

Homework 5 – Phrase structure rules and syntax trees

Due Friday, March 16

1. Using phrase structure rules

In the following questions, use only the phrase structure rules and words given below.

That is, don't use any words that aren't listed here, and only make the simple kinds of sentences allowed by these rules.

Phrase structure rules

S → NP VP

NP → A N

VP → V

Words

N = rockstars, princesses, weathermen

A = short, tall, stinky

V = sing, dance, fight

1.1. Give three sentences which can be generated using these rules and words.

a. _____

b. _____

c. _____

1.2. Demonstrate, via phrase structure trees, that these three sentences all have the same structure. You may do this by drawing one tree that represents all three sentences, or you draw more than one tree. Your tree(s) must explicitly show the structure of each of your three sentences.

1.3. For each of the following sentences, can it be generated by the very strict rules in 1.1? If so, how do you know? If not, why not?

a. Short weathermen fight stinky princesses.

b. Tall princesses dance.

c. Tall weathermen and short rockstars sing.

2. Constructing new phrase structure rules: Conjunction

So far, we don't have any phrase structure rules that fit conjunctions like *and* and/or *or* into sentences. It's time to fix that.

2.1. In each of the following sentences, *and* or *or* joins two words/phrases to form a larger word/phrase. Your first task is to identify by part of speech the types of words or phrases that can be connected by conjunctions, and what type of phrase is formed. Fill in each blank below with a part of speech or phrase type (e.g. N, V, P, Adj, NP, VP, PP, S).

In this exercise, you may need to give up the assumption that there will be exactly as many NPs in a sentence as there are Ns, as many VPs as Vs, PPs as Ps, etc.

EXAMPLE { [You]_A or [I]_B }_C must leave now.

A: NP B: NP C: NP

a. The guests { [played music]_A and [danced]_B }_C.

A: _____ B: _____ C: _____

b. The dog ran { [in the door]_A and [up the stairs]_B }_C.

A: _____ B: _____ C: _____

c. { [Mares eat oats]_A and [does* eat oats]_B }_C.

A: _____ B: _____ C: _____

d. { [Words]_A or [phrases]_B }_C are connected by a conjunction.

A: _____ B: _____ C: _____

* Here, "does" are female sheep.

- 2.2. Write as many phrase structure rules as necessary to describe where conjunctions (call them ‘Conj’) go in sentences, given the data in 2.1. You can write one phrase structure rule for each sentence, or more general rules that describe multiple sentences.
- 2.3. All of your phrase structure rules in 2.2 have something in common – that is, they all do the same kind of thing (beyond simply all being phrase structure rules), in a way that is hard to describe using phrase structure rule notation. What is this shared property?
- 2.4. Using your PS rules from 2.2 and those from class, draw tree structures for the following sentences from 2.1.
- a. The guests played music and danced. b. Mares eat oats and does eat oats.