

WHAT IF BIZET AND VERDI HAD BEEN COMPATRIOTS?

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ABSTRACT: Stalnaker argued that conditional excluded middle should be included in the principles that govern counterfactuals on the basis that intuitions support that principle. This is because there are pairs of competing counterfactuals that appear to be equally acceptable. In doing so, he was forced to introduced semantic vagueness into his system of counterfactuals. In this paper it is argued that there is a simpler and purely epistemic explanation of these cases that avoids the need for introducing semantic vagueness into the semantics for counterfactuals.

KEYWORDS: counterfactuals, Ramsey test, coherentism

1. Introduction

At least since Quine introduced the Bizet/Verdi case in 1950 there has been considerable controversy not only about the possibility of there being any adequate analysis of the logic of counterfactual conditionals, but also more specifically about the acceptability of the principle known as conditional excluded middle (CEM).¹ Conditional excluded middle is typically stated as follows:

$$(CEM) (A > C) \vee (A > \neg C).$$

CEM is a consequence of what Bonevac calls Stalnaker's rule:²

$$(SR) \neg (A > C)$$
$$\frac{}{A > \neg C}$$

This issue about CEM was a particular bone of contention between Stalnaker and Lewis as they developed their respective accounts of the logic and semantics of counterfactuals in the late 60s and 70s. Stalnaker ultimately argued that the principle was one that we should incorporate into the logic of counterfactuals (he favored the conditional logic C2) and that, as a result of doing

¹ W. V. O. Quine, *Methods of Logic* (New York: Holt, Reinhart and Winston, 1950).

² Daniel Bonevac, *Deduction, 2nd ed.* (Oxford: Blackwell, 2003).

so we must introduce vagueness into the semantics for such conditionals.³ In point of fact, he advocated doing this specifically by the use of the theory of supervaluations developed by Van Fraassen.⁴ The result then is a semantic theory whereby conditionals in Stalnaker's logic can be true, false or indeterminate.

The main reasons why he advocated this fairly radical approach to the semantics of counterfactuals are twofold. First, it is supposed to explain our inability to choose among competing conditionals like those in the Bizet/Verdi case a unique one that is most acceptable. Second, it supports Stalnaker's intuition that CEM is a plausible principle of conditional logic. Here it will be argued that we can explain our inability to choose a unique most epistemically acceptable conditional from among competing conditionals in Bizet/Verdi cases without recourse to a semantics that incorporates vagueness and that we ought to resist the temptation to introduce vagueness into the semantics of conditionals due to the principle of minimal mutilation. This solution will also allow us to avoid having to choose whether or not to incorporate CEM in the logic of conditionals on the basis of problems with Bizet/Verdi type cases alone and this is a good thing as that determination should probably not be entirely militated by conflicting intuitions or by appeals to what most speakers would affirm about Bizet/Verdi cases alone.

2. Quine's Example and CEM

Quine famously discussed the following pair of conditionals in his 1950 book:

(BV1) If Bizet and Verdi had been compatriots, Bizet would have been Italian.

(BV2) If Bizet and Verdi had been compatriots, Verdi would have been French.

What this pair of conditionals is ultimately supposed to show is that there can be ties in terms of the closeness of counterfactual possible worlds and so Stalnaker's analysis of the logic of counterfactuals is supposed to fail. The basic idea is that while there is good reason to suppose that world where Bizet and Verdi are both French or are both Italian are more similar to the actual world than worlds where they are, for example, Nigerian, Australian or Sri Lankan it seems intuitively to be the case that there is no good reason to suppose either that the world where they are both Italian is closer to the actual world than the world where they are both French or that the world where they are both French is closer to the actual world than the world where they are both Italian. These two counterfactual worlds seem

³ Robert C. Stalnaker, "A Defense of Conditional Excluded Middle," in *Ifs*, eds. William Harper, Robert C. Stalnaker, and Glenn Pearce (Dordrecht: D. Reidel, 1981), 87-104.

⁴ Bas C. Van Fraassen, "Singular Terms, Truth-value Gaps and Free Logic," *Journal of Philosophy* 63 (1966): 481-495.

to be *equally* close to the actual world. As a result, there does not seem to be any reason to treat one conditional as more acceptable than the other. So, more controversially, there is supposed to be no reason to suppose that the first conditional is to be regarded as true and the second as false or vice versa. However, let us look more closely both at how this problem arises and why Stalnaker responds to the Bizet/Verdi case in the way that he does.

