shear point and Lock* not to unlock when Key is inserted in it.

On the extrinsic view, on the other hand, the loss of the disposition to open Door is supposedly explained by the fact that, as Lock is replaced by Lock*, Key loses the extrinsic property *being such that the lock on Door is a K-lock*. This explanation, however, seems to be worse than the one offered by the intrinsic view on at least two counts. First, the extrinsic view's explanation is ontologically costlier than the intrinsic view's one because it commits one to the existence (and causal efficaciousness) of properties such as *being such that a K-lock is on Door*, properties whose existence we would have very little reason to postulate otherwise. Second, the extrinsic view's explanation seems to fly in the face of our most basic beliefs about how keys and locks work. For example, it seems to suggest that the fact that a certain key fails to open a certain door is not explained by its

shape but by the fact that some other lock (which the key would be able to open) is not installed on the door instead. But, of course, if a key fails to open a door, it is not because a different lock is not installed on that door (let alone because the key does not have the alleged property of *being such that such-and-such lock is installed on such-and-such door*)—it is because its shape is such that when the key is inserted in the lock that happens to be installed on that door the lock’s pins do not align at the shear point. To claim the contrary would be analogous to explaining why Kurt failed the logic test not on the basis of the fact that he doesn’t know enough logic but on the basis of the fact that the test was not a test about his favorite TV show.

Contrary to the appearances, it is thus the intrinsic view not the extrinsic one that, on at least two counts, has a better explanation of how Key can lose its disposition to open Door without undergoing intrinsic change. First, the intrinsic view’s explanation is simpler because it does not require commitment to the existence of properties such as *being such that a K-lock is on Door*. Second, the intrinsic view’s explanation, unlike the extrinsic view’s one, does not conflict with our ordinary explanations of why keys open or fail to open doors.

VII

So far, I have argued that, if one accepts CB, then, unless one has principled reasons for denying that some dispositions are extrinsic, one would either have to be committed to the existence and the causal efficaciousness of unnatural, extrinsic properties such as *being such that the lock on Door is a K-lock* or deny that extrinsic dispositions have causal bases, because there seems to be no set of intrinsic properties of the object whose possession by the object together with the stimulus conditions of the disposition is a sufficient condition for its manifestation.

If, like me, one is inclined to believe that neither of the last two options is satisfactory and that there are no good reasons to bar extrinsic dispositions, then the most palatable options seems to be that of relaxing CB so as to allow for extrinsic dispositions to have causal bases without having to concede that their bases include unnatural extrinsic properties, whose existence and causal efficacy are at least dubious.

One way to do so is to adopt the following slightly modified version of CB:

CB*. The causal basis of *o*’s disposition to *M* when *S* is the complex of properties of *o*, P_1, \dots, P_n , such that, if it were the case that *S* and *M*, then it would be the case that *o*’s having P_1, \dots, o ’s having P_n and *S* are part (and possibly a proper part) of⁹ the causally operative sufficient condition for *M*.

What is crucial to note is that, according to CB*, the possession of all of the properties that act as the causal basis of a certain disposition is not a sufficient condition for having the disposition and the object may acquire or lose a disposition without acquiring or

⁹ The notion of ‘part’ employed by CB* should be familiar. J. L. Makie, for example, uses the same notion in his definition of an INUS condition as ‘an insufficient but necessary *part* of a condition which is itself unnecessary but sufficient for the result’ (Mackie 1965: 246, emphasis added). According to this use, if $(P \ \& \ Q)$ is a sufficient condition for *S*, then *P*, *Q* and $(P \ \& \ Q)$ are all part of a sufficient condition for *S* but only *P* and *Q* are *proper* parts of a sufficient condition for *S*.

losing any of the properties that act as the causal basis of that disposition (whenever the object has that disposition). For this reason, some may worry that CB* turns dispositions into something too ethereal for one to be realist about. Moderate realists, like me, however, see no reason to worry about dispositions being somewhat ethereal, for making them any less ethereal would amount to conceiving them as properties, thereby attributing them undue ontological weight. According to moderate realism, all there is to *o*'s being disposed to *M* when *S* is that something makes $\langle o \text{ is disposed to } M \text{ when } S \rangle$ true and, even if that "something" always includes some (intrinsic) properties of the object, it does not always need to include *only* (intrinsic) properties of that object.

This however, does not mean that, according to moderate realists, the truth of true disposition ascriptions is any less grounded in the world than it is according to extreme realists. Nor does it mean that it is not (at least partly) grounded in the objects to which the disposition is ascribed. It only means that true disposition ascriptions are not always grounded *exclusively* in the properties of the objects to which they are ascribed. In other words, while what an object is disposed to do largely depends on its intrinsic properties, other objects and their properties may also contribute to its dispositions. To put it in yet another way, the supervenience basis of an object's dispositions is not always limited to the intrinsic properties of the object but can and often does include considerably large chunks of the world.

