IMPROVING BIRD'S ANTIDOTES

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In this paper I will first consider Bird's cases against the conditional analysis of dispositions and defend them from Gundersen's objection. This does not mean that I believe that Bird's cases are successful. To the contrary, I take it that we can save the conditional analysis from Bird's cases by taking Lewis's two-step approach to dispositions. However, I will go on to argue that if Bird's cases are supplemented with the assumption that dispositions are intrinsic matter, they are able to do what they are intended to do.

I. Bird's Antidotes

There have been intense debates among contemporary metaphysicians on the issue of whether dispositions can be analysed in terms of counterfactual conditionals. Alexander Bird, in his recent paper, offers counterexamples against one version of the conditional analysis of dispositions—Lewis's reformed conditional analysis of dispositions [Bird 1998]. Fortunately, the present discussion on Bird's counterexamples does not depend on the subtleties of Lewis's analysis; so for the sake of simplicity I shall stick to a simpler version of the conditional analysis that goes as follows:

CA. Something x is disposed to give response r to stimulus s iff, if x were to undergo stimulus s, then x would give response r.[1]

Bird's cases are concerned with dispositional 'antidotes' that would frustrate the causal chain from stimulus to response. Here is one: a fragile glass G_1 is struck but it does not break because it is protected by a sorcerer who detects when G_1 is about to be struck and reacts by instantaneously administering an antidote that cancels out the shock of the striking, and thereby aborts the process of breaking. In this case, G_1 would not break if struck. Therefore, the analysans of CA for G_1's disposition to break in response to being struck is not satisfied. But it seems that, since G_1 is fragile, it has the disposition to break in response to being struck. If so, the analysandum of CA is satisfied. Thus it seems that Bird's case serves as a counterexample against CA.

In the following I will consider two objections to Bird's case to the effect that it is not a genuine counterexample against CA. The one objection due to Lars Bo Gundersen is that although it is indeed true that the analysandum of CA for G_1's disposition is satisfied, the

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[1] This is one formulation of the simple conditional analysis of dispositions proposed by Prior, Pargetter, and Jackson [1982]. Lewis admits that the simple analysis is conclusively refuted by Martin's electro-fink counterexamples and then proposes his reformed analysis by revising it [Martin 1994; Lewis 1999].

claim that the analysans of CA is unsatisfied is, in fact, not established [2000; 2002]. The other objection that is based on Lewis's two-step approach to dispositions is that although it is indeed true that the analysans of CA is unsatisfied, the claim that the analysandum of CA is satisfied is wrong. I will argue that the first objection by Gundersen fails; but that the second objection based on Lewis's two-step approach does work. I will go on to argue, however, that if Bird's case is supplemented with the assumption that dispositions are intrinsic matter, the second objection can be overcome.

II. Defending Bird's Antidotes Against Gundersen's Objection

Gundersen objects that, contrary to Bird's view, CA does not suffer from Bird's case because the claim that its analysans is unsatisfied is not established. He suggests that the most charitable reading of Bird's case is:

> G_1, when placed in the context where it is protected by the sorcerer—call this context 'sorcerer-context'—has the disposition to break in response to being struck and yet G_1, in the context, would not break if it were to be struck.
>
> [Gundersen 2002: 396]

Let us now consider the following four propositions:

A$_1$. G_1 has the disposition to break in response to being struck (in the sorcerer-context).
B$_1$. G_1 has the disposition to break in response to being-struck-in-the-sorcerer-context.
A$_2$. If G_1 were struck, it would break.
B$_2$. If G_1 were struck in the sorcerer-context, it would break.

