

If counterfactuals were neg-raisers, conditional excluded middle wouldn't be valid*

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The principle of “Conditional Excluded Middle” (CEM) has been a matter of longstanding controversy in both semantics and metaphysics. According to CEM, we are, *inter alia*, committed to claims like the following:

If the coin had been flipped, it would have landed heads, or if the coin had been flipped, it would not have landed heads.

In favour of CEM, various theorists have appealed, primarily, to linguistic data – for instance, that we intuitively feel no important difference between denying that the coin would have landed heads and affirming that the coin would have landed tails (i.e., not heads). Against CEM, however, theorists have argued that it commits us to facts that are, from a certain perspective, metaphysically arbitrary. For suppose that the relevant coin is completely indeterministic. In that case, there would be nothing that explains why it is true that the coin would have landed tails, on the one hand, and nothing that explains why it is true that it would have landed tails, on the other. And yet, by CEM, if flipped, it would have landed heads, or if flipped, it would have landed tails – and so, either way, it would seem, there exists some fact that is, in the relevant way, “arbitrary”. CEM must therefore be rejected, and the linguistic data somehow explained away.

Such are the familiar problems. However, a new strategy for supporting CEM has emerged in the literature. In a recent paper, building on work from Higginbotham (1986, 2003), J.R.G. Williams articulates a new positive argument in favor of CEM stemming from quantified conditional statements. He insists that “the burden of proof is therefore shifted to those who would argue against the principle” (Williams 2010: 650). Our aim here is not precisely to argue against the principle. But we do worry that Williams’ strategy proves too much. We will argue that the strategy Williams employs can be parodied to generate an argument for the unwelcome principle of Should Excluded Middle: the principle that, for any A, it either should be that A or it

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should be that not A. Uncovering what goes wrong with this argument casts doubt on a key assumption in Williams’ argument. Thus, with this assumption undercut, the issue devolves into a more familiar debate between those that accept and those that deny Conditional Excluded Middle. The strategy is thus ultimately ineffective.

The core way we wish to develop this point is by defending the thesis that, like *should*, *would* is a so-called neg-raising predicate. “Neg-raising” refers to the widespread linguistic phenomenon whereby what is in fact wide-scope negation gets treated, in context, as if it belonged to the relevant embedded clause. For instance, “I don’t think that Trump is a good president” strongly tends to implicate “I think that Trump is not a good president,” despite the former not semantically entailing the latter. The phenomenon of neg-raising has generated substantial discussion in the linguistics literature – and we thus aim, in part, to make a contribution to that literature. The aim of our paper is thus ultimately twofold. First, we show how one could resist Williams’ new argument for CEM. Second, we show how a defender of a Lewis-style semantics for counterfactuals should implement the idea that the counterfactual is a “neg-raiser”.

1. Conditional excluded middle and the argument from quantification

The debate in question concerns the principle called Conditional Excluded Middle, which can be stated as the following schema (where A and C stand for propositions, and $\>$ is the counterfactual conditional):

$$\text{CEM: } (A \> C) \vee (A \> \neg C)$$

Williams provides an argument for CEM that proceeds via arguing for the equivalence of quantified conditional statements with the following form:

$$[\text{Every } x: Fx] \neg(Gx \> Hx)$$

$$[\text{Every } x: Fx](Gx \> \neg Hx)$$

This amounts to establishing CEM—just as one can derive CEM from the equivalence of $\neg(A \> C)$ and $(A \> \neg C)$.¹ (Notice that the only difference in the above formulas concerns the parallel

¹ The reasoning goes as follows. From the Law of Excluded Middle, we have $(A \> C) \vee \neg(A \> C)$. But the latter disjunct is itself equivalent to $A \> \neg C$. So we have CEM from LEM and the equivalence.

position of the given negation.) Williams argument rests on these three premises (and here we quote):²

Premise 1: The following are equivalent:

- A. No student would have passed if they had goofed off.
- B. Every student would have failed to pass if they had goofed off.

Premise 2: (A) and (B) can be regimented respectively as follows:

- A*. [No x: student x](x goofs off > x passes)
- B*. [Every x: student x](x goofs off > \neg x passes)

Premise 3: For any F, “[No x: Fx]Gx” is equivalent to “[Every x: Fx] \neg Gx”

From these premises it straightforwardly follows that (C*) is equivalent to (B*):

- C*. [Every x: student x] \neg (x goofs off > x passes)
- B*. [Every x: student x] (x goofs off > \neg x passes)

The reasoning from the premises to the equivalence of (C*) and (B*) proceeds via the following chain of equivalences:

- (C*) is equivalent to (A*), by premise 3;
- (A*) is equivalent to (A), by premise 2;
- (A) is equivalent to (B), by premise 1;
- (B) is equivalent to (B*), by premise 2;
- So, (C*) is equivalent to (B*).

And since this argument seems to hold in general one can derive corresponding instances of CEM. Williams concludes that

The upshot is that denying CEM comes to seem rather heroic: one needs to explain away... the apparent equivalences between quantified conditional statements. (Williams 2010: 652)

² Williams (2010: 652). The argument builds on some observations of Higginbotham (1986, 2003), and especially the discussion in von Fintel and Iatridou (2002). A version of this argument is likewise developed by Mandelkern 2019; it is similarly endorsed in Goodman ms.

We can be heroes. Williams' argument, however, is a powerful one – and, in our judgment, it takes some substantial groundwork to uncover its weak point. However, the first thing to say about this argument is that, although it is a delicate matter explaining exactly how the argument goes wrong, there is nevertheless substantial reason to believe that it does go wrong. For the above argument can be parodied to generate an argument for the unwelcome principle of Should Excluded Middle. We thus pursue the following roundabout strategy. We first develop a parallel argument for Should Excluded Middle. We will then unmask the culprit in the faulty argument concerning “should”. With this in mind, we can return to the argument for CEM and inspect the analogous point in that argument.

2. An argument for should excluded middle

Recall that the above argument for CEM proceeds on the basis of an intuitive equivalence between claims like:

- (1) No student would pass were he to goof off.
- (2) Every student would fail to pass were he to goof off.

- (3) No employee would be happy were she to be sacked.
- (4) Every employee would fail to be happy were she to be sacked.

