
CAN OPPOSING DISPOSITIONS BE CO-INSTANTIATED?

Abstract: Is it possible that one and the same object x has opposing dispositions at the same time? One's first reaction might be that it is evidently impossible. On the assumption that x is incombustible, it seems to follow that it is not combustible. Surprisingly enough, however, it is claimed that there are a number of examples in support of the possibility of simultaneous co-instantiation of opposing dispositions. In this paper, I will bring under scrutiny some of the examples and come to the conclusion that none of them achieve the desired goal. This will give support to the initial intuition that opposing dispositions cannot be co-instantiated by one and the same object at the same time.

1. Opposing dispositions

Let me start by defining conflicting dispositions as dispositions that have mutually consistent characteristic stimuli but inconsistent manifestations. Take the property of being explosive and the property of being sturdy. They have mutually inconsistent manifestations, x 's exploding and x 's remaining intact: x can't both explode and remain intact at the same time. But their characteristic stimuli are mutually consistent. Whilst the characteristic stimulus of being explosive is the event of being ignited, the characteristic stimulus of being sturdy is the event of being struck. These two events can possibly occur at the same time, in which sense they are mutually consistent. Then it follows that the property of being explosive and the property of being sturdy are conflicting dispositions. There is no question that many pairs of conflicting dispositions are simultaneously co-instantiated by the same object. A dynamite stick is both sturdy and explosive at the same time. Similarly, a glass is both disposed to break when struck and is disposed not to break when heated.

One might wonder: when x has conflicting dispositions, say, the disposition to M in response to S and the disposition not to M in response to S^* , how would x respond if x were subject to S and S^* at the same time? What if, for instance, a dynamite stick were simultaneously struck and ignited? We all know that it would explode. Why? That's because the causal influence initiated by the igniting overrides the causal influence initiated by the striking. Generally speaking, the manifestation x would exhibit if x were simultaneously subject to S and S^* depends on which of S and S^* would yield a more powerful causal influence with respect to M . In case that S 's causal influence overpowers S^* 's with respect to M , then x would M .

But there is a special subgroup of pairs of conflicting dispositions for which the possibility of simultaneous co-instantiation can be challenged. Let me define opposing dispositions as conflicting

dispositions that have one and the same characteristic stimulus.¹ For instance, the property of being fragile and the property of being sturdy are opposing dispositions. They have the same characteristic stimulus, the event of being struck. But they have mutually inconsistent manifestations, the event of breaking and the event of remaining intact, respectively.

Unlike the case of non-opposing conflicting dispositions, it is puzzling how it is possible that one and the same object possesses opposing dispositions at the same time. Assuming that x is simultaneously disposed to M in response to S and disposed not to M in response to S , we are at a loss as to how x is disposed to react if it were subjected to S . When x possesses non-opposing conflicting dispositions at the same time, I proposed, x would manifest according to which of their characteristic stimuli initiates the most powerful causal influence. But this explanation can't be given for the case of opposing dispositions since they have exactly the same characteristic stimulus, S . To spare us from this perplexity, it might be thought, we need revoke our initial assumption, leading to the conclusion that opposing dispositions can't be simultaneously co-instantiated by the same object.

In fact, it is somewhat intuitive that ' x has P ' entails ' x does not have Q ' when P and Q are opposing dispositions. On the assumption that x is incombustible, it seems to follow that it is not combustible. Likewise, on the assumption that x is unpleasant, it seems to follow that it is not pleasant. But there are some philosophers who disagree, insisting on the possibility of simultaneous co-instantiation of opposing dispositions. I think they are all wrong, though: we must accept our intuitions at their face value.

What would one attempt for the purpose of showing the possibility of simultaneous co-instantiation of opposing dispositions? There are two main passages one might explore in order to argue for this possibility. The first is to give a theoretical reason for admitting it. One might, for example, first assume an analysis of dispositions and then argue that it necessitates the possibility of simultaneous co-instantiation of opposing dispositions. Given the current state of debate, however, this is not an effective strategy as no consensus has been reached among philosophers of dispositions as to what an adequate conceptual analysis of dispositions would be like. Lewis's conditional analysis of dispositions, for instance, is well-known to allow for the possibility that opposing dispositions are co-instantiated by the same object at the same time (Choi 2005; Clarke 2010; Bird manuscript), which might move one to assume Lewis's analysis and then derive the

¹ In what follows, I will chiefly focus on deterministic dispositions, investigating the possibility of simultaneous co-instantiation of deterministic opposing dispositions. But I note that the definition of opposing dispositions presented here can be naturally extended to probabilistic dispositions. Such an extension will require an articulation of the characteristic stimulus and manifestation of a probabilistic disposition, which goes beyond the scope of this paper.

possibility of simultaneous co-instantiation of opposing dispositions from it. But this is bound to have not much dialectical force since the very tenability of Lewis's analysis is all too often up for debate. Indeed Bird (manuscript) will go as far as to claim that the very fact that Lewis's analysis bears out the possibility of simultaneous co-instantiation of opposing dispositions should be taken to show its falsity.

What is worse, different analyses of dispositions say different things about that possibility. Consider, for instance, the simple conditional analysis of dispositions according to which, very approximately, to say that x is disposed to M when S is to say that x would M if S . It is an easy matter to ascertain that this analysis spells out two opposing dispositions in terms of counterfactual conditionals that have the same antecedent but incompatible consequents. But it is widely held that such counterfactual conditionals can't be both true with respect to the same context of utterance, which is called 'The principle of conditional non-contradiction' ($\sim((S \square \rightarrow M) \& (S \square \rightarrow \sim M))$).² This is to say that opposing dispositions are inconsistent with each other on the simple conditional analysis of dispositions. In contrast with Lewis's analysis, thus, the simple conditional analysis rules out opposing dispositions from being co-instantiated by the same object at the same time. In view of the fact that there is still an ongoing dispute as to how to adjudicate between the two analyses, this will further curtail whatever small support Lewis's analysis may give to the possibility of simultaneous co-instantiation of opposing dispositions.

Such being the case, we have a sufficient reason to turn our attention to the other passage to showing the possibility of simultaneous co-instantiation of opposing dispositions, which is to reflect on individual examples and consult our intuitions. Interestingly enough, there are indeed some examples that seem to force the possibility of opposing dispositions' being co-instantiated by the same object at the same time. For example, I agree with Clarke (2010) who cogently points out that we sometimes say 'I like and dislike the same thing at the same time' or 'I am able to do X but, at the same time, unable to do X '. At first glance, they do appear to give compelling reasons for admitting of the possibility of simultaneous co-instantiation of opposing dispositions. I urge, though, that a careful and adequate analysis ought to be provided for these examples before any philosophical lessons are drawn from them. In fact, I do believe that such an analysis will reveal that they are of no service to those who believe in the possibility of simultaneous co-instantiation of opposing dispositions. With this in mind, in the sections to come I will carefully examine some of the most appealing of them and argue that none of them do what they are intended to do.

² There is some dispute regarding whether the principle of conditional non-contradiction holds with respect to indicative conditionals. But it has never been seriously challenged with respect to counterfactual conditionals. For discussions, see (Jackson 1990, 1991), (Lowe 1991) and (Bennett 2003).