3. Stalnaker's and Lewis' Theories in a Nutshell

Stalnaker and Lewis independently proposed accounts of the logic of counterfactuals in the late 60s and early 70s. While these two theories are formally quite similar, they were presented on the basis of somewhat different semantic ideas. Nevertheless, these semantics differences are largely superficial when closely analyzed, with the exception of one major point of disagreement that in turn reflects a major difference in terms of the formal principles characterizing these two logics. Let us begin by looking at the semantics for these two accounts of counterfactuals.

Stalnaker's semantics for counterfactuals was presented in terms of possible worlds and the concept of a selection function.⁵ This selection function f takes proposition and possible world pairs into a possible world. More straightforwardly then, the truth conditions for counterfactuals are given as follows:

$A > B$ is true at world I , if and only if, B is true at $f(A, i)$.

Of course, f is governed by a number of well-known constraints.

Alternatively, Lewis' semantics for counterfactuals was presented in terms of a comparative similarity relation.⁶ Where $S(i, j, k)$ means that j is more similar to i than k is to i , Lewis gives the truth conditions for counterfactuals as follows:

$A > B$ is true, if and only if, there is a A -world j such that B is true at j and all in all A -worlds at least as similar to i as to j .

Stalnaker, however, showed that the choice of presenting semantics in terms of a selection function or in terms of a comparative similarity relation is really arbitrary.⁷ Nevertheless, the two theories of counterfactuals that arise from these semantic basis and the constraints imposed on them are not strictly equivalent. It turns out that when one looks at the details, Stalnaker's theory is a special more-restricted case of Lewis' theory. Lewis' theory involves a well-ordering of all

⁵ Robert C. Stalnaker, "A Theory of Conditionals," in *Studies in Logical Theory*, ed. James W. Cornman (Oxford: Blackwell, 1968), 98-112.

⁶ David Lewis, *Counterfactuals* (Cambridge: Harvard University Press, 1973).

⁷ Stalnaker, "A Defense of Conditional," 87-104.

possible worlds while Stalnaker's theory involves only a weak total ordering of possible worlds. This then gives rise to the crucial point where the theories differ. Stalnaker's theory assumes what Lewis called the limit and uniqueness assumptions. The details of the limit assumption are not important here, but acceptance of it and the uniqueness assumption is what gives rise to the problems associated with CEM noted above.⁸ The uniqueness assumption can be stated as follows:

(uniqueness) for every world i and proposition A there is at most one A -world minimally different from i .

Accepting both of these assumptions amounts to the acceptance of CEM, but the uniqueness assumption is what effectively rules out ties in the similarity of worlds. There cannot be two worlds that are equally similar to a given possible world.

Stalnaker admits that this is an idealization that he has made with respect to the semantics of counterfactuals, specifically with respect to the selection function.⁹ He defends this view on the basis of "...unreflective linguistic intuition,"¹⁰ and argues essentially that treating both of the Bizet/Verdi counterfactuals as indeterminate in truth value better reflects such semantic intuitions than Lewis' view, where they both turn out to be false.

4. Coherence as a Guide to Counterfactual Acceptance

Stalnaker and Lewis developed their semantic views of counterfactuals in terms of truth conditions and this was framed in terms of possible worlds. However, as argued in the previous section, the issue of the acceptability of CEM should not be driven by semantic considerations. Rather, what is needed is a clear account of the acceptability conditions for counterfactuals that explains the resistance to CEM and Bizet/Verdi type cases. Fortunately, there has been considerable discussion of this matter in the debate about the Ramsey test for conditional acceptance that is so-named because of Ramsey's brief footnote comment made in a paper in 1929.

In this vein, Carlos Alchourrón, Peter Gärdenfors, and David Makinson developed the AGM theory of belief revision in the 1980s and a number of related theories have arisen as a consequence.¹¹ Here we will specifically focus on the

⁸ See Charles B. Cross, "Conditional Excluded Middle," *Erkenntnis* 70 (2009): 173-188 for discussion of the relationship between the limit assumption, the uniqueness assumption and the principle of counterfactual consistency.

