SOME REMARKS ON ERNEST ADAMS' THEORY OF INDICATIVE CONDITIONALS

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By 'indicative conditional', in this paper I shall mean natural language statements such as 'If I get the ticket, then I shall go to the play'. 'Ernest W. Adams has claimed that these statements have only conditional probabiltiy, and that they do not have truth-conditions. He has proposed that the use of standard formal truth-functional logic to these statements must be supplanted by that of a separate logic based purely on probability axioms, which he himself has devised exclusively for these statements. Several of his arguments thus have a common theme; namely, that the "application" or the use of standard formal truth- functional logic to indicative conditionals is not defensible. Among these arguments, in this paper I have focused on three of his better-known arguments. The objective is to argue that none of these arguments warrants the conclusion that the standard truth-functional logic is not applicable to indicative conditionals.

I

In one of his arguments, Adams presents the following natural language inferences containing indicative conditionals as crucial supporting evidence.

F1. John will arrive on the 10 o'clock plane. Therefore, if John does not arrive on the 10 o'clock plane, he will arrive on the 11 o'clock plane.

F2. John will arrive on the 10 o'clock plane. Therefore, if he misses his plane in New York, he will arrive on the 10 o'clock plane.

F3. If Brown wins the election, Smith will retire to private life. Therefore, if Smith dies before the election and Brown wins it, Smith will retire to private life.

F4. If Brown wins the election, Smith will retire to private life. If Smith dies before the election, Brown will win it. Therefore, if Smith dies before the election, then Smith will retire to private life.

F5. If Brown wins, Smith will retire. If Brown wins, Smith will not retire. Therefore, Brown will not win.

F6. 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.

F7. It is not the case that if John passes history, he will graduate. Therefore, John will pass history.

F8. If you throw both switch S and switch T the motor will start. Therefore, either if you throw switch S the motor will start, or if you throw switch T, the motor will start.

F9. If John will graduate only if he passes history, then he won't graduate. Therefore, if John passes history, then he won't graduate (Adams, 1965, pp. 166-167).

Each of F1-F9 is truth-functionally valid in the sense that symbolized in the way of tradititional truth-functional calculus and analyzed truth-functionally no combination of truth-values of components makes the premises true and the conclusion false. However, Adams expects that his readers will concur with him that these inferences are 'invalid' in a different sense. He writes:

> We trust that the reader's immediate reaction to these examples agrees with ours in rejecting or at least doubting the validity of these inferences - one would not *ordinarily* 'draw' the inferences if one were 'given' the premises (Adams, 1965, p. 167, *Italic* mine).

Granted that F1-F9 are 'invalid', it follows, he believes, that F1-F9 pose a serious problem for the application or the use of standard formal logic in the analysis of indicative conditionals (Adams, 1965, p. 167-168). For, he maintains that there is a causal link between the special sort of 'invalidity' of these arguments involving indicative conditionals and the following ''extremely dubious'' assumption about indicative conditionals: that for the sake of formal analysis indicative conditionals can be treated as truth-functional in the sense that they are true only when their antecedents are false or consequents true and false only when their antecedents are true and consequents are false. Regarding the assumption of truth-functionality, he puts it as follows:

> ...one might immediately be led to expect that fallacies would rise in applications of the formal theory which tacitly make the assumption. Examples F1-F9 might be regarded simply as confirmation of this expectation (Adams, 1965, p. 168).

According to him, this assumption of truth-functionality is one of the basic principles upon which the application of formal logic to indicative conditionals relies. It follows, he believes, therefore that F1-F9 pose a serious problem for the application of standard formal logic to indicative conditionals.

A key point for this argument is that the alleged 'invalidity' of F1-F9 somehow is the consequence of applying formal logic to indicative conditionals on the tacit assumption that these statements can be treated as truth-functional. Unfortunately, although Adams suggests that the 'invalidity' of these inferences is somehow linked to the assumed truth-functionality of indicative conditionals in them, from his sample inferences, however, nothing as unequivocal as that follows.