This issue of the possibility of simultaneous co-instantiation of opposing dispositions is intimately linked with the issue of the possibility of intrinsic finks or antidotes to dispositions that has received much discussion in the latest literature. A glass is fragile but it does not break when struck. Why? Because it has a property *P* that would hinder it from breaking if it were struck: either *P* would instantly remove its fragility, in which case *P* is termed a fink to fragility, or *P* would instantly thwart the process from striking to breaking without removing its fragility, in which case *P* is termed an antidote or masker to fragility.³ When *P* is an intrinsic property of the glass, it is an intrinsic fink or antidote to fragility.

There are two different types of fink or antidote. When a putative fink or antidote to *D* would be triggered to prevent *D*'s manifestation by *D*'s characteristic stimulus, it will be labelled 'standard'. Almost all the cases of finks or antidotes to *D* that have been under discussion by philosophers are standard ones. Most famously, Charlie Martin's (1994) example of electro-fink involves a live wire attached to a fink that would be instantly caused to eliminate the wire's property of being live by its being touched by a conductor, the characteristic stimulus of the dispositional property of being live. By the same token, Clarke (2008) discusses a man who is apparently strong but also has an intrinsic property *X* such that, whenever he attempts to lift a heavy thing, this would immediately cause *X* to eliminate his apparent strength. When we follow Clarke who takes the characteristic stimulus of physical strength to be the event of one's attempt to lift a heavy thing, this is a standard-type intrinsic fink to a disposition. I thus submit that the finks or antidotes typically discussed in the literature on dispositions are of the standard type, which justifies my use of the term 'standard'.

Dispositional finks or antidotes of the standard type contrast with non-standard-type ones that would be caused to kick in by a different event from *D*'s characteristic stimulus. A match is combustible, being disposed to catch fire when struck against a match box. But it also has some intrinsic properties in virtue of which it is disposed to lose its combustibility if doused. These properties jointly serve as an intrinsic fink of non-standard strain to combustibility that would be triggered not by the match's being struck against a match box but by its being doused: if it were doused it would immediately lose its combustibility, and therefore, it wouldn't catch fire even if struck against a match box. Similarly, my calculator is disposed to give a correct answer to an arithmetical problem. But some of its intrinsic properties ensure that it is disposed to break down if knocked very hard. Yet again, these intrinsic properties collectively act as a non-standard-type intrinsic fink to its disposition to give a correct answer to an arithmetical problem.

There is no doubt that dispositions can be co-instantiated along with their non-standard-type intrinsic finks or antidotes. The combustible match instantiates a non-standard-type intrinsic fink

³ For discussions of finks and antidotes, see (Johnston 1992), (Martin 1994), (Lewis 1997), and (Bird 1998).

that, if doused, would immediately make it no longer combustible. Similarly, my calculator simultaneously instantiates both the disposition to give a correct answer to an arithmetical problem and a non-standard-type intrinsic fink to this disposition. This shows that the conceptual possibility of non-standard-type intrinsic finks or antidotes to dispositions isn't up for debate, which is perhaps why philosophers haven't taken much interest in the issue of non-standard-type intrinsic finks or antidotes to dispositions but rather concentrate on the issue of standard-type intrinsic finks and antidotes to dispositions.

Indeed, it is an intensely disputed issue whether or not standard-type intrinsic finks or antidotes to dispositions are conceptually possible.⁴ Is it possible that x has D and is subjected to its characteristic stimulus but it does not manifest D because the stimulus triggers one of its *intrinsic* properties to prevent the manifestation? Some philosophers say yes. They take it that it is conceptually possible that a glass is fragile but, if struck, this would set off one of its intrinsic properties to prevent its breaking with the result that it doesn't break. But others disagree. They maintain that what is really the case in alleged cases of standard-type intrinsic finks or antidotes to dispositions is that x doesn't have the disposition, to begin with. In a case where a glass is alleged to instantiate fragility and a standard-type intrinsic fink or antidote to fragility alike, for instance, it isn't fragile in the first place, which in turn means that it doesn't instantiate an intrinsic fink or antidote to fragility.

In short, it is the possibility of standard-type intrinsic finks and antidotes to dispositions, not the possibility of non-standard-type intrinsic finks and antidotes to dispositions, which has stirred much dispute among philosophers. But the standard/non-standard distinction has not been clearly made vis-a-vis the possibility of intrinsic finks and antidotes to dispositions.⁵ Once it is in place, we can see that the ongoing debate regarding the possibility of intrinsic finks and antidotes to dispositions can be better viewed as one regarding the possibility of standard-type intrinsic finks and antidotes to dispositions. Seen this way, I will focus the subsequent discussion on standard-type intrinsic finks and antidotes to dispositions.

It is to be noted that defenders of the possibility of standard-type intrinsic finks or antidotes to D are under pressure to hold that opposing dispositions can be simultaneously co-instantiated by the same object. On the supposition that x is disposed to M in response to S at t and x also has an intrinsic fink or antidote to it at t that would be caused to prevent M by its characteristic stimulus S ,

⁴ The possibility of intrinsic finks and antidotes to dispositions has been discussed by (Ashwell 2010), (Bird manuscript), (Choi 2005; forthcoming_a), (Clarke 2008; 2010), (Cohen and Handfield 2007), (Everett 2009), (Handfield 2008), (Handfield and Bird 2008), and (Fara 2008).

⁵ I acknowledge that Bird (2007, 26)'s notion of acausal fink is almost the same as the notion of non-standard-type fink. But he doesn't go over its relevance to the possibility of intrinsic finks or antidotes to dispositions.

it is highly plausible to say that x is disposed *not* to M in response to S at t , where the two dispositions, the disposition to M in response to S and the disposition not to M in response to S , are opposing dispositions. Given that the glass is assumed to have an intrinsic property P that, if it were ever struck, would be triggered to prevent its breaking, it sounds reasonable to say that it is sturdy.

This point can be further reinforced by Clarke's 'constitution test', which he has invoked to bear out the possibility of standard-type intrinsic finks or antidotes to dispositions. Clarke (2008, 5) says:

Furthermore, in many standard cases of dispositions, we find intrinsic structural features which, given the laws, suffice for the possession of those dispositions. Having a certain molecular structure and bonding suffices, given the laws, for being soluble. We need not take into account *all* of a thing's intrinsic properties in determining whether it has a given disposition.

The core idea of the constitution test, I take it, is that not all but only *some* of x 's intrinsic properties suffice to make it the case that x possesses the disposition. Clarke goes on to indicate that the constitution test entails that dispositions are intrinsically finkable. To see this, let us apply Clarke's constitution test to an object O that is supposed to have a microstructural intrinsic property, say, a particular type of molecular bonding structure which is typical of fragile things. This object O is claimed to have an intrinsic structural property required for being fragile. From this, by the constitution test, Clarke will infer that it is fragile. Further, even if we additionally posit an intrinsic property P that would be caused to take away the bonding structure from O by its being struck, this makes no difference to the fact that O is fragile. For, according to the constitution test, the glass is fragile insofar as it keeps the bonding structure required for being fragile. In general, it is conceptually possible that x has an intrinsic property or property-complex Q which, according to the constitution test, makes it the case that x has a given disposition; and, at the same time, x has another intrinsic property that would be triggered to eliminate Q by the characteristic stimulus. The constitution test thus upholds the position that dispositional properties are susceptible to intrinsic finks of the standard type (and *mutandis mutatis* for intrinsic antidotes). Indeed, I presume that most philosophers are at least implicitly driven by the constitution test or its close relatives when they accept the possibility of standard-type intrinsic finks or antidotes to dispositions.