The stimulus of the disposition ascribed by (A$_1$) is a striking, whereas the stimulus of the disposition ascribed by (A$_2$) is a striking-in-the-sorcerer-context. Therefore, CA analyses (A$_1$) into (A$_2$) and (B$_1$) into (B$_2$). Gundersen holds that, under the charitable reading of Bird's case, (A$_1$) is true and (B$_2$) is false. On the one hand, the falsity of (B$_2$) poses no threat to CA since, as Bird concedes, (B$_1$) is also false [2000: 231]. On the other hand, (A$_2$) does not imply (B$_2$) because of the principle of variable strictness for counterfactual propositions, wherefore, the falsity of (B$_2$) does not imply the falsity of (A$_2$). Thus the truth of (A$_1$) poses no threat to CA, either. So Gundersen concludes that Bird's case does not come out as a counterexample to CA.

As Gundersen correctly points out, the falsity of (B$_2$) does not imply the falsity of (A$_2$). Nevertheless, it is clear that, according to the standard Lewis/Stalnaker semantics for counterfactual propositions, (A$_2$) is false in the sorcerer-context as well as (B$_2$): G_1 is struck and so the antecedent of (A$_2$) is true; yet it does not break because of the sorcerer's protection and so the consequent of (A$_2$) is false. And, the falsity of (A$_2$) suffices for rejecting CA since it is agreed that (A$_1$) is true.

Probably Gundersen will respond that the standard Lewis/Stalnaker semantics is wrong. In fact, he says that it is highly counterintuitive that 'the conjoined truth of the antecedent and the falsity of the consequent ($s\&\neg m$), however accidental it may be, suffice for conferring falsity upon a subjunctive conditional ($\neg(s\,\square\!\!\rightarrow m)$)' [2002: 393]. Thus Gundersen will deny that the falsity of (A$_2$) follows from the fact that its antecedent is true and yet its consequent is false. Unfortunately I am afraid that Gundersen's view is untenable. I first note that, as

Gundersen himself concedes, his view on this issue needs backing from a detailed and comprehensive account of subjunctive semantics [2002 : 409]. Secondly, and more importantly, his arguments against the thesis that $(s\&\neg m)$ implies $(\neg(s\,\square\rightarrow m)\,)$—call it 'the true antecedent and false consequent (TAFC) thesis'—are not convincing at all.

One of Gundersen's arguments goes as follows:

> When the doctor for instance proclaims that his patient miraculously survived an attack of illness X, this appears to imply that were someone to suffer an attack X, the person would not survive. One can thus comfortably insist on $(s\,\square\rightarrow m)$ although $(s\&\neg m)$, as a matter of fact, is true on some particular occasion.
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> [Gundersen 2002: 393]

Suppose that John suffered the attack X about a time t and then miraculously survived. Gundersen, I think, equivocates two different counterfactual propositions:

C$_1$. If someone were to suffer X about t, he would not survive.
C$_2$. If John were to suffer X about t, he would not survive.

It is not the falsity of (C$_1$) but the falsity of (C$_2$) that, according to the TAFC thesis, follows from the fact that John suffered X about t and then miraculously survived. Therefore, to make a counterexample to the TAFC thesis, Gundersen would have to establish that the doctor's proclamation implies (C$_2$). However he argues only that the doctor's proclamation implies (C$_1$).

Note that (C$_1$) can be interpreted as a universally quantified counterfactual propositions:

C$_1$*. For every man y, if y were to suffer X about $t,$ y would not survive.

Gundersen might respond that if (C$_1$) is interpreted as (C$_1$*), the doctor's proclamation implies (C$_2$) since the doctor's proclamation implies (C$_1$*) which implies (C$_2$) by universal instantiation. But, in my opinion, it is not feasible that the doctor's proclamation implies (C$_1$*). As long as the doctor admits that John suffered X and then survived, he will deny (C$_1$*). A natural interpretation of (C$_1$) is: for most but not all men, if one were to suffer X about t, he would not survive. On this interpretation, it is plausible that the doctor's proclamation implies (C$_1$); yet (C$_1$) does not imply (C$_2$); therefore, neither does the doctor's proclamation imply (C$_2$).