⁹ Stalnaker, "A Defense of Conditional," 89.

¹⁰ Stalnaker, "A Defense of Conditional," 92.

¹¹ See Carlos E. Alchourrón, Peter Gärdenfors, and David Makinson, "On the Logic of Theory Change: Partial Meet Functions for Contraction and Revision," *Journal of Symbolic Logic* 50

version of this view as presented by Gärdenfors.¹² These theories are fundamentally based on the concept of a belief state, belief set or a corpus of beliefs, K , typically satisfying the following minimal conditions (where it is assumed that belief states are given a representation in some language L):

(BS) A set of sentences, K , is a belief state if and only if (i) K is consistent, and (ii) K is objectively closed under logical implication.

The content of a belief state is then defined as the set of logical consequences of K (so $\{b: K \in b\} =_{df.} Cn(K)$). Given this basic form of epistemic representation, the AGM-type theories are intended to be a normative theory about how a given belief state which satisfies the definition of a belief state is related to other belief states satisfying that definition relative to: (1) the addition of a new belief b to K_i , or (2) the retraction of a belief b from K_i , where $b \in K_i$. Belief changes of the latter kind are termed *contractions*, but belief changes of the former kind must be further sub-divided into those that require giving up some elements of K_i and those that do not. Additions of beliefs that do not require giving up previously held beliefs are termed *expansions*, and those that do are termed *revisions*.¹³ Specifically, for our purposes here it is the concept of a revision that is of crucial importance to the issue of providing an account of rational commitment for conditionals. In any case, given AGM-style theories the dynamics of beliefs will then simply be the epistemically normative rules that govern rational cases of contraction, revision and expansion of belief states.

The fundamental insight behind these theories is then that belief changes that are contractions should be fundamentally conservative in nature. In other words, in belief changes one ought to make the minimal alterations necessary to incorporate new information and to maintain or restore logical consistency. This fundamental assumption is supposed to be justified in virtue of a principle of informational economy. This principle holds that information is intrinsically and practically valuable and so we should retain it at all costs unless we are forced to do otherwise. So, while the details are not important here, the revision operations on belief states are restricted so as to obey a principle of minimal mutilation.

(1985): 510-30, Peter Gärdenfors, *Knowledge in Flux. Modeling the Dynamics of Epistemic States* (Cambridge: MIT Press, 1988) and Isaac Levi, *For the Sake of the Argument: Ramsey test Conditionals, Inductive Inference, and Nonmonotonic Reasoning* (Cambridge: Cambridge University Press, 1996).

¹² In Gärdenfors, *Knowledge in Flux*.

¹³ In point of fact the AGM theory really only holds that there are two dynamical operations on belief states, because revision is defined in terms of expansion and contraction.

What is important to the topic of this paper is that on the basis of such theories of belief revision, the defenders of this approach to belief dynamics have also proposed that one could also give a theory of rational conditional commitment.¹⁴ The core concept of this theory is the Ramsey Test:¹⁵

(RT) Accept a sentence of the form $A > C$ in the state of belief K if and only if the minimal change of K needed to accept A also requires accepting C .¹⁶

Even in this quasi-formal form we can see what the AGM and other theorists have in mind. The Ramsey Test requires that we modify our beliefs by accepting A into our standing system of beliefs and then see what the result is.¹⁷ This view is typically framed in terms of a version of the epistemological coherence theory of justification and this seems natural given BS.¹⁸ The idea is that one's beliefs are justified to the degree that they hang together or are mutually supportive. The idea then is that our belief system is justified in virtue of this feature of the system as a whole and there are several extant version of

¹⁴ See Peter Gärdenfors, "An Epistemic Approach to Conditionals," *American Philosophical Quarterly* 18 (1981): 203-211, Gärdenfors, *Knowledge in Flux*, and Peter Gärdenfors, "Imaging and Conditionalization," *The Journal of Philosophy* 79 (1982): 747-760.

