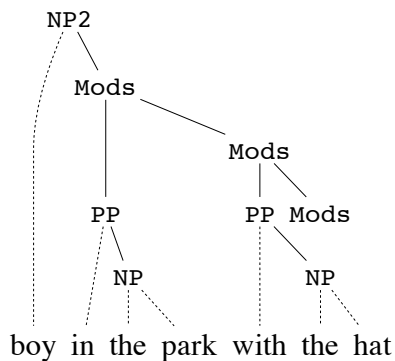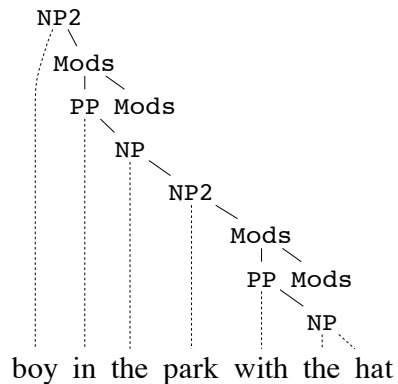**Figure 8.3.** A sequence of words with two parse trees

This parse corresponds to the grouping where *with the hat* modifies *boy*.

This parse corresponds to the grouping where *with the hat* modifies *park*.

the words that make up that category. For example, the sequence *on the mat* is a PP, while the sequence *is on the mat* is a VP.

A grammar is said to be <u>*ambiguous*</u> if there is a sequence of words with two distinct parse trees. An example appears in figure 8.3. (The dashed lines indicate details that are missing from the diagram.) According to the grammar, the noun phrase *with the hat* can be attached as a modifier either to the NP2 that has the head noun *boy* (on the left in the figure) or to the NP2 that has the head noun *park* (on the right). It is only when *semantics* are taken into account that the ambiguity disappears. Prior knowledge provides the fact that boys, not parks, have hats. This is precisely the sort of thinking that is described, beginning in the next section.

8.2 Interpreting noun phrases

The goal in this section is to develop a Prolog program that does simple syntactic and semantic processing of noun phrases written in English. This involves two things:

- Parsing the noun phrases according to a given grammar
- Determining what is being referred to by the noun phrases