Moreover, it certainly is not the only explanaiton possible of the alleged 'invalidity' of F1-F9. For instance, a far more simple explanation, which I shall try to develop in the following, of why in F1-F9 one would not infer the conclusion given the premises would be that in these cases one is not sure that one is 'logically' safe to do so. Granted that these examples contain indicative conditionals and mostly are structured according to argument-forms the primary connective of which is the symbol ' $\supset$', it is a moot point, however, whether they establish anything exclusively about indicative conditionals as such. I contend that Adams' examples simply reaffirm the need for some simple precautionary measures for the application of the schemata of formal logic to natural language arguments in general. To be more specific, I shall argue that one would not infer the conclusion which according to formal truth-functional logic follows from the given premises in F1-F9, because certain basic pre-requirements for the application of truth-functional logic have not been fulfilled in these argumetns. My aim is to thus challenge the soundness of Adams' argument under consideration with an alternative explanation of the 'invalidity' of F1-F9 which neither involves the assumption of truth-funcionality nor implicates the application of formal logic to indicative conditionals. Explanation follows.

In his appeal to his readers, where he expects them to find the examples 'invalid' in an ordinary, non-truth-functional sense, Adams has supposed his readers to be ordinary reasoners. He assumes them to have enough logical intuition to go beyond the usual truth-functional analysis of his sample inferences and "immediately react" to the above-mentioned truth-functionally valid samples in a certain way. My alternative account makes a few more additional assumptions about such ordinary reasons. It assumes, for instance, that it is also natural for such a reasoner to recognize the obvious fact that indicative conditionals, like many other natural language statements, are context-sensitive in the sense that their interpretation and evaluation are susceptible to changes in their context. A reasoner of this sort is supposed to be alert and sensitive to the interplay of the content of a natural language statement and its context. Thus, it is assumed that the kind of reasoners Adams has in mind would try to assess the truth or falsity of indicative conditionals with due consideration to and in relation to their context of utterance; *not* irrespective of it.

The rules of inference of standard formal truth-functional logic, taken just by themselves, are pure formal exercises presenting in the barest, skeletal form what according to them follows from a given set of premises. However, since natural language statements such as indicative conditionals are context-sensitive, a fundamental assumption of this paper is that the application of rules of inference of standard formal logic to actual natural language argument-instances involving indicative conditionals requires that certain discreet, common-sensical expectations, which will be discussed shortly, about the context of an inference are met. It is further assumed that where these expectations are not fulfilled, a common reasoner feels uncomfortable about inferring the conclusion from the given premises. I shall appeal to the latter assumption to explain why a common reasoner would react to these inferences just as Adams expects them to. I shall argue that this reaction alone does not warrant Adams' conclusion.

An assumed 'normal' context often helps us to understand what an ordinary statement says and to evaluate what it says. Given the statement 'Crows are black', for instance, we try to understand the statement against an assumed context of what usually or 'normally' is the case. That is, the existence of albino crows is kept aside strictly as unusual exception. Without this assumption in effect, the assessment of the even simple statements such as the following conditional becomes a problem:

(1) If I drop this pen, it will fall to the floor.

This conditional is determined true *assuming* that the circumstances presupposed by it will be 'normal'; i.e., no one will try to catch it in the mid-air, this event is not taking place in zero-gravity, the pen is a 'normal' pen and the floor a 'normal' floor, and so on. Its evaluation [that (1) is true] presupposes that this *ceteris paribus* clause is in effect. When any of the presupposed circumstances change, it is understood that accordingly the evaluation will be affected. If, perchance, the context for (1) changes to an unusual one, where for instance the pen-dropping experiment is taking place in a zero-gravity situation, then obviously the formal appraisal will have to be withdrawn.

The same is true about understanding and assessing a natural language inference. We assume a pertinent 'normal' context for them on the basis of the information provided by the premises and the conclusion. Since inferences involve a process of sequential transition from premises to conclusion, the *ceteris paribus* clause further assumes that for the same inference this context will remain, relatively speaking, the same throughout in the sense that (a) if for some reason some change in the initial contextual conditions has to be allowed, the conditions will change within 'reasonable', 'expected' parameters, and (b) that a change in the conditions will not be such that it can be accommodated only by a context which is drastically different from, or is inconsistent with, the initially supposed one. For instance, in the following inference,

> If I drop this pen, it will fall to the floor. If it falls to the floor, then ink will splatter. Therefore, if I drop this pen, then ink will splatter.