And so on. And the fact is that these claims do sound equivalent (at any rate, they certainly sound like claims only philosophers would try to prize apart). But now the point. A parallel observation holds for should:

- (5) No student should pick up a hitchhiker if he is traveling alone.
- (6) Every student should refrain from picking up a hitchhiker if he is traveling alone.

- (7) No employee should report to work if she has a fever.
- (8) Every employee should fail to report to work if she has a fever.

- (9) No one should suffer from malaria if he is living in modern-day Scotland.

(10) Everyone should be free from malaria if he is living in modern-day Scotland.

Examples could be multiplied, but the point is clear. Imagine a context in which two political candidates are on stage during a debate. In response to an outbreak of malaria due to a failure of the health system, the first candidate, after proposing a doubling of the health budget, says, “Let me be clear. No one should suffer from malaria if he is living in modern-day Scotland.” And now imagine the other candidate responding, “Yes. But let me go further. I believe that everyone should be free from malaria if he is living in modern-day Scotland.” Needless to say, the audience will be confused by this attempted one-upmanship from the second candidate: intuitively, they’ve both said just the same thing. Or imagine the following. Imagine someone saying:

No one should suffer from malaria if he is living in modern-day Scotland, but I’m not saying that everyone should be free from malaria if he is living in modern-day Scotland.

Anyone uttering the above will almost certainly be met with a “blank stare” (MacFarlane 2012: 216). The point here is clear: there is a strong feeling that there is an intuitive equivalence between the relevant pairs considered above.

And yet: we can use this intuitive equivalence to support an argument for Should Excluded Middle (SEM). As a first approximation, SEM can be captured with the following schema: $\text{Should } A \vee \text{Should } \neg A$. But note a wrinkle before proceeding. Some “should” claims, such as the ones in (5)-(10), are so-called “iffy-shoulds” – they contain an ‘if’-clause. The ‘if’-clauses occurring in sentences of this kind are standardly interpreted as “restrictors” on the modal (“should”). That is, the ‘if’-clause serves to restrict the sort of situations that are quantified over for the “should” claim. For example, “should A if B” means (roughly) that all the best worlds among those that are B-worlds, are also A-worlds. We will represent a sentence such as “should A if B” with a restricted-should as follows: $[[\text{Should: B}] A]$.³ Then more generally we can say that Should Excluded Middle is the following principle:

³ This follows the long tradition stemming from Lewis (1975) and Kratzer (1986) known as the restrictor analysis. And the related idea of treating conditional obligations with a binary obligation operator goes back further to Von Wright (1956). See also van Fraassen (1972). Alternative analyses are available for the iffy-shoulds, which would serve our purposes as well. Note: there is also an evidential, “epistemic” *should*, as in “He should be at the office by now.” We focus on the moral *should* in this paper, although cases involving the epistemic *should* would suit our purposes as well.

SEM: [Should: B] A \vee [Should: B] \neg A⁴

At this stage, we can return to Williams' argument for CEM, and provide an exactly parallel argument for SEM. As before, this analogous argument proceeds via arguing for the equivalence of quantified "should"-statements of the following form:

[Every x: Fx] \neg [Should: Hx]Gx

[Every x: Fx] [Should: Hx] \neg Gx

More precisely:

Premise I: The following are equivalent:

α . No student should pick up a hitchhiker if he is traveling alone.

β . Every student should fail to pick up a hitchhiker if he is traveling alone

Premise II: (α) and (β) can be regimented respectively as follows

α^* . [No x: student x] [[Should: alone x] pick-up x]

β^* . [Every x: student x] [[Should: alone x] \neg pick-up x]

Premise III: For any F and G, "[No x: Fx]Gx" is equivalent to "[Every x: Fx] \neg Gx"

From these three premises, one can then reason via the chain of equivalencies to the equivalence of (γ^*) and (β^*):

γ^* . [Every x: student x] \neg [[Should: alone x] pick-up x]

β^* . [Every x: student x] [[Should: alone x] \neg pick-up x]

That argument looks good on a first pass. Very plausibly, however, SEM is not a valid principle, so it must have gone wrong somewhere. That is, it certainly seems possible that there are scenarios in which it is neither the case that it should be that A, nor the case that it should be that \neg A. In these scenarios, we might say, the relevant (moral) considerations are "on a par". (For instance: two strangers x and y are drowning in a pond, and you can't save both. But you should save

⁴ The special case where there is no restrictor (or B is a tautology) amounts to the unrestricted principle: Should A \vee Should \neg A.

someone. Thus: it is not the case that you should save x, and not the case that you should save y – although certainly you should save x or y.) Our claim is that this argument for SEM has a key weak point, and the original argument for CEM has a parallel weak point.

3. Assessing the argument for should excluded middle

Now the important question: what has gone wrong with the argument above? We will discuss two potential diagnoses. The first is tempting, but only plausible given a controversial assumption; we thus we opt for the second diagnosis.

3.1 Ambiguity of scope

First the tempting diagnosis. The idea is to appeal to structural ambiguity. Consider the following sentences:

- (12) No student should cheat on their exam.
- (13) Every student should not cheat on their exam.

Prima facie, these sentences seem equivalent. But there is a question of scope. Does ‘should’ take widest scope, or do the quantifiers take widest scope? In particular, should sentence (12) be regimented as (a) or instead (b)?

- (a) No student is such that it should be that they cheat on their exam.
 - [No x: student x] [[Should] cheat x]
- (b) It should be that no student cheats on their exam.
 - [Should] [[No x: student x] cheat x]

The fact that modals and quantifiers can often swap their respective scopes raises a flag concerning the intuitive equivalence between (12) and (13). That is, these sentences are *de re/ de dicto* ambiguous, so claims of their intuitive equivalence must be treated with care. On closer inspection, they are, in the first instance, equivalent on a reading not equivalent simpliciter. A normal utterance of (12) would naturally be interpreted to be saying that at the best worlds the students don’t cheat, i.e., that there is an obligation for the students to not cheat. The alternative interpretation to the effect

that it is not the case that the students at the best worlds do cheat (i.e. the students don't have a special obligation to cheat), while perhaps available, is certainly not a natural reading.