Here it is important to realize that the constitution test not only necessitates the possibility of standard-type intrinsic finks or antidotes to dispositions but also necessitates the possibility of simultaneous co-instantiation of opposing dispositions. To see this, consider the object O again. As Clarke sees it, the constitution test implies that O is fragile as it has an intrinsic structural property nomically sufficient for being fragile, i.e., the bonding structure in question. Let us now look at the intrinsic property complex consisting of the bonding structure and the intrinsic property P that

would remove this bonding structure should it be struck. This intrinsic property complex may well be seen to necessitate the possession of the property of being sturdy. The two intrinsic properties, the bonding structure and *P*, ensure that *O* would remain intact when struck, which indicates that, according to the constitution test, *O* is sturdy. More generally, I hypothesize, whatever reason one has for believing that the bonding structure is a constitutional basis for being fragile also serves as a reason for believing that the property complex is a constitutional basis for being sturdy.

In short, the constitution test allows us to attribute to *O* two opposing dispositions, being fragile and being sturdy, at the same time. In general, the constitution test, which is brought up to argue for the possibility of standard-type intrinsic finks or antidotes to dispositions, has it that each case of standard-type intrinsic finks or antidotes to *D* where allegedly *D*'s characteristic stimulus causes one of *x*'s intrinsic properties to prevent *D*'s manifestation involves simultaneous co-instantiation of opposing dispositions. In this sense, proponents of the possibility of standard-type intrinsic finks or antidotes to dispositions are left with the view that opposing dispositions can be co-instantiated by the same object at the same time.⁶

It is worth remarking that the same isn't true of non-standard-type intrinsic finks or antidotes to dispositions. As noted earlier, the possibility of non-standard-type intrinsic finks or antidotes is generally accepted. Recall, for instance, a match that simultaneously instantiates both combustibility and a non-standard-type intrinsic fink to this disposition: it is combustible but disposed to lose its combustibility if doused. On the supposition that the match is not doused, it is combustible but not incombustible. Conversely, on the supposition that it is doused, it is incombustible but not combustible. Whether the match is doused or not, thus, it never instantiates the opposing dispositions, combustibility and incombustibility, at the same time. This shows that the possibility of non-standard-type intrinsic finks or antidotes to dispositions doesn't necessitate the possibility of simultaneous co-instantiation of opposing dispositions.

Note that it is non-opposing conflicting dispositions that the match instantiates at the same time: it is disposed to catch fire if struck against a match box but is disposed not to catch fire if doused, where the two dispositions have mutually consistent stimuli but mutually inconsistent manifestations. More generally, in each case of non-standard-type intrinsic finks or antidotes to dispositions, two non-opposing conflicting dispositions can be attributed to the same object at the same time. We have seen, though, that it is not a matter of controversy that non-opposing conflicting dispositions can be co-instantiated by the same object at the same time, as can be seen from the example of a dynamite stick. There is not much to debate about non-standard-type

⁶ In fact, Clarke, a vehement supporter of the possibility of intrinsically finkable or maskable dispositions, explicitly subscribes to the view in question.

intrinsic finks or antidotes to dispositions, after all.

Standard-type intrinsic finks or antidotes to dispositions are a very different story: as noted earlier, there has been a lively ongoing debate about the conceptual possibility of standard-type intrinsic finks or antidotes. Furthermore, as long as the possibility of standard-type intrinsic finks or antidotes to dispositions yields the possibility of simultaneous co-instantiation of opposing dispositions, my subsequent discussion of the second possibility bears direct relevance to the prospect of upholding the first possibility. Then it is of great importance and interest to metaphysicians inasmuch as the issue of the possibility of intrinsic finks or antidotes to dispositions, which is generally taken to throw new lights on issues in many areas of philosophy⁷, is. This underscores one aspect of significance of the subsequent discussion of the possibility of x 's simultaneous co-instantiation of opposing dispositions.

But it doesn't have all of its significance derive from its relevance to the issue of the possibility of intrinsic finks or antidotes to dispositions. After all, as long as in everyday life we use countless opposing dispositional concepts like fragility versus sturdiness, solubility versus insolubility, combustibility versus incombustibility, and so on, the issue of the possibility of simultaneous co-instantiation of opposing dispositions ought to be intriguing in its own right: it will be good to know if there is any a priori constraint on the applications of opposing dispositional concepts. This will in turn help us evaluate proposals regarding how to understand dispositional ascriptions conceptually. As we have seen earlier, Lewis's analysis of dispositions entails the possibility of simultaneous co-instantiation of opposing dispositions. Therefore, if it turns out that the possibility should be ruled out, this will count against Lewis's analysis of dispositions. As such, philosophers have a number of good reasons to take interest in the subsequent discussion about the possibility of simultaneous co-instantiation of opposing dispositions.

2. American football

It came to be known in the last section that, given the present state of debate, the best strategy one can take on behalf of the possibility of simultaneous co-instantiation of opposing dispositions is to consult our intuitions on individual examples. Clarke's (2010, 153) presents one such example that starts with his amiable memory of childhood:

Once when I was eight or nine, during a game of football (the American kind) with some friends, I took a

⁷ For an excellent exposition of how this second issue is importantly relevant to numerous areas of philosophy, see (Bird manuscript).

handoff and quickly broke free of defenders. I ran as fast as I could toward the goal. Unhappily, before I reached it, I dropped the ball.

In this example, Clarke suggests, he had two opposing dispositions. He says, 'It seems that if I was disposed to take the ball across the goal if I tried in the given circumstances – if I had this power – then I simultaneously had an opposite disposition (or power, or liability): to drop the ball if I ran with it' (*ibid*).

In the first place, it will be appropriate to remind ourselves that, as Clarke describes it, the dispositions involved are sure-fire dispositions, not probabilistic dispositions. What Clarke claims is not that he was disposed to have a chance to score if he tried but he was, at the same time, disposed to have a chance to drop the ball if he ran with it, which will be denied by nobody.⁸ It is that he was disposed to score with certainty if he tried but he was, at the same time, disposed to drop the ball with certainty if he ran with it, which is an interesting but highly contentious claim. I think when we take this point to heart we can perceive the weakness of Clarke's suggestion.

As I said before, Clarke suggests that his case shows that opposing dispositions can be simultaneously co-instantiated by the same object. It will be useful to clarify precisely what the opposing dispositions involved are. Clarke indicates that they are the following two dispositions: 'the disposition to take the ball across the goal if he tried in the given circumstance' and 'the disposition to drop the ball if he ran with it'. At least apparently, however, they are not opposing dispositions! They have different characteristic stimuli: the characteristic stimulus of the first disposition is the event of his trying to score under the given circumstance and the characteristic stimulus of the second disposition is the event of his running with the ball. But we have seen that opposing dispositions are defined to have the same characteristic stimulus.

