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## MPP, RIP

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It is fair to say that the past twenty-five years' burst of exciting research in the semantics and pragmatics of conditional statements began with E.W. Adams' "The Logic of Conditionals" (1965) and Robert Stalnaker's "A Theory of Conditionals" (1968), followed briskly by David Lewis' *Counterfactuals* (1973).<sup>1</sup> Those three works set the agenda that still occupies us, an agenda that has provided a highly unified vision and afforded very gratifying progress on a notoriously difficult cluster of problems.

### I

Perhaps embarrassing my claim of unification, the corpus consisting of our three essays offers not one but two paradigms for the semantic evaluation of conditionals. Adams offered an epistemic assertibility semantics for indicative conditionals, according to which a conditional  $A > C$  is assertible for a speaker  $S$  in direct proportion to the conditional probability  $\Pr(C/A)$  relative to  $S$ 's belief set. This is a probability-theoretic adaptation of F.P. Ramsey's now well-known thought-experiment:<sup>2</sup> To evaluate  $A > C$ , add  $A$  hypothetically to your current belief set, make such revisions in your new total belief set as would be rationally required to preserve coherence while retaining  $A$ , and see whether  $C$  would be a member of the revised set. (According to standard Bayesian theory, the value assigned to  $C$  by the subjective probability function representing the new belief set would be equal to the conditional probability  $\Pr(C/A)$  according to the original belief set.) Following recent usage,<sup>3</sup> I shall speak generically of the "Ramsey Test" for the evaluation of conditionals. For Adams, indicative conditionals have only epistemic assertibility values determined by the Ramsey Test, and no truth-values (he says nothing of subjunctive conditionals save that

they differ from indicatives). This No-Truth-Value claim for indicatives has caught on of late, but I shall reject it here.<sup>4</sup>

Just after the publication of Adams' article, happily and inevitably, the theory of conditionals met possible-worlds semantics. Stalnaker essayed to recast the Ramsey Test in terms of worlds and a selection function defined on them. To evaluate  $A > C$  at a world  $w$ , Stalnaker advised, hop over to the "nearest" or *most similar* world to  $w$  at which  $A$  holds and see whether  $C$  holds there also. (This corresponds to adding  $A$  hypothetically to one's current belief set, making minimal revisions to preserve coherence, and seeing whether  $C$  is now a member.) Stalnaker introduced a function  $f$  that maps a world and an antecedent proposition onto a world (intuitively the antecedent-world that differs as little as possible from the home world). Thus  $A > C$  is true at  $w$  just in case  $C$  is true at  $f(A, w)$ . The resulting semantics brilliantly predicted the inferential failures that characterize everyday English conditionals as opposed to either material or strict conditionals—failure of Antecedent-Strengthening, Transitivity, Contraposition, *et al.* Though similarly inspired by the Ramsey Test, Stalnaker did not join Adams in rejecting truth-values for indicatives; rather, his semantics predicts conditionals' truth-values rather elegantly, given our intuitive ideas of overall similarity of worlds.<sup>5</sup>

Lewis objected to several features of Stalnaker's semantics, notably to the assumption of a uniquely "nearest" world and to the consequent licensing of Conditional Excluded Middle. To shed these he introduced a notion of *comparative* similarity; for Lewis,  $A > C$  is true at  $w$  just in case some world at which  $A \& C$  is true is closer or more similar to  $w$  than is any world at which  $A \& \sim C$  holds. Like Stalnaker, Lewis appealed to a preanalytical notion of overall similarity of worlds, much like overall similarity of cities or of planets (though subsequently he has refined that notion in response to counterexamples, at some cost in intuitive appeal and testability).

Thus one can see a smooth and natural line of conceptual development from Ramsey's thought-experiment through Adams and Stalnaker to Lewis' comparative similarity theory.

## II

Nonetheless it should be clear that Lewis' view is quite different from Ramsey's and has very different implications for the semantics of conditionals. Viewed cold, without the sort of historical preface I have just provided, Lewis' theory would not bring the Ramsey Test instantly to mind, even if—contrahistorically—we are taking both as proposals of truth-conditions. I shall exhibit several ways in which the two differ. (I leave open the question of which is *better*, though my own view is that a mixture is needed.) Then I shall argue—what is more surprising—that Modus Ponens is an invalid form of inference.

1. The Ramsey Test requires us to stipulate our counterfactual antecedent and then make minimal revision of our beliefs. Stalnaker and Lewis require us to stipulate the counterfactual antecedent and then make minimal departure from *reality*. But those are two different revisions or departures, since we may be sure our beliefs do not entirely match reality.

2. In commentaries on *Counterfactuals*, various philosophers urged counterexamples against Lewis' analysis, based on an intuitive notion of similarity. For example, Kit Fine:

The counterfactual 'If Nixon had pressed the button there would have been a nuclear holocaust' is true or can be imagined to be so. Now suppose that there never will be a nuclear holocaust. Then that counterfactual is, on Lewis' analysis, very likely false. For given any world in which antecedent and consequent are both true it will be easy to imagine a closer world in which the antecedent is true but the consequent false. For we need only imagine a change that prevents the holocaust but that does not require such a great divergence from reality.<sup>6</sup>

Most people I have consulted share the intuitive judgments behind such arguments. Lewis has responded by noting that similarity is said in many ways; counterfactuals mobilize their own distinctive similarity relation which may or may not coincide exactly with the everyday one.<sup>7</sup> Unfortunately, Lewis provides no independent characterization of this special notion of similarity; so, until and unless he does, his analysis is not well testable against cases.

