A Dispositional Theory of Counterfactuals

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1.   Dispositions and counterfactuals: the question of priority

Many have noted that there is a close relationship between *disposition ascriptions* such as:

> (1.1)   This glass is disposed to break when struck

or, more generally,

> (1.2)   x is disposed to M when C

And *counterfactuals* such as:

> (1.3)   If this glass were struck it would break,

or, more generally,

> (1.4)   If x were [subjected to] C, x would M

What exactly is the nature of this relationship?

Defenders of the *simple counterfactual analysis of dispositions* (SCAD) hold two claims about this relationship. They hold that:

> (1.5a) (1.2) is true just in case (1.4) is true, *and*
> (1.5b) (1.2) is true *in virtue of* the fact that (1.4) is true

In short, the truth conditions of disposition ascriptions are wholly determined by associated counterfactuals. The relationship here is a reductive one, from disposition ascriptions on the one hand to counterfactuals on the other.

This view faces at least two problems.

The first problem is the set of counterexamples to SCAD that have emerged in the literature, especially the cases of *finking* (Martin 1994) and *masking* (Johnston 1992).[1] These cases appear to show that SCAD is not even extensionally adequate: that is, that (1.5a) is false.

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[1] While the focus here on these two sorts of cases, the comments in the text apply also to other counterexamples to SCAD, such as *reverse-finking* and *mimicking*. For yet more counterexamples, see the barrage of cases developed in Manley and Wasserman 2008.

Finking. Consider a fragile glass equipped with a device that will turn it into steel when it is about to be struck. (1.1) is true of it but (1.3) is false of it.

Masking.[2] Consider a fragile glass that is filled with styrofoam packaging. (1.1) is true of it but (1.3) is false of it.

Such cases have been influential in raising doubts about SCAD, but their force is limited. For one thing, it remains possible for one sympathetic with SCAD to maneuver in response to them, either by taking care in specification of the stimulus and manifestation of the relevant disposition ascriptions (Choi 2006) or by moving to a *sophisticated* counterfactual analysis of dispositions (Lewis 1997). More importantly, for present purposes, is that such cases give us no insight into the question of *priority*. Since they are directed merely against the *extensional adequacy* of SCAD, namely (1.5a), they are silent on whether SCAD is right in thinking that counterfactuals are *more fundamental* than dispositions, as (1.5b) asserts. It may yet be that the spirit of SCAD is correct, though some care must be taken in spelling out its letter.

The second problem is somewhat more enlightening on the question of priority. This is the problem of *monadic disposition ascriptions*.[3] Consider the disposition of a given uranium atom to decay. Intuitively, this is not a disposition to decay *when* certain circumstances obtain. It is a disposition to decay *simpliciter*. But if this is right, then there is a quite fundamental obstacle to reducing disposition ascriptions to counterfactuals. The very form of a counterfactual, which must be dyadic, is inadequate to giving the truth-conditions for a disposition ascription, which may be dyadic *or* monadic. In short, however our intuitions about particular cases may go, counterfactuals simply appear to be formally inappropriate to figure in the reduction of disposition ascriptions.

This latter problem suggests that SCAD is mistaken not only in its symmetric claim about the truth-conditions of disposition ascriptions and counterfactuals but also in its asymmetric claim about the priority of counterfactuals to disposition ascriptions. Furthermore, it shows that the logical form of disposition ascriptions is somewhat more general than that of counterfactuals. This suggests a natural thought: that counterfactuals may be reduced to disposition ascriptions.

This thought has not been pursued in the extensive literature on dispositions and counterfactuals.[4] There are at least two reasons why it has not been.

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[2] In the alternate vernacular due to Bird 1998, cases of masking are sometimes referred to as cases of "antidotes."

[3] Fara 2005: 70-71, Manley and Wasserman 2008: 72-73.

[4] The accounts of counterfactuals that are closest in spirit to the present account are those on which their truth-conditions are given by natural features of the actual world, such as the causal theory of Jackson 1977.

The first reason is that this proposal seems to involve reducing something that is well understood to something that is poorly understood. For we *already* have a reductive account of the truth-conditions of counterfactuals, namely the account developed by David Lewis on which these truth-conditions of counterfactuals are given by similarity relations among possible worlds.[5]

There are, however, serious problems for such an account.[6] Furthermore, two of these problems – its treatment of 'might' counterfactuals and its treatment of certain counterpossibles – are ones that are better handled by the dispositional account of counterfactuals developed. So this is not ultimately a good reason for skepticism about the present account.

The second reason is that this proposal is more straightforward. The counterexamples to SCAD canvassed above were counterexamples to (1.5a): that is, to its extensional adequacy. This is why they give us no insight into the question of priority. But for precisely this reason they tell just as much against a reduction of (1.4) to (1.2) as they do against a reduction of (1.2) to (1.4). If there is to be an adequate dispositional account of counterfactuals, it must somehow avoid these objections to the very extensional adequacy of such an account.

This *is* a good reason to be skeptical about the present approach, but it can be answered. The key to answering it will be finding dispositions that, by their very nature, *cannot* be finked or masked. It is these dispositions to which counterfactuals may be reduced. The next section states and defends a principle about dispositions that entails that there are such dispositions. The remainder of the essay develops an account of counterfactuals on which they involve the ascription of precisely such dispositions.

2.   A principle about dispositions

There appears to be a strong connection between the dispositions of a thing and facts about the thing *itself*, considered independently of the environment that it happens to inhabit. One way of making this connection explicit is by saying that the dispositions of a thing are *intrinsic* to it, at least *modulo* the laws of nature. Thus Lewis claims: "Dispositions are an intrinsic matter . . . 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" (Lewis 1997: 138).

Jennifer McKitrick, however, convincingly argues that this principle is false (McKitrick 2003). Consider the disposition of one's key to open the door of one's office when inserted and turned.[7] This is a dispositional property of the key, but it does not appear to

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[5] Lewis 1973. A similar account is defended by Robert Stalnaker (Stalnaker 1968). The focus is on Lewis's account here, but where the differences between the accounts are significant – in particular, in their treatment of 'might' counterfactuals – it will be important to consider Stalnaker's approach explicitly.

[6] One problem that bears noting, in addition to those mentioned here, is that of working out an adequate measure of similarity; see especially Tooley 2003.

