

Assignment 3

1 Phrase Structure Rules with Features

In the first assignment, we constructed phrase structure rules that generated a given set of sentences. These rules, however, also generated a whole slew of ungrammatical sentences. The goal of this exercise is to construct a set of phrase structure rules that generate the following sentences while at the same time making sure that we do not generate any ungrammatical sentences. One way to do this is by enriching phrase structure rules with features.

Task 1: Provide a set of enriched phrase structure rules that will generate all of the sentences in (1) but none of the sentences in (2). The fewer rules you use, the better. Separate your rules into two groups: lexical rules (e.g. $N \rightarrow \text{John}$) and phrasal rules (e.g. $S \rightarrow NP VP$).

(1) Sentences to generate

- a. I/we like you/him/her/them/it/John.
- b. You like me/us/him/her/them/it/John.
- c. He/she/it/John likes me/us/him/her/them.
- d. The teacher likes me/us/him/her/them/it/John.
- e. They/Teachers like me/us/him/her/them/it/John.
- f. The teachers like me/us/him/her/them/it/Johns.
- g. I/we/you/we/they often sneeze (in the attic).
- h. He/she/it often sneezes (in the attic).
- i. John likes that/this/the/a/some/every/each book.
- j. John likes those/these/the/some/many/most books.
- k. The very tall girl likes those long magical books.

(Of course if you've done your phrase structure rules correctly, you should generate many many more sentences than just the above - for example, you should also generate all the sentences in (3).

(2) Things to avoid:

- a. Case mismatches:
 - i. No nominative objects: *I/we like he/they.
 - ii. No accusative subjects: *Me/us like he/they.
- b. Agreement mismatches:
 - i. * I/we likes you.
 - ii. * He like me/us.
- c. Transitivity mismatches:
 - i. Transitive verb, no object: *I like.
 - ii. Intransitive verb, object: *I often sneeze him.

- d. NP mismatches:
 - i. Proper names: John, *the John, *tall John
 - ii. Pronouns: she, *the she, *tall she
 - iii. Plurals: teachers, the teachers, tall teachers
 - iv. Singulars: *teacher, the teacher, *tall teacher
 - v. Determiner restrictions 1: *that/this/a/every/each books
 - vi. Determiner restrictions 2: *those/these/many/most books

Task 2: Show that your rules work by using them to provide trees for the following examples. You will need to extend the rules minimally by adding additional lexical rules.

- (3) a. Very long magical books like every tall teacher.
- b. Many tall teachers saw him in the dusty attic.
- c. They often sneeze in the very dusty magical attic.
- d. She likes long scary books.
- e. Every tall teacher likes some dusty attic.

Task 3: Show how your rules block the following sentences. This will involve using your rules to construct a tree. You will generally be able to get to a certain point but then you will see that something blocks further tree construction. The goal here is to spotlight what blocks further derivation.

- (4) a. * Very long magical book like every tall teacher.
- b. * Many tall teachers saw he in the dusty attic.
- c. * They often sneeze her in the very dusty magical attic.
- d. * She likes in the dusty attic.
- e. * The tall she likes John.
- f. * Most tall teachers like every students.

2 From the textbook

Problems 9, 10, and 11

3 Native American Language Project

For this project, you need to pick a Native American language to work on. A detailed list can be found on the Ethnologue website (<http://www.ethnologue.com/web.asp>). A non-exhaustive list follows:

Aleut, Apache, Arapaho, Bella Coola, Caddo, Carrier, Cayuga, Chatino, Cherokee, Cheyenne, Chinook, Chippewa, Choctaw, Chol, Comanche, Plains Cree, Dakota, Eyak, Hopi, Hupa, Inuktitut, Jacaltec, Jemez, Kashaya, Kekchi, Kiowa, Kuskokwim, Lakhota (Lakota), Luiseño, Lushotseed, Mam, Menomini, Micmac, Mojave (Mohave), Mohawk, Navajo, Nez Perce, O'odham, Okanagan, Onandaga, Oneida, Papago, Pawnee, Pomo, Potawatomi, Salish, Seneca, Serrano, Shasta, Shawnee, Shoshoni, Spokane, Squamish, Tiwa, Tlingit, Tzotzil, Wichita, Yaqui, Yavapai, Yokuts, Yupik, Zapotec, Zuni

Once you've picked the language, you'll need to locate a grammar of your language. The UMass library has a good selection of grammars for a wide variety of languages. Sometimes detailed dictionaries also include some grammatical information. If you are unable to find any grammar for your language, pick another language. I would encourage you to work with a native speaker but the vast majority of the above languages are moribund and you'd be very lucky to find a native speaker in the area. Still if you have access to a native speaker, feel free to confirm the data you get from your grammar with your native speaker.

Your task is to answer the following questions. In order to answer them, you will need access to a proper grammar for your language - it would be a good idea to check if the grammar you have addresses the kinds of questions listed below. If it does not, you might be better off looking for another grammar or possibly another language with a grammar that does address such questions.

- (5)
 - a. The name of the language
 - b. Genetic affiliation
 - c. Detailed reference of grammar (name, author, publisher, year, ISBN, URL if online)
 - d. What is the basic word order? What word orders are permitted? Provide a simple sentence with a transitive verb and two NPs.
 - e. What are the basic categories?
 - f. Nouns in English are marked for plurality. What kinds of distinctions are marked on nouns in your language? How are they marked? Show giving examples.
 - g. Tense in English is expressed on the verb (ate/eats/will eat). How is tense expressed in your language? Show giving examples.
 - h. How is the distinction between nouns and verbs marked? Show giving examples.
 - i. Does the language have prepositions, postpositions, both, or neither? If it does, give a few examples.
 - j. Does the language make a distinction between adjectives and adverbs? If it does, show how. If it doesn't, provide a few examples that demonstrate the lack of distinction.
 - k. If the language has adjectives, do they precede the noun they modify or do they follow it? Show giving examples.

Please make sure that your examples have a detailed gloss¹.

¹See page 59 of text.