The conclusion follows from the premises *assuming* that the operating circumstances are 'normal', as explained in relation to (1). Howerver, there is also the additional assumption that for the same inference there will not be a sudden shift in the background assumptions for instance, while making the transition from the premises to the conclusion. It is not allowable, for instance, that in the context of the premises the referred-to pen is assumed to be a liquid-ink pen, whereas the context of the conclusion chooses it to be the kind whose ink, when dropped, does not 'splatter'. Such a shift is a direct violation of the *ceteris paribus* clause required by the evaluation of the inference, and for that reason is not a permissible move from a common reasoner's point of view.

In most of the inferences of F1-F9, this *ceteris paribus* clause has not been observed. There is a noticeable change in the context or the backgound assumptions either while in transition from one premise to another, or from one premise to the conclusion. For instance, in F3 the premise, which asserts Smith's retirement given Brown's victory in the election,clearly assumes that Smith will be alive when the election is over. However, the component newly inserted in the antecedent of the conclusion, namely, 'Smith dies before the election', ushers in a totally unexpected scenario which is in direct conflict with the above-mentioned assumption of the premise. In F4, the original premise "If Brown wins this election, then Smith will retire to private life " clearly assumes a certain situation within the parameters of which Smith is supposed to be alive *after* the election is over. However, the context changes significantly with the next premise. The second premise suddenly brings in a conflicting consideration about Smith's death prior to the election. Thereby, it effectively places the argument in a whole new scenario, one that is not only drastically different but also is inconsistent with the context assumed by the first premise. Consider also F2 which relies on the fact that the idea of John missing the plane in New York in its conclusion virtually cancels the premise. Clearly, the additional clause of missing the plane was not originally intended to be a part of the argument when the arguement was initiated. Thus, the newly introduced component creates for the conclusion a context that is drastically altered from that assumed by the premise. Similarly consider F1, in which the premise states clearly and without any hesitation that John will arrive on the 10 o'clock plane, and thus assumes an appropriate background in which that is well-affirmed possibility, e.g., in which John has already confirmed that he will arrive on the 10 o'clock plane. Yet, the conclusion assumes a rather different set-up in which John's arrival by the 10 o'clock plane does not have the same degree of surety, and which also allows the possibility of his coming by later planes. As for F5, its premises jointly assert two contradictory consequences of Brown's victory, such that both cannot be true at the same time. One of them is not tenable unless we assume a total shift in the background of the other. Similarly, the first premise of F6 asserts a disjunctive possibility about who will attend the patient. However, by the time the second premise is asserted, the context which led to the assertion of this disjunctive possibility is no longer binding. For, the new premise clearly cancels one of the possibilities.

In F7-F9, the violation of the *ceteris paribus* assumption is subtler. From a given set of premises, infinite number of truth- functional valid conclusions follow.[1] However, among the myriad of valid conclusions, we neither choose at random nor choose each and every thing that follows from a given set of premises. The meaning of the premises, their interplay against the backdrop of a specified context are pointers to an informative, appropriate conclusion. Same thing applies to F7- F9. The conclusions in each case are among many that follow truth-functionally from the premises. However, all things being equal, these would not be the conclusions we would ordinarily draw. For instance, from the premise of F7, truth-functionally it also follows that John will not graduate. From the premise of F8, a truth-functionally valid conclusion is also that if you throw switch S, then if you throw switch T then the motor will start. Judged from the viewpoint of the assumed context of the premises, both seem more appropriate than the ones Adams has deliberately chosen.

Adams might state that this is precisely his point, namely, that the improper moves in these inferences are all there inspite of staying within the dictates of formal logic. The fact remains, he might say, that following the principles of truth-functional logic we can arrive at argumetns which nevertheless are 'invalid'. Hence, he would argue, his claim stands firm, namely, that examples such as these show that the application of truth-functional logic to indicative conditionals is problematic.

To this, my reply is as follows. Although the formal truth-functional logic is helpless against the moves mentioned above, common reasoners, who apply this logic to natural language arguments for their own purpose, are not. They can reject these spurious moves on the ground that there has been a willful violation of a tacit *ceteris paribus* assumption in these arguments, and that a common reasoner is uncomfortable with that.

Adams has also argued that the standard criterion of truth-functional validity is essentially ineffective as it allows even spurious argument-forms as valid.[2] On the other hand, he claims, his own probabilistic criterion of soundness, according to which "it should be impossible for the premises to be probable while its conclusion is improbable" (Adams, 1975, p. 1), is a much more effective criterion in comparison since it delivers exactly where the truth-functional criterion fails. Since the use of truth-functional logic for formal analysis to indicative conditionals depends heavily upon the standard criterion of validity, this point, in his opinion, therefore consitutes yet anoter ground against the application of truth-functional logic to indicative conditionals.

