

A NOTE ON MCGEE'S COUNTEREXAMPLE TO MODUS PONENS

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Abstract. In this article I will review McGee's famous counterexample to Modus Ponens and I will argue that it is not a real counterexample. I will claim that the problem lies in an infelicitous assertion of the second premise. As result of this diagnosis, I will suggest that when dealing with indicative conditionals a pragmatic theory is needed.

Keywords: modus ponens • counterexample • indicative conditionals • conditionals • existential quantification

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In 1985, McGee published an unsettling counterexample to Modus Ponens (the inference that allows you to infer from the premises “If A, then B” and “A” the conclusion “B”, where A and B are two arbitrary sentences of the language). The relevant question that is being posed by this famous counterexample is what the meaning of “If A, then B” is, and whether the logic of indicative conditionals has to validate this classical inference or not. Of course, if “If A, then B” happened to be the material conditional, this counterexample would simply be incorrect, because there is no valuation in which the premises of Modus Ponens can be true and its conclusion false. The question behind this counterexample, then, is how to model the semantics of indicative conditionals if it's not by means of a material conditional. And almost forty years later, there is still no consensus over that question (still, the problem regarding the right semantic for indicative conditionals might take us far from our goal here). So, without further ado, here is McGee's example:

Opinion polls taken just before the 1980 election showed the Republican Ronald Reagan decisively ahead of the Democrat Jimmy Carter, with the other Republican in the race, John Anderson, a distant third. Those apprised of the poll results believed, with good reason:

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

Yet they did not have reason to believe



1. If it's not Reagan who wins, it will be Anderson. (numbering added)

(McGee 1985, p. 462)

This counterexample is usually treated in propositional logic, and formalized as (1) $p \rightarrow (\neg q \rightarrow r)$, (2) p , therefore (3) $\neg q \rightarrow r$. Yet, I think it is more enlightening to see this argument formalized in first order logic to spot where the difficulty lies:

1. $\exists x(Rx \wedge Wx) \rightarrow (\neg Wr \rightarrow Wa)$
2. $\exists x(Rx \wedge Wx)$

Therefore,

3. $\neg Wr \rightarrow Wa$

Where Rx is interpreted as x is a Republican, Wx as x will win the election, and r and a refer to Reagan and Anderson respectively.

A counterexample is an example that shows, given an argument, that the premises can be true and its conclusion false. So, the first question to be asked is “does this example show that it is possible for the premises to be true and the conclusion false?”. At first sight, the premises seem to be true. Given that there are only two Republicans in the race, that conditional looks like an analytic truth. And it was true according to the polls that Reagan, a Republican, was going to win the elections (and he won). And it also seems plausible to accept that it is false that if Reagan were to lose, then Anderson would win.

There are good reasons to reject the idea that if a conditional has truth conditions, then the premises of this argument can be true and the conclusion false, such as those exposed in (Katz 2015) (at least if one wants to retain certain other inferences). Yet we will not deepen into these arguments for reasons of space. It is important to notice, nevertheless, that one reason this might not be a real counterexample after all, is that it is possible to argue that indicative conditionals do not have truth conditions at all, as in (Adams 1965, Edgington 1995, Bennett 2003). What a conditional expresses, according to these philosophers, is the degree of confidence the speaker has that the consequent will be the case whenever the antecedent is the case. For this reason, it will never be possible to give an example where the premises are true and the conclusion is false, simply because one of its premises and the conclusion of the argument do not have truth conditions.

Then, the question this example raises might be whether this argument preserves good grounds for belief. That would amount to something like: if you have good grounds for believing the premises, then you should have good grounds for believing the conclusion. Even though, some authors like Armstrong, Moor, Fogelin (1986) will reject this question as a logical question and will argue this is an epistemological

question, and those it doesn't threaten the validity of Modus Ponens. Yet, here I think there is an interesting point to be made.

If we model degree of belief in terms of probabilities, then the question is whether it is possible to have a high degree of belief in the premises and a low degree of belief in the conclusion. Or also, a high degree of belief in the conjunction of the premises and a low degree of belief in the conclusion. What the Kolmogorov axioms tell us is that if an argument A therefore B is valid, then the probability of B should be equal or higher than the probability of A . And I think, this is what McGee is actually arguing: that it is rational to have a high degree of belief in the conjunction of the premises and a low degree of belief in the conclusion, and thus this argument should be invalid.

What I want to argue is that this argument is valid, and that if you have a high degree of belief in the conjunction of the premises and you are allowed to assert those premises, then you should have a high degree of belief in the conclusion and be allowed to assert it. But the problem lies in a faulty assertion of the second premise. If we look at it in terms of propositional logic, the problem can go unnoticed, but in first order logic it is easy to spot. What one wants to assert in (2) is:

(2*) Reagan will win the election.

And of course, from (2*), (3) doesn't follow. The problem lies in the introduction of the existential quantifier (this suggestion is similar to the one made in Fulda (2010), yet the conclusion I will draw is radically different). From (2*) and a side premise

(2_{side}) Reagan is a Republican

it follows:

(2) A Republican will win the election.

And therefore, because we have a high degree of belief in (2*) and in (2_{side}), we should hold an equal or higher degree of belief in (2). The problem then, is not that our degrees of belief in (2) should be low, but that it is an infelicitous assertion in the Gricean sense. This means that we should not convey irrelevant or less information than the one we have when uttering a sentence. Mainly because we have a high degree of belief that Reagan will win and a really low degree of belief that Anderson will win, but instead of asserting (2*) we assert something weaker, that either Reagan or Anderson will win.

If we were licensed to utter (2), because we were truly uncertain whether the winner might be Reagan or Anderson, then the example would run smoothly into a perfect instance of Modus Ponens. What generates the uncomfortable feeling of being compelled to assert a conclusion we do not believe is that we asserted a weaker premise than the one we should have asserted.

McGee's counterexample is not an example of an argument with true premises and a false conclusion. It's not an example where we have high degree of belief in the premises and low degree of belief in the conclusion either. It is an example of a failed assertion, because even if the inference from (2*) and (2_{side}) to (2) is valid, (2) is not assertable in the sense that is a violation of Grice's maxim of relevance.

One interesting fact to highlight about this conclusion is that, even if it is not stated by Adams (1965), it goes in line with the way he explains why the fallacies of the material conditional are invalid. In particular, he explains that the reason why the following argument is invalid are exactly the same as the reason not to assert premise (2). Take this example: "Either Dr. A or Dr. B will attend the patient. Dr. B will not attend the patient. Therefore, if Dr. A does not attend the patient, Dr. B will." (Adams, 1965, p.167). The problem in this argument, he argues, is that it does not seem reasonable to assert that either Dr. A or Dr. B will attend the patient when you believe that Dr. B will not attend the patient.

This is just to remark that, if one accepts this diagnosis of McGee's counterexample, one can still endorse Adams' stance that conditionals do not have truth conditions. At the same time, I think this argument highlights the importance of having, at least, a small pragmatic theory to understand when asserting a conditional is justified, at least if one is going to address conditionals in terms of degrees of belief or degrees of assertibility.

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