

RELEVANCE LOGIC: SOME VIEWS

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ABSTRACT-"Logic" is the science which studies and investigates the principles of correct reasoning. It gives us a tool to distinguish good reasoning from bad reasoning; to distinguish valid arguments from invalid arguments. The question intrigued me as to what should be the criteria for the validity of an argument; based on which criteria can one say that the conclusion follows from the premises.

"Entailment" is the relation which is the converse of the relation of deducibility. However, the nature of "entailment" is not very clear. There is an ongoing research to find the criteria for the validity of an argument and to clarify the nature of "entailment".

There are differences of opinion amongst logicians regarding the nature of entailment. Different logicians like Russell and Lewis define the notion differently. Alan Ross Anderson and Nuel D. Belnap Jr., both American logicians and Professors of Philosophy at Yale University and the University of Pittsburgh, together were instrumental in the development of Relevance Logic. They uphold the view that the condition of relevance is an indispensable one for entailment and validity. They claim that in case of entailment the antecedent and the consequent be relevant to each other, and that in case of validity what is also required is that the premises must be relevant to the conclusion; hence the name Relevance logic.

Apart from Anderson and Belnap there are some other philosophers, like E. J. Nelson, Baylis, Douglas Walton and Trudy Govier, to name a few, who think that relevance is a necessary condition for entailment.

KEY WORDS- Logic, Relevance Logic, Anderson, Belnap, Nelson, entailment.

INTRODUCTION

"Logic" is the science which studies and investigates the principles of correct reasoning. It gives us a tool to distinguish good reasoning from bad reasoning; to distinguish valid arguments from invalid arguments. The question intrigued me as to what should be the criteria for the validity of an argument; based on which criteria can one say that the conclusion follows from the premises. "Entailment" is the relation which is the converse of the relation of deducibility.

According to George Edward Moore, "entailment" is the relation which is the converse of the relation of deducibility. According to Moore the relation between the premises and the conclusion is that of "entailment".

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Alan Ross Anderson and Nuel D. Belnap Jr., both American logicians and Professors of Philosophy at Yale University and the University of Pittsburgh, together were instrumental in the development of Relevance Logic. They uphold the view that the condition of relevance is an indispensable one for entailment and validity. They claim that in case of entailment the antecedent and the consequent be relevant to each other, and that in case of validity what is also required is that the premises must be relevant to the conclusion; hence the name Relevance logic.

Apart from Anderson and Belnap there are some other philosophers, like E. J. Nelson, Baylis etc., to name a few, who think that relevance is a necessary condition for entailment. Let us discuss some of the views in brief.

E. J. NELSON'S NOTION OF ENTAILMENT

According to Nelson, entailment requires that there be a 'necessary' connection between the meaning of the antecedent and the consequent. He advocates the view that it is in this sense that entailment can be equated with implication as understood in ordinary language.

He rejects the view that strict implication is a kind of implication, for it includes even those cases which are not considered to be implications in any ordinary sense. Nelson holds that the paradoxes of strict implication are 'so utterly devoid of rationality' so as to be a reductio ad absurdum of any view that involves them. He argues that what is needed for A to entail B is not only that it be impossible for A to be true and B false, but also that there be some 'connection of meanings' between A and B. He maintains that, entailment is an intensional relation which holds between the meanings of the antecedent and the consequent.

Nelson rejects Lewis' proof of the so called paradox $A \sim A \therefore B$ on the condition that there is no connection of meanings between the impossible premise and the conclusion. He regards the simplification principle ' $p \supset q$ ' and the addition principle ' $p \supset p \vee q$ ' to be the ones that are responsible for the so-called paradoxes. In his 'Internal relations' he rejects the principle of simplification and addition on the basis that there is no 'meaning-connection' involved here. He considers the simplification principle ' $p \supset q$ ' to be invalid because q in the antecedent is not relevant to the consequent p. Likewise, the addition principle ' $p \supset p \vee q$ ' is invalid as q is not relevant to the antecedent p.