Adams claims that there are couter-instances to some truth-functionally valid argument-forms. The following, for instance, is what he believes is a counter-instance to the argument form *contraposition* ($B \supset \sim A$, therefore $A \supset \sim B$) :

> If it rains tomorrow there will not be a terrific cloudburst' ($B \supset \sim A$). Therefore, if there is a terrific cloudburst tomorrow it will not rain ($A \supset \sim B$) (Adams, 1975, p. 15).

Although *contraposition* is a truth-functionally valid argument-form, according to him this inference is invalid in the sense that we would assert the premise, but we would not infer the conclusion from it. Similarly, he contends that the argument form '$A \vee B$, therefore $\sim A \supset B$' has a counter-instance in:

> Either it will rain or it will snow in Berkeley next year. Therefore if it doesn't rain, then it will snow in Berkeley (Adams, 1975, p. 16).

The following, as mentioned earlier in relation to the first argument, are his examples of a counter-instance of the argument- forms *hypothetical syllogism* ($A \supset B$, $B \supset C$, therefore $A \supset C$) and *antecedent restriction* ($B \supset C$, therefore $[A \& B] \supset C$) respectively:

> If Smith dies before the election Jones will win. If Jones wins then Smith will retire. Therefore, if Smith dies before the election then he will retire (Adams, 1975, p. 16).

> If Jones wins the election then Smith will retire. Therefore, if Smith dies before the election and Jones wins then Smith will retire (Adams, 1975,

p. 17).

Adams argues that since standard truth-functional logic has no means to stop these questionable argument-forms, therefore for an "adequate" theory of these conditionals one must look for "other dimensions of rightness besides truth and other criteria of soundness besides the classical one..." (Adams, 1975, p. ix).He claims that his probabilistic criterion, on the other hand, fulfills this need. For instance, with the aid of this criterion the arguement form *contraposition* can be shown to be "probabilistically unsound". That is, it can be shown that it is possible to have instances of this argument-form to have highly probable premise and improbable conclusion. For instance, using a Venn diagram it is possible to represent the high probability of the premise by depicting almost all the A-area as included within not-B area, where A is the bigger circle and B is a small circle within A. In that case, the probability of 'If B then Not-A' will be zero. Similarly, for the argument-form 'A v B, therefore ~ A ⊃ B', Adams attempts to show its probabilistic unsoundness by a figure, in which A is a large rectangle and B is a very small circle outside of A. In that case, the probability of 'A v B'may be high, but the probability of ' ~ A ⊃ B' will not be high. This shows, in Adams' view, that the argument-form is probabilistically an unsound one. Examples such as these show, Adams claims, that clearly his new probabilistic criterion is far more effective than the old truth-functional one.

This argument relies heavily on the claim that some of the truth-functionally valid argument-forms can be shown to have 'counter-instances'. It is not clear to me, however, exactly what these instances 'counter'. They certainly do not counter the truth-functional validity of the argument-forms, e.g., *contraposition*; for, Adams' examples against them are not truth-functionally invalid. And if they are supposed to 'counter' the tradional criterion of truth-functional validity and establish the supremacy of Adams' probabilistic criterion of validity over it, then too their success is debatable. For, comparatively speaking, Adams' own probabilistic criterion is not that perfect either. Adams considers it a big victory for his own criterion that it can correctly detect impermissible argument forms while the truth- functional criterion is not that perfect either. Adams considers it a big victory for his own criterion that it can correctly detect impermissible argument forms while the truth-functional criterion cannot. For instance, as mentioned earlier, he claims that his criterion does not sanction the argument form *contraposition*. Consider, however, the following instance of *contraposition*:

> (2) If an American is a senator in U. S. Congress, then he is not black. Therefore, if an American is black, then he is not a senator in the U. S. Congress.

This is an unacceptable inference, but Adams' probabilistic criterion of soundness, which merely looks at the high probability of the premise as against that of the conclusion and has no concern for the truth-value of the statements, cannot stop it. For, the conditional probability of the premise is on the high side, and so is that of the conclusion. Of course, none of them are true, but Adams cannot use that to explain the failure of the inference.