I do not mean that as a criticism, for Lewis' counterfactual logic has great power purely as a logic. My point in mentioning it is just to show a second way in which the metaphysical-similarity analysis differs from the Ramsey Test. The principal difference is that if we return to thinking of the selection of antecedent-worlds to be searched as an epistemic procedure, we can then bring to bear on it the epistemology that we already have. We *know* how to answer questions of what readjustments we ought to make in our total belief system in response to a troublesome epistemic impact; therefore, if we return to understanding the evaluation of counterfactuals in Ramsey's way, we will once again have an independent check on the correctness of our analysis' predictions, and so our theory will be testable again. Testability is fallibility, of course, and so a Ramsey-Test analysis may also be counterexampled.

In fact, let us try the Ramsey Test on Fine's counterexample case: Currently we believe that (N) there has not been and will never be a nuclear holocaust, and that (B) Nixon's red button is in good working order. We now stipulate that (P) Nixon did push the button. Clearly, that would be a reason to reject (B) rather than to reject (N). Thus from our present epistemic point of view, things come out wrong; the Ramsey Test licenses "If Nixon had pushed the button, it would have been broken" instead of Fine's opposing conditional. But the judgment *depends on* one's point of view. Suppose we are the technicians who have just installed the red button and we know (B) is true. Then from (B) and (P) we would infer the denial of (N), and assent to Fine's conditional.

3. As we have just seen, the Ramsey Test infects conditionals with a relativity to epistemic situation; a conditional's truth-value depends on the epistemic circumstances of its evaluator. This can be a valuable feature for the case of some conditionals. But it distinguishes the Ramsey-Test conditional from the Stalnaker-Lewis conditional, for, although the latter may exhibit some interest-or purpose-relativity owing to such relativity inherent in the notion of similarity, the latter is a different relativity from the Ramsey-Tester's thoroughgoing relativity to current *evidence base*. (Never forget the relativity of relativity.)

4. Finally, there are simple counterexamples to the identification of the metaphysical-similarity test with the Ramsey Test.

Suppose I am attending a caucus of radical leftists, because a friend has begged me to come. My sympathies are less with the leftists than with the conservative establishment, but I do not mind attending just to see what the meeting is like. Someone voices the suspicion that the meeting has been infiltrated by the CIA. I reject that suspicion, but I say to myself, "If there were a CIA agent here, I'd be in trouble," since I justifiably reckon that my name would be put on a list of dangerous radicals.

On the Ramsey criterion, my statement is true or at least assertible given my epistemic situation. But in fact there *is* a CIA agent present, and in fact unbeknownst to me I am not in any trouble, for surprisingly, the CIA is aware of my conservative sympathies. On Stalnaker-Lewis semantics, my statement is false, for it has a true antecedent and a false consequent. (Perhaps the simple Ramsey Test might be modified to allow such conditionals to be false despite their reasonableness. My own view, to be sketched below, can be seen as such a modification.)

A second counterexample can be adapted from a recent article of Angelika Kratzer's:<sup>8</sup>

Last year, a zebra escaped from the Hamburg zoo. The escape was made possible by a forgetful keeper who forgot to close the door of a compound containing zebras, giraffes, and gazelles. A zebra felt like escaping and took off. The other animals preferred to stay in captivity. Suppose now counterfactually that some other animal had escaped instead. Would it be another zebra? Not necessarily. I think it might have been a giraffe or a gazelle.

Kratzer argues that this case refutes the similarity analysis, since a world in which a different zebra escapes is clearly more similar to our world than is one in which a giraffe or a gazelle escapes, other things being equal, but we do not accept "If a different animal had escaped instead, it would have been a zebra."

The Ramsey Test again contrastingly gives the correct result: Adding "It was a different (individual) animal that escaped" to our existing stock of beliefs does not preserve the implication that a zebra escaped, for by hypothesis, we have no reason to think that zebras are more likely to escape than are giraffes or gazelles.<sup>9</sup>

There are many more counterexamples where those came from. But having exhibited some sharp differences between the Ramsey Test and the metaphysical-similarity criterion, let us turn to the question of Modus Ponens.

### III

The “*question*” of Modus Ponens? Yes. If the Ramsey Test (taken as a criterion of truth, not just of assertibility) is applied to the foregoing example and accordingly my conditional “If there were a CIA agent here, I’d be in trouble” comes out true, Modus Ponens is thereby counterexampled; for “There is a CIA agent here” is also true, but, by hypothesis, I am not in trouble.

This is of course no embarrassment to Ramsey-Testers such as Adams himself who use the Test only to determine assertibility. Indeed, an assertibility-analogue of Modus Ponens is unscathed by the example, since “There is a CIA agent here” is unassertible even though actually true. Bear in mind that, rejecting the No-Truth-Value thesis, I join Stalnaker and Lewis in seeking the truth-conditions, not the assertibility-conditions, of my target sentences.

So (very) much the worse, many philosophers will feel, for the Ramsey Test: It is now *entirely* obvious that, so far as we consider it as supplying truth-conditions, the Test must be modified in the direction of reality, at least to the extent of preventing true conditionals from having true antecedents and false consequents. Until very recently, the idea of questioning Modus Ponens would have seemed totally out of hand to virtually any philosopher—much on a par with speculating that there are true contradictions.

Yet some considerably stronger doubt can be cast on Modus Ponens, without simply cleaving to the naive Ramsey Test—as soon as one realizes that indicative conditionals, like subjunctives, admit Sobel-sequences. To take the indicative analogue of Lewis’ famous example:<sup>10</sup>

- If Albert comes to the party, it will be great.
- If Albert and Betty come to the party, it will be awful.
- If Albert and Betty and Carl come to the party, it will be great.
- .
- .
- .