It may be that by opposing dispositions Clarke means something different, perhaps, non-opposing conflicting dispositions. On this construal, however, Clarke's example is not that interesting at all. Recall that it is not objectionable at all that x co-instantiates two non-opposing conflicting dispositions at the same time, as evidenced by a dynamite stick that is both sturdy and explosive. I am therefore not concerned to reject Clarke's example when it is claimed to substantiate the possibility of simultaneous co-instantiation of non-opposing conflicting dispositions. The main interest in Clarke's example originates from the fact that, whilst it is of momentous consequence to metaphysicians whether opposing dispositions can be simultaneously co-instantiated by the same

⁸ For instance, there seems to be nothing disputable about the thought that Clarke is disposed to have the chance of 2/3 to score and, at the same time, is also disposed to have the chance of 1/3 to drop the ball.

object, Clarke's example might be claimed to exemplify that they can be so co-instantiated.

In view of this, I take it, Clarke's example is to be read in a way that involves opposing dispositions. The following is one such reading that seems to me closest to Clarke's intention: he was disposed to take the ball across the goal if he tried to score in the given circumstance but he was also disposed to drop the ball if he tried to score in the given circumstance. On this reading, the two dispositions concerned have the same characteristic stimulus but incompatible manifestations, which is to say that they are opposing dispositions. This reading takes away much of the intuitive force from Clarke's suggestion, though. It might be viewed as plausible to say that he was disposed to score if he tried with no defenders near but he was, at the same time, disposed to drop the ball if he ran with it: after all, he could have scored without running. But it is very counter-intuitive to maintain that Clarke was disposed to score with certainty if he tried but, at the same time, he was disposed to fail to score (by dropping the ball) with certainty if he tried.

What can Clarke say in support of his suggestion? Clarke thinks of his example as involving an intrinsic antidote, say, a simple lapse of attention.⁹ Whilst drawing an analogy between his example and Austin's example where Austin misses a short putt despite his ability to do so, indeed, Clarke (2010, 155) says: 'His [Austin's] ability might have been masked by a simple lapse of attention. Our dispositions to do things when we try are characteristically subject to failure due to such intrinsic foibles'. Following Clarke, let's assume that he was indeed disposed to take the ball across the goal if he tried to score but he did not manifest this disposition because it was masked by a lapse of attention which was intrinsic to his body. If the lapse of attention should be an intrinsic antidote to the disposition at issue at all, however, it would obviously be a standard-type intrinsic antidote, for, it wouldn't be triggered unless Clarke ever tried to score. What is more, as we have seen in Section 1, it is quite arguable that two opposing dispositions are co-instantiated by one and the same object in each case of a standard-type intrinsic fink or antidote to a disposition: given that such a lapse of attention was Clarke's intrinsic feature, he had an intrinsic property complex that ensured that he would have failed in his attempt to score. If so, we come to the conclusion that Clarke was not only disposed to score if he tried but also disposed to fail to score (by dropping the ball) if he tried. I will argue below, though, that this line of thought is not sound, for Clarke's example does not involve an intrinsic antidote.

Why do I think so? Let me start with the sentence that my computer is disposed to break when struck. Is it true or not? It depends on how hard my computer is supposed to be struck. It would break if struck very hard but it wouldn't break if struck softly. We can't decide if my computer is

⁹ Clarke does not explicitly suppose that his disposition to score is masked by a *simple lapse of attention* in particular.

disposed to break when struck, therefore, unless it is explicitly or contextually determined how hard it is supposed to be struck. I maintain that the same type of indeterminacy is present in the sentence that Clarke is disposed to score if he tries. Am I disposed to give the correct answer to an addition problem ' $x+y = ?$ ' if I try? It depends. When the two numbers x and y are very small, say, 1 and 2, respectively, then I need not try very hard to give the correct answer to ' $1+2 = ?$ ', which implies that I am disposed to give the correct answer to ' $1+2 = ?$ ' if I try a little – of course, I am also disposed to give the correct answer to ' $1+2 = ?$ ' if I try hard. On the other hand, when the two numbers are very large, say 6984 and 9897, then it takes much care to give the correct answer to the addition problem. Should I have even a momentary lapse of attention, I would be prone to make an error. This suggests that, whilst I am disposed to give the correct answer to ' $6984+9897 = ?$ ' if I try very hard, I am not so disposed if I try a little. Once this is realized, strictly speaking, we can't decide if I am disposed to give the correct answer to ' $6984+9897 = ?$ ' if I try, unless it is explicitly or contextually specified how hard I am expected to try.

Clarke describes his example such that he was disposed to score if he tried. In view of what I said in the previous paragraph, though, Clarke's description is in need of disambiguation with regard to how hard he is expected to try. Let's first suppose that what he means is that he was disposed to score if he tried a little. But this supposition is at variance with the assumption that he failed to score as a result of a temporary lack of attention. For, once he is supposed to be disposed to score if he tried a bit, it must be the case that some degree of carelessness wouldn't stop him from scoring. On the assumption at issue, therefore, it is reasonable to think that Clarke was not disposed to score if he tried a bit. With this in mind, I submit that the most natural reading of Clarke's description is that he was disposed to score if he tried hard.¹⁰ But when you say you will try hard, at least typically you mean you will make sure that there is no lapse of attention. Should you have a lack of attention, then very likely you will be accused of having not tried hard enough. I believe this observation will reveal a fatal flaw of Clarke's reasoning.

A dispositional antidote or masker is a factor that would frustrate the process from stimulus to manifestation should the characteristic stimulus *occur*. We can therefore say that the disposition in question did not manifest because it was masked by the lack of attention, only if its characteristic stimulus did in fact occur. But it has emerged that Clarke failed to score because he didn't try hard in the first place: he should have tried hard to prevent any possible lack of attention. Such being the case, Clarke did not manifest the disposition to score if he tries not because a dispositional antidote

¹⁰ Surely there is a continuous spectrum from trying maximally hard to trying a little. For convenience, however, I will simplify the example by assuming the bipartite division into 'trying a little' and 'trying maximally hard'. I will below use the simple expression 'trying hard' for 'trying maximally hard'.

prevented the manifestation but because the characteristic stimulus did not take place, to begin with. Taken this way, Clarke's lack of attention did not function as an intrinsic antidote to the disposition in question; but it merely made it the case that the characteristic stimulus, that is, the event of trying hard did not occur. No masking took place.

I thus maintain that Clarke's example, where it is assumed that he was disposed to score if he tried hard, does not exemplify that he tried to score hard but failed to score. If so, it is not a case where Clarke manifested his disposition to fail to score if he tried hard, for he did not try to score hard in the first place. Then it follows that Clarke's example does not justify the claim that he was disposed to fail to score if he tried hard, the claim that has brought us to the conclusion that he had opposing dispositions at the same time. What we can derive from Clarke's example, if anything, is merely that he was disposed to fail to score if he did not try hard. Put together, therefore, we have the result that Clarke was disposed to score if he tried hard but was disposed to fail to score if he did not try hard. But the two dispositions involved are not opposing dispositions. In fact, they are not even conflicting dispositions since their characteristic stimuli are inconsistent with each other. Hence the conclusion that Clarke intends to draw from his example, that he had opposing dispositions at the same time, does not follow. The same goes for Austin's example.