[7] An example due to Shoemaker 1984.

be intrinsic in the way Lewis requires. For by altering something wholly extrinsic to the key – namely, the lock – we may make it the case that the key loses this disposition. So the dispositions of a thing at least sometimes appear to depend partly on the environment which that thing happens to inhabit, even once we set aside the qualification about laws of nature.

There appears however to be *something* right about the claim that Lewis makes. In recent work Sungho Choi (Choi 2009) develops the promising idea that this idea is to be cashed out in terms not of what the dispositions of a thing depend on but rather on what sort of factors may fink or mask a particular disposition. In particular, Choi denies that there may be *intrinsic* finks or masks.

One concern about Choi's proposal is that the nature of intrinsicality is not clear enough to figure in this sort of fundamental principle.[8] We may however avoid this problem by stating a similar principle in terms of the more luminous vocabulary of mereology.

Consider the following principle:

(2.1)   If x is disposed to M (when C), and the disposition of x is finked or masked, then there is some (concrete, actual) y such that the disposition of x is finked or masked because of y *and* y is not part of x.[9]

Whereas Choi denies the existence of *intrinsic* finks or masks, let us say that (2.1) rules out the existence of *internal* finks or masks, where "internal" is to be understood in the mereological terms just given.

In most cases, it will be straightforward to solve for "y." In the case of finking discussed above, it is the device attached to the glass. In the case of masking, it is the styrofoam peanuts with which the glass is filled. There is no requirement, however, that "y" be a "medium-sized dry good," as it is in these cases. All that is required is that y is concrete, actual, and is not a part of the object whose disposition is finked or masked.

This principle seems a *conceptual* truth about the relationship between dispositions and mereology. Nonetheless, there are those who deny it. In particular, some objections recently made by Randolph Clarke (Clarke 2008) to Choi's proposal apply also, if successful, to (2.1). Let us briefly review those objections.

Clarke's first example is due to Mark Johnston, who considers a shy but intuitive chameleon. Being intuitive, such a chameleon is disposed to turn the color of any

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[8] Consider the well-known difficulties in giving an adequate account of intrinsicality, such as those raised by Langton and Lewis 1998, as well as arguments purporting to show that the domain of intrinsicality may be rather different than it is often assumed to be, such as the argument of Skow 2007. For these reasons it may be that intrinsicality is ill-suited to play a foundational role in formulating metaphysical theses, as Choi requires it to do.

[9] The qualification to concrete and actual y's rules out abstracta and concrete possibilia, if such there be. It is generally left implicit in what follows. The requirement of "concreteness" is not an entirely perspicuous one, for the reasons given in Rosen 2001. Nonetheless it is clear enough for present purposes.

environment in which it is about to be placed. Being shy, such a chameleon is disposed to turn bright red when exposed to view. Clarke says that the chameleon-like disposition of the chameleon is finked by its shy disposition, for "it loses the disposition to appear green in just the circumstances which commonly trigger a manifestation of that disposition" (Clarke 2008: 518).

If this were a successful objection, then it would also be an objection to (2.1), since there is nothing mereologically external to the chameleon that is responsible for its disposition being finked. But this does not seem a successful objection. For it is not plausible that the chameleon's disposition to turn green when about to be placed in a green environment is in this case lost, as finking requires. The chameleon has this disposition in virtue of being a chameleon and being intuitive, and it does not *cease* to be either of these things when it blushes. For this reason it is not plausible that the chameleon loses this disposition, and therefore not plausible that this disposition is finked. A more plausible diagnosis is the following: the chameleon has *opposed* dispositions, one to turn green in certain circumstances and the other to turn red in those very same circumstances. Both dispositions are operative in this case, but the latter is more powerful than the former. This is not then a case of a finked disposition, but of a "trumped" disposition: a disposition that is retained but outweighed by another disposition. But nothing in (2.1) rules out the possibility of such internal "trumping."

Clarke gives another case of a strong man who also has a property because of which he loses his strength whenever he comes into contact with weights. Clarke claims that such a man is disposed to pick up weights, but that this disposition is finked by his disposition to lose his strength. If this objection were successful, then it too would be an objection to (2.1).

But again there is an alternate diagnosis available. While above Clarke was mistaken in thinking that the chameleon lost a disposition, and therefore mistaken in thinking that this disposition is finked, here Clarke is mistaken in thinking that the weightlifter has a disposition in the first place, and therefore mistaken in thinking that there is any disposition here to be finked at all. A better diagnosis of the case seems to be the following: the strong man has certain categorical properties (a certain muscle mass, and so forth) that normally ground the dispositional property to pick up weights. But those properties in this case fail to ground any such disposition, in virtue of their modal fragility. So the assumption that the strong man is in fact disposed to lift weights is not, in this case, warranted. In neither this case nor the former one, then, has Clarke given us reason to reject (2.1).[10]

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[10] There are limits to this method of diagnosis. It is difficult to discern, without more explicit criteria, under what circumstances exactly a disposition is lost rather than trumped, and under what circumstances it exists in the first place. Perhaps ultimately the correct diagnosis of these cases must be treated as "spoils to the victor," on which we let the more plausible view of dispositions guide our intuitions about these borderline cases. For present purposes, it is enough to show that one who finds (2.1) plausible may reasonably retain this view in light of Clarke's objections, by appealing to the alternate diagnoses of the sort offered above.

3.   Global dispositions

From the principle defended in the previous section we may derive a class of dispositions that may not be finked or masked. Let us say that an object x is *maximal* just in case for any (concrete, actual) y, y is a (proper or improper) part of x. There can in fact be at most one maximal object. (Assume there are two, x and y. Since x is maximal, y is a part of x; since y is maximal, x is a part of y; then x=y). Let us call this object *the world*.[11] And let us call dispositions of the world *global dispositions*. The principle defended in the previous section entails, in these terms, that global dispositions cannot be finked or masked.

Are there any global dispositions? On the present proposal there are very many such dispositions, at least one for every true counterfactual. But we need not assume this to make plausible the claim that there are such dispositions. Consider *conservation laws*, such as the conservation of energy. In virtue of this law, the world has the following disposition: it is disposed to gain a certain amount of energy in one of its parts when it loses that amount of energy in the mereological complement of that part. (Indeed, one might argue that the order of priority here is reversed: the law may be true in virtue of the disposition of the world). So, even without assuming the view of counterfactuals to be defended, we should accept that there are global dispositions and, in light of the arguments of the previous section, that these dispositions cannot be finked or masked.

