

## LEHMANN ON THE RULES OF THE INVALID SYLLOGISMS

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Anne Lehmann<sup>1</sup> makes a distinction between valid, invalid, and neither valid nor invalid syllogisms. A valid syllogism is one in which the conclusion must be true when each of the two premises is true; an invalid syllogism is one in which the conclusions must be false when each of the two premises is true; a neither valid nor invalid syllogism is one in which the conclusion either can be true or can be false when each of the two premises is true. An example of a valid syllogism is: All  $M$  is  $P$ , All  $S$  is  $M$ , All  $S$  is  $P$ ; an example of an invalid syllogism is: All  $M$  is  $P$ , Some  $S$  is  $M$ , No  $S$  is  $P$ ; an example of a neither valid nor invalid syllogism is: All  $P$  is  $M$ , All  $S$  is  $M$ , Some  $S$  is not  $P$ .

As you may know, the ' $S$ ' is called the minor term, the ' $P$ ' the major term, and the ' $M$ ' the middle term. The ' $S$ ' term must always appear in the second premise and conclusion, and the ' $P$ ' term in the first premise and conclusion. 'Some  $M$  is  $P$ ' and 'All  $S$  is  $P$ ' are called affirmative, and 'Some  $S$  is not  $P$ ' and 'No  $S$  is  $P$ ' negative. A term is either distributed or undistributed. If all is meant by a term, it is distributed, and if some is meant, it is undistributed; in All  $M$  is  $P$ , ' $M$ ' is distributed and ' $P$ ' undistributed; in No  $M$  is  $P$ , ' $M$ ' and ' $P$ ' are distributed; in Some  $S$  is  $P$ , ' $S$ ' and ' $P$ ' are undistributed; and in Some  $S$  is not  $P$ , ' $S$ ' is undistributed and ' $P$ ' is distributed (all  $P$  is not those some  $S$ ). There are 256 syllogisms. With Lehmann there are 24 valid syllogisms, 24 invalid, and 208 neither valid nor invalid. The valid and invalid syllogisms have the same set of premises, and their conclusions are contradictory to each other.

Those logicians who divide the 256 syllogisms into valid and invalid have come up with four rules, any one of which if violated by a syllogism means that the syllogism is invalid. Since Lehmann breaks up their invalid syllogisms into invalid and neither valid nor invalid, then if a syllogism violates one of the four rules it would not mean that it is invalid; it could be neither valid nor invalid. Therefore, she had to come up with rules of the

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1. Anne Lehmann, "Two sets of perfect syllogisms," *Notre Dame Journal of Formal Logic*, vol. XIV (1973), pp. 425-429.