¹⁵ See F. P. Ramsey, "Laws and Causality," reprinted in *F.P. Ramsey: Philosophical Papers*, ed. D. H. Mellor (Cambridge: Cambridge University Press, 1929/1990). See Michael Shaffer, "Three Problematic Theories of Conditional Acceptance," *Logos & Episteme* 1 (2011): 117-125 and Michael Shaffer, "Doxastic Voluntarism, Epistemic Deontology and Belief-Contravening Commitments," *American Philosophical Quarterly* 50 (2013): 73-82 for some discussions of problems for naïve formulations of the Ramsey test.

¹⁶ For a relatively recent discussion of RT and related views see Isaac Levi, *Mild Contraction* (Oxford: Oxford University Press, 2004).

¹⁷ David H. Sanford, *If P, then Q: Conditionals and the Foundations of Reasoning*, 2nd ed. (New York: Routledge, 2003) contains the objection that in many cases where the antecedent of such a conditional is a radical departure from what we believe to be the case, we cannot in fact employ the Ramsey test because we do not know what would be the case if we believed such an antecedent. So, he claims that many conditions are simply void, rather than true or false. It is worth pointing out here that Sanford's criticism is weak at best. It simply does not follow that because we cannot always clearly determine what would be the case if we were to believe some claim, a conditional with such an antecedent has no truth value. See chapters 5 and 6 of Timothy Williamson, *The Philosophy of Philosophy* (Blackwell, Oxford, 2007) for discussion of one suggestion for how such knowledge might be obtained.

¹⁸ See Peter Gärdenfors, "The Dynamics of Belief Systems: Foundations Versus Coherence Theories," in *Knowledge, Belief and Strategic Interaction*, eds. Cristina Bicchieri, Maria Luisa Dalla Chiara (Cambridge: Cambridge University Press, 1992) for the most thorough defense of the AGM theory in terms of coherentism. See Michael Shaffer, "Coherence, Justification, and the AGM Theory of Belief Revision," in *Perspectives on Coherentism*, ed. Yves Bouchard (Ontario: Aylmer-Éditions du Scribe, 2002) for some worries about this view.

coherence theory that are plausible views of justification.¹⁹ The most famous are of course those of Bonjour and Lehrer, but Thagard's version is also a well-regarded and more recent version of coherentism.²⁰ In any case, we need not get bogged down in the debate about the particular details of coherentism here and we can simply adopt a basic, largely unanalyzed and broadly intuitive conception of that view for the purposes of this paper. This is also desirable because the results here are then not dependent on any particular version of coherence theory. So we shall simply accept that a belief corpus is coherent to the degree that its elements fit together and are mutually supportive. Once we accept this interpretation of RT and the notion of a belief state on which it is based, there is a natural way to extend RT to cases of comparative acceptance for conditionals.

First, it is important to note that it is not at all clear that on RT either BV1 or BV2 is acceptable. This is because the minimal change of belief needed to incorporate the claim that Bizet and Verdi are compatriots does not obviously *require* accepting either that Bizet would have been Italian or that Verdi would have been French. But, both BV1 and BV2 seem to be acceptable conditionals nonetheless because accepting the shared antecedent permits one to accept either that Bizet would have been Italian or that Verdi would have been French. What is also important in the case of BV1 and BV2 is that they in an important sense compete. We then need to introduce the appropriate concept of a competitor as it applies to counterfactual conditionals. For the purpose of this paper we can simply adopt the following concept of the competition of conditionals:

(COMP) A counterfactual conditional $A > C$ competes with all other counterfactual conditionals that have A as an antecedent.

So, in the case of the Bizet/Verdi conditionals, we have a case of two competing conditionals and this should be no surprise. As we have seen there is something important about the relationship between those two conditionals that ties them together intimately. Given COMP we can then replace RT with an appropriate concept of comparative acceptance given the coherentist interpretation of belief states as follows:

¹⁹ There is of course some controversy about such views, especially those that are framed in terms of probabilistic notions of coherence. See Luc Bovens and Stephan Hartmann, *Bayesian Epistemology* (Oxford: Oxford University Press, 2003) and Erik J. Olsson, *Against Coherence*, (Oxford: Oxford University Press, 2005) for discussion of this matter.

²⁰ See Laurence Bonjour, *The Structure of Empirical Knowledge* (Cambridge: Harvard University Press, 1985), Keith Lehrer, *Theory of Knowledge* (Boulder: Westview Press, 1990), and Paul Thagard, *Coherence in Thought and Action* (Cambridge: MIT Press, 2000).

