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AN EXTENSION OF VENN DIAGRAMS

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In §15 of *Methods of Logic*, Quine states some limitations of Venn Diagrams as a decision-procedure. He considers a problem ("the class of '00") of which the pattern is:

(1) All F who are G are $H \supset$ some F are not G
All F are G v All F are H
$\therefore$ All F who are H are $G \supset$ some F who are not H are G,

and comments that Venn Diagrams are suited to handling expressions like 'all F who are G are H', and the techniques of propositional logic to handling connectives like '$\supset$' and 'v'. He asks 'just how may we splice the two techniques in order to handle a combined inference of the above kind?' (p. 82). In the sections that follow he introduces quantifiers, and eventually (§21) reaches a decision-procedure for problems like (1).

What follows here is an extension of Venn Diagrams (EVD) to deal with such problems. The method provides, not only a simple decision-procedure, but a pedagogically useful introduction to types of reasoning found in deductive systems.

A Venn Diagram depicts an assertion concerning the emptiness or non-emptiness of certain classes. Hatching is an assertion or a conjunction of assertions of emptiness; the 'cross' an assertion and the 'bar' a disjunction of assertions of non-emptiness. Consequently, the assertion depicted in any Venn Diagram may be negated by interchanging hatching and a cross, or hatchings and bars.* We can call this 'Diagrammatic Negation'; EVD will cite it as 'Diag. Neg.'.

The superposition of Venn Diagrams will depict the conjunction of the assertions made by each of them. Such superposition must respect the method of representation of the diagrams: the distinctness of classes must not be destroyed by the superposition, and the subclasses engendered by the classes considered must be fully represented. Examples of superposition are:

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*See Addendum to this article for some suggestions here.

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