All the members of such a sequence may be true. Now, consider the first two members of the foregoing sequence, and suppose that in fact Albert and Betty both do come to the party. The application of Modus Ponens to each of the two sentences in turn, along with that fact, yields a contradiction; but the two sentences are jointly compossible with the supposed fact, and so Modus Ponens must be invalid.

One might think that Sobel-sequences of subjunctives would have likewise

refuted Modus Ponens for Lewis' system had Lewis not hastily stipulated that  $A > C$  is false when  $(A \ \& \ B) > C$  and  $A \ \& \ B$  are true. But Lewis' "stipulation" was hardly *ad hoc*, for it falls right out of the basic metaphysical-similarity model for the interpretation of subjunctives. This illustrates yet a fifth difference between the metaphysical-similarity model and the Ramsey Test.

It is fairly obvious why Sobel-sequences do not embarrass Modus Ponens in evaluation by metaphysical similarity: Suppose  $A \ \& \ B$  is true. Then it is false that some  $A \ \& \ C$ -world is closer to @ than is any  $A \ \& \ \sim C$ -world. For by anyone's standards, *any world is most similar to itself*, and that goes for @; since by hypothesis @ is an  $A \ \& \ B$ -world and hence a  $\sim C$ -world, the  $A$ -world most similar to @ is a  $\sim C$ -world rather than a  $C$ -world. So  $A > C$  is false, and Modus Ponens is legitimately saved.

But now consider the simple Ramsey Test. When we affirm  $A > C$  we do so because adding  $A$  to our present belief-store does not incline us to add  $B$  as well, and epistemically minimal coherence-adjustment preserves  $C$ . When we affirm  $(A \ \& \ B) > C$ , we do so because adding  $A \ \& \ B$  to our belief-store and performing coherence-adjustment does not preserve  $C$ . But *reality has nothing to do with it*. In particular, there is no counterpart to the Lewisian principle that the real world must be most similar to itself: the actual truth of  $A \ \& \ B$  does nothing to show that the *epistemically* nearest  $A$ -world is an  $A \ \& \ B$ -world and hence a  $\sim C$ -world. And the latter claim is false, for the epistemically nearest  $A$ -world is *not* an  $A \ \& \ B$ -world. Thus the faithful (naive) Ramsey-Test interpretation of "nearness" does impugn Modus Ponens, which again is our fifth difference between it and the metaphysical-similarity interpretation. And the point provides still further motivation for the Ramsey-Tester to join in No-Truth-Value (however implausibly) for Ramsey-Test conditionals, indicative or subjunctive as the case may be. Thus an argument against No-Truth-Value is to that extent an argument against Modus Ponens.

#### IV

In my own writings on conditionals<sup>11</sup> I have offered a mixed view, epistemic but constrained by reality. I translate  $A > C$  as

$$(e)(\text{In}(e, A) \supset \text{In}(e, C)),$$

while  $(A \ \& \ B) > \sim C$  comes out as

$$(e)(\text{In}(e, A \ \& \ B) \supset \text{In}(e, \sim C)),$$

the variable ' $e$ ' ranging over "events," "cases," "circumstances" or "conditions" as may be stylistically appropriate. Such items will then be understood as possible states of affairs. Thus the analysandum  $A > C$  and its translation would both be glossed as *C in any possible state of affairs in which A, C in any*

*event in which A, C in the event that A, C in case A, C on the condition that A, and the like.*

Naturally the quantifier is restricted; otherwise all conditional consequents would be held to be *logically* implied by their antecedents. The restriction class varies widely with context; I call it the class of events or circumstances that are “real and relevant possibilities” in the context—real in the sense of being epistemically envisionable rather than idle, and relevant in the sense of involving antecedent or consequent. My official analysis for “Q if P,” “If P, Q” or “If P, then Q” will be

$$(e \in R)(\text{In}(e, P) \supset \text{In}(e, Q)),$$

read roughly as *In any relevant event that is a “real” possibility relative to this occasion and in which P, Q.*

The contextual variation of my parameter ‘R’ is my analogue of Stalnaker’s selection function and of Lewis’ similarity relation; it is the means whereby a conditional antecedent directs us to a set of possible situations that differ minimally from the actual state of affairs. The contents of the restriction class R on an occasion of utterance are controlled by several requirements, two of which will be of use here:

**The Weak Relevance Requirement:**

**R must contain at least one “event” in which the conditional antecedent itself is true.** [Intuitively, because uttering or hearing the antecedent forces us to envisage a state of affairs in which it holds, however outlandish it may be.]

**The Reality Requirement:**

**All *actual* relevant events are members of R, envisioned or not.** [Originally designed to save Modus Ponens.]

Requirements like these account for the various distinctive failures of inference exhibited by English conditionals as opposed to material or strict conditionals (the failures called to our attention by Stalnaker and by Lewis). For example, Antecedent-Strengthening fails because the antecedent of our conclusion forces us (*via* the Weak Relevance Requirement) to envision a possibility that had not been envisaged until after the premise had been tokened:

If my good friend Smedley finishes his book, I’ll be happy.

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∴ If my good friend Smedley finishes his book and concludes it with a vicious and totally unfair personal attack on me, I’ll be happy.

Let us pause to see how this account applies to the cases we have considered.



*Nixon*: According to my theory, “If Nixon had pressed the button there would have been a nuclear holocaust” is true iff every button-pressing event  $\in R$  is a holocaust event. And since a sincere utterer of that sentence is not envisaging a defect in the button, every button-pressing event  $\in R$  is a holocaust event; the sentence comes out true as desired.