Notice that sentences (12) and (13) are clearly equivalent on their de dicto readings, which we can regiment as follows:

(12dd) [Should] [[No x: student x] cheat x]

(13dd) [Should] [[Every x: student x] \neg cheat x]

But notice that the regimentations at issue in our argument for SEM are instead the de re readings of the relevant sentences, namely (α) and (β). (Likewise for the relevant sentences in Williams' analogous argument for CEM, (A) and (B).) A critic of the argument for SEM, then, might maintain that (α) and (β) are de re/de dicto ambiguous, and although they are intuitively equivalent on their de dicto readings (hence our data), the de re regimentations employed in the argument are not equivalent. When we are careful to read (12) de re, however, we can see that just because no student is such that he or she should cheat, this doesn't analytically imply that all the students are such that they should not cheat.

The problem with this diagnosis is that, while it is true that modals and quantifiers can often swap their respective scopes, given certain syntactic environments these scopal interactions can be blocked. For example, the following sentence is structurally ambiguous, depending on the relative scopes of the quantifiers.

(13) A female professor met every student.

But when the universal is within the clause "who met ..." the inverse scope reading is blocked.

(14) A professor who met every student was female.

In (14), the universal can't scope out over the existential, and so only has the reading where the existential takes widest scope. Our sentence (α), likewise, contains something that constrains the options for scope (as does Williams' parallel sentence (A)).

(α) No student should pick up a hitchhiker if he is traveling alone.

In this case, the bound pronoun in the if-clause forces the quantifier to take wide scope over the modal. Thus, the *de dicto* reading is blocked. That is, if the quantifier were given narrow scope, it would leave the pronoun in the if-clause (“alone y”) unbound.⁵

[[Should: alone y] [[No x: student x] pick-up x]

To be clear: it is not the if-clause per se that is blocking the *de dicto* disambiguation. Iffy-shoulds can also be *de re/de dicto* ambiguous. Consider:

(13) No student should pick up a hitchhiker, if the circus is in town.

- [No x: student x][[Should: circus-in-town] pick-up-hitchhiker x]
- [Should: circus-in-town] [[No x: student x] pick-up-hitchhiker x]

But in this case there is no bound pronoun in the if-clause. The relevant constructions by contrast do have a bound pronoun in the if-clause: “if he is traveling alone”. So the relevant *de dicto* reading is not available. Thus, charging the above argument for SEM with *de re/de dicto* equivocation would seem to be a misdiagnosis. Only *de re* readings are relevant and it seems that only *de re* readings are available.

But there is a complication here. There is a background question: in constructions like (α), does the if-clause restrict the modal or instead the quantifier? Some have suggested that ‘if’-clauses can directly restrict the relevant quantifiers (see von Stechow 1998 and Leslie 2009; see also Rothschild 2014). Consider this sentence:

(15) Every student passed the exam if he tried.

In this case, it seems that ‘if he tried’ simply restricts the quantifier phrase ‘every student’, so that (15) is equivalent to

(16) Every student who tried passed the exam.

Given this general idea, one might think that (α) and (β) are just other ways of saying (α_1) and (β_1):

⁵ Of course, in the right context, there is a reading of (α) where the pronoun ‘he’ is used as a demonstrative – imagine the speaker points at John when the speaker utters ‘he’. But the diagnosis under discussion requires there to be a *de re/de dicto* ambiguity holding fixed that in *both* cases the pronoun is bound.

- α . No student should pick up a hitchhiker if he is traveling alone.
- β . Every student should fail to pick up a hitchhiker if he is traveling alone.

- $\alpha 1$. No student who is traveling alone should pick up a hitchhiker.
- $\beta 1$. Every student who is traveling alone should not pick up a hitchhiker.

Now, ($\alpha 1$) and ($\beta 1$) are plausibly de re/de dicto ambiguous – and, notably, they don't contain an if-clause with a bound pronoun. And they have (equivalent) de dicto readings:

- ($\alpha 1$ -dd) Should: No student who is traveling alone picks up a hitchhiker
- ($\alpha 2$ -dd) Should: Every student who is traveling alone doesn't pick up a hitchhiker

Now the point. One could argue that the reason that (α) and (β) seem equivalent is that they are naturally read as ($\alpha 1$ -dd) and ($\alpha 2$ -dd), which indeed are equivalent. However, one could then point out that, since only the de re readings of (α) and (β) support the argument for SEM, the argument for SEM equivocates, and thus is unsound. Maybe. (And if so, then an analogous diagnosis applies to Williams argument for CEM.) But this line of response rests on the proposal that, in general, the if-clause in the given constructions restricts the nominal quantifier (instead of the modal), and there are good reasons to doubt that proposal. For one sort of example, the following claims don't seem equivalent:

- (17) Some student will fail if he goofs off.
- (18) Some student who goofs off will fail.

Rothschild (2014) goes so far as to say that “the leading consensus is that ...the idea that ‘if’-clauses restrict nominal quantifiers is wrong” (see also von Stechow and Iatridou 2002, and Klinedinst 2011). So while we don't think this line is ultimately the way to go, our discussion thus far does highlight the fact that the arguments we are diagnosing employ some highly controversial and ill-understood constructions. Nevertheless, we think there is a better diagnosis of where the argument for SEM goes wrong. To that diagnosis we now turn.

3.2 Neg-raising and excluded middle

In our judgment, the correct diagnosis of where the argument for SEM goes wrong concerns not a structural slide between de re and de dicto readings, but instead a subtler sort of slide concerning negation. It is well-known that when verbs such as ‘think’ and ‘want’ are negated they are most naturally interpreted as taking wide scope over the negation. As Quine remarked, there exists what he considered to be a

... familiar quirk of English usage whereby ‘x does not believe that p’ is equated to ‘x believes that not p’ rather than to ‘it is not the case that x believes that p’.

(Quine 1960: 145-6)

Standard examples of this phenomenon – which is, contra Quine, much more than a mere “quirk” of English – are the following, which are known in the literature as “neg-raising”:⁶

(18) Sam doesn’t think he is a villain.

≈ Sam thinks that he is not a villain

(19) Sam doesn’t want to help me.

≈ Sam wants to not help me.

This phenomenon does not only occur with negation per se; crucially, it is also observed with negative quantifiers such as ‘nobody’, ‘no’, ‘nothing’, and ‘never’, among others.⁷ Consider the following:⁸

(20) Sam never wants to lose.