Pace Gundersen, it seems to me that (C$_2$) is false. Suppose that someone who has the false belief that John did not suffer from X asserts (C$_2$). In this case I would reply: 'That's false; for John did suffer from X, yet he survived'. And, as Lewis correctly points out, this reply is perfectly cogent [1973: 27–8]. This means that the falsity of (C$_2$) follows from the fact that John suffered X about t and survived.

Another argument of Gundersen's against the TAFC thesis is:

> Contrarily, if one insists on the standard Lewis/Stalnaker subjunctive semantics one is also committed to the (likewise unpalatable) view that the conditional $(s\,\square\rightarrow m)$ is derivable from the mere *truth* of s and m. But if this is so, it is highly surprising that there ever was any issue about the theoretical adequacy of (CA). For surely, no one would seriously entertain the thought that the mere instantiation of two events A and B implies a dispositional interdependence between A and B (right-to-left reading of (CA)).
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> [Gundersen 2002: 393, his italics]

Gundersen seems to argue against one of the theses of the standard Lewis/Stalnaker semantics that $(s\&m)$ implies $(s\,\square\!\rightarrow m)$, which I call 'the true antecedent-true consequent (TATC) thesis'. On Gundersen's view, the TATC thesis makes CA absurd; yet it is unbelievable that CA is absurd since CA has been a received view on dispositions; therefore, the TATC thesis should be rejected.

In this paper I wish to be non-committal on whether Gundersen's argument succeeds in confuting the TATC thesis or not. For the sake of argument let me grant that it does the job. Even then, in Lewis's semantics for counterfactual propositions, Gundersen's argument fails to confute the TAFC thesis. It should be noted that, in Lewis's semantics, the TATC thesis is quite distinct from the TAFC thesis: the TATC thesis is a consequence of the assumption that no other world is even as similar to a world i as i itself is, whereas the TAFC thesis is a consequence of the assumption that no world is more similar to i than i itself is. Furthermore, the TAFC thesis does not imply the TATC thesis; so, rejecting the latter does not mandate rejecting the former. In fact, Lewis says that we can reject the latter but not the former by weakening the standard centring condition which stipulates that $\{i\}$ is to be a sphere around a world i [1973: 29]. In a weakly centred system of spheres, the world i itself is one of the closest worlds to i; but there may be other worlds as well that come out just as close to i as i itself.

In short, the falsity of the TATC thesis does not imply the falsity of the TAFC thesis. However, Gundersen's argument against the TATC thesis poses a threat to the TAFC thesis only if the falsity of the TAFC thesis follows from the falsity of the TATC thesis. Hence, Gundersen's argument does not threaten the TAFC thesis.[2] But, in so far as the TAFC thesis holds, we can establish the falsity of (A_2) and, therefore, Bird's case serves as a counterexample against CA. Thus Gundersen's objection to Bird's case fails.

III. Lewis's Two-Step Approach to Dispositions

We have seen that Gundersen's defence of CA against Bird's case does not work. In my opinion, there is a better defence of CA that is based on Lewis's two-step approach to dispositions. Lewis distinguishes two different kinds of problems in providing an analysis of an ordinary dispositional concept such as fragility, lethality, solubility, etc. [1999: 142–6]. First, we should correctly specify the stimulus and the response of the dispositional concept so as to define it into an 'overtly dispositional locution'—a disposition to give a response to a stimulus. For example, we might roughly define fragility to be the disposition to give the response of breaking to the stimulus of being struck. Suppose that this definition were correct. Then we would need to analyse what it means that something has the disposition at a time to give the response of breaking to the stimulus of being struck, which is the second problem in analysing fragility.

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[2]   It is worth noting that, in Stalnaker's semantics, the TAFC thesis implies the TATC thesis; therefore, Gundersen's argument against the TATC thesis indeed threatens the TAFC thesis. This is because Stalnaker, but not Lewis, accepts the uniqueness assumption that, for every possible world i and for an antecedent ϕ of a counterfactual proposition that is entertainable at i, there is at most one closest possible world to i where ϕ is true [Stalnaker 1984: 133–46; Lewis 1973: 77–83]. But, I take it that Lewis gives us many good reasons to reject the uniqueness assumption. Here I am indebted to Inkyo Chung.