*CIA*: My truth-condition for the leftist caucus sentence “If there were a CIA agent here, I’d be in trouble” is that every CIA-agent event  $\in R$  is a trouble event. This is of course false under the Reality Requirement (the fact being that there is a CIA agent present but our protagonist is still not in trouble). Suspending the Reality Requirement, as I shall be urging we do, leaves the sentence questionable. It may be false, since the speaker can envision or should have envisioned a CIA agent savvy enough to know of his conservative politics. On the other hand, if we tax the speaker with the latter possibility, he might respond, “I *meant*, of course, an ordinary CIA agent who thinks he’s watching an undifferentiated crowd of commies.” I believe the sentence itself is indeterminate as between these two evaluations of ‘*R*’.

*Zebra*: “If some other animal had escaped, it would have been another zebra” comes out clearly false on my view, precisely because on our background assumptions it is just as easy to envision a giraffe or gazelle escaping as it is another zebra.

So far, then, my view is ahead of the similarity theory on points.

## V

Let us return to the matter of Sobel-sequences, applying my account. Let us also consider the Reality Requirement now as a *switch* that can be either on or off. It is easy to see that if the Reality Requirement is not imposed, all the members of a Sobel-sequence can be true, since in asserting the first I do not envision an “event” in which Betty comes, while (by the Relevance condition) I cannot assert the second without envisioning such an event, and so on through the list. So much the worse for Modus Ponens. My theory could avoid this result only if I did impose the Reality Requirement, thus falsifying the first sentence in the sequence owing to the actual though quite unexpected attendance of Betty.

I pause to rebut three obvious and closely related objections.

First, it might be said *ad hominem* that even in the terms of my own account of conditionals, one could not assert both the first two propositions in the same breath, because the envisioning of Betty’s attendance required by the second would make one reassess the first and take it back. I do not think the latter claim is correct. Many English sentences belie the idea that a reference-class cannot be expanded within a single utterance context. Indeed, even within a single complex sentence the implicit reference-class parameter can take one value

at one occurrence and a distinct, more inclusive value at a later occurrence, and without any doxastic change having taken place within the speaker: "I'll eat anything on pizza, even squid or bull's testicles, but not bull's testicles laced with ground glass." (It would be misguided to demand that after the speaker had finished uttering that sentence's concluding clause, the speaker take back its first clause as erroneous.<sup>12</sup>) Thus, no reason has been shown why the members of a Sobel-sequence cannot be asserted in the same breath, if they differ only by expansion of reference-class.

Second, it may be complained that regardless of my particular theory, the first member of our sequence just *is* false, if the second member is true and Albert and Betty both do come to the party. (The claim would be that Stalnaker and Lewis are *intuitively* right, not just technically able to save Modus Ponens because they want to.) But one might make just the same move in defense of Antecedent-Strengthening, and say that once one sees the obviously false conclusion that follows, especially if its falsity is underscored by the real-world truth of its conjunctive antecedent, one will naturally take back the premise because the premise does not survive consideration of the new conjunct. And that move does not work. Antecedent-Strengthening is still invalid; we do not judge ordinary conditionals in this way, holding truth hostage to an infinitely open future.<sup>13</sup>

Further, the objection holds that whether "If Albert comes, the party will be great" is true as uttered in a context where Betty's attendance is not envisioned depends entirely on whether Betty will in fact come, however unlikely and unforeseeable that might be. That immediately generalizes to the view that any contingent conditional, no matter how highly assertible on the evidence possessed by any reasonable person, can be falsified by an actualized possibility, no matter how bizarre and remote that possibility might be. Such is the Reality Requirement, of course; and also, as a staunch truth-conditional semanticist I endorse the separation of truth-conditions from assertibility-conditions. But simply to insist that the most highly assertible conditionals are falsified by the most bizarre and unlikely events is simply to insist that the Reality Requirement stands and that Modus Ponens must be valid — and thus to beg the question. At best it is a standoff. Also, as we shall see in the next section, adjoining Sobel-sequence members can be concatenated into intuitively true conjunctions.

Third, still in a similar vein, someone might say that a sincere utterer of the first member of our sequence is assuming however tacitly that Betty will not come. That is probably true (though we would do well to observe the distinction between assuming-not and merely not assuming). But the point would be damaging to my case only if it showed that Stalnaker and Lewis *are* right, and the first two members of our sequence as given cannot after all both be true in the case where Albert and Betty both do come. What is true, one might say, is only that "If Albert comes to the party *and Betty does not*, it will be great" is compatible jointly with the other two propositions. But this objection assumes

that for the original first sentence to be true in the case at hand, it must be *elliptical* for “If Albert comes to the party and Betty does not, it will be great,” which is a very daring claim, much stronger than merely the observation that an utterer of the first sentence in some sense tacitly assumes that Betty will not come. First, actual semantic ellipsis is rare and computationally expensive (the former because the latter, I suppose). Second, once we go into the business of seeing ellipsis in the antecedent whenever a conditional is threatened by Antecedent-Strengthening, we find there is no end to it. Since *every* contingent conditional has some potential defeater or other, we would have to say that every apparently contingent conditional is really elliptical for a necessary one; there are no contingently true conditionals. I take that to be unacceptable.

Now again, if the Reality Requirement is imposed, the restriction class *R* must contain all relevant actual events. In a Sobel case, at least one such event is one in which *A & B* holds—here, in which both Albert and Betty attend the party. That event would have to be included in *R* when we were evaluating even the first of our two conditionals, and would falsify that conditional; end of Modus Ponens problem.

In my experience people’s intuitions divide over indicative Sobel-sequences. Sometimes people side with the similarity theory and insist that earlier members of a sequence be rejected when later ones are accepted. Other people agree with my own feeling that each member of the sequence is still true taken on its own. The irenic thing would be to claim a pragmatic ambiguity, granting that the Reality Requirement is an option; we might concede that Modus Ponens is valid for indicatives on their Realistic understandings, while insisting that it is invalid for indicatives on their Ramseyan Libertine understandings. Yet I believe the latter predominate and the former are at best hard to hear. Moreover and more to the point, the Sobel argument can be strengthened, as we shall now see.