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(CCA) Accept a sentence $A > C$ in the state of belief K rather than $A > B$ if and only if the minimal change of K needed to accept A , K' , permits accepting C , the minimal change of K needed to accept A , K'' , also permits accepting B and the changes necessary to maintain the coherence of K' are less extensive than those necessary to maintain the coherence of K'' .

So defined, the principle of comparative conditional acceptance allows us to introduce a differential notion of conditional acceptance that is normative because it is based on the coherence theory of justification. Moreover, as we shall see in the next section, it allows us to explain Bizet/Verdi cases without having to depend entirely on suspicious appeals to semantic intuitions and without having to introduce vagueness into the semantics for those conditionals.²¹

5. Explaining Bizet/Verdi Cases.

So why are our two conditionals so problematic and how does CCA make sense of the apparently problematic nature of them? Recall the Bizet/Verdi conditionals:

(BV1) If Bizet and Verdi had been compatriots, Bizet would have been Italian.

(BV2) If Bizet and Verdi had been compatriots, Verdi would have been French.

By COMP BV1 and BV2 are competing counterfactual conditionals. Now if we apply CCA to our dual of sentences we should see that the revision of our state of belief K by the addition of the shared antecedent of BV1 and BV2 permits the acceptance both of the claim that (I) Bizet would have been Italian and it also permits the acceptance of the claim that (F) Verdi would have been French.²² This can be made more apparent by comparing the case of BV1 and BV2 with the cases where BV1 and BV2 are compared in terms of CCA with the following conditional:

(BV3) If Bizet and Verdi had been compatriots, Bizet would have been Dutch.

The changes necessary to accept BV3 are clearly more extensive than those needed to maintain consistency given the acceptance of BV1 or BV2. Moreover, given the relevant parts of our belief corpus and our intuitive understanding of coherence it is also reasonable to suppose that the revision of K by I , K' , and the revision of K by F , K'' , are *equally extensive*. Both resultant belief states hang

²¹ The reliability of semantic intuitions has recently been questioned in Edouard Machery. Ron Mallon. Shaun Nichols, and Stephen P. Stich, "Semantics, Cross-cultural Style," *Cognition* 92 (2004): B1-B12 and the reliability of intuitions in general have been more generally questioned in Jonathan M. Weinberg, Shaun Nichols, and Stephen Stich, "Normativity and Epistemic Intuitions," *Philosophical Topics* 29 (2001): 429-460..

²²This can be seen also in that both BV1 and BV2 satisfy RT.

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together or are mutually supportive to the same degree – or to a very similar degree – given what we know about Bizet, Verdi and the world in general, and the degree of change necessary to incorporate the antecedent and consequent of both is not noticeably different. It is just as coherent and requires the same sorts of changes of the same degree to suppose that, if the two men were compatriots, Bizet would be French as it is to suppose that, if the two men were compatriots, Verdi would be Italian. But the changes necessary to pursue either of these options in a coherent manner are clearly less extensive than the changes necessary to entertain the supposition that if the two men were compatriots, Bizet (or Verdi) would have been Dutch. Importantly, this means that while both BV1 and BV2 are acceptable there is no reason to accept BV1 over BV2 and no reason to accept BV2 over BV1 as per CCA. This then straightforwardly *explains* our inability to determine which is true and it explains this without any appeal to semantic vagueness and without any unsupported appeals to semantic intuition. As a result, we do not need to take Stalnaker's radical semantic steps in order to deal with these sorts of cases. If the theory of counterfactual acceptance presented here is even broadly correct, then that the Bizet/Verdi cases are odd may well just be a reflection of a purely epistemic phenomenon and nothing deeper. This recognition in turn then shows that the Bizet/Verdi type cases do not decide the issue of CEM one way or the other. The *metaphysical/semantic* matter about whether there can be ties in terms of the similarities of worlds is not decided simply because we cannot *epistemically* distinguish conditionals in Bizet/Verdi type cases, and in deference to the principle of minimal mutilation we ought to resist the move to introduce vagueness into the semantics of conditionals *pace* Stalnaker.