

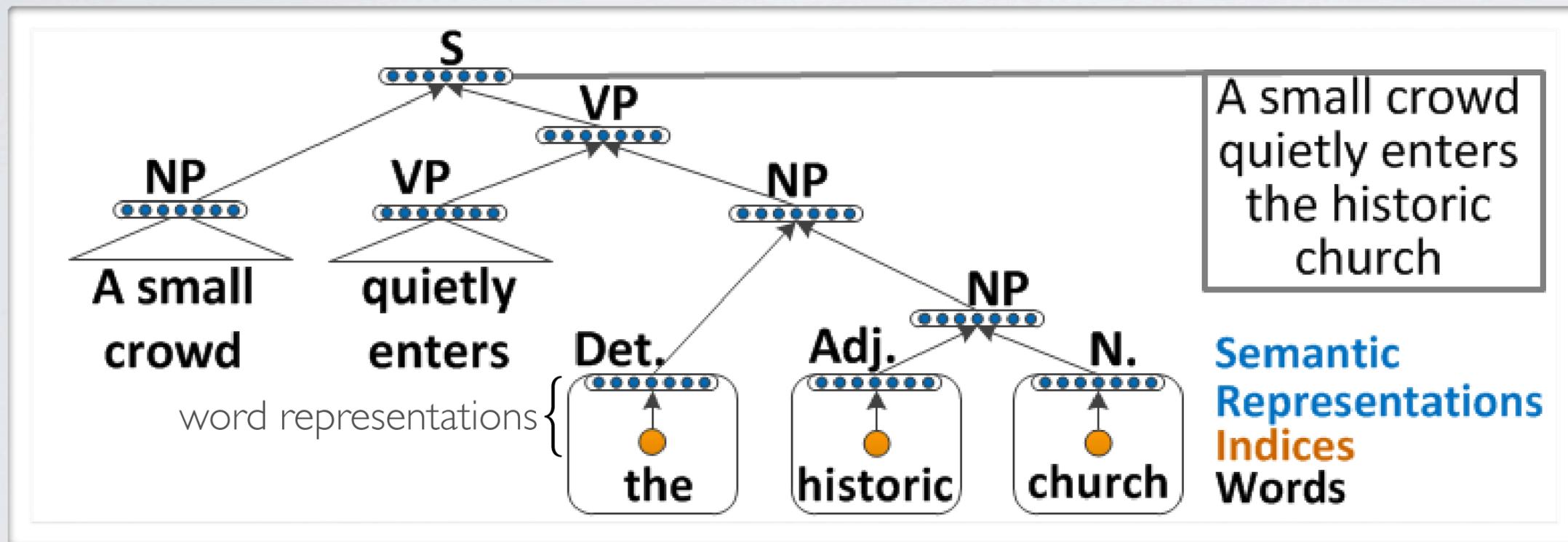
# Neural networks

Natural language processing - merging representations

# RECURSIVE NEURAL NETWORK

**Topics:** recursive neural network (RNN)

- Idea: recursively merge pairs of word/phrase representations



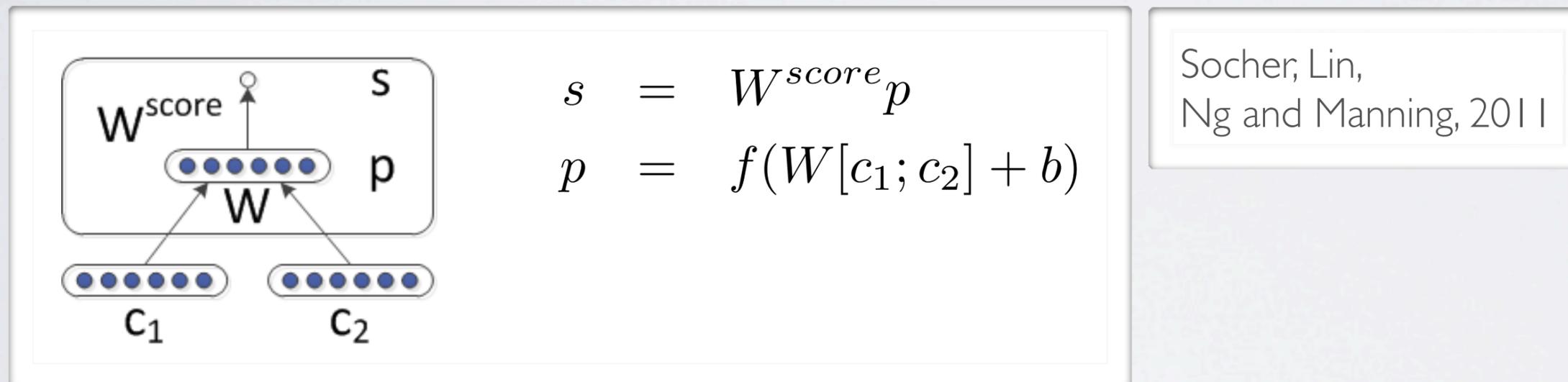
- We need 2 things
  - ▶ a model that merges pairs of representations
  - ▶ a model that determines the tree structure

Socher, Lin, Ng and Manning, 2011

# RECURSIVE NEURAL NETWORK

**Topics:** recursive neural network (RNN)

- Given two input representations  $c_1$  and  $c_2$ , the recursive network computes the merged representation  $p$  as follows:



- The network also computes a score  $s$ 
  - ▶ it estimates the quality of the merge
  - ▶ it will be used to decide which pairs of representations to merge first