More importantly, however, the sole concern of Adams' criterion with probability alone without much ado for truth leads to the consequence that it cannot stop some the truth-functionally invalid agruments which even the standard truth-functional criterion of validity can. Consider for instance the following,

> (3) If it is good coffee, then it is from Brazil. Therefore, if it is from Brazil, then it is good coffee.

However, the high probability of both the premise and the conclusion allows it to pass through Adams' probabilistic criterion.

III

Adams has also claimed that indicative conditionals have a certain feature which creates a "fundamental difficulty" for the application of, not only standard formal truth-functional logic, but for *any* bivalent truth-conditional logic to these statements (Adams, 1975, 1981). This crucial feature, according to him, is that indicative conditionals do not have probability of truth; unlike any other statement they only have conditional probability.

Although usually the assertability of a statement is given by the probability of its truth; or, as he puts it, by the sum of the probabilities of the "possible states of affairs" (Adams, 1975, p. 2) in which the statement would be true, Adams claims that for indicative conditional statements their assertability goes by their conditional probability. For instance, we assume that in a poker game there is good reason to accept the indicative conditional 'If X calls he will win' only when "the chances of X's calling and winning sufficiently outweigh those of his calling and losing..." (Adams, 1981, p. 332). This weighing of chances of one possibility against that of the other, according to Adams,

> ...is equivalent to measuring conditionals' probabilities by *conditional probabilities* (this assumption is not a tautology,) and it is well known that these probabilities do not conform to the laws of unconditional probability. (Adams, 1981, p. 332).

Adams maintains that the fact, that an indicative conditional has only conditional probability, has many serious consequences. One of them is that this creates a problem for applying classical criterion of validity to indicative conditional. For, he asserts, it is a well-known fact that conditional probability does not conform to the laws of unconditional probability and, he claims, classical criterion of validity takes it for granted that the statements it is dealing with have unconditional probability. He puts it as follows,

> ...assessing provisional reasoning according to the classical criterion of deductive soundness rests on assumptions about probabilities that are not valid in the case of reasoning involving conditionals (Adams, 1981, p. 332.).[3]

He explains as follows:

> What follows immediately from the fact that a piece of reasoning from premises which are not certainties is 'classically sound'is that if it is highly probable that all of the premises have the value 'true' in some perhaps artificially stipulated sense, then it is also probable that the conclusion has the stipulated value. *But what needs to be shown in the case of provisional reasoning to conditional conclusions...is not that it is probable that they have any one value, but rather that the likelihood of one of two non-exhaustive values is high relative to that of another value.* (Adams, 1981, p. 332, *Italics* mine)

The showing of this relative value, Adams claims, is the "most essential criterion of adequacy" (Adams, 1981, p. 332) for an improved theory of conditionals; but which, he thinks, no theory of conditionals can satisfy if it is based on truth-conditions and uses the classical criterion of soundness. Since this assumption is not valid for the probability of an indicative conditional, he contends, the stumbling block will not go away with a different set of truth-conditions. Thus, according to him, *no* truth-conditional analysis can ever be the right account for indicative conditionals. In his own words,

> If the conditional probability measure for conditional's probabilities is correct, and given other standard assumptions of probability theory, there is no way of attaching dichotomous truth values to conditionals in such a way that their probabilities will equal their probabilities of being true. (Adams, 1975, p. 5)

For indicative conditionals, ''Truth conditions,'' Adams concludes, ''are just not enough''(Adams, '975, p. 7). Thus, he maintains, since the probability of indicative conditionals are not reducible to truth-conditions of any kind, it follows that for indicative conditionals the application of standard truth- functionals logic should be supplanted by another logic, one which requires no reference to truth-conditions whatsoever and is based purely on axioms of probability instead.