The simplification principle validates the deduction of p from the conjunction of p and q. Nelson considers the conjunction of p and q, i.e. pq to be one unit, or a whole and not just an aggregate. He thinks that only when pq is regarded to be a unit, that it

may be said to entail r . Nelson, argues that even though p entails p , pq as a unit cannot be said to entail p , on the ground that, q is irrelevant to p .

Again, in connection to the principle of addition i.e. ' p implies p or q ', Nelson upholds the view, that this principle cannot be asserted on logical grounds, since the propositional function ' p or q ' cannot be derived from an analysis of p .

Thus, Nelson rejects the notion of strict implication as a relation of implication, on the grounds that it leads to paradoxes, which he seeks to keep away from by rejecting the principles of simplification and addition.

BAYLIS' THEORY OF ENTAILMENT

Baylis, a different relevance logician, maintains that A implies B can be said to hold when the intensional meaning of B becomes identical with a part of the intensional meaning of A . He insists on fact that defining implication in terms of truth values has been unsuccessful so far mostly due to the fact that in each of these, there is a 'possibility' of the antecedent and consequent being unrelated and irrelevant to each other. He thinks that in this case then the consequent cannot be said to be 'derivable from' the antecedent. To quote Baylis: "DEFINITIONS of implication in terms of truth values have all failed by leaving open the possibility of the implicans being irrelevant to the implicate, for in such a case the implicate cannot truly be said to be derivable from or to be a consequence of the implicans, in the ordinary meaning of "derivable from" or "consequence of."¹

He upholds the same view for material and strict implications. He points out that, both of these hold even in case the antecedent and the consequent are unrelated and irrelevant to each other. Baylis goes on to define implication between two propositions P and Q , as one which holds when the intensional meaning of the latter is 'identical with a part of the intensional meaning of' the former.²

He advocates the view that that defining entailment in such a manner ensures a meaning connection between the antecedent and the consequent, together with the fact that the consequence really follows from the antecedent. Thus, Baylis concludes by saying that his definition of implication is the most appropriate one since it emphasises on the meaning connection between the antecedent and the consequent and that the consequent can be inferred from the antecedent. More so, it is all the more appropriate as it accords with the ordinary sense of implication. Furthermore, according to Baylis, just like the ordinary implication this too allows: "...the possibility of one concept implying another and the possibility of a false proposition implying another proposition, both features of ordinary usage, and (b) at the same time it assures us that it is impossible that what is implied by a true proposition should be false, that an implicans is always relevant to its implicate and that an implicate is always a consequence of its implicans and may be inferred there from".³

DOUGLAS WALTON'S THEORY OF RELATEDNESS CONDITIONAL

Douglas N. Walton in his *Logical Dialogue-Games And Fallacies*, formulates a notion which is very close to that of relevance logic — namely that of *Relatedness Conditional*. According to his theory, the propositions under consideration should be related to each other. Though Walton does give any significance to Anderson and Belnap's relevance logic, he points out instances where Anderson and Belnap consider certain arguments to be relevantly invalid, but which nevertheless fulfil the condition of variable-sharing or that of derivational utility. It is here that he endorses his relatedness theory of conditional and argues that it has greater utility, for according to his, his theory will no longer lead to the so called paradoxes.

His view is quite strange and different. According to him, the paradoxes pose as a problem only when relatedness is important in a given context; it is in that context then that the inference is invalid, otherwise the inference is valid when relatedness is not an issue.

Naturally, the question arises as to what he means by relatedness. Walton interprets relatedness as spatio-temporal proximity in an act-sequence.⁴

In this sense then the paradox such as "Mars has ten moons \rightarrow the grass is green on Earth" will no more hold, as there is no spatio-temporal proximity between the two. Walton goes on to give another meaning of relatedness in the sense of subject matter overlap. Walton accordingly writes: "...in order for a relatedness conditional to be true, the basic component propositions should be related by common subject-matters".⁵

In one more book, he says that for the relatedness conditional, $A \rightarrow B$ that which is required is (a) that A and B have the right truth-values, and (b) that A is related to B , in the sense that there is subject-matter overlap.