In response, it might be insisted, though, that trying hard doesn't necessarily rule out the possibility of errors. It is not a wholly implausible story that a good footballer tried as hard as possible and yet because of an intrinsic foible, say, attention deficit disorder, failed to score at a crucial moment. For the sake of argument, let me admit this point. Even then Clarke's position is still hopeless. Supposing that, with all my utmost effort, I sometimes fail in my attempt to solve an addition problem owing to my own foibles, I would maintain that I am not disposed to solve it if I try hard. I can't solve a complex mathematical problem due to my own faults, however hard I try. Then, no matter what view of dispositions one may hold, it sounds most reasonable to say that I don't have the ability to solve the problem, lacking the disposition to solve it if I try. Similarly, Clarke wouldn't be disposed to score if he tries hard, unless he could preclude the possibility of errors. Therefore, supposing that Clarke tried very hard but failed to score due to his intrinsic foibles, we are pressed to retract the initial assumption that he was disposed to score if he tried hard. Perhaps, he might have been disposed to have some chance to score if he tries hard. This chancy disposition, though, is distinct from the deterministic disposition to score if he tries hard.

What if Clarke digs his heels in yet again and refuses to agree? In this case, he at least has to be prepared to draw a fine line between his example under discussion and examples that are structurally similar but tip the balance of intuition in my favour. Suppose that Peter is fit and strong, but has chronic memory loss and so often does not score at football in virtue of forgetting the rules

of the game.¹¹ Given that the memory loss is so chronic, there is a strong temptation to doubt that Peter is really disposed to score if he tries hard. But there seems to be a structural resemblance between Clarke's example and this example. Therefore, if one is to insist that Clarke, as described in his example of football, was disposed to score if he tried hard, one has to explain why we need treat the two examples differently, which, I presume, won't be an easy task.¹²

My criticism of Clarke's example so far relies on the assumption that the intrinsic antidote is a simple lapse of attention or its likes. In response, therefore, Clarke might reject this assumption, insisting that his disposition to score failed to manifest owing to some intrinsic antidote but it was not a lack of attention. But this does not do much to support the apparently counterintuitive claim that Clarke simultaneously instantiated the two opposing dispositions under discussion unless a detailed story of what the intrinsic antidote at work was is given. One such story might be given by supposing that a tiny muscle in Clarke's right arm was malfunctioning and further that when Clarke tried to score, the malfunctioning muscle was exercised not invariably but in unusual cases where he made some unfortunate movement.¹³ On this supposition, it might be claimed, it is not that unreasonable to think that Clarke was disposed to score if he tried. Why, in spite of this disposition, did Clarke fail to score? That's because, goes the story, Clarke made the unfortunate movement and, as a result of this, the muscle's malfunctioning caused him to drop the ball, preventing its manifestation. If so, the malfunctioning muscle would be an intrinsic antidote to Clarke's disposition to score if he tries.

I am unconvinced, though. Why, in spite of the malfunctioning muscle, are we inclined to think that Clarke was disposed to score if he tried? That's chiefly because he was disposed to score if he tried without making the unusual movement. But Clarke's malfunctioning muscle was not an antidote, let alone intrinsic antidote to this disposition, for he would have indeed scored had he tried without making the movement. This being the case, the thought that the muscle was an intrinsic antidote to Clarke's disposition to score if he tries is deeply perplexing. That's because, given that it is in virtue of his having been disposed to score if he tried without making the unfortunate movement that he was disposed to score if he tried, it is natural to think that Clarke's malfunctioning muscle being an intrinsic antidote to the second disposition is as implausible as it being an intrinsic antidote to the first disposition.

Note further that, on the supposition about Clarke's malfunctioning muscle, there is no temptation

¹¹ We may also suppose that Peter often forgets that he tends to forget the rules, which is why his enthusiasm for the game remains high. I thank one of the referees for this journal for giving this example.

¹² In (Choi forthcoming_b), I make a similar point to this one and conclude that no such explanation is forthcoming.

¹³ The muscle may be what Manley and Wasserman (2008) call an 'Achilles' heel'.

whatsoever to say that Clarke was disposed to drop the ball if he tried: we have the firm conviction that he wasn't disposed to drop the ball if he tried. But it came to light earlier that each case of standard-type intrinsic finks or antidotes to dispositions has a strong claim to exemplify simultaneous co-instantiation of opposing dispositions. This observation turns our perplexity into the suspicion that this is not a case of standard-type intrinsic antidote to Clarke's disposition to score if he tries. Since it is assumed that the muscle's malfunctioning was caused by Clarke's trying to score, however, had the muscle ever been an intrinsic antidote to Clarke's disposition to score if he tries it would have been a standard-type intrinsic antidote to it. Then, from the fact that this example is not a case of standard-type intrinsic antidote to Clarke's disposition, it follows that this is not even a case of intrinsic antidote, either.¹⁴ It would be more acceptable that the malfunctioning muscle was an intrinsic antidote to *the disposition to score if he tries in a way that would involve the unfortunate movement* if Clarke were to have this disposition at all. On the supposition at issue, however, we are firm in the belief that Clarke was not disposed to score if he tried in a way that would involve the unfortunate movement. Either way no intrinsic antidotes operate.¹⁵ This consideration naturally leads us to the idea that Clarke's example is not a case of intrinsic antidote, to begin with, which undermines the attempt to neutralize the counterintuitiveness of Clarke's claim by supposing that his example involves an intrinsic antidote.

Thus far I have contended that when Clarke's example is interpreted as involving the following two dispositions, it does not suit his purpose: the disposition to score if he tried to score in the given circumstance and the disposition to drop the ball if he tried to score in the given circumstance. Perhaps I have misinterpreted him. Here I observe that Clarke (2010) frequently speaks of his abilities in the relevant passages. This observation instigates an alternative reading of his example, according to which the core idea is that Clarke was able to take the ball across the goal but, at the same time, he was unable to take the ball across the goal. It is at least arguable that when I am able to do *X*, I am disposed to do *X* if I try.¹⁶ Meanwhile, it is also quite arguable that when I am unable to do *X*, I have the corresponding liability or disposition not to do *X* even if I try. Therefore, the core idea in question, if successfully defended, would seem to point somehow to the possibility of simultaneous co-instantiation of opposing dispositions.

¹⁴ This is in accord with my claim made in (Choi forthcoming_b) that, despite Manley and Wasserman's view, Achilles' heels can't be dispositional antidotes or maskers.

¹⁵ Thanks to one of the referees for this journal for pressing for this point.

¹⁶ Indeed, Fara (2009) develops this into a dispositional analysis of abilities to act, according to which I am able to do *X* iff I am disposed to do *X* if I try. Besides, Clarke (2010, 153) acknowledges that his example is in keeping with Fara's analysis although Fara's analysis has some shortcomings.

For one thing, I concede that there are numerous contexts where it is highly plausible to say that one is able to do *X* but, at the same time, is unable to do *X*. Clarke's example may provide one such context. Nonetheless, however, I stress that this reading of Clarke's example does not warrant his claim that opposing dispositions can be co-instantiated by one and the same object at the same time, either.

Clarke (2009, 339) himself says, 'There are several different things that we might be thinking or talking about when we think or say that someone can or is able to do a certain thing. Perhaps one or another of these things is just a matter of having some disposition(s). Some of the others appear not to be.' This being the case, there is no guarantee that when we truly say that Clarke was able to take the ball across the goal and, at the same time, he was unable to take the ball across the goal, the two expressions, 'able' and 'unable', refer to the same notion of ability. I am able to drive a car: I have a driver's licence and I also have a lot of experience of driving a car. When it is further supposed that no cars happen to be available to me, however, there is a good sense in which I am unable to drive a car. We can then truly state that I am able to drive a car and, at the same time, I am unable to drive a car.¹⁷ But the two expressions, 'able' and 'unable', occurring in this true statement refer to distinct notions of ability. In Bird's (manuscript) terms, the first expresses my long term ability, whilst the second expresses my short term ability. We can thus render the statement in question true without contravening the widely held view that it is impossible that someone is able to do *X* and, at the same time, he is unable to do *X* in the same sense of ability.

