Jun 6th, 9:00 AM - Jun 9th, 5:00 PM

'So'

David Hitchcock
McMaster University

‘So’

DAVID HITCHCOCK

Department of Philosophy
McMaster University
1280 Main St. W.
Hamilton, ON L8S 1W7
Canada
hitchckd@mcmaster.ca

ABSTRACT: I argue, contrary to a recent assertion by Lilian Bermejo-Luque, that the inference-claim in an argument of the form ‘*p*, so *q*’ is not its associated material conditional ‘if *p* then *q*’. Rather, it is the claim that the argument has a covering generalization that is non-trivially true. I defend this interpretation against three objections by Bermejo-Luque.

KEYWORDS: Lilian Bermejo-Luque, covering generalization, inference-claim, material conditional, negajunction, Stephen E. Toulmin, warrant

1. INTRODUCTION

In this paper I address the meaning of the word ‘so’ in its inferential use, and of other inferential particles, both those like ‘so’ that introduce a conclusion and those like ‘since’ that introduce a premiss.

Since we are restricting our attention to inferential uses of such particles, their meaning is in one way quite obvious. Roughly speaking, a conclusion indicator like ‘so’ indicates that the sentence that it immediately precedes follows from the sentence that immediately precedes it, perhaps in combination with other sentences in the immediate context. And, also roughly speaking, a premiss indicator like ‘since’ indicates that the main clause of the sentence in which it occurs follows from the clause that immediately follows it, perhaps in combination with other sentences in the immediate context. (I say “roughly speaking” to allow for variants where a clause or phrase rather than a sentence functions as a premiss or as the conclusion, and also for subordinate inferential clauses within the main inferential structure. Also, I use the phrase “roughly speaking” to allow for other accounts of what types of entities may be connected by an inferential particle or phrase, such as utterances, propositions and speech acts.)

But what does it mean to say that a sentence follows from one or more sentences?

The Spanish philosopher Lilian Bermejo-Luque has recently claimed, in a paper entitled “Toulmin’s model and the question of relativism”, that the inference-claim of any argument is its corresponding material conditional (Bermejo-Luque 2006, p. 80). The claim that an argument’s conclusion follows from its premisses, she says, is “the particular [material] conditional that licenses the step from a particular reason to a particular conclusion” (p. 80).

In opposition, I maintain that following means something logically stronger, namely, a generalization of material implication. To avoid the misleading implications of

Hitchcock, D. (2007). ‘So’. In H.V. Hansen, *et. al.* (Eds.), *Dissensus and the Search for Common Ground*, CD-ROM (pp. 1-8). Windsor, ON: OSSA.

the English word ‘if’, I shall express material implication in the form of a negated conjunction, ‘not both the antecedent and not the consequent’. I shall refer to the negated conjunction whose first conjunct is the conjunction of an argument’s premisses and whose negated second conjunct is the negation of the same argument’s conclusion as that argument’s “associated negajunction”. I maintain that to claim that a conclusion follows from one or more premisses is to commit oneself to the non-trivial truth or acceptability, for some non-empty set of content expressions, each of which occurs at least once in a premiss or in the conclusion or both, and for a corresponding set of reference classes that include in each case the object signified by the content expression, of a generalization, possibly qualified, over those reference classes of the associated negajunction, with respect to those content expressions. To take a hackneyed and traditional example, the word ‘so’ in the argument ‘Socrates is human, so Socrates is mortal’ indicates more than that it is not the case that Socrates is human and Socrates is not mortal. It indicates that some generalization of this material conditional, such as the generalization ‘for every animal x, it is not the case that x is human and x is not mortal’, is non-trivially true. (The example of course reduces to what one would standardly take to be the argument’s inference-licensing assumption: ‘Every human is mortal.’)

2. WHY AN ARGUMENT’S ASSOCIATED MATERIAL CONDITIONAL IS NOT ITS INFERENCE-CLAIM

An argument’s associated material conditional (i.e. what I am calling its associated negajunction) is not its inference-claim. To say that it is not the case that Socrates is human and Socrates is not mortal is not to say that it follows from the fact that Socrates is human that Socrates is mortal. The associated negajunction makes a much weaker claim than the claim implicit in an illative like ‘so’ or ‘therefore’ that introduces a conclusion. We can see that this is so by constructing an example where the associated negajunction is true but the inference-claim is false. Consider, for example, the argument, ‘8 is divisible by 2, so 6 is divisible by 2.’ This is clearly a bad argument, even though it has a true premiss and a true conclusion. You cannot legitimately infer from the fact that 8 is divisible by 2 that 6 is divisible by 2, even though as a matter of fact it is true that 6 is divisible by 2. Thus the inference-claim in the argument ‘8 is divisible by 2, so 6 is divisible by 2’ is false. But the associated negajunction ‘not both 8 is divisible by 2 and 6 is not divisible by 2’ is true, because the conjunction that is negated has a false conjunct, namely ‘6 is not divisible by 2’, so that the conjunction is false and its negation true.

