

Problem Set 8

Assigned: Apr. 24

Due: May 1

If you want, you may write out this assignment by hand and photograph it. If so *please* write clearly, use dark pen or pencil, and photograph it clearly.

Problem 1

Consider the following headed context-free grammar and lexicon:

Grammar:

$$\begin{aligned} S &\rightarrow NP \text{ VP\# } \mid S\# \text{ Conj } S \\ NP &\rightarrow \{ \text{Adj} \} \text{ Noun\# } \mid NP\# \text{ Conj } NP \\ VP &\rightarrow \text{Verb\# } \{ NP \} \mid VP\# \text{ Conj } VP \end{aligned}$$

Lexicon:

$$\begin{aligned} \text{and} &\rightarrow \text{Conj.} \\ \text{boots} &\rightarrow \text{Noun, Verb.} \\ \text{brown} &\rightarrow \text{Adj, Noun, Verb.} \\ \text{many} &\rightarrow \text{Adj, Noun.} \\ \text{own} &\rightarrow \text{Adj, Verb.} \\ \text{people} &\rightarrow \text{Noun, Verb.} \\ \text{socks} &\rightarrow \text{Noun, Verb.} \end{aligned}$$

Show four phrase-structure trees for the sentence “Many people own boots and brown socks” consistent with the above grammar. (There are actually six, but I’m only asking for 4.) Include at least one tree that uses the rule $S \rightarrow S \text{ Conj } S$, at least one that uses $NP \rightarrow NP \text{ Conj } NP$, and at least one that uses $VP \rightarrow VP \text{ Conj } VP$. Every tree should have root S .

Problem 2

For each of the phrase-structure trees in your answer to problem 1, show the corresponding dependency tree. The arcs on the tree should point from dependent to head, and should be unlabelled.