Suppose now that advocates of CA take Lewis's two-step approach to dispositions and intend CA to solve the second problem. Then CA on its own does not provide an analysis of such an ordinary dispositional concept as fragility; it analyses only a disposition that is put into the overtly dispositional locution by means of a counterfactual proposition.

On this construal, CA can be saved from some alleged counterexamples. Let us consider a case offered by Lewis [1999: 145–6]. When a styrofoam dish is struck, it makes a distinctive sound; the Hater of Styrofoam is within earshot of the styrofoam dish; when the Hater of Styrofoam hears the distinctive sound, he comes and tears the styrofoam dish apart by brute force. In this case, if the styrofoam dish were to be struck, then it would break. Hence, according to CA, the styrofoam dish has the disposition to break in response to being struck. But we do not want to say that it is fragile. This seems to pose a problem for CA.

Under Lewis's two-step approach, however, CA is not troubled with the case of the styrofoam dish because its advocates can follow Lewis's view that fragility is strictly not identical with the disposition to break in response to being struck. For them, what the case of the styrofoam dish poses a problem for is not CA but the rough definition that fragility is the disposition to break in response to being struck. The correct definition of fragility would be something like 'the disposition to break through a certain direct and standard process in response to being struck' [Lewis 1999: 145]. On this view, the styrofoam dish indeed has the disposition to break in response to being struck; yet, it is not fragile because it does not have the disposition to break through a certain direct and standard process in response to being struck.

I take it that advocates of CA can respond to Bird's case in a similar way to the case of the styrofoam dish. Pace Gundersen, it is clear that the analysans of CA for G_I's disposition to break in response to being struck is not satisfied. This result, however, poses no threat to CA because its advocates can maintain that G_I does indeed not have that disposition and so the analysandum of CA is not satisfied, either. This does not mean that they will deny that G_I is fragile since, on their view, fragility is not identical with the disposition to break in response to being struck. Rather, they will speak of something like 'the disposition to break in response to being struck without antidotes' [Lewis 1999: 145][3] and maintain that G_I is fragile since it would break if struck without antidotes.

Bird anticipates this defence of CA, and argues that such a defence would require an adequate definition of fragility that serves its purposes; however, the prospects of finding such a definition are not promising [1998: 230]. For example, consider the following definition:

> BD. x is fragile iff x is disposed to break in response to a stimulus while nothing acts to prevent the breaking.

Bird claims that according to BD we would have to admit that a fragile glass is disposed to break in response to a far-off sneeze in a circumstance where nothing acts to prevent the breaking, for example, a circumstance where via a butterfly effect the sneeze would bring

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[3]   This is not tantamount to a definition of fragility since we cannot define the concept of antidotes (to fragility) without invoking the very dispositional concept 'fragility'.

about a major disturbance; yet that we do not wish to admit that disposition of a glass [Bird 1998: 231]. From this, Bird concludes that BD should be rejected.

I believe, however, Bird is wrong at this point: a glass is indeed disposed to break if a far-off sneeze brings about a major disturbance and then the disturbance impacts it. Of course, as Bird maintains, under normal circumstances a butterfly effect does not occur. But this means only that the dispositional concept in question is not useful in our ordinary language. Suppose that, on Mars, butterfly effects frequently occur because of unstable atmosphere. Then it would be no surprising news to Martians that a glass breaks in response to a far-off sneeze via a butterfly effect. If so, the dispositional concept in question would be useful to Martians. For example, those who cherish glassware would have to distinguish things that would break in response to a far-off sneeze via a butterfly effect from things that would not.

Fortunately this does not cause serious troubles for Bird's view, because we can easily offer another strong argument against BD. Even a red rose would break if struck at extremely low temperature. This means that there are some possible circumstances— extremely low-temperature circumstances—where a red rose is disposed to break in response to being struck. Under normal circumstances it would not break if struck. But if we, like Bird, regard normal circumstances as being circumstances which act to prevent the red rose from breaking, then we would have to say that it is disposed to break in response to being struck while nothing acts to prevent the breaking. It follows from this that, according to BD, the red rose is fragile. However, we do not want to say that it is fragile. Thus, I think, BD should be rejected though not for Bird's own reason.