≈ Sam always wants to win

(21) Nobody wants to help me.

≈ Everybody wants to not help me.

⁶ See Horn (1978) and Horn (1989).

⁷ Horn (1978: 170) provides the examples “Nobody would suppose anymore that the war was worth it” ≈ “Everybody would suppose now that the war was not worth it”; “Not everyone thinks I ought to leave you” ≈ “Someone thinks I ought not to leave you”. Gajewski (2005: 42) provides “No student thinks Mary left until Friday” ≈ “Every student thinks Mary didn’t leave until Friday”.

- (22) No one thinks they're a villain.
 \approx Everyone thinks they aren't a villain

Given this sort of slide, we must be careful with intuitively equivalent pairs such as:

1. No student thinks they are a robot.
 - [No x: student x] [x thinks A]
2. Every student thinks they aren't a robot.
 - [Every x: student x] [x thinks \neg A]

If we assume that these are equivalent, we could – as Williams has taught us – very quickly conclude that the following are equivalent:

- [Every x: student x] \neg [x thinks A]
 [Every x: student x] [x thinks \neg A]

And thus arrive quickly at Belief Excluded Middle: [x thinks A] \vee [x thinks \neg A]. But, of course, this principle incorrectly stipulates that any agent is completely opinionated. Now the point. Plausibly, an utterance of “No student thinks they are a robot” usually seems to entail “Every student thinks they aren't a robot” because there would usually be a pragmatic assumption in the context to the effect that for any given student, that student is opinionated as to whether they are a robot. But this assumption is defeasible – the students could have no opinion on this matter either way. (More on this shortly.)

Importantly, the phenomenon of neg-raising is not limited simply to the relevant attitude verbs. Consider another neg-raiser on Horn's list: 'usually'. Suppose you and a colleague make your way to the office over the Christmas break, hoping for a quiet place to do some work. Unexpectedly, however, the office is humming. Your colleague says:

- (25) Strange. No one is usually here over the break.

Naturally, of course, an assertion of (25) is standardly interpreted to be a claim about your colleagues' usual habits, not simply a denial of a claim about their usual habits. That is, (25) would standardly be interpreted as an assertion to the effect that everyone is usually not in over the break – which is other words for saying that

(26) Everyone is usually gone over the break.

In this light, consider the absurdity, in this context, of your saying, “Yes, and let me add that everyone is usually gone over the break.” And consider once more the strangeness of the following:

(27) No one is usually here over the break, but I’m not saying that everyone is usually gone over the break.

(27) is certainly a puzzling thing to assert. However, this oddness is not best explained by the hypothesis that (25) and (26) are in fact equivalent. More generally, we cannot rely on the felt equivalence between (25) and (26) to generate an argument for “Usually Excluded Middle”: either it is usual that A or it is usual that $\neg A$. Thus, if we reject Usually Excluded Middle, our burden – if this is a burden – is to explain how it is that (25) doesn’t entail (26).

Return now to the argument for Should Excluded Middle. We suggest that since the modal verb ‘should’ is also a known neg-raiser, the same sort of illegitimate slide is occurring in the argument for SEM.⁹ Consider again the pair of sentences that seem equivalent:

α . No student should pick up a hitchhiker if he is traveling alone.

β . Every student should fail to pick up a hitchhiker if he is traveling alone.

The fault in the argument is the claim that these sentences are truth-conditionally equivalent. They seem that way on a first pass. But that appearance is due to the neg-raising phenomena, which rests on an auxiliary assumption to the effect that all the best worlds are A-worlds or all the best worlds are not-A worlds. With that assumption in place, (α) entails (β).

1. (All the best worlds where x travels alone are worlds where x picks up a hitchhiker) \vee (All the best worlds where x travels alone are worlds where x doesn’t pick up a hitchhiker)

⁹ Horn has ‘should’ on his early list of neg-raisers. For example, “No one who is here should leave” typically conveys the same as “Everyone who is here should stay”. Indeed, as Horn explains, it seems that as far back as Anselm the neg-raising phenomena with negation and deontic modals was recognized (see Horn 1989).

2. \neg All the best worlds where x travels alone are worlds where x picks up a hitchhiker

3. So: All the best worlds where x travels alone are worlds where x doesn't pick up a hitchhiker

But strictly speaking (α) could be the case without (β) being the case.¹⁰ For illustration, focus on a particular student Sam. If (α), then it is not the case that at all the best worlds among those at which Sam travels alone, Sam picks up a hitchhiker. This is to say that Sam doesn't have any special reason or obligation to pick up hitchhikers – when travelling alone. But that is not to say that Sam should refrain from picking them up. Perhaps the area is safe, and although Sam need not pick up hitchhikers, he also need not *not* pick them up either. If so, then (β) is false. After all, if (β) is true, then at all the best worlds among those at which Sam travels alone, Sam does not pick up a hitchhiker.

Look at it this way. “No student should pick up a hitchhiker if he is traveling alone” can mean that no student has the property of being such that he should pick up a hitchhiker if traveling alone. But it is relatively clear that, just because no student has this property, it doesn't follow that every student has the opposite property – the property of being such that he should refrain from picking up a hitchhiker if traveling alone. In this sense, no student should pick up a hitchhiker if traveling alone, but no student should not do so either. If we suppose that the relevant considerations for and against picking up hitchhikers are “on a par”, we might say, none of the students are such that they should pick up hithchikers if traveling alone, and none of the students are such that they shouldn't. In this matter, they have no obligations either way. However, in a context in which it is assumed that the moral considerations are not on a par, an assertion to the effect that “No student should pick up a hitchhiker if traveling alone” will tend to be interpreted, as explained, as the stronger assertion, an assertion to the effect that all the students should refrain from doing so.

¹⁰ Sentence (α) is true just in case no student x is such that at all the best worlds among those at which x travels alone, x picks up a hitchhiker. Sentence (β) is true just in case every student x is such that at all the best worlds among those at which x travels alone, x does not pick up a hitchhiker. If some of the best worlds among those at which students travels alone are pick-up-hitchhiker worlds and some aren't, then (α) is true but (β) is false.

4. Assessing the argument for conditional excluded middle

Analogously, we think one should simply reject Williams' first premise, the premise on which the following are equivalent:

- A. No student would have passed if they had goofed off.
- B. Every student would have failed to pass if they had goofed off.

