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Material Equivalence and Tautological Entailment

A. J. DALE

The introduction of any new device into the symbolism of logic is neces-
sarily a momentous event. In logic a new device should not be introduced in
brackets or in a footnote with what one might call a completely innocent air.
(Tractatus, 5.452)

. . .

It is my purpose in this paper to argue that Anderson and Belnap's
([1], Chap. 3) system of tautological entailment is, at best, a mere fragment of
a full theory of entailment for truth-functions and that no guide has been given
by Anderson and Belnap as to how to complete it. A secondary purpose is to
show that two recently published accounts of entailment are not coextensional
with tautological entailment, as their proponents claim, nor with each other. I
shall assume familiarity with the theory of tautological entailment throughout
this paper.

In Lewy's *Meaning and Modality* there is a long and absorbing discussion
of the Lewis paradoxes, concluding with a definition of "strictly entails" that
Lewy conjectured would be satisfied by tautological entailment, ([11], p. 150).
Since that definition and the conjecture were made, however, Clark and Dunn
have separately shown the definition to be defective. Both have proposed ways
in which they believe Lewy's definition may be repaired, and these repairs
reveal definitions that are coextensional with those of tautological entailment
(see [3], [2], and [7]). If these results were correct then some support would
be given to the thesis that entailment was to be identified with tautological
entailment in the same manner that Church's thesis gained support from the
coextensiveness of Turing computability, λ-definability, etc. I shall argue that
any such clustering is extremely limited in the case of the recent entailment
definitions.