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THE MIDDLE TERM

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Syllogism is traditionally conceived as a form of mediate inference. The distinction between mediate and immediate inference is usually stated thus: "For the most part a new judgement is only got by putting together two judgements, and as it were extracting what they yield. But there are a few conclusions which we appear to draw *not* from any 'putting together' of two judgements, but simply from the relation to one another of the terms in one judgement. This is called *immediate* inference . . . " (Joseph [1], p. 232). According to Joseph, therefore, a syllogism to be a form of mediate inference has to fulfil two conditions: (a) there must be two judgements functioning as premises, and (b) the two premises must be 'put together' in order to yield the conclusion. We shall attempt here to examine the nature of 'putting together' of the two premises in syllogistic inference.

It is often contended that this 'putting together' of the premises is nothing but their conjunction. To say that the conclusion of a syllogism follows neither from the major premise alone, nor from the minor premise alone, but from the both 'put together' is simply to say that it follows from their conjunction. This is also necessary to explain why mediate inferences in general and syllogisms in particular ought to be regarded as logically valid implications with the conjunction of the premises as the antecedent and the conclusion as the consequent.

Against this theory we shall try to show that the conjunction of the premises cannot be regarded as explaining what it is to 'put them together', for this theory fails to bring out an essential feature of the middle term whether syllogism is considered as an inference or as an implication. To explain our point we shall examine how we can get an instance of a syllogism from its *form*. Consider, for example, the form Barbara which is often stated as the logical law of the transitivity of class inclusion:

(B) $\qquad (b)(c)(a)(a \subset b.c \subset a. \supset .c \subset b)$

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where 'a', 'b' and 'c' are class-variables. Now to get a concrete example of a syllogism of the form (B), it is usually thought necessary to have specific class-terms for the variables. This may be done in the following way:

Syl 1.	(1)	$(c)(a)(a\subset M.c\subset a.\supset c\subset M)$	(B), **U.I.**
	(2)	$(a)(a\subset M.K\subset a.\supset K\subset M)$	1, **U.I.**
	(3)	$H\subset M.K\subset H.\supset K\subset M$	2, **U.I.**

where 'H', 'M' and 'K' are abbreviations of 'the class of men', 'the class of mortals' and 'the class of kings'.

Now Syl 1 (3) can be regarded as a concrete example of Barbara, if we regard a syllogism as an implication. If, however, we want to *infer* 'all kings are mortal' ('$K\subset M$'), then we have to affirm the antecedent of Syl 1 (3) which is a conjunction. This we can do if we take this conjunction as a premise, thus:

(4)	$H\subset M.K\subset H$	premise
(5)	$K\subset M$	3,4 modus ponens.

Now we shall show that it is not necessary to specify the middle term in order to have an example of a syllogism.

Syl 2.	(1)	the same as (1) of Syl 1.	
	(2)	the same as (2) of Syl 1.	
	(3)	$(\exists a)(a\subset M.K\subset a)\supset(K\subset M)$	2, by rules of quantification.

Syl 2 (3) in our opinion should be regarded as a concrete example of a syllogism of the form (B). If we now want to infer Syl 1 (5), then we have to assert

(4) $(\exists a)(a\subset M.K\subset a)$

which in our opinion should be the premise of the syllogism and not Syl 1 (4). For now we can have

(5) $K\subset M$, 3,4 modus ponens

just as in Syl 1.

It may be noted here that our premise Syl 2 (4) is weaker than the conjunction Syl 1 (4) in the sense that it is implied by, but does not imply, Syl 1 (4). The difference between Syl 1 and Syl 2 is obvious. In Syl 1 we have specific class terms for all the variables of (B), whereas in Syl 2 we have left the middle term unspecified. Now the question is whether Syl 2 should be regarded as a syllogistic inference at all. We give the following reason for regarding it as a syllogism. If we accept the theory that the middle term of a syllogism need not be specified, then we can explain why given the conclusion 'all kings are mortal' we cannot uniquely determine the premises from which it follows, although in this particular case the figure and the mood are uniquely determined. This indeterminacy of the

premises (not of the *form* of the premises) is due wholly to the fact that different middle terms can be used to construct premises from which 'all kings are mortal' can be deduced syllogistically. The theory that the conclusion of a syllogism follows only from a conjunction of its so-called premises fails to bring out this essential feature of the middle term. A conclusion can be derived syllogistically even if a conjunction of the premises like Syl 1 (4) is not a premise, for Syl 2 (4) suffices to prove the conclusion (in our opinion syllogistically).

So far we have accepted the theory that a syllogism has one premise (other than the form), but let us now see what happens if we accept the traditional view that a syllogism is an inference with two premises. Now if we are to have *two* premises, then, of course, we must have specific terms in both the premises where no term-variable can occur. Then the question will arise: What it is to 'put them together'? We can now have a conjunction like Syl 1 (4), for its two conjuncts are separately available. So should we not say that, *when the two premises are separately available*, it is their conjunction which is the result of 'putting them together'? Our reply to this question is that the situation is not at all changed even when we have a specific term functioning as the middle term. For even when we use a specific term as the middle term of a syllogism the special properties of the objects denoted by the middle term are not relevant for the conclusion or for the syllogism. That is, if we know more specifically what the middle term is, even then it is only its relations to the major and the minor terms which are relevant to the syllogism. If we render Syl 2 (4) in ordinary English it becomes 'the class of kings is a subclass of *a class* which is itself a subclass of the class of mortals'. If we prefer the language of predication to the language of classes, we have the judgement 'that of which mortality is predicated (in a certain manner) is itself predicated (in a certain manner) of all kings'. This judgement may be regarded as involving predication of the second order, for that which is predicated of all kings is itself something of which mortality is predicated. Thus the 'putting together' of the two premises of a syllogism is not a mere conjunction of them, but is a complex judgement involving second order predication.

Now we sum up. The form of a syllogism may be conceived either as an implication with universally quantified term-variables, or as a form of inference with two premises 'put together'. In the first case, in order to get a concrete example of a syllogism it is not necessary to have a specific term functioning as the middle term. In the second case, although we must have a specific term as the middle term, yet the specific nature of the middle term is not relevant for the syllogism at all, and this fact should not be ignored when the premises are 'put together'. So the theory that the mere conjunction of the premises is necessary for a syllogism is unsatisfactory in both the cases and for exactly the same reason.

In the above we have tried to present the controversy between the Pūrva-Mīmāmsā and the Nyāya schools of Indian philosophy on this issue.

The philosophers of the Pūrva-Mīmāmsā school insist that the knowledge of the specific nature of the middle term (*vyāpyatâvacchedaka-prakāraka-jñānam*) is necessary for syllogistic inference. Against this contention the philosophers of the Nyāya school, specially of the later period beginning from Gangeśa Upādhyáya (circa 13th Century), claim that the specific nature of the middle term need not be known. The argument given by us in the paper is taken from the Nyāya text of Viśvanātha, circa 17th Century, ([2], pp. 213 ff). We have translated the Nyāya term *'viśiṣṭa-vaiśiṣṭyâvagāhi-buddhi' loosely* by 'judgement involving second order prediction'.

REFERENCES

[1] Joseph, H. W. B., *An Introduction to Logic*, second edition, Oxford, 1961.

[2] Pañcānana, Viśvanātha, *Kārikāvalī-Muktāvalī*, edited by Harirāma Śukla, Chowkhamba, Benares, 1951.

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