The claim that an argument’s associated negajunction is its inference-claim gets its plausibility from expressing this negajunction as a conditional, ‘If the premisses are true, then the conclusion is true’. Such a conditional clearly *is* the argument’s inference-claim, as ancient Stoic logicians recognized long ago (Diogenes Laertius VII.71). But its truth-conditions are not those of the material or Philonian conditional. The conditional statement ‘if 8 is divisible by 2, then 6 is divisible by 2’ is false, for exactly the same reasons as the argument ‘8 is divisible by 2, so 6 is divisible by 2’ has a bad inference. The conclusion of the argument does not follow from its premiss; similarly, the consequent of the conditional does not follow from its antecedent. This example shows as clearly as any that the truth-functional account of the truth-conditions for a particular indicative conditional in natural languages is incorrect. It may be convenient to translate

natural-language ‘if .. then’ particular sentences into a formal language with a horseshoe or arrow as the main connective, and to treat this connective as signifying a truth-function. But it is a convenient fiction.

My counter-example of course involves a case where the conclusion is known to be true independently of the argument put forward in its support. Bermejo-Luque tries to ward off this sort of counter-example by remarking that an argument’s associated material conditional (i.e. its associated negajunction)

> is to be valued under the argumentative conditions in which it arises, namely, that the reason alleged in the argument (whose content is the antecedent of the conditional) is supposed to be true or highly acceptable, and also that we have not already independently determined the real value of the claim for which we argue (whose content is the consequent of the conditional). These conditions suffice to free us from the paradoxes of material implication when appraising [inference-claims]. (Bermejo-Luque 2006, p. 79)

So we are to construe my supposed counter-example as an argument presented in a situation where it is supposed to be true that 8 is divisible by 2, but we have not already determined independently whether 6 is divisible by 2. To make such a situation plausible, let’s vary the example slightly to one where the arithmetical premiss is obviously true, the arithmetical conclusion not yet determined to be true, and the inference apparently incorrect. An example might be the argument: ‘20,472 is divisible by 3, so 20,472 is divisible by 9.’ According to Bermejo-Luque, the fact that the premiss of this argument is supposed to be true (and can in fact easily be checked to be true) but that we have not yet determined whether the conclusion is true (because we have not yet tried to divide 20,472 by 9) frees us from the paradoxes of material implication when we come to appraise the argument’s associated material conditional, i.e. the associated negajunction ‘Not both 20,472 is divisible by 3 and 20,472 is not divisible by 9.’ But surely the easiest and most direct way to determine whether this negajunction is true, given that we know that the first of the two conjuncts in the negated conjunction is true, is to check whether the second one is also true. If the second conjunct is also true, then the whole conjunction is true, the associated negajunction is false and the conclusion does not follow. If the second conjunct is false, then the whole conjunction is false, the associated negajunction is true and the conclusion (on Bermejo-Luque’s account) does follow. The fact that we have not already determined the value of our conclusion does not bar us, when it comes to appraising the associated negajunction, from making such a determination independently of the argument offered in support of the conclusion. And, in any case where we have a way of making such an independent determination, and that determination yields the result that the conclusion is true, we will rightly conclude that the associated negajunction is true. Thus, on Bermejo-Luque’s account, not only does every argument whose conclusion is true make a true inference-claim (its conclusion follows from the premisses offered in its support), but every argument whose conclusion can be independently determined to be true makes an inference-claim that can be known to be true: its conclusion demonstrably follows from the premisses offered in its support. Similarly, every argument with an untrue premiss makes a true inference-claim (its conclusion follows from the premisses offered in its support), and every argument with a premiss that can be independently determined to be untrue makes an inference-claim that can be known to be true: its conclusion demonstrably follows from the premisses offered in its

support. Further, the only invalid arguments are ones that actually have true premiss(es) and an untrue conclusion.