As for example, "if John drank Hemlock then John committed suicide". Here "John drank Hemlock" is related in subject matter to "John committed suicide". So it can be said that one is related to the other and that one entails the other. The paradoxes do not hold in this theory as their components are not so related, like, for instance, "if $2+2=7$ then the grass is green". Here the subject matter of " $2+2=7$ " is in no way related to "the grass is green"; thus these paradoxical propositions do not in any way hold in Walton's theory. He calls this propositional relevance. Thus, on this account $R(A, B)$ stand for ' A is related to B '. So, according to him $A \rightarrow B$ is false only when (a) A is true and B is false or (b) A and B are not related.⁷ Thus, according to Walton, it can be said that two propositions imply each other only when one is related to the other.

TRUDY GOVIER'S PROPOSITIONAL RELEVANCE

Some other Philosophers have also made an attempt to define propositional relevance, Trudy Govier, for instance, in her book *A Practical Study of Argument*, upholds the view that relevance between premises and conclusion, is a necessary condition for the cogency of any argument. She argues that, in any argument, the premises cannot be said to support the conclusion "unless they are relevant to it".⁸

She defines relevance between the premises and the conclusion as one in which the premises provide evidence and reason in support of the conclusion, or one in which there is a derivation of the conclusion from the premises.

In her words:

By this (relevance) we mean that the premises state evidence, offer reasons that support the conclusion, or can be arranged into a demonstration from which the conclusion can be derived.⁹

She maintains that relevance holds between two propositions when the truth of one proposition 'counts' for the truth of another. Her basic aim is to formulate a way in which the premises give some evidence and reasons to support the conclusion.

Govier goes on to explain three types of relevance, that is positive relevance, negative relevance, and irrelevance. By positive relevance between two statements P and Q, she means that the truth of the proposition P 'counts' for the truth or 'rational acceptability' of the truth of the proposition Q; that P offers evidence in support of the truth of Q. In her own words: "A statement A is positively relevant to another statement B if and only if the truth of A counts in favor of the truth of B. This means that A provides some evidence for B, or some reason to believe that B is true".¹⁰

The second type of relevance, she urges, is negative relevance. Negative relevance between two propositions P and Q holds when the truth of the proposition P 'counts against' the truth or 'rational acceptability' of the truth of the proposition Q. That is, P's being true is not conducive to the truth of Q. To quote her: "A statement A is negatively relevant to another statement B if and only if the truth of A counts against the truth of B. This means that if A is true, it provides some evidence or reason to think that B is not true".¹¹

Let us consider the following examples of negative relevance:

1. Morning walk often results in knee injuries.
2. Morning walk improves a person's general health.

Here, the first statement can be said to be negatively relevant to the second one, since, having knee injuries goes against having good general health".

The third one is irrelevance. By irrelevance she means that two propositions P and Q are neither positively relevant nor negatively relevant to each other. That is, P neither offers evidence in support of Q nor against Q. To take two examples as given by Govier:

1. Natural catastrophes such as earthquakes are beyond human control.
2. Human beings have no freedom of choice concerning their actions.

In case of the above statements, the first one refers to some natural events which are beyond human control while, the second one is about human choices about their own action. The truth of the former would not count as any reason to accept or reject the latter, so this is a case of irrelevance.¹²

Thus, according to Govier, positive relevance holds only when the truth of a proposition 'counts' for the truth or 'rational acceptability' of another. By negative relevance she means that the truth of a proposition 'counts against' the truth or 'rational acceptability' of another. Again, by irrelevant is meant that a proposition is neither positively relevant nor negatively relevant to another proposition.

Govier concludes by saying that for an argument to be 'cogent' there must be positive relevance between the premises and the conclusion, negative relevance and irrelevance are not conducive to its cogency.

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