

**Homework 2**  
**11-721: Grammars and Lexicons, Fall 2009**  
**Due Friday, September 25, 2009**

## 1 Based on Radford, Exercise XVI, page 225

Assume the following phrase structure rules:

S --> N'' VP

VP --> V'

VP --> V' PP

V' --> V

V' --> V N''

PP --> P N''

N'' --> (Det) N'

N' --> N' PP

N' --> N (PP)

N --> N CONJ N

N' --> N' CONJ N'

N'' --> N'' CONJ N''

Det --> that

Det --> his

Det --> the

CONJ --> and

V --> like

VP --> just don't get on

N --> picture

N --> pushchair

N --> workers

N --> managers

N --> factory

N'' --> I

N'' --> him

P --> of

P --> in

**Question 1:** Note that *I* and *him* are N' and not N. Write an ungrammatical sentence that would be generated if “I” and “him” were N and not NP. This grammar generates a lot of ungrammatical sentences, so be sure to write one that is ungrammatical for the right reason.

**Question 2:** Note that *his* is a determiner. Write an ungrammatical sentence that would be generated if *his* were an N. Write a sentence that could not be generated if *his* were an NP.

**Question 3:** Assuming that there is an attachment ambiguity in *that picture of him in his pushchair*, what are the two meanings?

**Question 4:** The phrase structure rules don't generate a tree that corresponds to one of the meanings. Which one is it?

**Question 5:** Draw a phrase structure tree for the meaning that is generated.

**Question 6:** There is also an attachment ambiguity in *The workers and the managers in the factory just don't get on*. What are the two meanings?

**Question 7:** The phrase structure rules don't generate a tree that corresponds to one of the meanings. Which one is it?

**Question 8:** Draw a phrase structure tree for the meaning that is generated.

**Question 9:** Radford suggests to reformulate the rule that introduces PP adjuncts into three rules, one for adjuncts to X, one for adjuncts to X', and one for adjuncts to X". Write the new phrase structure rules.

**Question 10:** Using the new rules, draw a tree for the meaning of *that picture of him in his pushchair* that wasn't previously generated.

**Question 11:** Using the new rules, draw a tree for the meaning of *The workers and the managers in the factory just don't get on* that wasn't previously generated.

## 2 Possessive Noun Phrases

In the last problem, possessive pronouns like *his* were treated as determiners. However, possessors can be full noun phrases as in *the boy across the street's toy* where the possessor is *the boy across the street*.

The 's is a *clitic*, not a full word, but not a prefix or suffix. One of the things that makes it different from prefixes or suffixes is that it attaches to words that aren't related to it. In *the boy across the street's toy* the 's indicates that the boy is a possessor, but it attaches to *street*. In the phrase structure rules below, the 's is treated as a terminal symbol that is a daughter of NP.

**Task 1:** Using the phrase structure rules below, draw two trees for *the wife of your friend's brother*, which has two different meanings. Assume that *of your friend* is an argument, not an adjunct. For the sake of simplicity, *your* is still treated as a determiner because it does not occur with 's.

**Task 2:** Using the phrase structure rules below, draw two trees for *We gave her dog biscuits*. The verb *give* should have three arguments: agent, theme, and recipient.

S --> N' VP

VP --> V N' N'

PP --> P N'

N' --> (Det) N'

N' --> N (PP)

N' --> NP 's N'

In the previous rule, the N' has three daughters, NP, 's, and N'.

Det --> the

Det --> your

Det --> her

N' --> her

N' --> we

N --> N N

### 3 Two types of sentences embedded inside noun phrases

This is based on an exercise from Santorini and Kroch (<http://www.ling.upenn.edu/beatrice/syntax-textbook/index.html>). An *embedded sentence* or *embedded clause* is an S that is inside another S. The sentences below show two types embedded sentences that modify nouns.

- (1) a. The fact *that you like linguistics* surprised me.  
b. I am surprised by the fact *that you like linguistics*.
- (2) a. The story *that you told* surprised me.  
b. I was surprised by the story *that you told*.

There are also many types of embedded sentences that do not modify nouns as in (3). But this exercise is about embedded sentences that modify nouns.

- (3) I believe *that it is raining*

Embedded sentences are sometimes called *complement clauses* or just *complements*. For this reason, words like *that* at the beginning of an embedded sentence are called *complementizers*. They turn sentences into complements.

In (1), *the fact that you like linguistics* is a noun phrase. *that you like linguistics* is called an S-bar. An S-bar is an S with a *complementizer*. In this exercise, *that you like linguistics* will be referred to as a *noun complement*.

In (2), *the story that you told* is a noun phrase. *that you told* is an S-bar of a particular type called a *relative clause*. In this exercise, *that you told* will be referred to as a relative clause.

**How to tell a noun complement from a relative clause:** In a relative clause, the word *that* can usually be replaced by *which* or some other appropriate word like *what*, *who*, etc. But *that* cannot be replaced by *which* in a noun complement.

- (4) a. The story which you told surprised me.  
b.\* The fact which you like linguistics surprised me.

Another difference between noun complements and relative clauses is that relative clauses contain a *gap* – a hole where something is understood, but isn't there. In the relative clause *that you told*, the gap is after *told*. It is understood that you told the story, but *the story* isn't there. In other words, if you just look at the S-bar *that you told*, you will see that the verb *told* is missing one of its arguments. In contrast, in the noun complement *that you like linguistics*, the verb *like* has all of its arguments.

After all of that explanation, the questions are actually very short. Assume that *one* can substitute for an N-bar, but not an N.

**Question 1:** Based on (5), which phrase structure rule is the correct one for *the fact that you like linguistics*?

- a. N-bar --> N S-bar  
b. N-bar --> N-bar S-bar

- (5) \* I was surprised by the fact that you like linguistics and Sam was surprised by the one that you like chemistry.

**Question 2:** Based on (6), which phrase structure rule is the correct one for *the story that you told*?

a. N-bar --> N S-bar

b. N-bar --> N-bar S-bar

- (6) I was surprised by the story that you told and Sam was surprised by the one that Sue told.

**Question 3:** Based on your answers to Questions 1 and 2, what would you predict about a noun phrase that had both a noun complement and a relative clause? Which one would be predicted to come first?

**Question 4:** Make up a noun phrase that has both a noun complement and a relative clause. It will be a big messy noun phrase, but you should be able to do it. Try both orders: “Det N noun-complement relative-clause” and “Det N relative-clause noun-complement”. Are they both good?

**Relative clauses are important for the rest of the course, so don't forget what they are.**

## 4 Radford, page 121 problem X

Do problem X on pages 121 and 122 of Radford's book. Answer all of Radford's questions about sentences 2, 3, 4, and 5 except for this one: “Can you think of any way(s) in which we might defend the assumption that *one* is a pro-N-bar in the face of such apparent counterevidence?” We are not prepared to grade long answers to that question, so just skip it. However, if you have ideas, come to my office and I will be happy to talk about it.