

Approximate Truth
Notes

Miller's Problem: Consider the following alternative primitive predicates for a language:

A, B, C ; A, B', C' , with $B' =_{\text{def}} (A \equiv B)$, $C' =_{\text{def}} (A \equiv C)$

In these alternative vocabularies, the following three theories can be given equivalently as:

T_r : $A \& B \& C$; $A \& B' \& C'$

T_1 : $\sim A \& B \& C$; $\sim A \& \sim B' \& \sim C'$

T_2 : $\sim A \& \sim B \& \sim C$; $\sim A \& B' \& C'$

A practical realization of Miller's problem: Tokens for Coke machines may be 1 or 2 oz, square or round, and red or green:

Theory Tr (The true theory): 2 oz., square, and red, ALSO given by 2 oz. and 2 oz. iff square and 2 oz. iff red.

Theory 1: 1 oz., square, and red. Equivalently given by 1 oz. ,and not (2 oz. iff square), and not (2 oz. iff red)

Theory 2: The token is 1 oz., round, and green. Equivalently given by 1 oz, and (2 oz. iff square), and (2 oz. iff red).

California Token: square and red (1 or 2 oz.)

New York Token: 2 oz. iff square and 2 oz. iff red (1 or 2 oz.)

