

$$p(a)$$

$$r(a)$$

we conclude neither $q(a)$ nor $\neg q(a)$. It is a typical example of two rules blocking each other. This conflict may be resolved using *priorities among rules*. Suppose we knew somehow that the first rule is stronger than the second; then we could indeed derive $q(a)$.

Priorities arise naturally in practice and may be based on various principles:

- The source of one rule may be more reliable than the source of the second rule, or it may have higher authority. For example, federal law preempts state law. And in business administration, higher management has more authority than middle management.
- One rule may be preferred over another because it is more recent.
- One rule may be preferred over another because it is more specific. A typical example is a general rule with some exceptions; in such cases, the exceptions are stronger than the general rule.

Specificity may often be computed based on the given rules, but the other two principles cannot be determined from the logical formalization. Therefore we abstract from the specific prioritization principle, and assume the existence of an *external priority relation* on the set of rules. To express the relation syntactically, we extend the rule syntax to include a unique label. For example,

$$r_1 : p(X) \Rightarrow q(X)$$

$$r_2 : r(X) \Rightarrow \neg q(X)$$

Then we can write

$$r_1 > r_2$$