## VI

Consider a sentence that was put to me (years ago) by Allan Gibbard in conversation: (G) “I’ll be polite even if you insult me, but I won’t be polite if you insult my wife.” (G) is perfectly consistent, and creates an immediate objection to Modus Ponens. Suppose I token (G) and you do proceed to insult both me and my wife, whereupon I am very impolite. Then although (G) was presumably true, its first surface conjunct “I’ll be polite (even) if you insult me” has a true antecedent and a false consequent, and Modus Ponens leads to contradiction. Somehow, (G)’s second conjunct cancels or suspends the Reality Requirement we would ordinarily impose on the first.

Notice too that the problem is not generated by the presence of ‘even’; it persists when ‘even’ is deleted from (G); call the result (G-): “I’ll be polite if you insult me, but I won’t be polite if you insult my wife.”

(G-) poses a problem for my “event” theory also (as was Gibbard’s original intention in exhibiting (G) to me). My official analysis for (G-) is

$$(f \in R)(\text{In}(f, \text{you insult me}) \supset \text{In}(f, \text{I am polite})) \& (g \in R)(\text{In}(g, \text{you insult my wife}) \supset \text{In}(g, \sim(\text{I am polite}))).^{14}$$

This formula entails that there is no event  $R$  in which you insult both me and my wife. Thus, assuming the Reality Requirement, it is incompatible with your actually being so comprehensively insulting; but intuitively (G-) can have been true even if you do unexpectedly turn out to do that, so long as your insulting my wife was considered a remoter possibility than your merely insulting me.

Responding to (G) in a previous essay,<sup>15</sup> I made the obvious move of suggesting that ‘ $R$ ’ changes its value from the first conjunct to the second conjunct, the idea being that an utterer of (G), while tokening the first conjunct, did not envision his hearer’s insulting his wife, but suddenly came to envision it and therefore uttered the second conjunct. ((G)’s intuitive content would then be expressed roughly as *I do not as things are envision any real and relevant possibility that I will not be polite, not even one in which you insult me, but if I now make myself envision one in which you insult my wife, I do not see myself being polite in any such event.*) But, happily for the attack on Modus Ponens, that move does not work for (G-), even when we understand “envisioning” in the stylized way I have suggested.<sup>16</sup> For *so long as the Reality Requirement continues in force*, my official analysis still contradicts the fact of your being doubly insulting. As I have said, (G-)’s second clause somehow removes the Reality Requirement from the first clause, and so much the worse for Modus Ponens.

It is easy to see that (G-) is cognate with Antecedent-Strengthening and with Sobel-sequences; if we take two adjacent members of a Sobel-sequence and conjoin them, we get a sentence like (G-). For that reason, one might say, Gibbard’s example adds little to the case I had already made against Modus Ponens. But (G-) does have its own dialectical point: Since it is a single sentence that could reasonably and unequivocally be tokened on a single occasion, there is no temptation to protest (as people sometimes do in response to failure of Antecedent-Strengthening or to standard Sobel-sequences) that we cannot legitimately lump together premises and conclusions that would actually be accepted only by different people in different epistemic situations. For “envisionings” do often switch within one and the same context, in the way I have illustrated earlier. Thus one should accept (G-) as a counterexample even if one’s intuitions about Sobel-sequences are equivocal; and when one does, it helps to firm up one’s Ramseyan intuitions about Sobel-sequences.

Notice that the undermining of Modus Ponens by Sobel-sequences and by sentences like (G-) is already *foretold* by the well-known failure of Antecedent-Strengthening. For that failure is what gives rise to Sobel-sequences in the first place. Only the metaphysical-similarity analysis’ wiping out of earlier contrary

sequence members saves Antecedent-Strengthening from *itself* being a counterexample to Modus Ponens. As we have seen, Antecedent-Strengthening does constitute a counterexample either on the Ramsey Test or on my analysis *sans* Reality Requirement.

In fact, it is odd that logicians were, comparatively, so compliant in abandoning Antecedent-Strengthening and the rest, but at the same time oblivious to the exactly similar objection to Modus Ponens. It is of course *possible* to construct a logic that invalidates Antecedent-Strengthening while preserving Modus Ponens—Stalnaker and Lewis, after all, did so—but it is hard to see why anyone would want to, save for being tacitly scandalized by the very idea of rejecting Modus Ponens. Once one sees how and why the contextual shift of background assumptions leaves room for an Antecedent-Strengthened conclusion to be false, it seems arbitrary to insist that the same does not happen to Modus Ponens.

Moreover, I maintain, any argument in defense of Modus Ponens against my Sobelian counterexamples has an exactly parallel argument in defense of Antecedent-Strengthening. If one upholds the validity of Modus Ponens by explaining the counterexamples away, one will have to uphold Antecedent-Strengthening in the same way, and reject Stalnaker's and Lewis' conditional logics as well, reverting to something very like the logic of the nomological conditional.

I turn to quite a different sort of objection to Modus Ponens.

## VII

In a now well-known article,<sup>17</sup> Vann McGee has offered a distinctive type of alleged counterexample to Modus Ponens, featuring major premises whose consequents are themselves conditionals. A typical instance is (regarding the 1980 Presidential campaign between Ronald Reagan and Jimmy Carter, with Republican John Anderson a distant third):

If a Republican wins the election, then if it's not Reagan who wins it  
will be Anderson.  
A Republican will win.

---

∴ If it's not Reagan who wins, it will be Anderson. [p. 462]

Premises true, conclusion false (since the truth was rather that if Reagan had not won, Carter would have).