As before, we can grant these claims seem equivalent, but can explain why they aren't in fact equivalent. And, as before, we here appeal to neg-raising.¹¹ Intuitively, we ought to say about (A) and (B) what we have already said about (α) and (β).¹²

As the examples considered above have brought out, context can play a key role in our judgments concerning whether the pairs at issue are or are not equivalent. The point is thus perhaps easier to observe for indeterministic coins. Consider:

- (30) No indeterministic coin is such that it would have landed heads had you flipped it, but not every indeterministic coin is thereby such that it would have landed tails had you flipped it.

We are not asking the reader to judge that this statement is perfectly acceptable (or even possibly true). We instead want to observe that (30) isn't obviously unacceptable – an appeal to its seeming unacceptability can't be put forward as evidence in favor of CEM. Our linguistic judgements here are vexed. Certainly, the proponent of CEM is committed to its falsity and the denier of CEM will grant its truth. But if we accept (30), then, while perhaps our initial judgments tell against it, we should also be able to find a way of accepting:

¹¹ Todd (forthcoming) defends an analogous strategy concerning future 'will' and Will Excluded Middle. It is difficult to hear a difference between constructions where negation takes wide scope over 'will' versus ones where negation takes narrow scope: 'not (will A)' vs. 'will (not A)'. This is a challenge to certain semantic proposals about 'will' according to which it is a universal quantifier over some set of available futures histories (e.g. the Peircean semantics), since these views are committed to the scope of the negation making a truth-conditional difference. Todd suggests that the requisite scope distinctions aren't missing, but are instead being masked. The hypothesis is that 'will' induces neg-raising.

¹² Arguably, Lewis himself was (or would have been!) sympathetic with an account of counterfactuals in terms of neg-raising. Hence Lewis on some of the data that seems to support CEM: "...we want to assert [the negation of counterfactuals]. But negate their English readings in any straightforward and natural way, and we do not get [what we desire]. Rather the negation moves in and attaches only to the consequent..." (Lewis 1973b: 422) Lewis' point would seem to be this: there is in fact a semantic distinction between the wide-scope negation of a counterfactual, and that counterfactual with a negation on its consequent – but in natural, everyday settings, this distinction is blurred or otherwise masked. With some work, this account is very close to the account we offer in this paper.

(31) No indeterministic coin would have landed heads had you flipped it, but not every indeterministic coin would have landed tails had you flipped it.

And our diagnosis in terms of neg-raising provides a way. So there we have it. If we can accept (31), then we can accept a view on which (A) and (B) aren't equivalent, and the argument for CEM fails.

Note that, as with other neg-raisers, *focus* and intonation can help in making salient the relevant non-“neg-raised” reading. For instance, if I say, “Sam doesn't *believe* that Trump is a good president,” the usual pragmatic implication – that Sam believes that Trump isn't a good president – is postponed or otherwise blocked. Similarly, if I say, “No one *should* pick up a hitchhiker if traveling alone,” the usual pragmatic implication – that everyone should refrain from doing so – is again postponed or blocked. Similarly, focus seems to help in achieving the relevant reading of (31). No indeterministic coin *would* have landed heads had you flipped it. But that doesn't mean that every indeterministic coin would have landed *tails* had you flipped it.

5. The assumption

But let us back up. The crucial idea behind the relevant account of neg-raising appeals to some idea concerning what would ordinarily be considered the “default situation”. For some reason, it is the default assumption that people have opinions on the subject matter under discussion; thus, when Jones says he doesn't think that A, we interpret this to mean that he thinks that $\neg A$. For some reason, it is the default assumption that people's preferences aren't perfectly neutral with respect to the subject matter under consideration; thus, when Jones says he doesn't want to come to our party, we understand this to mean that he wants to stay home – or anyway do something else than come to our party. For some reason, it is the default assumption that the moral considerations aren't on a par concerning the matter at issue; thus, when the principal says that none of us should pick up hitchhikers, we understand this to mean that we should all refrain from doing so.

Now, what matters, for our purposes, is not exactly how and why it is that the relevant assumptions are (or become) the “default” assumptions; our point is simply that, whatever the explanation of this fact, it would indeed seem to be a fact. But now the issue. What is the parallel assumption in the case of counterfactuals – the assumption such that, because we tend to make

that assumption, we tend to hear $\neg(A > B)$ as equivalent to $(A > \neg B)$? Before proceeding, it is important to observe that there does in fact seem to be some sort of assumption about counterfactuals we make in ordinary discourse that the denier of CEM rejects. Consider an ordinary context in which Jane didn't come to our party late last night. You are now asked by a friend, "That's unfortunate – do you think she would have come if it had been earlier?" Reflecting on the matter, you say:

Well, there's no real fact of the matter concerning what she would have done – by which I mean it is not a fact that she would have, and not a fact that she would not have.

Two observations. First, this is not a response that will win you any friends. Indeed, such a response would reveal you to be, well, some kind of *philosopher* who is insisting on being needlessly difficult.

Second, according to theorists like Lewis, this response may be reporting what is nevertheless the sober truth: there really is no fact of the matter concerning what she would have done; she could have come and she could have stayed home, and there's no fact specifying which she would have done. The result is simple. Theorists who deny CEM are committed to the truth of claims that in ordinary contexts the assertion of which nearly all of us recognize to be obnoxious. In ordinary life, we tend to make an assumption about counterfactual possibilities that we might, *on reflection*, nevertheless reject. As a first approximation, that assumption is that there are always facts by reference to which some one of the given counterfactuals is true – even if we may not know which. But that assumption – like the assumption that a person is opinionated – can be coherently rejected (and, we think, should on reflection be rejected). The important point: there does seem to be a normal, everyday assumption about counterfactuals that the denier of CEM rejects. And it is in terms of this assumption that one should make the case that the counterfactual conditional is a neg-raiser.

5.1 Counterfactual availability

But now the issue. What exactly *is* the parallel assumption that leads to neg-raising when combined with the semantics of counterfactuals? And this prompts the prior question: what is the semantics of counterfactuals?