The existence of global dispositions, however, is not quite enough. For the present view of counterfactuals, global dispositions must have somewhat more structure than this. In particular, they must be dispositions to *make true* certain propositions. The remainder of this section motivates this claim about global dispositions. The next section puts it to work.

Consider once more the conservation of energy. The world is disposed to gain a certain amount of energy in one of its parts when it loses that amount of energy in the mereological complement of that part. But this is not the only available description of this disposition. We may also say, equivalently, that the world is disposed to *make it true* that there is a gain of a certain amount of energy in one of its parts when there is a loss of that amount of energy in the mereological complement of that part.

"Make it true" in this disposition ascription is to be understood as attributing a state to the world, rather than an event of which the world is the subject. Such disposition ascriptions are familiar from other contexts. Samantha is disposed to be happy when the sun is out. This disposition ascribes a relation between a state and a state, rather than between an event and an event, as does (1.1) above. The disposition to make a proposition true is a disposition ascription of the former sort.

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[11] This claim requires something that the foregoing argument does not establish, namely that there is also *at least* one maximal object. One who rejects this claim (someone, for example, who claims that only simples and living beings exist, in the manner of van Inwagen 1990) may therefore reject the present proposal as resting on unsound ontological presuppositions.

The availability of such ascriptions of global dispositions is underwritten by the following principle:

(3.1) For any contingently true proposition p, the world is a truthmaker for p[12]

This is a principle that ought to be accepted by anyone who accepts that contingent propositions have truthmakers in the first place.[13] George Molnar remarks that it is "trivial." (Molnar 2000: 83). It should be sharply distinguished from the following claim, recently defended by Jonathan Schaffer (Schaffer ms.):

(3.2) For any contingently true proposition, the world is the *only* truthmaker for p

The principle (3.1), unlike (3.2), leaves open the possibility that any contingent proposition, at least any proposition that does not concern the entire world, has some truthmaker more minimal than the world itself. It is in this respect a very weak principle, one that merely makes explicit the thought that the truth of contingent propositions must be, somehow or other, grounded in the world. This weak principle suffices to ensure that global dispositions are equivalently described as dispositions to make certain propositions true.

4. A theory of counterfactuals

With the materials developed in the previous section, we may state a theory of counterfactuals, as follows:

(4.1)   "A []$\rightarrow$ B" is true iff the world is disposed to make B true when A

To get an intuitive idea of what this proposal comes to, it is helpful to gloss it in the sort of informal terms with which Lewis 1973 begins. Lewis writes:

> 'If kangaroos had no tails, they would topple over' seems to me to mean something like this: in any possible state of affairs in which kangaroos have no tails, and which resembles our actual state of affairs as much as kangaroos having no tails permits it to, the kangaroos topple over. (Lewis 1973: 1).

On the proposal defended here, we should rather say:

> 'If kangaroos had no tails, they would topple over' seems to me to mean something like this: the world is disposed to make it true that kangaroos topple over when they have no tails.

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[12] Matters are less clear when p is a necessarily true proposition. These issues are discussed below in section 8.

[13] Of course, not everyone accepts this in the first place. See Merricks 2007 for a recent and vigorous criticism of such views. If the present theory is satisfactory on other grounds, however, this may itself be a reason to accept a minimal truthmaking view of the sort stated by (3.1). If such a view is the price of admission to the present view of counterfactuals, and if this view is a good one, then those otherwise agnostic about truthmaking may reasonably judge it to be a price worth paying.

We eliminate some of Lewis's fundamentals – possible states of affairs and the resemblance relation – in favor of some others – global dispositions and the truthmaking relation. This proposal is not clearly better from the intuitive point of view than Lewis's; nor is it clearly worse. To decide which theory is better, we need to consider, among other things, what principles about counterfactuals are true according to these respective theories.

Lewis 1973 discusses three "fallacies" in counterfactual logic: patterns of inference that are true of the material conditional but false of the counterfactual. These are: *strengthening the antecedent*, *transitivity,* and *contraposition*. Lewis also discusses a principle that he argues, *pace* Stalnaker, ought to be considered a fallacy: the principle of *conditional excluded middle*. All four principles also come out false of the counterfactual on the account given by (4.1). Let us take them in turn.

Strengthening the antecedent. This is the principle that:

(4.2)   (A []$\rightarrow$ B) $\rightarrow$ ((A & C) []$\rightarrow$ B)

Note that this principle is false for disposition ascriptions generally. This glass is disposed to break when struck, but it is not disposed to break when struck *and* wrapped in velvet. It is also false of the dispositions that figure in (4.1). The world is disposed to make it true that kangaroos topple over when they do not have tails, but it is not disposed to make it true that kangaroos topple over when they do not have tails and are anchored to the earth. So (4.2), strengthening the antecedent, is a fallacy on the present account, as it is on Lewis's.

Transitivity. This is the principle that:

(4.3)   ((A []$\rightarrow$ B) & (B []$\rightarrow$ C)) $\rightarrow$ (A []$\rightarrow$ C)

Note that this principle is false for disposition ascriptions generally. This glass is disposed to break when struck with this rod, this rod is disposed to break when wielded by an angry person, but this glass is not disposed to break when struck when wielded by an angry person (it may be, for example, that this glass is seldom if ever in the company of angry people). It is also false of the dispositions that figure in (4.1). Imagine that Bob and Charles generally go to parties together. Ann, who rarely goes to parties, is adored by Bob but disliked by Charles, so that Bob goes to the rare parties that Ann attends while Charles never does. Then the world is disposed to make it true that Bob goes to parties when Ann does, and to make it true that Charles goes to parties when Bob does, but is not disposed to make it true that Charles goes to parties when Ann does. So (4.3), transitivity, is a fallacy on the present account, as it is on Lewis's.

Contraposition. This is the principle that:

(4.4)   (A []→ B) → (~B []→ ¬A)[14]

Note that this principle is false for disposition ascriptions generally. Consider a glass that always contains water and that almost always leaks. This glass is disposed to leak when it contains water, but it not disposed to not contain water when it does not leak. It is also false of the dispositions that figure in (4.1). Consider again the previous case, modifying it so that Ann *always* goes to parties while Bob, though he tries to go to any party that Ann is attending, occasionally misses one. Then the world is disposed to make it true that Bob goes to parties when Ann does. But the world is not disposed to make it true that Ann does not go to parties when Bob does not. So (4.4), contraposition, is a fallacy on the present account, as it is on Lewis's.

