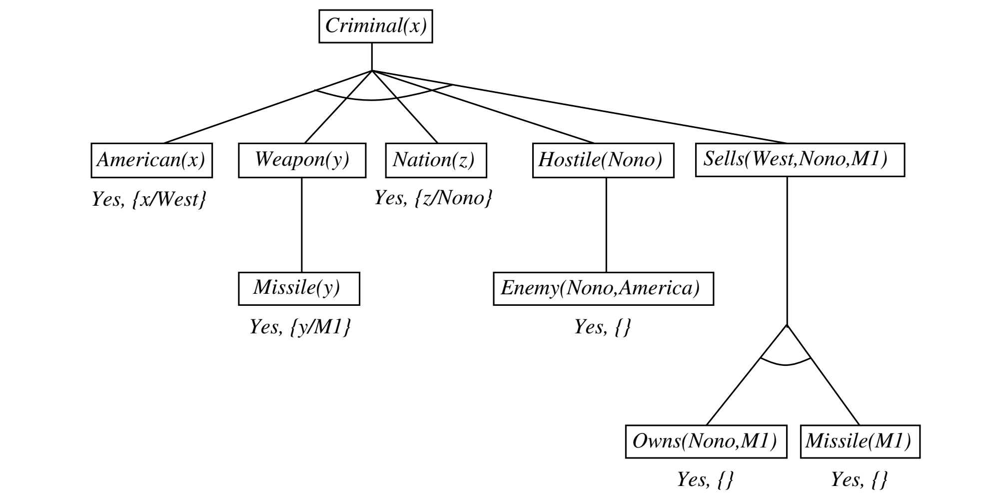

Figure 9.3 Proof tree to infer that West is a criminal.

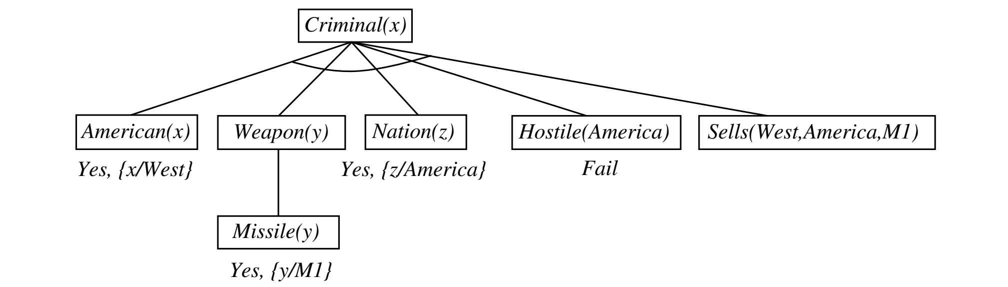

Figure 9.4 A failed proof tree: nothing can be inferred.

9.5 COMPLETENESS

Suppose we have the following knowledge base:

$$\begin{array}{l} \forall x \;\; P(x) \Rightarrow Q(x) \\ \forall x \;\; \neg P(x) \Rightarrow R(x) \\ \forall x \;\; Q(x) \Rightarrow S(x) \\ \forall x \;\; R(x) \Rightarrow S(x) \end{array} \tag{9.40}$$

Then we certainly want to be able to conclude $S(A)$; $S(A)$ is true if $Q(A)$ or $R(A)$ is true, and one of those must be true because either $P(A)$ is true or $\neg P(A)$ is true.