These are clearly unacceptable consequence, as we can readily see by constructing simple examples of arguments with an obviously true conclusion and an obviously irrelevant premiss. 'Snow is white, so grass is green' is not a good argument, even though its premiss and its associated negajunction are both known to be true. The conclusion that grass is green simply does not follow from the premiss that snow is white, which is obviously totally irrelevant to the conclusion. *A fortiori*, it does not demonstrably follow from this premiss. The word 'so' implies, as part of its meaning and not as some pragmatic implicature of its ordinary use, that the statement preceding it is relevant to the statement following, in the sense that it helps to establish the truth of the conclusion (Hitchcock 1992).

3. WHAT AN ARGUMENT'S INFERENCE-CLAIM IS

I have argued previously (Hitchcock 1985, Hitchcock 1998), and still maintain, that the inference-claim of an argument is the claim that some generalization of the argument's associated negajunction is non-trivially true. Any such generalization is equivalent in force to a rule that claims an entitlement: 'Data such as D entitle one to make claims such as C,' i.e. what Toulmin (1958, p. 98) calls a warrant. One only has such an unqualified entitlement if claims such as C are true whenever we have corresponding data such as D. And conversely, if it is non-trivially true that there are no cases where we have data such as D but the corresponding claim C is not true, then data such as D do entitle us to make claims such as C.

In opposition to this sort of position, Bermejo-Luque argues (2006, p. 78) that general rules are not inference-claims, because they are not bridges between premiss(es) and conclusions, for two independent reasons. First, several rules of inference are suitable for any given argument. Second, every general rule can have conditions of rebuttal applicable to the particular case stated by the argument. These two points are correct, and they tell against identification of an argument's inference-claim with some specific general rule. But they do not tell against identification of the inference-claim with the claim that some general rule or other licenses the transition from the premiss(es) to the conclusion. The question 'does this conclusion follow from these premisses?' is not identical with the question 'is this particular generalization of the associated negajunction non-trivially true?' But it is identical with the question 'Is some generalization of the associated negajunction non-trivially true?'

From this perspective, a specific warrant, such as 'Information that someone was born in Bermuda entitles one to claim that this person is a British subject', acts as support for the more vague inference-claim, 'Data such as the information that Harry was born in Bermuda entitle one to make claims such as the claim that Harry is a British subject.' (The example comes from Toulmin (1958, p. 99).) Or, to put the same point in terms of generalizations of an argument's associated negajunction, the non-trivial truth of a specific generalization of the associated negajunction, such as the generalization that everybody born in Bermuda is a British subject, provides support for the more general inference-claim that some generalization of the associated negajunction is non-trivially true.

Bermejo-Luque deploys an infinite regress argument against this attempt to construe a specific warrant as support for an argument’s inference-claim:

> ... if warrants justify the inferences, ... they should be reasons for the corresponding inference-claims. But, if warrants “justify” our inferences in this sense, every argument contains another argument, namely the argument “warrant, so inference-claim”. But then, we would need a new warrant to justify our inference from our warrant-reason-for-the-inference to our inference-claim, and this warrant would be another reason with a new warrant to bridge the new gap, and so on. Thus, we would never be entitled to infer a claim from a reason if warrants, as bridges between reason and claim, should bridge the gap as justifications for our inferences. (Bermejo-Luque 2006, p. 77)

On the account I am proposing, the inference-claim is an existential generalization, and the warrant is an instance of this generalization, perhaps accompanied by information that the instance does in fact fall under the generalization (e.g. that Harry is a human being). Thus the account is subject to the opening step of Bermejo-Luque’s regress: every argument contains (or least involves a commitment to) an argument ‘warrant, so inference-claim’. The inference-claim of such a second-order argument is the claim of the non-trivial truth of some generalization of the following associated negajunction: It is not the case that a warrant such as this is true and the corresponding inference-claim is not true. And the warrant supporting this inference-claim is that every existential generalization with a true instance is true. This second-order warrant however is obviously true. It does not need justification. Further, the inference from it to the second-order inference-claim is obviously valid. We could if we liked make explicit the third-order inference-claim implicit in our argument, and the warrant supporting it. And there is no end to the possibility of further ascent. But such further ascent is not needed to show that the inference is justified. Thus Bermejo-Luque’s infinite regress argument does not undermine my account of what is involved in inferring a conclusion from reasons offered in its support.

The extent of abstraction involved in each step of the regress may leave it unclear what exactly are the inference-claim and warrant at each step. So I shall illustrate the sequence for the Harry argument:

First-order argument: Harry was born in Bermuda, so Harry is a British subject.