Conditional Excluded Middle. This is the principle that:

(4.5)   (A []→ B v C)) → ((A []→ B) v (A []→ C))

The main difference between Lewis's theory and the very similar theory developed by Robert Stalnaker is that Lewis denies, while Stalnaker asserts, that (4.5) is a legitimate inference for the counterfactual. This is, as Lewis remarks, "the principal virtue and the principal vice of Stalnaker's theory" (Lewis 1973: 79).

Lewis convincingly argues that there is more vice than virtue in (4.5). Consider, as Lewis notes, the counterfactual copatriation of Bizet and Verdi. If Bizet and Verdi were compatriots, they would be French or Italian. But it is not the case that if Bizet and Verdi were compatriots they would be French, nor is it the case that if Bizet and Verdi were compatriots they would be Italian. In Lewis's terms, the worlds where they are French may simply be exactly as similar to the actual world as the worlds where they are Italian. This argument is a compelling one, and so we should reject (4.5). And the present account does.

Note that this principle is false for disposition ascriptions generally. A ball perfectly held atop an equiangular triangle is disposed to roll left or right when released, but it is not disposed to roll left when it is released and it is not disposed to roll right when released. It is also false of the dispositions that figure in (4.1). The world is disposed to make it true that Bizet and Verdi are French or Italian when they are compatriots, but it is not disposed to make it true that they are French when they are compatriots and it is not disposed to make it true that they are Italian when they are compatriots. So (4.5), conditional excluded middle, is a fallacy on the present account, as it is on Lewis's.

Let us review. (4.1) states a theory of counterfactuals on which their truth-conditions are given by global dispositions of the sort described in section 3. We have considered three "fallacies" (that is, invalid inference patterns) in counterfactual logic, as well as a fourth principle that, in light of Lewis's arguments, we ought to regard as a fallacy. All of these principles come out as invalid on the theory given by (4.1). This is a virtue of the theory.

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[14] And conversely: that is, (¬B []→¬A) → (A []→ B)). This principle is true just in case (4.4) is true, so the argument above for the falsehood of (4.4) also establishes the falsehood of its converse.

It is of course a virtue shared by Lewis's theory. So it has not yet been shown that the present theory is preferable to Lewis's, though it is has been shown that, on these points at least, it is as plausible as Lewis's. The following sections turn to issues on which the present view of counterfactuals is *more* plausible than Lewis's, and more plausible than "similarity of worlds" theories of counterfactuals more generally.

5. SCAD revisited

In a recent discussion (Manley and Wasserman 2008), David Manley and Ryan Wasserman pose a challenge to those who deny the simple counterfactual analysis of dispositions. They write:

> Even if the promise of a conditional analysis is illusory, it is hard to believe that there is *no* interesting connection between conditionals and ordinary dispositional ascriptions . . . A theory of dispositions that dismisses this connection is simply abnegating its explanatory burden (Manley and Wasserman 2008: 73)

Manley and Wasserman are correct that the link between conditionals (more specifically, counterfactuals) and disposition ascriptions is a central datum, and one that needs to be explained. The presupposition that this explanation must be given by our theory of *dispositions*, however, is a false one. It may instead be given by our theory of counterfactuals. That is what we are now in a position to do.

The link between counterfactuals and disposition ascriptions, on the present view, is not a link between two disparate kinds of claims, but between two varieties of a single kind of claim: *local* disposition ascriptions and *global* disposition ascriptions. It should not be surprising that *these* two varieties of claims should be connected in systematic, though defeasible ways. The remainder of this section makes explicit the nature of that connection.

Recall that the canonical form of a dyadic disposition ascription is:

(5.1)   x is disposed to M when C

For any such disposition ascription there will be a corresponding global disposition ascription of the following form:

(5.2)   The world is disposed to make it true that x M's when C[15]

In these terms, and if the theory of counterfactuals defended in the previous section is right, then SCAD amounts to the following claim:

(5.3)   The truth conditions of a dyadic disposition ascription are those of its

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[15] This ought to be read so that (5.2) is a dyadic disposition ascription, with 'C' as the stimulus condition and 'make it true that x M's' as the manifestation. That is, the form of (5.2) is that the world is disposed to (make it true that x M's) when C, not that the world is disposed to (make it true that x M's when C).

       corresponding global disposition ascription

This claim is false: cases of finking and masking are counterexamples. Indeed, the form of (5.3) makes it clear *why* SCAD is false. Since the disposition ascriptions in question are distinct in both their objects and their manifestations, it should be possible for their truth-conditions to come apart, as in fact they do in cases of finking and masking.

In addition to explaining why SCAD is false, the present proposal can also explain the fact that Manley and Wasserman reasonably demand an explanation for, namely that SCAD normally approximates to the truth about dispositions. The explanation factors into two parts: one having to do with the logical connections between disposition ascriptions of the form (5.1) and (5.2), and one having to do with contingent features of the world.

The first part is the following. *If* (5.1) and (5.2) are both true (or both false – the following remarks apply, *mutatis mutandis*, to their joint falsehood), then their respective truths will stand in one the following relations of dependence: either (5.1) is true in virtue of the fact that (5.2) is true, or (5.1) is true in virtue of the fact that (5.2) is true. That is, these truths are, as we might say, "fit" to ground one another. This part has to do with the logic of these dispositions ascriptions, rather than the contingent features of the world, because it holds independently of whether (5.1) or (5.2) or both are actually true or false.

The second part is the following. Normally, in virtue of contingent features of our world, (5.1) and (5.2) *are* jointly true or jointly false, and so do in fact stand in a relation of dependence. Their joint truth or falsehood is ensured by two claims. First, the *a priori* claim given in (2.2): that their truth conditions will come apart just in case there is something mereologically external to x that finks or masks its dispositions. Second, the *a posteriori* claim that such finks and masks are relatively uncommon in our world. Taken together, these claims entail that (5.1) and (5.2) will normally be jointly true or jointly false.

Really, these two parts of the explanation are explaining two slightly different phenomena. The first phenomenon, explained by the first part, is the pseudo-logical connection between disposition ascriptions and counterfactuals, the sort of thing that has led many to believe that it is the sort of connection that might be explained by analysis alone. The second phenomenon, explained by the second part, is the contingent fact that, in our day-to-day interaction with dispositional properties, it is normally sensible to act *as if* SCAD is true.[16] Both phenomena need to be explained if we are to give an adequate account of the connection between disposition ascriptions and counterfactuals, and this is something that the present account, as we have just seen, succeeds in doing.

