

## PRIOR'S CRITICISM OF THE BARCAN FORMULA

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Douglas Lackey<sup>1</sup> agrees with Massey's conclusion that A. N. Prior is incorrect in his criticism of the Barcan formula but disagrees with him as to the source of the mistake. Prior's criticism, according to Lackey, depends on reading the existential quantifier exclusively as tensed. But we cannot do this: (a) even in ordinary speech we often require a tenseless interpretation of the quantifier; (b) in a logic containing both quantifiers and tense-operators we must have a means of distinguishing tensed from tenseless usages of the former; hence we need a present-tense operator ( $J$ ). I agree with Lackey's remarks but (as I shall try to show) this does not resolve the relevant difficulties. To be sure, if a logic lacks a present-tense operator but is tensed, then expressions for propositions lacking any tense-operator (i.e.,  $p, q, \Sigma x Qx$  etc.) will have to be read as present-tensed, and Prior's logics are normally set up in this way. This does not mean, however, that he cannot allow for a tenseless reading of the quantifier where this is necessary, e.g., Lackey's example "Jones is dead" could simply be written (where  $S$  means "is named 'Jones'" and assuming that proper names are used only once to name particular individuals), " $KP\Sigma x SxN\Sigma x Sx$ "; and, in general, tenseless existence could be expressed by, " $KK\Sigma x \dots P\Sigma x \dots F\Sigma x$ " on Prior's view that timeless existence and sempiternal existence come to the same thing (or, at least, that the one entails the other). Alternatively, if the latter view is rejected, one could simply introduce an operator indicating *tenselessness*. In either case Prior's criticism of the Barcan formula would remain unaffected.

The real difficulty with Prior's criticism hinges, I think, on his definitions of " $M$ " (it is possible that) and " $L$ " (it is necessary that): " $Mp$ " he defines as "it either is or has been or will be the case that  $p$ ", and " $Lp$ " as "it is always true that  $p$ ". The Barcan formula,  $CM\Sigma x \phi x \Sigma x M\phi x$ , he translates as "if it either is or has been or will be the case that something  $\phi$ s, then there is something which either  $\phi$ s or has  $\phi$ ed or will  $\phi$ ." His criticism of it is simply this: suppose, for example, that in fact someone will fly to the moon someday but not anyone who now exists.<sup>2</sup> Clearly this criticism does apply to the formula on the ordinary English translation that Prior gives to it, and equally clearly does not apply where the quantifiers