At a certain level of description, it seems that we can all agree – or most of us can agree – on the following. Whether ' $A > B$ ' is true is a matter of whether all of a certain set of A-worlds

are B-worlds. In other words, whether ‘ $A > B$ ’ is true is a matter of whether in the relevant A-worlds, B.¹³ We shall call the relevant worlds – whatever they are – the “counterfactually available” A-worlds. Thus, at this level of description, we can all agree with the following:¹⁴

(CAV) ‘ $A > B$ ’ is true in a world w iff B is true in all of the counterfactually available A-worlds relative to w .

Now, in this light, the thesis that we need for the neg-raising hypothesis is that we tend to assume the following:

(CON) All of the counterfactually available A-worlds are B-worlds or all of the counterfactually available A-worlds are \neg B-worlds.

If (CON) is true, it certainly isn’t anything like an analytic truth, or true in virtue of logical form. Why is it then that we tend to assume (CON)? The question here is tied up with the question: which worlds are relevant? Which worlds are indeed “counterfactually available”?

There are two broad traditions of thought in the philosophical literature concerning how we should think about which worlds are counterfactually available. According to one influential tradition, the truth of a counterfactual is always a matter of something *non-modal* (or “categorical”). On this approach, the truth of a counterfactual is a matter of *objective similarity* to the actual world. Roughly, the leading idea here is that ‘ $A > B$ ’ is true just in case *all of the most similar A-worlds are B-worlds*. On this approach, we give what we might call a *reductive* analysis of counterfactuals: the truth of a counterfactual – which is in a certain sense “modal” – always reduces to facts that are themselves *non-modal*. Thus: the counterfactually available worlds are those that are, in the relevant way, objectively most similar to the actual world. Call this sort of non-modal, objective similarity “closeness”. To assume that all the closest A-worlds are B-worlds or all the closest A-worlds are \neg B-worlds amounts to assuming (local) determinism. Under this assumption, our ignorance, say,

¹³ Those who agree that the counterfactual has truth conditions will seemingly agree with this much. Of course, proponents of Edgington-style views (on which they do not) will not. For more on such views, see, e.g. Edgington (1995).

¹⁴ This general approach is usually called a “variably-strict” analysis, and attributed to Stalnaker (1968) and Lewis (1973a). The distinctive feature here is that the domain of worlds quantified over varies with different antecedents. More formally, the semantics will appeal to a selection function f , which takes a world w , and a proposition A , and returns the set R of A-worlds that are “counterfactually available” from w : $f(w,A) = R$. Then ‘ $A > B$ ’ is true in a world w iff B is true in all worlds in R . (This semantics is well-known, so we will won’t rehash the various complexities and options here, e.g. one needn’t do so, but we make the “limit assumption” for ease of exposition.)

concerning who would have won the game had Jones made the catch is simply ignorance concerning which outcome would have been determined to happen.

Against this approach, however, there has been another. According to some theorists, the truth of certain counterfactuals cannot be reduced to facts that are themselves non-modal. Instead, to account for the truth of certain counterfactuals, we must suppose that there are facts that are themselves *primitively modal*. For instance, many people would be happy to grant that fair coins are genuinely indeterministic. And yet they still seem to find room to wonder: how would the coin have landed had it been flipped? On this approach, it seems, even if indeterminism is true, there is nevertheless a primitive “modal hand” that tips the counterfactual scales one way or the other.

Here we might profitably consider the perspective of the so-called “Molinists”. Suppose Curley has indeterministic (“libertarian”) freedom. And supposed he was never offered the bribe. Well, would he have taken it? According to the Molinist, either if Curley were offered the bribe, he would have taken it, or if Curley had been offered the bribe, he would have rejected it. Crucially, however, given the assumption of Curley’s indeterministic freedom, we can suppose that worlds where Curley accepts the bribe and worlds where Curley rejects it are just as similar to the actual world. Nevertheless, there is a primitive modal hand, and God knows what it has written, even if we do not. In other words, God knows what Curley would have done, even assuming Curley’s indeterministic freedom.

On this sort of picture, which worlds are counterfactually available is not just a matter of closeness. Instead, there are primitive modal facts that “break ties” amongst worlds otherwise tied for being objectively similar to the actual world (cf. Hawthorne 2005 and Schulz 2014). That is, even if some A-worlds are just as similar to the actual world, there is also a further consideration, in virtue of which one of these worlds is primitively “selected”, so therefore uniquely counterfactually available. Call these primitive modal facts that select one world amongst the most similar the “counterfacts” (cf. Hájek forthcoming on *counterfactism*). With this in play, we can give a neutral characterization of “counterfactual availability” as follows: the counterfactually available worlds are *those closest worlds consistent with the counterfacts (if there are any)*.

So we needn’t decide whether some sort of determinism or some sort of Molinism is usually assumed. Indeed, we incorporate both into our neutral characterization of “counterfactual availability”. Thus, on our proposal, we tend to assume (CON) because in normal contexts we implicitly tend to assume:

(CON*) All of the closest A-worlds consistent with the counterfacts are B-worlds, or all of the closest A-worlds consistent with the counterfacts are \neg B-worlds.

Now, there can clearly be two reasons why we might tend to assume (CON*). Indeed, these two reasons might, in some ways, work in tandem. Some people might be implicit determinists, who think that some unique event is always the one that would have been determined to happen, even if we don't know which it is. And others may think that, even if indeterminism is granted, there are primitive modal counterfactuals that specify what would have happened. In any case, our proposal is that these two assumptions working together create a default assumption: CON*.

5.2. *Semantics or pragmatics?*

Finally, we want to distinguish our proposal from a related nest of views in the literature. These are views that model the relevant auxiliary assumption, which we have understood as pragmatic, as instead a genuine semantic *presupposition*.

First, there is von Fintel (1997), who doesn't discuss neg-raising *per se*, but nevertheless takes the data we have been discussing to motivate the thesis that conditionals trigger a special sort of presupposition (cf. von Fintel and Iatridou 2002). von Fintel defends a Lewis-style variably strict analysis of the conditional, but also builds into the semantics of the conditional a "homogeneity presupposition": ' $A > C$ ' triggers the presupposition that all of the relevant A -worlds agree on C . This has the effect that there cannot be a context in which both $(A > C)$ and $(A > \neg C)$ are uttered falsely. If the presuppositions are satisfied, one has to be true. So this account thus "traces the Excluded Middle back to a presupposition carried by the implicit quantifier in $[A > C]$ " (See von Fintel 1997, sec 7.2).