A more serious problem in Bird's argument against the defence of CA that is based on Lewis's two-step approach to dispositions is: even if we grant Bird's objections to some definitions of fragility like BD, Bird does not succeed in defeating that defence. Note that, according to Lewis's two-step approach, to define fragility into the overtly dispositional locution is the first problem in analysing fragility; yet CA is purported to solve the second problem of analysing a disposition that is already put into the overtly dispositional locution. Therefore, in defending CA against Bird's case, its advocates have only to hold that G_1 does indeed not have the disposition to break in response to being struck, on the basis of which they can claim that the analysandum as well as the analysans of CA are unsatisfied; they do not have the burden of proposing that the concept of fragility can be defined into the overtly dispositional locution this way and that. Hence the fact that it is not easy to find an adequate definition of fragility does not on its own pose a problem for CA. Of course, without being given such a definition, Bird might complain that for now CA is not able to provide an analysis of an ordinary dispositional concept like fragility. The advocates would immediately respond, however, that this inability of CA is not due to some, if any, flaw of their analysis itself but due to some pragmatic difficulties in specifying the stimulus and the response built into the concept of fragility; and they would follow Lewis's view that to specify them 'affords no lesson about dispositionality in general' [Lewis 1999: 146].

IV. Improving Bird's Antidotes

As we have seen, Bird's argument against the defence of CA that is based on Lewis's two-step approach to dispositions does not work. I believe, however, that we can ultimately

defeat that defence on the assumption that dispositions are an intrinsic matter, which most philosophers including Lewis subscribe to. Lewis holds that dispositions of a thing supervene on intrinsic properties of it [1999: 138–9; 147]: 'if two things (actual or merely possible) are exact intrinsic duplicates (and if they are subject to the same laws of nature) then they are disposed alike'. For short, I will call this thesis 'the ICD (intrinsic character of disposition) thesis'.

Let 'G_2' denote an unprotected glass that is a perfect intrinsic duplicate of G_1. It is clear that according to CA G_2 is disposed to break in response to being struck: if it were struck, it would break through the normal course of fragile things since it is unprotected. Consider the following argument:

D$_1$. G_2 is disposed to break in response to being struck. [premise]
D$_2$. Dispositions are an intrinsic matter. [premise]
D$_3$. G_1 and G_2 are perfect intrinsic duplicates of each other. [premise]
D$_4$. Therefore, G_1 and G_2 have all their dispositions in common. [from (D$_2$) and (D$_3$)]
D$_5$. G_1 is disposed to break in response to being struck. [from (D$_1$) and (D$_4$)]

This argument is valid. Moreover, the premise (D$_3$) is what we can simply assume; and we have seen that the premise (D$_1$) is true. Accordingly, we can say that given the premise (D$_2$), i.e., the ICD thesis, G_1 must be disposed to break in response to being struck and, therefore, the analysandum of CA must be satisfied. This means that Bird's case, together with the ICD thesis, refutes CA since, as we have seen, the analysans of CA is not satisfied in it.[4]

It is clear that, given the ICD thesis, the advocates of CA have to admit that the analysandum of CA is satisfied and, therefore, cannot respond to Bird's case that G_1 is not disposed to break in response to being struck. Hence, on the assumption of the ICD thesis, we can defeat the defence of CA that is based on Lewis's two-step approach to dispositions. In consequence, I conclude that we can improve Bird's case against CA by drawing on the ICD thesis.[5]

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[4] It is remarkable that Lewis is well aware of this connection between the simple conditional analysis and the intrinsic character of dispositions. I think that the general relation between the ICD thesis and the conditional analysis of dispositions is worth scrutinizing, which will be a topic for another paper.

[5]

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