McGee couches his own discussion mainly in terms of assertibility rather than of truth, and if indeed what is in question is an assertibility-analogue of Modus Ponens rather than Modus Ponens itself, his examples are disputable.<sup>18</sup> But if we hew to the line of truth-conditions, the examples are powerful.

Maddening as they are on first consideration, they seem to refute not only Modus Ponens but (of course) every analysis of conditionals that unconditionally licenses Modus Ponens—which is to say, Stalnaker's, Lewis' and every other going theory of the 1970s.

I believe McGee's cases are genuine counterexamples to Modus Ponens and to the theories that license it. I think the two premises of his Republican argument are just plain true and the conclusion just plain false.<sup>19</sup>

Moreover—initially to my own surprise—my own theory not only predicts but explains McGee's data.<sup>20</sup> In my most straightforward terms, the Republican argument is formalized as

$$(e_{\in R})(\text{In}(e, P) \supset \text{In}(e, (f_{\in R})(\text{In}(f, \sim R) \supset \text{In}(f, A)))) \\ P \text{ [Or, In}(@, P)]$$

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$$\therefore (f_{\in R})(\text{In}(f, \sim R) \supset \text{In}(f, A))$$

Glancing at McGee's examples, one might assume that like my own they involve questioning the Reality Requirement. But the foregoing translation shows that they do not; for we may allow the Requirement to be imposed, indeed insist that all actual events be included on the conclusion's reference class, and the conclusion is if anything even more obviously false than otherwise. McGee's examples work on a different principle entirely.

We must begin by asking whether the parameter  $R$  shifts its reference from its first occurrence to its second within the major premise; to avoid begging that question, let us hereafter represent the second occurrence instead by ' $R^*$ ', leaving open the question of whether  $R^* = R$ . There is excellent reason to think that the parameter does shift: The premise's main antecedent should have the effect of closing off the subclass of initially envisioned Democratic victories. That is, although the conditional as a whole envisions both Republican and Democratic victories as "real and relevant possibilities," the nested consequent conditional is explicitly premised on a Republican victory, and we are no longer to envision otherwise when we evaluate it in its embedded state.

Let us see what happens to the argument. If  $R^*$  does thus exclude Democratic victories, then every non-Reagan event is indeed an Anderson event, and the first premise as a whole is plainly true. The second premise of course remains simple fact. But the conclusion is false, and for just the right reason: Since a Carter victory is still a blatantly real and relevant possibility, one could hardly say that every non-Reagan event is an Anderson event. And if the conclusion is considered on its own, Anderson's victory not being intrinsically a real possibility, the opposite is true: every non-Reagan event is a Carter event, which neatly assures the truth of "If Reagan does not win then Carter will." The argument fails because the premise's consequent is evaluated under a restricting assumption that does not apply to the same formula when it stands alone as the

argument's conclusion. And both the restricting assumption and its removal are independently and well motivated by our intuitive ideas about "real and relevant possibilities."

I turn without delay to meet an obvious objection:  $R^* \neq R$ , I have argued. Therefore someone may complain (just as, n.b., some hearers have complained against counterexamples to Antecedent-Strengthening, Transitivity, Contraposition and the like) that since the background assumptions held fixed are varied between premise and conclusion, the Republican argument commits a fallacy of equivocation by tacit parameter shift, and so is not a counterexample to Modus Ponens, because it is no longer an instance of Modus Ponens. Indeed, our present analysis brings the parameter shift into glaring relief: the premise's consequent conditional has  $R^*$  as its parameter but the conclusion still has  $R$ , and the two are distinct.

In the latter, technical sense the point is correct. (And notice that, as always, the very same point can be made as regards counterexamples to Antecedent-Strengthening, and to Transitivity and the rest.) But that very strict sense of 'instance' is neither specified nor intended in logic textbooks that present Modus Ponens as a valid form of inference. What students and professional philosophers have always been told is that barring equivocation or overt indexicals, arguments of the sentential surface form  $A \supset B, A \therefore B$  are valid arguments, period. And that is what is refuted by McGee's examples. One can continue to insist that Modus Ponens is valid for the strict sense of 'instance', but at the price of keeping us from telling easily and uncontroversially when a set of ordinary English sentences is an "instance" of an argument form.

Suppose that contrary to my earlier argument the parameter does not shift —  $R^* = R$ , and the set of envisioned relevant possibilities remains constant even for the consequent conditional. Even so, although a Carter victory stays envisioned throughout, any  $R$ -event *in which a Republican wins* has presumably got to be such that in it, any event in which Reagan does not win is one in which Anderson does. So the first premise seems true even on its dubious non-shifting interpretation and the counterexample goes through as before.

Perhaps my presumption is wrong, and even in a Republican  $R$ -event, the class  $R$  continues to contain Democrat events; the idea would be that even in the in-fact-Republican event, a Carter victory would still count as a real possibility. (And we are, after all, trying to stipulate that  $R$  remains fixed throughout the argument.) That would yield a sense in which the first premise is false, and false for much the same reason that the conclusion is false. *Perhaps* one can hear that sense, given suitable emphasis: "(Even) if (in fact) a Republican is going to win the election, then the following *is a true thing to say*: If it's not Reagan who wins, it will be Anderson." I doubt linguistically that McGee's premise can express that last paraphrase; I doubt on account of my views on the control of 'R' that the non-shifting interpretation of the premise is possible; and I think the latter impossibility explains the former. But even if I am wrong, the more

natural reading of the premise and the more intuitive shifting interpretation each dominate heavily, conspiring to vindicate and explain McGee's data. This I take to be a triumph for my semantics at the expense of Stalnaker and Lewis, the greater for its being entirely unanticipated.

