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Notre Dame Journal of Formal Logic
Volume XX, Number 2, April 1979
NDJFAM

NECESSARY TRUTH AS ANALYTICITY, AND THE ELIMINABILITY OF MONADIC *DE RE* FORMULAS

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Among formulas of modal predicate logic, the *de re* ones are those in which a variable occurs free within the scope of a modal operator; the *monadic* ones are those containing none but monadic predicates and no nested quantifiers (no quantifier within the scope of a quantifier).[1] Assuming that only *analytic* statements count as *necessary truths*—that necessary truths are somehow *logically* necessary—I will show that the *monadic de re formulas* are *eliminable* in this sense: there is an effective way of translating them into non-*de re* equivalents.

To prove this claim, I first recast it in a more precise, mathematically tractable form. In the process, the assumption that necessary truths are analytic gets weakened considerably. Note, by the way, that this assumption explicitly constrains the interpretation of modal operators only when prefixed to statements, not open sentences; it does not explicitly say anything about the interpretation of *de re* locutions.

1 *Syntax* Because monadic modal formulas contain none but monadic predicates and no nested quantifiers, they can be written with a single individual variable, which we may as well suppress, treating a predicate standing alone as though a variable followed it.[2] Such formulas can be built from a *vocabulary* comprising $\neg$, $\wedge$, $\exists$, $\Box$, parentheses and some (monadic) predicates. Although monadic modal formulas contain no nested quantifiers, hence no open subformulas with quantifiers inside, I find it convenient to work with a slightly more inclusive class of formulas, defined to allow nested $\exists$'s (though without distinct variables), and therewith open formulas with $\exists$ inside, so long as none has the form $\Box A$.

Let a *quasi-formula* be any member of the least class containing every predicate and containing $\neg A$, $(A \wedge B)$, $\exists A$, and $\Box A$ whenever it contains A, B. A quasi-formula is *$\exists$-free* if devoid of $\exists$, and *closed* if a member of the least class containing $\exists A$ for every quasi-formula A and containing $\neg A$, $(A \wedge B)$ and $\Box A$ whenever it contains A, B. A *formula*, then, is any quasi-formula such that every quasi-formula of the form $\Box A$ occurring

Received March 27, 1976