Strictly speaking, this allows for cases where neither $(A > C)$ nor $(A > \neg C)$ are true, so in an important sense, this allows for failures of CEM. But CEM is also "valid" in a weaker sense — the sense known as *Strawson validity*.¹⁵ Strawson validity, and more generally Strawson equivalence, take into account the relevant presuppositions. Roughly: φ and ψ are Strawson equivalent iff in all situations where the presuppositions of φ and ψ are satisfied, φ is true iff ψ is true. For example, "The F is G " and "There is exactly one F that is G " are not true in all the same situations, but on a presuppositional account of the definite description, they are Strawson equivalent: they are true in the same situations where the presupposition triggered by "the" is satisfied.

Now, it is clear that a presuppositional account along the lines of von Fintel's has a sort structural similarity to our diagnosis in terms of neg-raising. But we are importantly not committed

¹⁵ So-called because of discussion in Strawson (1952). See von Fintel (1997).

to, nor advocating for, a presuppositional account of the relevant data.¹⁶ Our paradigm is not the presupposition (arguably) triggered in sentences like “The pope stopped smoking” or “The king of France is bald”, or more relevantly “The children are asleep” (cf. Fodor 1970).¹⁷ Instead, our paradigm is the sort of assumption behind the common slide from “not believe” to “believe not”. And while some theorists have indeed explored the idea that neg-raising stems from a presupposition associated with certain predicates, e.g. Gajewski (2005), these standard cases of neg-raising don’t at all look like cases where there is *presupposition* involved.¹⁸ Consider some standard tests for presupposition.

A simple sort of diagnostic for presuppositions is to ask whether or not an utterance where the alleged presupposition fails is judged to be truth-valueless. Now, consider the suggestion that there is a presupposition associated with “believe” to the effect that the agent is opinionated (on the matter at hand). Suppose Jill says,

(32) Jack believes that Trump is good president.

We don’t know anything about the situation, so we can’t make a truth-value judgement about (1). But suppose we learn that Jack has no opinions about Trump, in which case the alleged presupposition would fail. Surely, we have learned that Jill’s utterance was false – not that it was neither true nor false. However, if “Jack believes A” presupposes that Jack is opinionated about A, then when we learn that Jack is not opinionated about A, we should be inclined to say that “Jack believes A” is neither true nor false – but we aren’t. And conversely in the same situation an utterance of the following is straightforwardly true:

(33) Jack doesn’t believe that Trump is good president

¹⁶ It’s worth noting that von Stechow (1997) is actually somewhat noncommittal about the presuppositional status of the assumption: “I don’t know whether it is crucial that we assume that Homogeneity is a presupposition. Perhaps all we need is that it is an assumption that can feed the inferences that we automatically draw from a statement.” (p. 35)

¹⁷ An observation going back to Fodor (1970) is that constructions involving plural definites such as “the children are asleep” seem to carry the presupposition that the children are uniformly asleep or the children are uniformly awake. This known as an *all-or-none* (or homogeneity) presupposition.

¹⁸ Gajewski (2005) provides an analysis of neg-raising in terms of a lexical presupposition associated with certain predicates. This sort of approach is inspired by the early work of Bartsch (1973) where the presupposition is instead construed as “pragmatic” (and a brief comment in Heim 2000, pp. 50-51, that she seems to have quickly recanted). Gajewski suggests that a homogeneity presupposition is triggered by a hidden distributivity operator. See Romoli (2013) and Kriz (2015) for objections.

Of course, (33) would naturally convey something false, namely that Jack thinks that Trump is *not* a good president. What is said is simply true – although what was pragmatically *conveyed* was false.

Parallel points hold for other cases of neg-raising, such as with ‘want’ or ‘should’. Suppose Jane says, “Oh yes, Jack should park on the left.” We then learn that Jack is pulling into his own empty driveway, and there isn’t the slightest reason in favour of Jack parking on one side of his driveway or instead the other. Surely we have learned that what Jill said is *false* – not that it was neither true nor false. However, if “Jack should φ ” *presupposes* that Jack’s reasons favour φ -ing, or instead favour not- φ -ing, then when we learn that that’s false, we should regard Jane’s utterance as neither true nor false – but we don’t. Similar points again hold for negated ‘shoulds’. The army recruiter says to Jack “You should join the army”. Jill interjects: “Son, that’s false; you’ve got your whole life ahead of you.” Assume there’s no strong reason either way: Some of the best worlds are join-the-army worlds and some aren’t. In that case, it seems that Jill’s utterance is not truth-valueless, but instead strictly speaking *true* (it is not the case that he *should* join the army). However, what she conveyed is false, namely that he should *refrain* from joining the army.

These sorts of diagnostics are highly suggestive, though perhaps not decisive (cf. von Stechow 2004). So, consider further the standard embedding diagnostics for presupposition. Notably, the alleged presuppositions don’t “project” (or remain as an inference) when embedded under various operators, such as in the antecedent of a conditional, under modals, under attitudes, etc. For example, consider projection from a possibility modal: (35a) follows from an utterance of (34a), but (35b) definitely doesn’t follow from an utterance of (34b):

- (34) a. It is possible that Sam stopped smoking.
- b. It is possible that Sam thinks that Oswald was a CIA agent.
- (35) a. Sam used to smoke.
- b. Sam thinks that Oswald was a CIA agent or Sam thinks that Oswald wasn’t a CIA agent.

Thus, the alleged presupposition (35b) doesn’t project from (34b) like it should. Cases could be multiplied, and again parallel points hold for other cases of neg-raising, such as with ‘want’ or ‘should’.¹⁹

¹⁹ See Romoli (2013) and Križ (2015) for more objections to the presuppositional analysis. Notice that neg-raising fails other sorts of diagnostics for presupposition as well. For example, consider the “hey, wait a minute” test (see von Stechow 2004). Contrast “A: Sam stopped smoking. B: Wait a minute! I didn’t know that she smoked” with “A: Sam thinks that Oswald was a CIA agent. B: #Wait a minute! I didn’t know that she has an opinion about that”.