## VIII

My approach has been to fix the value of our parameter ' $R$ ' by a mixture of epistemic and real-world considerations. My normal gloss on ' $(e \in R)$ ' is "For any event that is a real and relevant possibility,..." I suggested tying the notion of a "real and relevant possibility" to that of what would be foreseen or envisioned in the context by a reasonable person. Richard Gallimore has (in conversation) raised an objection to this, and his point illustrates yet a sixth difference between the metaphysical-similarity model and the Ramsey Test (though perhaps it actually boils down to the same sort of counterexample as my CIA example above).

Consider two propositions that are for us mutually irrelevant, e.g., "I will finish this paper today" and "Norway will have an unusually early autumn in 2001." Normally we would not assent to their conditional (FN) ("FN" for "Finish > Norway"), but would count it as false or truth-valueless. However, suppose that unbeknownst to us and even to the world's most competent physicists, there are arcane laws of nature  $L$  such that the conjunction of  $L$  with my finishing this paper today entails Norway's having the early autumn; that is, our conditional antecedent happens to lead by law to our consequent, even though no one could ever rationally suppose that.

Stalnaker or Lewis would count the conditional (FN) as straightforwardly true, since a world in which I finish the paper but Norway fails to have the early autumn would have to differ from our world in its laws of nature, a very large difference. So, for the similarity theorist: (FN) is true even though no one knows that, no one could even guess it, and everyone denies it. Denial of (FN) is just a case of perfectly well justified but false belief.

But now consider the simple Ramsey Test. We would affirm (FN) only if adding "I will finish..." to our present belief-store and performing epistemically minimal coherence-adjustment requires the further addition of "Norway will have..." (I assume "Norway will have..." was not already among our beliefs; otherwise (FN) would be an "even/still" conditional.) But here as usual, reality has nothing to do with it, and in particular the mere existence of the arcane laws  $L$  does nothing to make (FN) either true or assertible.

If we understand my notion of a "real and relevant possibility" purely in terms of what a reasonable person would foresee, my treatment of (FN) would go the same way for the same reason; by hypothesis, no reasonable person would foresee the existence of  $L$ . So, there will be envisioned events in which Norway



does have the early autumn and envisioned events in which it does not, and (FN) comes out false.

Now, two questions arise: (1) Is there really a sense in which (FN) is true? And (2) is there really a sense in which (FN) is false? Both questions are disputed, especially since No-Truth-Value just-says-no to both.

It seems undeniable that there is *at least* a sense in which (FN) is true, since (FN)'s antecedent leads by strict law to its consequent. (Notice that this is exceptionally embarrassing to No-Truth-Value: To continue to maintain the truth-valuelessness of indicative conditionals, one would have to deny that indicative conditionals follow from the corresponding nomologically strict conditionals, which would be very strange.) By the same token, the truth of (FN) in any sense precludes one's being a thoroughgoing Ramsey-Tester even if *contra* No-Truth-Value one understands the Test as delivering truth-values for conditionals. And as regards my own view, I must impose the Reality Requirement in order to guarantee a sense in which (FN) is true, for nothing less would see to it that the arcane laws *L* get included in *R*. Thus it seems I do not have the option of junking the Reality Requirement entirely; I have to grant that it is sometimes imposed.

To question (2), then—can (FN) be false despite *L*? That is a tough one, and its toughness embarrasses would-be epistemic accounts like mine. It is perhaps tempting to concede that given *L* there is *not* any sense in which (FN) is false, even though (FN) is eminently deniable, especially since as I said, (FN) could not otherwise be held to follow from the corresponding nomological. But we can after all grant such a sense, once we see what principle stands behind the reflex idea that indicative conditionals are entailed by the corresponding nomologicals.

In particular, although the sense in which (FN) is true demands invocation of the Reality Requirement, (FN) does not simply stand or fall with the Reality Requirement. The Requirement alone does not enforce the truth of (FN). The Requirement does ensure that at @ it is not only true but nomologically necessary that Finish  $\supset$  Norway. But on my semantics (FN) is true iff *every* Finish event that is a "real and relevant possibility" is also a Norway event. And some of those Finish events are nonactual, so the Reality Requirement by itself leaves it open that in at least one of them, Norway fails to have an early autumn. The problem is only that such an event is nomologically impossible. Now, why should nomological impossibility exclude an event from being a "real and relevant" case? Remember that *reality* has already been taken care of, so far as Gallimore's Problem is concerned; we have been forced to envision everything that is actually true. But nothing forces us to envision everything that is *nomologically necessary* in addition, especially in light of the epistemic spirit of my theory given the (by hypothesis) epistemically remote nature of the law *L*. There *is* at least one Finish event that is a "real and relevant possibility" but which is not also a Norway event, even though it is in fact nomologically

impossible—quite consistently with the Reality Requirement. And so in that sense, (FN) is false after all.

This concludes my case against Modus Ponens. I have not pursued a scorched-earth policy, for I have granted that within certain contexts and possibly on certain subordinate interpretations, Modus Ponens is a valid form of inference.

And obviously I concede that *textbook examples of Modus Ponens* are themselves valid arguments. I deny only that they are valid simply in virtue of having the form  $A \supset B, A \therefore B$ . (McGee points out the utter presumptuousness of our usual method in elementary logic—that of looking at two or three very simple instances of an inference-schema, seeing that those two or three instances are valid arguments, and directly inferring the general validity of the schema—without even considering, e.g., compound antecedents and consequents. When one thinks about it, that presumption is very dangerous.)

Modus Ponens is not *per se* a valid form of inference. But after all, following the demise of Transitivity, Contraposition and Antecedent-Strengthening, Modus Ponens was bound to be the next domino. At the very least, we should conclude that if one insists on any of the grounds considered above that Modus Ponens just is *per se* valid, then one ought on just the same grounds to restore the other conditional inferences as well—which is to champion the strict conditional and to write off twenty-five years' ever more subtle and elegant work on this topic.