In order to establish his strong, universal claim, that *any* truth-conditional analysis will necessarily be inadequate to deal with conditional probability, Adams needs to show that there is something directly conflicting, inherently contradictory or inconsistent, about the joint assignment of a truth-condition to a statement and its having a conditional probability value such that the presence of one nullifies the other possibility. It goes against him, however, that his arguments do not show anything as conclusive as that. Adams has made several attempts to argue for this point. Among them, I shall consider what appears to me as Adams' strongest argument on this point. In it, he argues that the ''fundamental difficulty'' for *any* truth-conditional analysis will be the classical criterion of soundness which simply cannot deal with conditional probability. This criterion, according to him, only considers the high probability of which *one* value, 'true' or 'false', the conclusion has when it needs to show the ''likelihood of one of two non-exhaustive values is high relative to that of another value'' (Adams, 1981, pp. 321-322). To this, I have the following comments to make. In his premise, Adams suggests that there is a veritable connection between any given truth-conditional analysis of conditionals and its accepting the same allegedly inadequate classical criterion of soundness to assess inferences involving these conditionals. However, it is never made clear why this highly controversial universal claim must be true. Adams hints at a connection between the assignment of truth and the assignment of, not conditional probability, but absolute probability. His point, however, remains vague as he does not provide us any further explanation on this crucial point. Whether such a theory can provide a systematic, uniform semantics for indicative conditionals is another issue, but it certainly shows that Adams' supposition that truth-conditional theories cannot account for conditional probability, is wrong.

Finally, according to his view, these oft-used statements have no truth-conditions, but only probability-conditions, and that too of a very special kind in comparison to the probability of other statements. This has some bizarre consequences for ordinary reasoners. Some of them are as follows. Consider the statement:

(4) If $2 + 2 = 4$, then Thailand is in Asia

Ordinarily, we would reject or at least doubt its assertability. However, Adams, who complains about the stipulated truth- conditions handed down by truth-functional logic, would require us to disregard our common intuitions about its assertability, and would ask us to accept its assertability on some stipulated dictum, e.g., that the chances of $2 + 2$ being 4 and Thailand's being in Asia significantly and sufficiently outweigh the chances of their not being so.

Adams' account also places an unreasonable and inordinate amount of burden on the reasoner. It demands in every reasoner a certain level of proficienty in probability calculus as a pre-requirement even for the most insignificant use of indicative conditionals. for a proper assessment of each of the occurrences of indicative conditionals in one's own reasoning as well as in that of others, the reasoner has to be able to correctly compute the conditional probability value of the conditional each time. Also, for assessing the worth of each inference involving these conditionals (either as premises or conclusion or both) one has to have enough skill and contextual information to correctly measure the joint probabilities of the premises and weigh it against the improbability of the conclusion. And that is not all. Since our reasoning does not consist of indicative conditionals alone, there will be the usual presence of other assertions in it as well which will have truth-conditions. This will require an ordinary reasoner to be adept enough in his logical abilities to mesh well all the special non-truth-conditional probabilistic calculations about indicative conditionals with the usual, truth- conditional considerations for the rest of the ordinary connectives to arrive at a complete assessment of a piece of ordinary reasoning. Thus, accepting Adams' characterization of indicative conditionals is too steep a price for an average, ordinary reasoner to pay.

Adams also demands that with respect to indicative conditionals we give up all considerations of truth in favor of the notion of conditional probability. This is highly counter-intuitive. For, our basic intuition about indicative conditionals is that, whether truth-functional or not, these statements definitely are true or false. Moreover, it is not immediately obvious at all that the proposed concept of conditional probability of an indicative conditional can be a successful replacement for any consideration about the truth of these statements. High conditional probability may be an important concern for judging the assertability of an indicative conditional, but it certainly is not our only concern about these statements. Occasionally, it is not even our primary concern, as for instance when we are interested in the plain and simple truth of a statement. Consider, for instance, the following conditional,

> (5) If an American is a senator of the U. S. Congress, then he is a rich white man.

The conditional probability of this statement, i.e., the probability of (that this American is a rich white man *given* he is a senator of the U. S. Congress), is pretty high; so is its assertability. However, most people would reject (5) on the ground that it is not *true*.

NOTES

1. For instance, from any premise 'p', we can deduce the premise itself. Thus, the conclusion will be 'p'. Next, we can conjoin these two statements to deduce 'p. p', and similarly to deduce 'p.p.p'. and so on.

2. William Cooper (1968) took the argument a step farther. He claimed to have also shown that some classically invalid argument forms have ''corresponding'' instances in natural language which are usually accepted as valid in ordinary reasoning.

3. My interpretation of this claim is that Adams is unwarrantedly assuming here that the standard criterion of soundness, as it is concerned with the truth of the statements (premises), is only concerned with the absolute probability of statements.

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