If CB* fits well with moderate realism, however, it does not fit equally well with many views about the nature of dispositions and their relation to their bases and, in particular, with some versions of extreme realism.¹⁰ Just to name a few, the view that dispositional properties are (type- or token-) identical with their causal bases (see, e.g., (Armstrong 1996) and (Mumford 1998) respectively), the view that they are second-order properties of having the properties that form its causal basis (see, e.g. (Prior, Pargetter and Jackson)), and the view that 'there is no real distinction between an object's categorical properties and its dispositional properties [...]' (Strawson 2008: 274) all seem to be incompatible with CB*, for if the tie between dispositions and their causal bases can be as loose as CB* allows, those views cannot be true.

But isn't the incompatibility of CB* with so many views about the nature of dispositions and their relation to their causal bases itself a reason not to adopt it? After all, 'causal basis' would seem to be a technical philosophical term and the definition of technical terms would seem to be a matter of conventional matter. Moreover, one would expect the definition of 'causal basis' to be something all sides of the debate should be able to agree on and so, if CB* is not neutral between different views of the nature of dispositions and their relation to their bases, it would not seem to be fit for the role.

I think this is the wrong way to think of the overall argument. First of all, the notion of 'causal basis' is a technical notion but, like many technical notions in philosophy, tries to capture the pre-theoretical intuition that what an object is disposed to do largely depends on the way the object is and so the definition of that notion is not an entirely conventional matter, as not all definitions of 'causal basis' would seem to capture this

¹⁰ It is worth noting, however, that not every version of extreme realism faces the same dilemma. For example, one could maintain that *being disposed to open Door* is a genuine extrinsic dispositional property of Key, a property that is only loosely related to the categorical properties of Key that act as its causal basis.

pre-theoretical intuition equally well. Second, even those definitions that manage to capture our pre-theoretical intuitions may need to be modified or rejected altogether if they turn out to have unacceptable consequences. For example, on CB, masked or finikish dispositions would seem to have no causal bases, but clearly this is no good reason to think they don't—it is a good reason to think that CB needs to be modified so as to allow for finks and masks to interfere with the manifestation of the disposition. Analogously, in this paper, I have argued that Key's disposition to open Door is one of those cases in which the unacceptable consequences of a definition give us good reasons to think that the definition should be modified. Third, my arguments for the modified definition of 'causal basis' did not rely on my views about the nature of dispositions and their relations to their causal bases but only on the implausibility of the extrinsic view of the causal basis of Key's disposition to open Door.

One might worry that, in conceding that the supervenience basis of an object's extrinsic dispositions extends beyond the object's intrinsic properties, I may be faithful to the letter IBT but not its spirit.¹¹ After all, my defense of IBT relies on what would seem a merely terminological trick—the decision to call only those components of the supervenience base of a disposition that are properties of the object 'the causal basis of the disposition', while leaving all other components out.

I do not believe that my allegiance to IBT is purely nominal. First, supporters of IBT often seem to acknowledge that the supervenience base of a disposition may be broader than its causal basis and they do not usually seem to take this to undermine their adherence to IBT (Lewis, for one, did not think that the fact that laws of nature needed to be included in the supervenience base of a disposition undermined IBT). Second, the choice between my definition of the notion of 'causal basis' and one that identifies the causal basis of a disposition with its supervenience base does not seem to be merely terminological. I believe that my definition better dovetails with the intuition that the causal basis of a disposition is a complex of properties of the object that has that disposition—the properties that would causally contribute to bringing about the manifestation of the disposition, if the disposition were to manifest itself—and better highlights the close relationship between extrinsic dispositions and some intrinsic dispositions (as in the case of the disposition to open door and that to unlock K-locks).

Although these remarks are admittedly inconclusive, I hope that even those who are not persuaded by them will concede that, even if I were to be forced to reject IBT together with IDT, the account I sketched here would provide me with a plausible way to do so and that, in any case, none of this would undermine what I take to be the most general and important moral to be drawn from my arguments—i.e. that the relationship between dispositions and their bases cannot be as close as it is usually taken to be.

Of course, those who refuse to adopt CB* to avoid rejecting one or the other of the above views about the relation between dispositions and their bases are free to do so but their freedom comes at a cost—they will have to either deny that it is true that Key is disposed to open Door or accept the extrinsic view of the causal basis of Key's disposition

¹¹ I would like to thank an anonymous referee for this journal for bringing this point to my attention.

to open Door, with all of its implausible consequences. Personally, I do not see how the benefits of doing so can be worth the costs.

If the arguments in this paper are by and large sound, then extrinsic dispositions turn out to be a crucial test-case for many views about the nature of dispositions and their relations to their causal bases. It is now up to those who are not happy with the results of those tests to argue that extrinsic dispositions should not be taken as seriously as I do.

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