## Notes

1. Adams, E.W., "The Logic of Conditionals," *Inquiry* 8 (1965): 166-197; Stalnaker, R., "A Theory of Conditionals," in N. Rescher, ed., *Studies in Logical Theory (American Philosophical Quarterly Monograph No. 2)* (Oxford: Basil Blackwell, 1968): 98-112; Lewis, D., *Counterfactuals* (Cambridge: Harvard University Press, 1973).
2. Ramsey, F.P., "General Propositions and Causality." In *The Foundations of Mathematics and Other Logical Essays*, ed. by R.B. Braithwaite (London, 1931). Reprinted in *Foundations: Essays in Philosophy, Logic, Mathematics and Economics*, ed. by D.H. Mellor (London: Humanities Press, 1978).
3. See particularly the essays collected in W. Harper, R. Stalnaker and G. Pearce, eds., *Ifs* (Dordrecht: D. Reidel, 1981).
4. Allan Gibbard, "Two Recent Theories of Conditionals," in Harper, Stalnaker and Pearce, *op. cit.*; Anthony Appiah, *Assertion and Conditionals* (Cambridge: Cambridge University Press, 1985); Jonathan Bennett has recently expressed sympathy, in "Farewell to the Phlogiston Theory of Conditionals," *Mind*, XCVII (1988): 509-27. My arguments against the No-Truth-Value thesis are given at length in Ch. Three of *Real Conditionals*, typescript, 1991.
5. Only later did Stalnaker address the indicative/subjunctive distinction, in "Indicative Conditionals," *Philosophia*, 5 (1975): 269-86 (reprinted in Harper, Stalnaker and Pearce, *op. cit.*).
6. Critical Notice of *Counterfactuals*, *Mind*, 84 (1975): 451-8, p. 452.
7. "Counterfactual Dependence and Time's Arrow," *Noûs*, 13 (1979): 455-76.
8. "An Investigation of the Lumps of Thought," *Linguistics and Philosophy*, 12 (1989): 607-653, p. 625. A similar example is offered by Igal Kvart in *A Theory*

of *Counterfactuals* (Indianapolis: Hackett, 1986), as is an extended discussion of Fine's sort of case.

9. Consider a slight variation: What if a *second* animal had escaped, in addition to the actual zebra? A world in which two zebras escape is intuitively more similar to the actual world than is one in which one zebra and one giraffe or gazelle escape. But again, "if a second animal had escaped as well, it would have been a zebra" is not true given our assumptions, and unlike the similarity analysis, the Ramsey Test predicts that: Adding "A second animal escaped" does not result in an adjusted belief set containing "A second zebra escaped," for the same reason as before.
10. *Counterfactuals, loc. cit.*, p 10. Lewis credits the idea to J. Howard Sobel; see also Sobel's "Utilitarianisms: Simple and General," *Inquiry*, 13 (1970): 394-449.
11. Chiefly "A Syntactically Motivated Theory of Conditionals," in *Midwest Studies in Philosophy, Vol. IX: Causation and Causal Theories*, P. French, T.E. Uehling and H. Wettstein, eds. (Minneapolis: University of Minnesota Press, 1984), and *Real Conditionals, loc. cit.*
12. An attested example, overheard in line at the Subway sandwich shop: "Subway Club with everything and also hot peppers, please."
13. On first hearing, some people object to such alleged counterinstances that, once one considers the quite properly derived conclusion, one sees that the premise is actually false after all—in initially assenting to it, one had mistakenly neglected the real possibility mentioned in the conclusion's expanded antecedent. That is a position one can take, certainly. But it has an ugly consequence: Since *any* contingent conditional can have its antecedent strengthened in such a way as to produce an obvious falsehood, no contingent conditional is ever true.
14. This formula omits a clause I posited in "A Syntactically Motivated Theory of Conditionals," designed to capture the force of "even." Incidentally, I trust the days are past when people could write off conditionals modified by 'even' as being "mere 'even if' conditionals" rather than conditionals, and so negligible. The word 'even' in the nonconstituent "even if" means precisely *even*, and is applied to a grammatical constituent *containing* the ordinary word 'if'. See Allen Hazen and Michael Slote, "'Even If'," *Analysis*, 39 (1979): 35-41; Jonathan Bennett, "Even If," *Linguistics and Philosophy*, 5 (1982): 403-18; and W. Lycan, "*Even and Even If*," *Linguistics and Philosophy*, 14 (1991): 115-150.
15. "A Syntactically Motivated Theory of Conditionals," *loc. cit.*, p. 447.
16. The difference, and an egregious error in a previous draft, were pointed out to me by Chris Gauker.
17. "A Counterexample to Modus Ponens," *Journal of Philosophy*, LXXXII (1985): 462-471.
18. E.g., W. Sinnott-Armstrong, J. Moor and R. Fogelin, "A Defense of Modus Ponens," *Journal of Philosophy*, LXXXIII (1986): 296-300; E.J. Lowe, "Not a Counterexample to Modus Ponens," *Analysis*, 47 (1987): 44-47; D.E. Over, "Assumptions and the Supposed Counterexamples to Modus Ponens," *Analysis*, 47 (1987): 142-6.
19. It is of course plain that the Republican argument is no counterexample when the conditionals are read materially, for the conclusion is true on that reading; I assume with McGee that the conditionals are stronger than horseshoes.
20. Here we have a jubilant case of confirming a "novel prediction"; my theory was not designed to explain facts like McGee's, for those facts had never remotely occurred to me when I devised the theory in the 1970s. To my shame, I had not even considered questions of iteration.