The same goes for the following statement insofar as it is thought to be true: Clarke was able to take the ball across the goal and, at the same time, he was unable to take the ball across the goal. But it might be taken to entail that Clarke had opposing dispositions at the same time only if the two embedded sentences talk about the same notion of ability. From the statement in question, therefore, it does not follow that Clarke had opposing dispositions at the same time.

I have so far canvassed some of the most charitable interpretations of Clarke's example and concluded that none of them lends support to the thought that opposing dispositions can be co-instantiated by one and the same object at the same time. Perhaps Clarke has in mind a different interpretation from the ones I have considered, in which case, however, he has not made it clear. The onus of clarification is on him.

3. Two like-charged and massive objects

In the preceding section, in an effort to repudiate the claim that Clarke's example involves

¹⁷ This example is due to Clarke (2009, 338)

simultaneous co-instantiation of opposing dispositions I took the strategies of explaining away its intuitive appeal that highlight diverse aspects of Clarke's example. For instance, I disentangled different kinds of ability, a confusion of which, I argued, is one of the sources of the intuitive appeal of Clarke's example. The next example I will examine below is a kind of standard example in physics textbooks for which these strategies apparently don't work. Nonetheless, the claim that opposing dispositions are co-instantiated by the same object at the same time in this example has a strong *prima facie* appeal. I will therefore need to take a different strategy of explaining why it appears to have such an appeal despite its falsity.

Consider two electrically like-charged and massive objects *x* and *y* whose electrostatic and gravitational effects exactly cancel off each other. Then it might be thought that, thanks to its mass, *x* is disposed to attract *y* (when placed at a certain distance apart) but, at the same time, thanks to its electric charge, *x* is also disposed to repel *y* (when placed at a certain distance apart). Note, though, that apparently the two ascribed dispositions have the same characteristic stimulus but incompatible manifestations. Then it seems to follow that *x* instantiates opposing dispositions at the same time.¹⁸ This thought may be further elaborated by saying that intrinsic masking takes place in this example: *x* is disposed to repel *y* but this disposition does not manifest itself because its mass works as a standard-type intrinsic antidote, blocking the manifestation (and *mutatis mutandis* for *x*'s disposition to attract *y*).

But I respond that this reasoning is *non sequitur*, trading on an equivocation between total force and component force. Thanks to its mass, *x* is truly disposed to undergo an attracting component force, whilst, thanks to its electric charge, it is truly disposed to undergo a repelling component force – for convenience, let's call the two dispositions the 'gravitational component disposition' and 'electrostatic component disposition', respectively. It is of major importance to realize, however, that the gravitational and electrostatic component dispositions are not opposing dispositions. That is because it is not contradictory at all that one and the same object undergoes many different component forces, some of which may operate in different, even opposite, directions. That said, *x*'s undergoing an attracting component force to *y* is perfectly compatible with *x*'s undergoing a repelling component force from *y*, which means that the gravitational and electrostatic component dispositions do not have incompatible manifestations, and so they are not conflicting dispositions, *a fortiori* opposing dispositions.

What is contradictory is that one and the same object undergoes more than one total force such as two total forces acting in opposite directions. But the total force exerting on an object is determined

¹⁸ This example was brought to my attention by one audience member in the Metaphysics of Science conference held in Melbourne 2009.

by adding up all the component forces it is subject to. Hence neither x 's having an electric charge nor x 's having a mass necessitates x 's being disposed to undergo a determinate total force. If so, it is not the case that, thanks to its mass, x is disposed to undergo a certain attracting total force and, at the same time, thanks to its electric charge, x is disposed to undergo a certain repelling total force. Conversely, x is uniquely disposed to undergo a zero total force since the electrostatic and gravitational forces on it are supposed to be of the same magnitude and pitted against each other. In view of this, I conclude that, whether the example is understood in terms of component force or in terms of total force, it does not corroborate the possibility of simultaneous co-instantiation of opposing dispositions.

I go further to claim that no intrinsic masking takes place in this example. As already noted, due to its mass, x is truly disposed to undergo an attracting gravitational component force toward y if they are placed at a certain distance apart; and, what is more, if they were placed at such a distance apart, x would manifest this disposition, undergoing the attracting component force toward y . This is to say that no masking, be it intrinsic or extrinsic, occurs (and *mutatis mutandis* for x 's electrostatic component disposition). We arrive at the same conclusion when we turn to x 's disposition to undergo a total force. If x were placed in an appropriate distance to y , x would undergo a total force that is equivalent to the vector sum of the electrostatic and gravitational component forces on it, which means that x would manifest its disposition to undergo such a total force. Once again, no antidotes, be they intrinsic or extrinsic, are present. Whether we direct our attention to component forces or total forces, consequently, we reach the same conclusion that no antidotes are at work in this example, which is in tune with my contention that it is not a case of two opposing dispositions' being co-instantiated by the same object at the same time.

Might it be objected that, though I've analyzed the example at hand in terms of component and total forces, the ontological status of component forces is highly controversial? Some philosophers like Cartwright (1983, 54-73) and Wilson (2009) indeed reject component forces as mere mathematical fictions, corresponding to no real entities. Does this make difference to the force of the argument I presented in the preceding paragraphs? No. To start, it is evident that no difference at all should be made as to what I have said about x 's disposition to experience a *total force*. What is problematic from the perspective of the philosophers who claim to eliminate component forces from the ontology of science is my discussion concerning the gravitational and electrostatic *component dispositions*. I, for example, said that x is disposed to experience a repelling electrostatic 'component' force from y , which they will find problematic. Note that this is directly derived from the textbook formulation of Coulomb's law which generally says 'For any two objects if they have charge q and Q , respectively, and are at distance r apart then they are subject to an electrostatic

component force of the magnitude $F=qQ/(4\pi\epsilon_0r^2)$ '. In fact, component force eliminativists reject this textbook formulation of Coulomb's law and propose ways to paraphrase it in a congenial way to their spirit. I urge below, though, that my central claim can be sustained across this paraphrasing.

Markus Schrenk (2007, 231), in his careful discussion of Cartwright's position, correctly suggests that, in her view, Coulomb's law should be paraphrased as something akin to the following: for any two objects O_1 and O_2 if they have charge q and Q respectively then O_1 has the Coulomb force capacity F_c which is the following capacity: to accelerate with $a=[qQ/(4\pi\epsilon_0r^2)]/m$ if O_1 is in distance r to O_2 , *ceteris paribus* (and *mutatis mutandis* for O_2). How is this *ceteris paribus* requirement to be specified? It is intended to exclude circumstances where O_1 would be subject to any other types of 'component force' than the electrostatic force at hand. With component forces taken out of the ontological picture, however, this intention should be phrased in a way that does not invoke the notion of component force. Schrenk (2007, 229), for example, says: '*ceteris paribus* means (amongst other things) that no masses should be around'¹⁹ as masses would yield gravitational component forces on O_1 . Granted that the *ceteris paribus* requirement can be successfully specified in this way, Schrenk's formulation of Coulomb's law involves no references to component forces, which means that it is jibe with Cartwright's eliminativism about component forces.