Inference-claim: Some generalization of the claim that it is not the case that Harry was born in Bermuda and is not a British subject is non-trivially true.

Warrant: Every person born in Bermuda is a British subject, and Harry is a person.

Second-order argument: Every person born in Bermuda is a British subject, and Harry is a person. So some generalization of the claim that it is not the case that Harry was born in Bermuda and is not a British subject is non-trivially true.

Second-order inference-claim: Some generalization is non-trivially true of the claim that it is not the case that every person born in Bermuda is a British subject, and Harry is a person and no generalization of the claim that it is not the case that Harry was born in Bermuda and is not a British subject is non-trivially true.

Second-order warrant: It is non-trivially true that every person born in Bermuda is a British subject.

Third-order argument: It is non-trivially true that every person born in Bermuda is a British subject. So some generalization is non-trivially true of the claim that it is not the case that every person born in Bermuda is a British subject and Harry is a person and no

generalization of the claim that it is not the case that Harry was born in Bermuda and is not a British subject is non-trivially true.
Third-order inference-claim: Some generalization is non-trivially true of the claim that it is not the case that it is non-trivially true that every person born in Bermuda is a British subject and that no generalization is non-trivially true of the claim that it is not the case that every person born in Bermuda is a British subject and Harry is a person and no generalization of the claim that it is not the case that Harry was born in Bermuda and is not a British subject is non-trivially true.
Third-order warrant: It is non-trivially true that every existential generalization with a true instance is true.
The regress can continue, but it is not vicious. At an early stage, which may vary slightly from one person to another, both the truth of the warrant at that stage and the truth of the inference-claim at the next stage are evident. We must not be so sceptical as to refuse to concede the truth of that which is perfectly obvious.

In personal correspondence, Bermejo-Luque has responded to this defence as follows:

> ... I think that the infinite regress is benign from an epistemological point of view... But it is not ok from a procedural point of view: the problem to conceive warrants as justifications is that warrants license the step from reason to claim. But if they do so by justifying this step, and justification is always a matter of having a sound argument, that is to say, an argument that would need a warrant in this sense, then we would never be entitled to assert the claim because of the reason because we would never have a proper justification for our warrant, as this justification would require a justified warrant, and so on. In my view, the problem is to demand justification as a condition for justification. (Bermejo-Luque to Hitchcock, e-mail message of 4 June 2005)

To this argument, I made the following reply:

> This response strikes me as reasonable, but only if one thinks that every inferential move requires justification. I don't think that saying that warrants justify the inference implies that every inferential move requires justification. Obviously the latter proposition leads to a vicious infinite regress, unless one supposes that somehow the justification could be self-justification or circular. One could adopt the dialectical approach of Toulmin's book, taking it that one needs to supply a justification only if there is a challenge. One supplies grounds if one makes a claim and is asked, "What do you have to go on?" One supplies a warrant if one adduces grounds for one's claim and is then asked, "How do you get there?" I take it that, on your view, the applicability of the warrant could be challenged in something like the following way: "How does that get you there?", to which the answer would be that the warrant covers the inference-claim. Theoretically, there is no limit to the series of such challenges. But the claim has been justified to a challenger if the challenger at some point stops making challenges and indicates that the series of responses to that point is sufficient. (Hitchcock to Bermejo-Luque, e-mail message of 4 June 2005, supplemented by subsequent clarification)

In the present paper, I have taken the alternative position that, at some early stage n of the regress, the nth-order warrant and the n+1th-order inference-claim become self-justifying. This position is the equivalent in an individualist epistemology of the position in a dialectical epistemology that justification is only required in response to a challenge.

In the same correspondence, Bermejo-Luque has offered the following critique of my claim that the inference-claim in an argument is that it has a covering generalization:

> ... inference-claims are not covering generalizations, in general. Take the case of ... arguments like ‘Socrates is hungry, so he didn't have breakfast this morning’. It is because of the features of the particular case stated by my reason (for example, that I'm talking of someone who usually has a big breakfast, that it is only 10 o'clock in the morning, that he is not at home, or whatever) that I can come to determine the truth-value of the particular inference-claim 'if Socrates is hungry, he didn't have breakfast this morning'. I do not need any cover[ing] generalization, although I can try to develop a suitable one, for example, for the sake of testing a hypothesis on Socrates’ habits, on a person's need of food, or whatever. In my view, covering generalizations can justify the particular inference-claim of an argument, but as justifications (and not as mere synonyms); they can also fail to do so. (Bermejo-Luque to Hitchcock, e-mail message of 4 June 2005)