This is potentially a good reason to accept the present view of counterfactuals. Whether

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[16] Manley and Wasserman note that a theory should "at least explain, for example, the way that ordinary beliefs about dispositions guide action. When we learn that something is fragile, we treat it with care because we know that many kinds of rough behaviour would lead to breaking" (Manley and Wasserman 2008: 73).

one judges that it is in fact a good reason will depend on one's antecedent commitments. If, for example, one thinks that the link between disposition ascriptions and counterfactuals can and should be explained some other way, then the arguments of this section are no reason to accept the present account.[17] Lewis, for example, could explain the link between dispositions and counterfactuals by appealing to the sophisticated counterfactual analysis of dispositions that he defends in Lewis 1998. But for those who wish to take dispositions as primitive and unanalyzable,[18] or who wish to give an analysis of dispositions that does not itself explain their connection to counterfactuals,[19] then the arguments of this section, conjoined with those of Manley and Wasserman, tell in favor of adopting a dispositional theory of counterfactuals.

6.　'Might' counterfactuals

An adequate theory of counterfactuals needs to account not only for 'would' counterfactuals, such as "If kangaroos had no tails, they would topple over," but also for 'might' counterfactuals, such as "If kangaroos had no tails, they might have longer ears." This section develops such an account, and argues that it is in an important respect superior to Lewis's, as well as to that of Stalnaker's. This is a further reason to prefer the present account of counterfactuals, one which is independent of the need to account for facts about dispositions.

'Might' counterfactuals appear to pose an obstacle to the dispositional account, for there is an aspect of dispositions that makes them ill-suited to account for 'might' counterfactuals in any direct way. This is that a disposition of to M when C involves x being *more* disposed to M when C than it is to disposed to *not* M when C. This is a *prima facie* obstacle to a dispositional analysis of counterfactuals since 'might' counterfactuals may be true even when the truth of their consequent is *less* likely than its denial.

The way to handle 'might' counterfactuals is by accounting for them in terms of features of the world that, while of the same ontological kind as dispositions, do not share this aspect of them. Consider the relation in which a sturdy but vulnerable mug stands to breaking when struck. This is not a disposition, because it is not the case that the mug is more prone to break when struck than it is to not break when struck. But the relation is very much *like* a disposition, since it involves a relation to a certain manifestation when a certain stimulus obtains. Let us call this property of the mug a *propensity* to break when struck.[20]

We may then state the theory of 'might' counterfactuals in terms of propensities, as

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[17] This would presumably be the response made by Manley and Wasserman themselves, who claim that the positive theory that they sketch (Manley and Wasserman 2008: 74-76) is adequate to explain this connection.

[18] Such as C.B. Martin, who emphatically claims that "the dispositional is as real and irreducible as the categorical" (Armstrong, Martin, and Place 1996: 74).

[19] Manley and Wasserman argue that the account of Fara 2005, on which disposition ascriptions reduce to habituals, is of such a kind (Manley and Wasserman 2008: 73-74).

[20] Talk of 'propensity' in modern metaphysics is far from univocal. The sense given to this term is a *stipulation*, which does not accord with many of the ways in which others have used it.

follows:

(6.1)   "A <>→ B" is true iff the world has the propensity to make B true when A

'Propensity' is to be understood in the way given in the previous paragraph, and the other terms in the same way they are to be understood in (4.1). Then 'If kangaroos had no tails, they might have longer ears' is true in virtue of the fact that the world has the propensity to make it true that kangaroos have longer ears when they have no tails.

What is the relationship between 'would' counterfactuals and 'might' counterfactuals, and does the present account explain this relationship? A number of authors, including Lewis, have endorsed the principle of *duality* for 'would' and 'might' counterfactuals, according to which:

(6.2)   (A []→ B) → ¬(A <>→ ¬B)

Informally, (6.2) says that the truth of a 'would' counterfactual is inconsistent with the truth of an opposed 'might' counterfactual with the same antecedent.

According to the present account, (6.2) is false. And it turns out, independently, that there is an good argument in favor of rejecting duality. So this aspect of the present account, that it offers an account of 'might' counterfactuals on which duality fails, is a further reason to accept the present account of counterfactuals.

First, the argument against duality. In recent work (Hájek ms.), Alan Hájek has noted a curious feature of duality, at least when it is conjoined with the fact that our world may be, and in likelihood his, an indeterministic one. Consider an arbitrary 'would' counterfactual. The objective indeterminacy of our world would appear to make the opposed 'might' counterfactual *true*. 'If the sun were to set earlier than it does, it would get dark sooner' would appear to be a true counterfactual. But of course it is possible that there might be some odd quantum event that lights up the heavens precisely when the sun goes down. So the following counterfactual is true: 'If the sun were to set earlier than it does, it might not get dark sooner.' But then, by duality, 'if the sun were to set earlier than it does, it would get dark sooner' is *false*. Similar arguments apply, *mutatis mutandis*, to almost any counterfactual which links a contingency to a contingency. Such arguments lead Hájek to the conclusion that most counterfactuals are false.[21]

The argument against duality simply runs Hájek's argument as a *modus tollens*. Many 'would' counterfactuals are true.   If duality is true then, in light of the likely indeterminacy of our world, few of them are true. Therefore we should reject duality. This argument is not decisive – it is not a "Moorean fact" that many 'would' counterfactuals are true. But it is a strong desideratum on a semantic theory that it not radically revise our judgments about the truth-conditions of the sentences of which it is a

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[21] Hawthorne 2005 runs a similar argument to a different conclusion; he proposes that we endorse Stalnaker's rather than Lewis's view, since the former allows us to deny duality. As discussed below, however, there are independent reasons to reject Stalnaker's approach to 'might' counterfactuals.

theory. This desideratum is a defeasible one, but it gives us grounds for seeking a theory of counterfactuals that allows us to deny duality in a reasonable and principled way.

One theory that denies duality is Stalnaker's. Stalnaker notes that 'might' in English typically expresses epistemic, rather than alethic, modality. Thus Stalnaker suggests that we understand the 'might' counterfactual as follows:

(6.3)   "A $\Diamond\!\!\rightarrow$ B" is true iff it is epistemically possible that A $[]\!\!\rightarrow$ B[22]

This theory of 'might' counterfactuals, however, is inadequate. It is plausible that 'might' counterfactuals typically have a reading of which (6.3) is an adequate account. But 'might' counterfactuals typically also have an *ontic* reading, and in contexts where we "force" this reading, (6.3) is false. Consider an example due to Jonathan Bennett.[23] A speaker standing by a haystack that in fact contains no needles but which he reasonably believes might contain a needle says: "If I had looked in the haystack, I might have found a needle." There is a reading on which what he says is *false*.[24] But Stalnaker's theory provides no such reading. Therefore we ought to reject Stalnaker's theory as a general theory of 'might' counterfactuals.