For these reasons, analysing neg-raising in terms of textbook presupposition seems like a non-starter. However, there are various sorts of “softer” presuppositional mechanisms that one might posit (see, e.g., Gajewski 2007).²⁰ A defender of CEM might hope that this sort of “presuppositional” account of neg-raising ends up vindicating CEM. But we see things differently. Of course, we can’t hope to rule out all the various theories that somehow or other defend a presuppositional account of neg-raising. But we can point out that whatever these “softer”, non-projectable, easy to accommodate sorts of “presuppositions” are, they tend more toward the pragmatic side of the elusive semantics/pragmatics divide. In fact, they move so far in this direction that it’s not clear that we want to disagree – except perhaps terminologically.

Consider again our position. We are insisting that there is a neg-raising inference at play in (36) and (37), and that it is the same phenomenon that is at play in (38).

(36) A: Does Sam think Trump is a good president?

B: No. \approx Sam thinks Trump is not a good president

(37) A. Should I join the army?

B: No. \approx You shouldn’t join the army.

(38) A: If Sanders would have been the candidate, would he have won the general?

B: No. \approx If Sanders would have been the candidate, he would not have won the general

Those appealing to the linguistic work of Gajewski, et. al. essentially agree thus far—they indeed think these are all cases of neg-raising. But they’d then insist that the mechanism that explains neg-raising is *presupposition* – hence it is “semantic” – and thus CEM still comes out as “valid” (at least in some very weak sense which takes into account the sort of presupposition involved). But notice that this amounts to conceding that CEM only has the logical status of a principle like Belief Excluded Middle or Should Excluded Middle. We see that as a vindication of our position.²¹

²⁰ But see Romoli (2013) and Križ (2015) for objections to this particular implementation. Like Gajewski, Križ (2015) advocates a homogeneity-based account – but he doesn’t do so in terms of a homogeneity *presupposition*. Instead, homogeneity is explored as a *sui generis* feature of predicates that involve plural description.

²¹ Views that analyse neg-raising as an implicature are not inconsistent with our view, e.g. a generalized conversational implicature with some similarity to scalar implicature (Romoli 2013), or some sort of neo-Gricean “short-circuited implicature” (Horn 1989). That is, at least in so far as implicature is given a standard textbook understanding. Yet, one might insist on analysing scalar implicatures semantically (cf.

Of course, what is ultimately wanted is a positive count of the mechanisms underlying the neg-raising phenomenon. Well, that's what is wanted – but that's not what we're here trying to provide. We don't have a positive story to tell about the nature of neg-raising.²² We claim only that it is there – that is, that everyone must give some account of its nature. More importantly, we claim that once this account is provided, the denier of CEM can appeal to this very account to provide a similar account of the nature of the auxiliary assumption that gives rise to neg-raising in the case of counterfactuals.

Conclusion

In the end, our proposal is simple. The assumption that we make that generates the relevant neg-raising phenomenon is that either the matter at issue is at least locally determined, or failing that, there is some primitive modal counterfact in virtue of which one single world is uniquely selected as counterfactually available.²³ It is because we make this assumption in ordinary conversations that we tend to hear $\neg(A > B)$ as equivalent to $(A > \neg B)$.

The question of determinism is certainly a familiar metaphysical question. And so is the question of whether there are primitive counterfactuals. The denier of CEM certainly rejects the

Romoli 2013). Here our reaction is in line with our reaction to the views that analyse neg-raising in terms of non-standard presuppositions. The grammatical implicature position (à la Romoli) could perhaps claim that CEM is “valid” in some sense. But on such views, it'd be valid only in the very weak sense that the following is valid: Some Fs are G \models Not all Fs are G. Again, we see that as a vindication of our position, not a challenge to it.

²² Some support for the claim that ‘would’ is a neg-raiser could come from broader generalizations concerning the interaction of negation with “medium strength modalities”. See Horn (1975) and the discussion in Pullum and Huddleston's (2002: pp. 838–843) concerning “increased specificity of negation”.

²³ Note: we aren't saying that it needs to be *determinate* which single world is uniquely selected in this way. Someone following in the spirit of Stalnaker might say that the primitive modal facts are sometimes *indeterminate*, and thus, in those cases, it is likewise indeterminate which world is uniquely consistent with the primitive modal facts – and so likewise indeterminate which unique world is counterfactually available. In general, the Molinist (and, e.g., theorists like Hawthorne 2005, Stefánsson 2018, and Schulz 2014) contend that the primitive modal facts are always *determinate* (it is always determinate, as it were, what the primitive modal hand has written), whereas other theorists (e.g., perhaps Stalnaker) contend that it is sometimes indeterminate what the primitive modal facts are (what the primitive modal hand has written is sometimes indeterminate) -- and yet further theorists (e.g., Lewis 1973a, and at least one of the current authors Todd (book manuscript)) contend that *there are no primitive modal facts in the first place* (the primitive modal hand is a fantasy). The important point: theorists of the first two stripes will contend that there is always only one counterfactually available world. For the first group, it is always determinate which world this is, and for the second group, it is sometimes indeterminate. However, for theorists of the last stripe, assuming indeterminism, there will sometimes be at least several genuinely counterfactually available worlds. It is for these reasons that, on either of the first two views, CEM holds, and on the final view, CEM fails.

necessity of causal determinism, and rejects the existence of primitive counterfactuals. Given these two broadly metaphysical theses, (CON*) is, in the relevant cases, straightforwardly false – and thus so is CON, and thus there are false instances of CEM. In this light, the question concerning CEM devolves into metaphysical disputes with which we were already familiar. In other words, assuming indeterminism, the question here reduces to the question of whether there are, or are not, primitive counterfactuals. If determinism is not necessary, and there are no primitive counterfactuals, then CEM is not valid. Thus, in the debate over CEM, one cannot merely point to linguistic data that seems to indicate that we move freely from $\neg(A > B)$ to $(A > \neg B)$ as evidence in favour of CEM. Of course, the thesis that CEM is valid would account for the seeming equivalence, but we have, we hope, suggested a plausible alternative pragmatic account of this data. On the hypothesis that ‘would’ is a neg-raiser, the fact that we freely move the negation “in” is a result of a default assumptions we implicitly tend to make – and it is precisely these metaphysical assumptions that are rejected by those that accept the invalidity of CEM.

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