The invented argument ‘Socrates is hungry, so he didn't have breakfast this morning’ provides an occasion for me to elaborate on and clarify my general thesis in this paper. Such arguments are clearly occasional, in the sense that their meaning and value is closely tied to a particular occasion of utterance, i.e. a particular time and place, in the way that an argument in a written text meant for a temporally and spatially indefinite audience is not so closely tied to a particular occasion. To understand such an occasional argument, we need to know who uttered it, what particular individuals are being referred to by its constituent proper names and definite descriptions, and what background knowledge about those particular individuals is being taken for granted as shared between the arguer and the argument’s addressees. These “features of the particular case” stated by the reason are indeed necessary for evaluating the inference-claim. But they are necessary in order to understand exactly what the inference-claim is. The inference-claim is not that ‘Socrates didn’t have breakfast this morning’ follows from ‘Socrates is hungry’, but that ‘Socrates didn’t have breakfast this morning’ follows from ‘Socrates is hungry, and it is 10 a.m., and Socrates usually has breakfast before 10 a.m. but never so much before 10 a.m. that he would be hungry at 10 a.m.’ Once the content of the argument is spelled out in this way, it becomes plausible that the inference-claim is that some covering generalization of the argument’s associated negajunction is non-trivially true.

Occasional arguments exhibit the kernel of truth in the missing premiss approach. Such arguments do need “gap-filling” (Ennis 1982) supplementation by information about the topic of the argument (i.e. the individual person or thing referred to in both premisses and conclusion), information that is taken for granted as known by both arguer and addressees. But this supplementation usually does not produce an argument that is formally valid, contrary to the general assumption of the missing premiss approach that the goal of supplementation is to produce an expansion that is formally valid (or perhaps formally inductively strong). Rather, it produces an argument with an inference-claim that is at least arguably correct, in the sense that some justified warrant licenses the drawing of the conclusion from the supplemented premiss set.

4. CONCLUSION

In summary, I have argued that the inference-claim in an argument is not its associated material conditional. Inferential uses of the word ‘so’ in contexts of the form ‘*p*, so *q*’ do not mean simply that it is not the case that *p* and not *q*. If they did, then any true statement would follow from whatever was adduced in its support, and any statement that could be shown to be true would follow demonstrably from whatever was adduced in its

support. Rather, the inference-claim of an argument is the claim that it has a covering generalization that is non-trivially true. I have defended this interpretation of the meaning of inferential words and phrases like ‘so’ against three objections. To the objection that general rules to which such covering generalizations are equivalent are not inference-claims, because they are not bridges between premiss(es) and conclusions, I replied that this point tells against identifying an argument’s inference-claim with some specific covering generalization but not against identifying it with the claim that some covering generalization or other is non-trivially true. To the objection that treating a specific covering generalization (or the corresponding conditional entitlements that Toulmin calls ‘warrants’) as a justification for an argument’s inference-claim gives rise to a vicious infinite regress, I replied that the regress is not vicious. To the objection that evaluation of the inference-claim in occasional arguments like ‘Socrates is hungry, so he didn’t have breakfast this morning’ requires consideration of the particular case rather than of some covering generalization, I replied that the features of the particular case need to be specified so as to understand exactly what the inference-claim is, after which it becomes plausible that evaluating the inference-claim is a matter of looking for a non-trivially true covering generalization of the (expanded) argument.

link to Weinstein commentary link to Bermejo-Luque commentary

REFERENCES

Bermejo-Luque, L. (2006). Toulmin's model of argument and the question of relativism. In: D. Hitchcock & B. Verheij (Eds.), *Arguing on the Toulmin Model: New Essays in Argument Analysis and Evaluation* (pp. 71-85, Ch. 6). Dordrecht, The Netherlands: Springer.

Diogenes Laertius (1925). *Lives of Eminent Philosophers*, trans. R. D. Hicks (2 vols,, *Loeb Classical Library* 184 and 185), London: William Heinemann.

Ennis, R. H. (1982). Identifying implicit assumptions, *Synthese* 51, 61-86.

Hitchcock, D. (1985). Enthymematic arguments, *Informal Logic* 7, 83-97.

Hitchcock, D. (1992). Relevance, *Argumentation* 6, 251-270.

Hitchcock, D. (1998). Does the traditional treatment of enthymemes rest on a mistake?, *Argumentation* 12, 15-37.

Toulmin, S.E. (1958). *The Uses of Argument*. Cambridge: Cambridge University Press.