Here then is what we need: a theory of 'might' counterfactuals that captures their ontic aspect while at the same time giving us a principled ground for denying duality and so resisting Hájek's arguments. The present theory, (6.1), meets both conditions.[25]

First, (6.1) is a view on which 'might' counterfactuals are at least sometimes genuinely ontic. While they may have a reading on which something like (6.3) is true of them, they also have an ontic reading, and this is what (6.1) captures.[26] On the example of Bennett's against Stalnaker's theory, the defender of (6.1) may correctly say that it is *not* the case that the speaker might find a needle were he to search in the haystack. For since there is no need, the world does not have even the propensity to make it true that he finds a needle when he searches in the haystack.

Second, duality fails on the present account. Note that the failure of conflict between dispositions and opposed propensities is a feature of disposition ascriptions generally. This glass is disposed to break when struck, but it may at the same time have the propensity not to break when struck – if, for example, there are a few points on its surface

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[22] See Stalnaker 1978: 98-99.
[23] Bennett 2003: 190.
[24] To ensure that this is false even in light of Hájek's arguments, we may need to stipulate that the haystack inhabits a deterministic world.
[25] We may construct possible-worlds based theories that satisfy this criterion as well. Consider a "threshold" theory on which there is some ratio r such that (i) $0 < r < 1$, (ii) "A $[]\!\!\rightarrow$ B" is true just in case the ratio of A-worlds where B is $> r$, and (iii) "A $\Diamond\!\!\rightarrow$ B" is true just in case there is some A-world where B. The concern about such theory – in addition to technical problems such as introducing a measure over worlds – is that it fails to be principled. For any choice of 'r' would appear to be an arbitrary one.
[26] Compare Eagle ms., who defends such an "ambiguity thesis" about the 'might' counterfactual and also defends a view of ontic 'might' counterfactuals that is in several respects close to the one defended here.

such that it will not break when struck at those points.[27] It is also false of the propensities that figure in (6.1). The world is disposed to make it true that it gets dark sooner when the sun goes down earlier, but the world may *also* have a propensity to make it true that it does *not* get dark sooner when the sun goes down earlier. It would have this propensity if, for example, it is indeterministic in precisely the way Hájek's argument appeals to, on which there might be a quantum event that lights up the heavens precisely when the sun goes down. So duality is false on the present account.[28] We may reject A $\diamond\!\!\rightarrow$ B's argument without neglecting the genuinely ontic aspect of 'might' counterfactuals.

The present account of counterfactuals allows for the truth of 'would' counterfactuals to survive the truth of conflicting 'might' counterfactuals. The tolerance of 'would' counterfactuals also has an interesting result that bears noting. This is that a principle endorsed by Lewis turns out to be a fallacy on the present account. While this principle is intuitively compelling, on reflection it is plausible that this principle is, in fact, a fallacy (that is, an invalid inference pattern in the logic of counterfactuals).

The principle in question is the following:

(6.4) $((A\ []\!\!\rightarrow B)\ \&\ (A\ []\!\!\rightarrow C)) \rightarrow ((A\ []\!\!\rightarrow B\ \&\ C))$

This principle is true on Lewis's, as well as Stalnaker's, account. It is however false on the present account.[29] Consider 'If this die were tossed, it would not come up 1 or 2' and 'If this die were tossed, it would not come up 3 or 4'. Each of these counterfactuals is plausibly *true* on the present account. The world is disposed to make it true that the die does not come up 1 or 2 when it is tossed, though it does have a *propensity* to make it true that the die comes up 1 or 2; similarly for the die coming up 3 or 4. Consider then: 'If this die were tossed, it would not come up 1,2,3, or 4'. If (6.4) were true, then this counterfactual would be true as well. But this counterfactual is plausibly false. The world is *not* disposed to make it true that the die does not come up 1,2,3,4 when it is tossed. On the contrary, it is disposed to make it true that the die does come up in one of those ways. So if we accept the present account, we must reject (6.4).

This is a virtue rather than a vice of the theory, however, for we ought to reject (6.4) anyway. Consider a lottery with one million tickets, exactly one of which will win. Imagine that the lottery is an indeterministic one, so that the outcome is genuinely open rather than determined but unknown. Consider then the following counterfactual, spoken of a given ticket n:

(6.5)   If Larry were to buy ticket n (and no other tickets), Larry would lose

This counterfactual, (6.5), is plausibly *true*. But iterations of (6.4) lead to the result that,

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[27] Manley and Wasserman discuss such a case as a further counterexample to the conditional analysis of dispositions; see their discussion of "reverse Achilles-heels" at 69-70.

[28] It may be that duality is *in fact* materially adequate at deterministic worlds. But its adequacy in any such world is, on the present view, a contingent matter.

[29] It is also false on the "threshold" view of 'would' counterfactuals discussed above.

taken together, the truth of such counterfactuals entail the truth of:

(6.6)   If Larry were to buy every ticket, Larry would lose

And this counterfactual is clearly false. We must then give up one of (6.4), (6.5), and (6.6).[30] Given the plausibility of the latter two claims, it is the first, (6.4), which we ought to reject.

The present view of 'would' and 'might' counterfactuals is one on which 'would' counterfactuals are tolerant of the falsehood of opposed 'might' counterfactuals. This is what allows it to deny (6.2), duality. This is a virtue of the theory. Its tolerance means that it also invalidates the principle (6.4). This appears to be a counterintuitive result, but in fact it turns out to be yet another virtue.

7.   Contingent truths

Thus far our attention has been focused on counterfactuals whose antecedent and consequent are both actually and contingently false. But these are not the only sort of counterfactuals (though the term "counterfactual" is most aptly applied to cases of this sort). There are also those whose antecedent or consequent are actually and contingently *true*. These cases are the topic of this section. The next discusses those counterfactuals whose antecedent or consequent are necessarily true or necessarily false.

There are three ways in which a counterfactual might have a contingently true component. It may be that its antecedent is true and its consequent false, that its antecedent is true and its consequent true, or that its antecedent is false and its consequent true. The first two cases are easily and correctly accommodated by the present theory. The third, as we will see, is somewhat more difficult.

