SYLLOGISMS AND DOMAINS

Robert Price & Henry W. Johnstone, jr.

There is apparently some confusion in the literature concerning the validity of syllogisms in small finite domains ([1]). Assuming that there are 256 possible moods of the syllogism ([2]), if we adopt the hypothetical interpretation of universal propositions, according to which a term can be null when it is the subject of a universal proposition, we obtain the following results.

1) Any mood valid in a domain of 3 individuals is universally valid.
2) Exactly one invalid mood is 2-valid (i.e., OOA in the Fourth Figure).
3) Exactly 81 moods are 1-valid but 2-invalid.

If we adopt the existential interpretation, according to which the major, minor, and middle terms are non-null, 1) still holds, but the counts in 2) and 3) must be replaced by 26 and 174 respectively.

These results have been confirmed on the computer, and we wish to thank the Computation Center of the Pennsylvania State University for its generous assistance.

The Pennsylvania State University   Robert Price
                                    Henry W. Johnstone, Jr.

([1]) Cf., e.g., Nicholas Rescher, *Introduction to Logic*, New York, 1964, p. 257.

([2]) As shown, for example, by Cohen and Nagel in *An Introduction to Logic and Scientific Method*, New York, 1934, p. 83.