Since capacities are dispositions by another name, we can naturally derive the following dispositional ascription from Schrenk's formulation of Coulomb's law: Thanks to its electric charge,

C. x is disposed to accelerate away from y with $a=[qQ/(4\pi\epsilon_0r^2)]/m$ if they are at distance r apart, *ceteris paribus*,

where m and q are x 's mass and electric charge, respectively, and Q is y 's electric charge. Since (C) involves no references to component forces, it can be used as an eliminativist paraphrase of the ascription of the electrostatic component disposition, i.e. ' x is disposed to experience a repelling electrostatic component force of the magnitude $F=qQ/(4\pi\epsilon_0r^2)$ from y if they are at distance r apart'.

We can say a similar thing about the law of gravity. It is an easy task to give a formulation of the law of gravity in a similar fashion to Schrenk's formulation of Coulomb's law, in the spirit of Cartwright's position. This formulation will make true the following dispositional ascription: Thanks to its mass,

G. x is disposed to accelerate towards y with $a=GM/r^2$ if they are at distance r apart, *ceteris paribus*,

¹⁹ Schrenk's formulation assumes that the object O_1 has mass m . That said, what Schrenk means by the *ceteris paribus* clause must be that no masses but x exist, not that no masses whatsoever exist.

where M is y 's mass. How is the *ceteris paribus* requirement to be specified in this case? It is important to realize first that the content of this *ceteris paribus* requirement differs from that of the *ceteris paribus* requirement occurring in (C). It includes, among other things, that no charges are around as charges would yield electrostatic forces on x . Further, it should not include that no masses are around since x and y both must be massive to bring about x 's accelerated movement with $a=GM/r^2$. The *ceteris paribus* clause thus means incompatible things, depending on whether it occurs in (C) or (G). Assuming that the *ceteris paribus* requirement can be successfully specified in a way that does not refer to component forces, (G), like (C), will serve as an eliminativist paraphrase of the ascription of the gravitational component disposition.

In short, (C) and (G) are the dispositional ascriptions by which component force eliminativists like Cartwright want to replace the ascriptions of the electrostatic and gravitational component dispositions in an effort to eliminate talk of component forces. But I urge that they don't ascribe to x opposing dispositions. As noted earlier, the *ceteris paribus* requirements in (C) and (G) mean inconsistent things: one of them includes that no masses are around, whilst the other does not include it but instead includes that no charges are around. But the *ceteris paribus* clause in each dispositional ascription can be naturally deemed as part of the characteristic stimulus. This being the case, the dispositions attributed by (C) and (G) have inconsistent characteristic stimuli, which is to say that they are not conflicting dispositions, *a fortiori* opposing dispositions. The conclusion this brings us to is that not only are x 's electrostatic and gravitational component dispositions not conflicting dispositions but their eliminativist replacements are not as well: the first two do not have inconsistent manifestations, whilst the second two have inconsistent characteristic stimuli.²⁰ Whether we accept or reject the reality of component forces, consequently, we cannot justify the claim that opposing dispositions are instantiated by one and the same object at the same time in the

²⁰ It might be objected that, assuming that component forces themselves are dispositional properties, x 's experiencing the gravitational and electrostatic component forces at the same time suffices for simultaneous co-instantiation of opposing dispositions. I don't think, though, that this objection will go through. First of all, the assumption that component forces are dispositional properties is a highly disputable one (Massin 2009). Granted this assumption, further, I suspect, the gravitational and electrostatic component forces on x won't come out opposing dispositions. For, it seems an easy matter to demonstrate that when they are naturally construed as dispositional properties their characteristic stimuli are inconsistent with each other in much the same manner as is the case for (C) and (G). In fact, Schrenk himself suggests that y 's electrostatic and gravitational component forces on x be identified with the dispositions attributed by (C) and (G), in which case, as we have seen earlier, they can't be opposing dispositions.

example under consideration.²¹

4. Liking and disliking

It emerged from the last section that the example of the two like-charged and massive objects, which involves fundamental physical properties, fails to establish the possibility of opposing dispositions' being co-instantiated by the same object at the same time. It is interesting to note that it exhibits a marked analogy with one of Clarke's examples that concerns our psychological attitudes. Clarke (2010, 154) observes that we routinely say that one both likes and dislikes something at the same time: 'Liking it, one has an attraction toward it, a disposition, perhaps, to seek it, acquire it, accept it, or enjoy it. Disliking it, one has a repulsion from it, a disposition, perhaps, to avoid it, reject it, etc.' This, on Clarke's view, is therefore a compelling case where opposing dispositions are co-instantiated by the same object at the same time. Once again, one might go further to say that intrinsic antidotes are involved in this case: the liking functions as an intrinsic antidote to the disliking or the other way around.

To be concrete, suppose that Tom asserts that he likes and dislikes a jacket at the same time. I think, with Clarke, that at least typically Tom likes the jacket for one reason and dislikes it for another. For instance, he likes it because he likes its shape and dislikes it because he dislikes its colour. In connection with this observation, it is important to draw a clear line between one's liking (or disliking) an object and one's liking (or disliking) a property instantiated by it. I like this apple. I also like its taste, one of its properties. As a matter of fact, I only like this apple because I like its taste, not because I like its colour.

Then exactly how do liking an object and liking a property instantiated by it differ and how are they related to one another? I take it that what Rupert (2008) proposes as the 'component-force' theory of laws of special sciences like psychology is highly illuminating in addressing this question. To illustrate it, consider Rupert's example of the law which says 'If a person wants that q and believes

²¹ Surely my argument owes much to Schrenk for his paraphrasing of fundamental laws like Coulomb's law on behalf of Cartwright. As already noted, he has convinced me that his paraphrasing is best suited for Cartwright's purpose, which justifies my use of his paraphrases. For those who would cast doubt on Schrenk's paraphrasing, however, it is worth noting that his paraphrases don't decide the success or failure of my argument. In fact, Schrenk canvasses a number of alternative paraphrases of Coulomb's law on behalf of Cartwright before he obtains his paraphrases. I believe, though, that I can carry out basically the same reasoning for the most promising of them as I have done for Schrenk's paraphrases, for, they ineluctably involve *ceteris paribus* clauses akin to the ones that occur in Schrenk's paraphrases.

that doing a is the most efficient way to make it the case that q , then she will attempt to do a' . According to Rupert's component-force view, wanting that q always causes a psychological component force. Similarly, believing that doing a is the most efficient way to make it the case that q produces another psychological component force. These two component forces may or may not cause the agent to attempt to do a , which depends upon how they work together with other forces of the agent. Along this line, Rupert (2008, 350) says:

When instantiated together, the combined causal influences typically cause the agent to attempt to do a . Nevertheless, there are cases—not all of a piece—where the subject fails to exhibit the expected behavior. In some such cases, these combined forces do not cause the agent to attempt to do a because further psychological forces are present; thus, there is a different “resultant force,” and the law governing the combination of psychological forces entails a different behavioral outcome.

Rupert's innovative idea is thus to introduce the notion of psychological component force and give an account of the interplay of diverse psychological properties in bringing about a behavioural outcome by referring to what total force the corresponding component forces combine to yield.

