

A CORRECTION IN COPI'S ACCOUNT OF
BOOLEAN NORMAL FORMS

ALEX BLUM

According to Copi:

(i) A statement form is in conjunctive/disjunctive Boolean normal form, if it is in conjunctive/disjunctive normal form, every conjunct/disjunct contains exactly one occurrence of every variable (either the variable or its negation), the variables occur in alphabetical order in each conjunct/disjunct, and no two conjuncts/disjuncts are the same. [*Symbolic Logic*, 3rd edition, Macmillan, New York and London (1967), pp. 329-330].

(ii) A statement form is in conjunctive/disjunctive normal form, when in addition to statement variables it contains no symbols other than those for conjunction, disjunction and negation; negation symbols apply only to single variables; and no disjunct/conjunct is a conjunction/disjunction, i.e., disjunction/conjunction symbols occur only between single variables or their negations. (*Ibid.*, p. 328).

(iii) A statement form containing n variables is contradictory/is a tautology, if and only if it contains 2^n conjuncts/disjuncts. (*Ibid.*, pp. 330-331).

But now (i), (ii), and (iii) could not all be right, since

$$'p \cdot \sim p' \text{ and } 'p \vee \sim p'$$

are each both in conjunctive and disjunctive Boolean normal form. Hence according to (iii) each is contradictory and each is a tautology.

A very natural way of preserving (i), (iii) and the spirit of (ii) is to add the following to (ii): . . . it contains at least one conjunction/disjunction. . .

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