English Grammar Homework

Linguistics 1

Due: Monday, October 31, 2011 (in class)

English Grammar

In class we developed the following set of phrase structure rules for analyzing English sentences:

Phrase Structure Rules:

1. S $\rightarrow$ NP VP   (allows VPs to combine with their subject NP to form a sentence.)

2. NP $\rightarrow$ Det N   (allows determiners to combine with a noun to form an NP)

3. N $\rightarrow$ Adj N   (allows attributive adjectives to be noun adjuncts)

4. VP $\rightarrow$ VP Adv   (allows adverbs to be VP adjuncts)

5. VP $\rightarrow$ TV NP   (allows transitive verbs to combine with their object NP to form a VP)

6. VP $\rightarrow$ DTV NP NP   (allows ditransitive verbs to combine with their two object NPs to form a VP)

7. VP $\rightarrow$ SV S   (allows sentential complement verbs to combine with their complement S to form a VP)

8. PP $\rightarrow$ P NP   (allows prepositions to combine with their complement NP to form a PP)

9. N $\rightarrow$ N PP   (allows allows PP to be noun adjuncts)

10. VP $\rightarrow$ VP PP   (allows PPs to be VP adjuncts)

11. VP $\rightarrow$ IV   (allows intransitive verbs to serve as a VP)

12. NP $\rightarrow$ Pro | PN   (allows pronouns and proper nouns to serve as an NP)

13. NP $\rightarrow$ N   (allows (common) nouns to serve as an NP[1]

14. N $\rightarrow$ N RC   (allows allows relative clauses to be noun adjuncts)

15. RC $\rightarrow$ RPro VP   (allows relative pronouns to combine with a VP to form a relative clause.)

16. VP $\rightarrow$ PV NP VP   (allows perception verbs to combine with both their object NP and a VP complement to form a VP)

17. X $\rightarrow$ X C X   (allows a conjunction to stand between two expressions of any category to form a phrase of that same category)

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[1]We noted that this will allow singular count nouns like desk to serve as an NP, incorrectly generating sentences like *Desk broke.* or *Kim likes desk.* Don't worry about this overgeneration in this problem.

These rules assume a classification of words that could be provided by a further set of phrase structure rules like the following:

- N → book, books, rice, ...

- PN → Kim, Sandy, Penny Eckert, ...

- Pro → I, me, you, he, him, she, her, it, they, them, ...

- RPro → who, that, ...

- Adj → noisy, happy, unreliable, little, ...

- Det → the, a, an, this, her, his, my, one, two, three, ...

- IV → walk, walks, walked, laugh, laughs, laughed, ...

- TV → worship, worships, worshipped, use, uses, used, ...

- DTV → give, gives, gave, deny, denies, denied, ...

- SV → say, says, said, think, thinks, thought, ...

- PV → see, sees. saw. hear, hears, heard, ...

- P → in, with, up, ...

- C → and, or, ...

These rules list only a few examples. Assume that the '...' in each rule includes all words of the indicated grammatical category.

Part 1

1. Consider the ambiguous sentence *This little animal eats grasshoppers and flies.*

2. Describe the two meanings informally.

3. What lexical ambiguity do you have to assume in order for our grammar to account for this ambiguity, i.e. to assign this sentence two distinct tree structures, one corresponding to each of the meanings in an appropriate way.

4. Draw two complete trees - one for each of the structures. [NB: Although we used triangles to abbreviate in class, you may not. That is, make sure you indicate every bit of structure required by our grammar.]

5. Extra Credit: Actually, one of the meanings you described in 2 can be analyzed in two ways by our grammar. Discuss briefly (here you can use triangles).

[Part 2 on Next Page]

Part 2

1. Provide an acceptable English sentence that our grammar (incorrectly) fails to generate.

2. Explain in a sentence or two why the grammar fails to generate your sentence.

3. Explain in a sentence or two how you might modify the grammar so that it correctly generates your sentence (associating it with an appropriate tree structure, of course).

4. As things stand, our grammar (incorrectly) generates sentences like *Kim eat bagels* and *The books gives Sandy a headache.*

5. Explain in a couple of sentences why the grammar allows these sentences.

6. Explain in a couple of sentences how you might modify the grammar in order to correctly exclude these sentences. [NB: Make sure your modification is as general as possible. That is, make sure your solution excludes the relevant class of sentences, not just those whose subject happens to contain the word *books* (as opposed to *forks, books, newspapers*, etc.) and/or whose VP happens to contain the word *gives* (as opposed to *eats*, *laughs*, etc.).]

7. Does your proposed modification of the grammar correctly exclude sentences like the following?

   - *The books in the kitchen gives Sandy a headache.*
   - *They laughs.*

8. Discuss the problem posed by the examples in 7 and how you would take steps to exclude them (in a general way).