In giving an adequate analysis of Clarke's example at issue, we can take crucial inspiration from Rupert's component-force view. The bottom line is that instances of liking a property produce psychological component forces; one likes an object or not, depending upon what total force the psychological component forces associated with its properties combine to yield. This thought can be nicely substantiated by means of an analogy with the example of the two like-charged and massive objects discussed in the last section. Liking the shape of the jacket, Tom is disposed to experience an 'attracting component force' toward it. Disliking the colour of the jacket, he is disposed to experience a 'repelling component force' from it. Whether Tom likes or dislikes the jacket, taken as a whole, is determined by how psychological component forces like them work together. Below I will briefly sketch how this can be done.

When Tom likes the jacket, this doesn't require that Tom likes all of the jacket's properties. Indeed, it is extremely rare that one likes all of x 's properties even in case one likes x very much. In view of this, ' x likes y ' approximately means that x likes y 's properties so much so that x is disposed to seek y , acquire y , accept y , or enjoy y . To say that Tom likes the jacket is to say that, all of its properties considered, he is so attracted toward it as to seek it, acquire it, accept it, and enjoy it. Likewise, to say that Tom dislikes the jacket is approximately to say that he dislikes the jacket's properties so much so that he is repelled from it with the result that he avoids it, disowns it, rejects it, and despises it. On Rupert's component-force view, this thought can be neatly formulated by suggesting

that to like an object x is to be disposed to experience an 'attracting total force' toward x ; and that to dislike x is to be disposed to experience a 'repelling total force' from x , where total force is spelt out in terms of component force. To be specific, recall that, as Tom likes the shape of the jacket but dislikes its colour, he experiences an attracting component force toward and a repelling component force from the jacket at the same time. My suggestion is then that Tom likes or dislikes the jacket, depending on which of the two component forces overpower the other (provided that Tom is subject to no other psychological component forces). Recognizing the hazard of oversimplification, we may further conceptualize the component forces as two-dimensional vectors and the jacket's total force on Tom, i.e., the total force Tom is disposed to experience with regard to the jacket, as the two-dimensional vector sum of the jacket's component forces on Tom. This is similar to the fact that, in the example of the two like-charged and massive objects, the total force on x is the vector sum of the component forces on it. If the jacket's total force on Tom is an attracting one, Tom likes the jacket, being disposed to seek it, acquire it, accept it, and enjoy it. Conversely, if the jacket's total force on Tom is a repelling one, Tom dislikes the jacket, being disposed to avoid it, disown it, reject it, and despise it. This is what I take to be the most convincing description of Tom's psychology, which has been naturally developed from Rupert's component-force view of psychological laws.

It is evident that, under this description, Tom instantiates no opposing dispositions at the same time. I said earlier that, liking the shape of the jacket, Tom is disposed to experience an attracting component force toward it; and that, disliking the colour of the jacket, he is disposed to experience a repelling component force from it. But the two dispositions are not opposing dispositions. It is perfectly possible that one experiences an attracting component force toward and a repelling component force from the same object at the same time. This resembles the fact that it is perfectly possible that the two like-charged and massive objects are subject to an attracting component force toward and a repelling component force from each other at the same time. Thus the two dispositions at issue do not have inconsistent manifestations, which means that they are not conflicting dispositions, let alone opposing dispositions.

It is indeed contradictory that one experiences an attracting *total force* toward and a repelling *total force* from one and the same object at the same time. On the assumption that Tom likes and dislikes one and the same *jacket*, therefore, it follows that Tom instantiates two opposing dispositions. But I stress that there is no reason whatsoever for thinking that this assumption is correct. When the attracting component force overpowers the repelling component force, the resulting total force is an attracting one, in which case Tom likes the jacket. Otherwise, the resulting total force is a repelling one, in which case Tom dislikes the jacket. Once this is seen, this example can be hardly viewed as a case where Tom likes and dislikes the jacket at the same time.

Surely we are sometimes ambivalent as to whether we like or dislike something. We occasionally get so confused as to sincerely assert that we like and dislike one and the same *object* at the same time, which I suspect Clarke attempts to exploit by means of his example. But this is only because we are unsure which of the attracting component force and repelling component force surpasses the other. In light of what I have discussed thus far, we should not take the assertion too literally.

To conclude, once Clarke's example is adequately described with the aid of Rupert's component-force view, it does not substantiate the claim that two opposing dispositions can be co-instantiated by one and the same object at the same time. Admittedly I leave open the possibility, albeit slim, of Rupert's view being challenged. For instance, one might hold the eliminativist view of 'psychological component forces' akin to Cartwright's view of physical component forces. Does this affect the validity of my conclusion in the present section? No, for much the same reason as Cartwright's eliminativism doesn't affect the validity of my conclusion in the previous section. Very briefly, that's because we have to introduce *ceteris paribus* clauses when we attempt to link liking (disliking) an object with liking (disliking) a property instantiated by it without invoking the notion of psychological component force. But Tom's liking the shape of the jacket and Tom's disliking its colour involve different *ceteris paribus* clauses, which makes it the case that they don't yield opposing dispositions: the first gives rise to Tom's disposition to seek it, acquire it, and consume it if he is indifferent to all of its properties but its shape, whereas the second gives rise to Tom's disposition to avoid it, disown it, and reject it if he is indifferent to all of its properties but its colour. They have incompatible characteristic stimuli, and so no opposing dispositions follow. This demonstrates that the validity of my conclusion is less reliant on the particulars of Rupert's view than otherwise thought.²²

5. Concluding remark

Thus far I discussed some examples that apparently show that opposing dispositions can be co-instantiated by one and the same object at the same time. It took a very careful analysis to uncover the underlying structure of each example properly, which brought to light that none of them work. This teaches us an important methodological lesson about how to use examples in philosophical discussions: in order to draw the right conclusions for individual cases, we need to go over each of them very carefully without blindly trusting our off-the-cuff intuitions about them.

Having seen that some of the most appealing of the examples offered by supporters of the possibility of simultaneous co-instantiation of opposing dispositions do not succeed, it is fair to say that there is no example-based reason for thinking that opposing dispositions can be co-instantiated

²² I thank one of the referees for pressing for this point.

by the same object at the same time. Isn't it possible to give a theoretical ground for it as an alternative? As already noted in Section 1, this is very unlikely! From this I come to the conclusion that we have no good reason to reverse our initial intuition that opposing dispositions can't be co-instantiated by the same object at the same time and hence we are best advised to accept it at its face value. This is a bad news for proponents of the possibility of standard-type intrinsic finks or antidotes to dispositions. For, as we have seen earlier, the possibility of standard-type intrinsic finks or antidotes to dispositions leads to the possibility of simultaneous co-instantiation of opposing dispositions. If opposing dispositions can't be co-instantiated by the same object at the same time, therefore, this will work as a *reductio* basis for rejecting the possibility of standard-type intrinsic finks or antidotes to dispositions.²³

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²³ Surely the impossibility of simultaneous co-instantiation of opposing dispositions doesn't serve as a *reductio* basis for rejecting the possibility of non-standard-type intrinsic finks and antidotes to dispositions. But this is of no much interest or dialectical import since, as already noted, it is evident, and therefore, not a matter of controversy that dispositions can be co-instantiated along with their non-standard-type intrinsic finks and antidotes to dispositions.

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