The principle that accounts for the first two cases is the following:

(7.1)   In the circumstances that actually obtain, the world is disposed to make true what is actually true, and is not disposed to make true what is actually false

This principle expresses the idea that, in the circumstances that actually obtain, the global truthmaking disposition simply reduces to the truthmaking relation. This principle is plausible. The global truthmaking disposition is, as it were, a certain sort of generalization of the truthmaking relation to non-actual circumstances. In the circumstances that actually obtain, this generalization simply generates the truthmaking relation itself.

If we accept (7.1), we arrive at the following results:

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[30] The problem here is obviously close to "lottery cases" familiar in recent epistemology; see Hawthorne 2004. The argument for denying (6.4) in the present case is much like the argument for denying "multi-premise closure" in the epistemic case made by Kyburg 1970.

(7.2) "A []→ B" is *true* if A is actually true and B is actually true

(7.3) "A []→ B" is *false* if A is actually true and B is actually false

So "If kangaroos had tails, they would not topple over" is true, in virtue of the fact that the world makes it true that kangaroos in fact do not topple over. "If kangaroos had tails, they would topple over" is false, in virtue of the fact that the world does not make it true that kangaroos in fact topple over. These are the correct predictions for a theory of counterfactuals to make. They capture the idea that, in these limiting cases, the truth-conditions of the counterfactual are simply those of the material conditional.

Matters are less straightforward when it comes to counterfactuals with actually false antecedents and actually true consequents. Consider a roulette player who places exactly one chip on 24 and wins. Imagine that, regretting that he did not bet more, he asserts the following counterfactual:

(7.4)   If I had put two chips on 24, I would have won

Intuitively, the speaker speaks truly. And this intuition can be backed by argument If he were pressed to defend his assertion, and if he were of a philosophical bent, he might point out that the number of chips placed on a number is *independent* of whether that number comes up or not. Such independence is what underwrites the apparent truth of (7.4).[31]

The defender of the present view of counterfactuals, however, must deny the truth of (7.4). For the world is not disposed to make it true that one wins in roulette when one puts two chips on 24. It is rather disposed to make it true that one *loses* in roulette when one puts two chips on 24. So the defender of the dispositional account of counterfactuals is obliged to deny the apparent truth of (7.4).[32]

How bad a result is this? The denial of the truth of sentences that ordinary speakers would regard as true is, of course, a cost for a semantic theory. One way of rendering this cost acceptable is by showing that the theory can give an adequate account of truth and falsehood of a range of other sentences, in light of which its departure from ordinary judgments in these marginal cases comes to look acceptable. This is something that I

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[31] The case is a variant on one given in Schaffer 2004. Such cases generally are due to Sidney Morgenbesser, and they raise problems also for the present account's treatment of some counterfactuals with actually false antecedents and consequents. Consider the case where the roulette player does *not* bet on 24, and says 'If I had bet on 24, I would have won.' This counterfactual appears to be true, but on the present account it plausibly comes out false. The remarks below in defense of the treatment of (7.4) on the present account apply also to cases where both the antecedent and the consequent are actually false.

[32] Compare here Timothy Williamson's remark that "since habituals in some sense characterize 'normal' cases while counterfactual conditionals can depend on abnormal features of the current case, habituals are not in general adequate substitutes for counterfactual conditionals" (Williamson 2008: 139). Since disposition ascriptions share this feature with habituals (indeed, on the proposal of Fara 2005 they simply *are* habituals), they too will elide the contingent abnormalities of the actual world. Whether this shows they are not adequate to capture counterfactuals is a further question, discussed in the remainder of this section.

have been doing in the course of this essay. Another and better way, however, is to show there is not really a cost to pay here at all. If ordinary speakers are in fact *mistaken* about whether these sentences are true, then a semantic theory ought *not* predict that they be true. One reason for suspecting that this may be the case here is that sentences like (7.4) *also* come out false on otherwise different accounts of counterfactuals, such as Lewis's. To make good on this suspicion, however, we need a principled account of why our judgments about modality go awry in such cases.[33] In the absence of such an account, any theory of counterfactuals that denies the truth of sentences like (7.4) must be regarded as incomplete. That said, I have argued that if there is a cost here there may be reason to pay it, in light of the success of the theory in many other cases, and that it remains an open question whether there is any cost to be paid here at all.

8.   Necessities and impossibilities

In addition to counterfactuals involving actually true claims, we need to give an account of those involving necessary (and so actually true) claims, and of those involving impossible (and so actually false) claims.[34] This section sketches such an account.

Begin with necessities. A counterfactual may either have a necessary antecedent or a necessary consequent, or both. The first of these cases is most easily handled. Consider "If 2 were less than 3, then kangaroos would topple over." This counterfactual is *false,* and the present account captures this fact, in virtue of principle (7.1) above, which says that in the circumstances that actually obtain, the truth of a counterfactual rises or falls with the truth of its consequent. Since any circumstances that necessarily obtain actually obtain, this principle entails that a counterfactual with a necessary antecedent will be true just in case its consequent is actually true.

The harder cases are those involving necessities in the consequent. To make sense of these, on the present account, we must make sense of the idea that the world is disposed to make *necessary* truths true. Some who are otherwise sympathetic with truthmaking have argued that necessary truths do not have truthmakers. Others have denied this, and have offered accounts on which necessary truths are, just like contingent truths, are made true by the world.[35] We need not settle this here. We may instead offer two accounts of these counterfactuals: one correct if necessary truths are made true by the world, the other correct if they lack truthmakers altogether.

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[33] One such diagnosis is proposed in Phillips 2007.

[34] There are also mixed cases, such as those with a necessary antecedent and an impossible consequent. These are not explicitly discussed here, but the remarks made in what follows may be naturally extended to account for them.

[35] Armstrong 2004: 95-111 offers such an account. Cameron 2008 criticizes Armstrong's account and proposes an alternate way of finding truthmakers for necessities. A third possibility is that necessary truths have possibilia among their truthmakers. This possibility, which looks beyond the actual world and its properties for truthmakers, is at odds with the present attempt to ground all counterfactuals in dispositions of the world. But we need not pursue it, since, as argued in the following, if it turns out we cannot find truthmakers for necessary truths in the actual world, we may instead take the disjunctive view stated by (8.1).

Let us say that necessities are made true by the world. Then our account easily handles counterfactuals whose antecedent is necessary. Necessary truths are those that the world is disposed to make true in any circumstances whatsoever, be they necessary circumstances or contingent ones. So "If 2 were less than 3, then 4 would be less than 5" is true, as is "If kangaroos had no tails, then 4 would be less than 5." If we may give an account on which the world makes necessary truths true, then the present account naturally extends to counterfactuals involving necessities.

Let us say that necessities are, while true, not *made* true by the world (or by anything else). In that case we may simple add a proviso to the theory of counterfactuals defended above. We may say:

(8.1)   "A []$\rightarrow$ B" is true iff (i) the world is disposed to make B true when A, *or*
                            (ii) B is necessary

This theory is adequate to capture the truth of the counterfactuals in question. Nonetheless, it is not entirely satisfactory. First, it is *inelegant*; if we wished to capture the nature of counterfactual truth, this theory no longer gives us a unified way of doing so, as Lewis's theory does. Second, it is *non-reductive*; if part of our aim in giving an account of counterfactuals was giving an account of modality more generally, then (8.1), which takes necessity as basic, will not play that role as well as the unmodified theory, (4.1), does. For these reasons, the present account will be more attractive if we can make good on the idea that necessary truths are in fact made true by the world.

Consider then impossibilities. Again, we may distinguish between those with an impossibility in the antecedent and those with an impossibility in the consequent, or both. Again, the first case is the straightforward one on the present account, while the latter ones are more difficult.

Consider "If water were not H_2O, then H_2O would not flow in the streams." This counterfactual is plausibly *true*. And it comes out true on the present account. Consider first ordinary disposition ascriptions. This glass is disposed to break when struck by a square rod, and it is disposed to break when struck with a cylindrical rod. The shape of the rod is immaterial to whether the glass breaks when it is struck. But then the glass is *also* disposed to break when it is struck by a rod that is both square and cylindrical – though, as a matter of necessity, there can be no such rod. Disposition ascriptions then appear to tolerate impossible stimulus conditions.[36] On the present account of counterfactuals, we may extend this feature of disposition ascriptions to our treatment of such "counterpossibles" The world is disposed to make it true that H_2O does not flow in the streams when water is not H_2O – though water is, as a matter of necessity, H_2O.

Not *all* such counterpossibles are true on the present account. Consider "If water were not H_2O, then kangaroos would not stand upright." This counterfactual is plausibly *false*. And the present account of counterfactuals underwrites this claim. As noted in (7.1), in the circumstances that actually obtain, the world is disposed to make true claims that are

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[36] Though contrast the arguments of Fara 2008: 851-852.

actually true. Supplementing the actual circumstances with irrelevant impossibilities does not undermine this disposition.

This is an *advantage* of the present account over Lewis's. Lewis is obliged to claim that any "counterpossible" is trivially true.[37] But this violates our intuitions about the counterfactuals canvassed in the previous two paragraphs – that one is true and the other false. The present account allows us to capture this claims about counterpossibles. And we need not avail ourselves of exotica like "impossible worlds" to do so.[38] These claims rather follow naturally from the logic of disposition ascriptions.

As noted, matters are more complicated when we consider counterfactuals with an impossibility in the consequent. The common-sense view of such counterfactuals appears to be that such counterfactuals are sometimes true and sometimes false. "If water were not H_20, then water would not be H_20" seems to be *true*, while "If water were not H_20, then total energy would not be conserved" seems to be *false*. This view is not captured on Lewis's account.[39] But, in this case, neither is it captured by the present account. For the following seems to express a sensible principle about truthmaking:

(8.2)   The world is never disposed, in any circumstances, to make impossibilities true

If (8.2) is true, then any counterfactual with an impossibility in the consequent will come out false. So while common sense judgments about counterfactuals with impossibilities in the antecedent are captured on the dispositional account but not on Lewis's, *neither* of these theories adequately captures common sense judgments about counterfactuals with impossibilities in the consequent.

How bad a result is this? The remarks made above with regard to the treatment of counterfactuals involving actual truths apply also here. If the dispositional account of counterfactuals is powerful across a range of cases, then this may be a price worth paying. And if ordinary speakers are for explicable reasons *mistaken* about certain connections between impossibilities, then there may be no cost to pay here at all. Since the treatment of counterpossibles within a possible-worlds framework clearly leads to a departure from common sense view of them, explanations of why this departure is an acceptable one are widespread in the literature.[40] The present account can, to a certain extent, turn these explanations to its own purposes. But there are limits to how far such explanations are applicable, for the present view endorses what the possible-worlds framework rejects: a *disjunctive* treatment of counterpossibles. Those with impossibilities in their antecedent may be true or false, while those with impossibilities in their consequent are all of them false. There are principled reasons for defending such a disjunctive view, which follows from the very nature of counterfactuals on the present

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[37] See Lewis 1973: 24-26.
[38] See Nolan 1997 for a defense.
[39] On this account, counterfactuals with impossibilities in the antecedent are all trivially true, whatever is in their consequent, while those with impossibilities in their consequent but contingencies in their antecedent are all automatically false. So Lewis's account does capture some variation in counterfactuals involving impossibilities, but this variation does not track the variation given by common sense.
[40] See for example Williamson 2008: 173.

account. But the defender of the dispositional account owes us a story about how ordinary speakers can be *partly*, though not *wholly*, correct about the truth-conditions of counterpossibles. Such a story remains to be given.

9.   Conclusion

The foregoing states and defends a theory of counterfactuals, on which counterfactuals reduce to a species of disposition ascriptions. The initial motivation for this theory was to explain the relationship between counterfactuals and disposition ascriptions by reversing the traditional order of explanation. The theory has turned out to have further virtues as well: its treatment of 'might' counterfactuals and of counterfactuals with impossible antecedents is preferable to the treatment of such counterfactuals on possible-worlds theories like that of Lewis. The theory also has what appear to be, at first pass, at least, vices, though some of these vices are vices shared by possible-worlds theories. Overall, the foregoing arguments seem to show that the present account is *preferable* to possible-worlds accounts, though this conclusion hangs on fine judgments about the desiderata for a theory of counterfactuals, as well as on making good on several promissory notes offered above. Whether one agrees will depend on one's own judgments about those desiderata, as well as one's optimism or pessimism about those promissory notes. However one judges these questions, the theory offered here is one that ought seriously to be considered by anyone interested in questions about whether some species of modality may be reduced to some others.[41]

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