Introduction to Linguistics: Homework 4 — Syntax

Spring 2020
Assigned: May 11th, 2020
Due: May 18th, 2020 by 11.59p Central Time on Canvas

DIRECTIONS: Complete problems 1 and 2; then, choose **one** of the remaining problems.

Problem 1: Hierarchical structure (50 points)

Rough constituency (30 points)

Consider the sentence *The dog with a big appetite might steal the unattended food.* Assume that the words have the following category labels:

D	N	P	D	A	N	T	V	D	A	N
the	dog	with	a	big	appetite	might	steal	the	unattended	food

Determine whether or not the following strings of words are phrases; use one piece of evidence to support your conclusion. If they are a phrase, state the category of that phrase. (For negative results, there will be multiple pieces of evidence, but you only need to refer to one piece in your answer.)

(i) *a big appetite might steal*

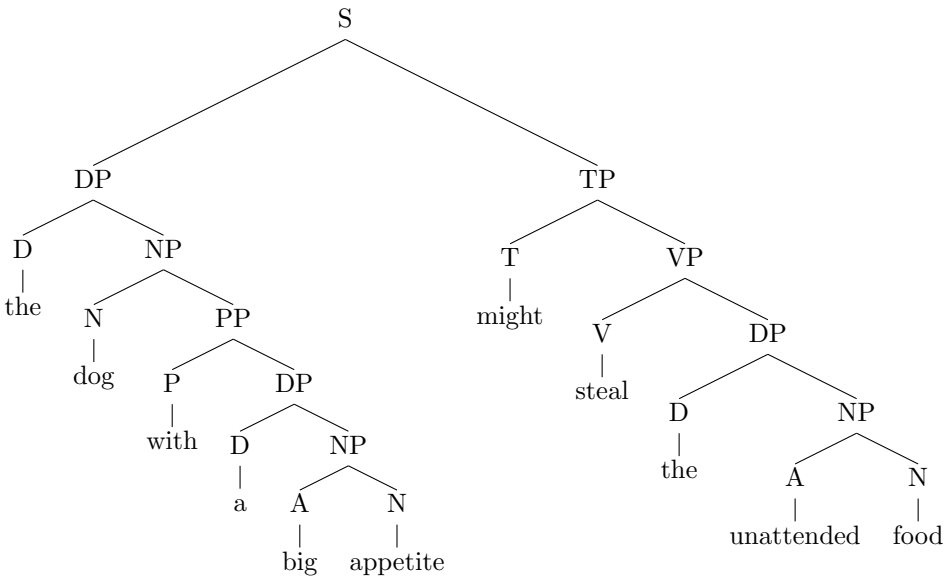
(ii) *with a big appetite*

(iii) *steal the unattended food*

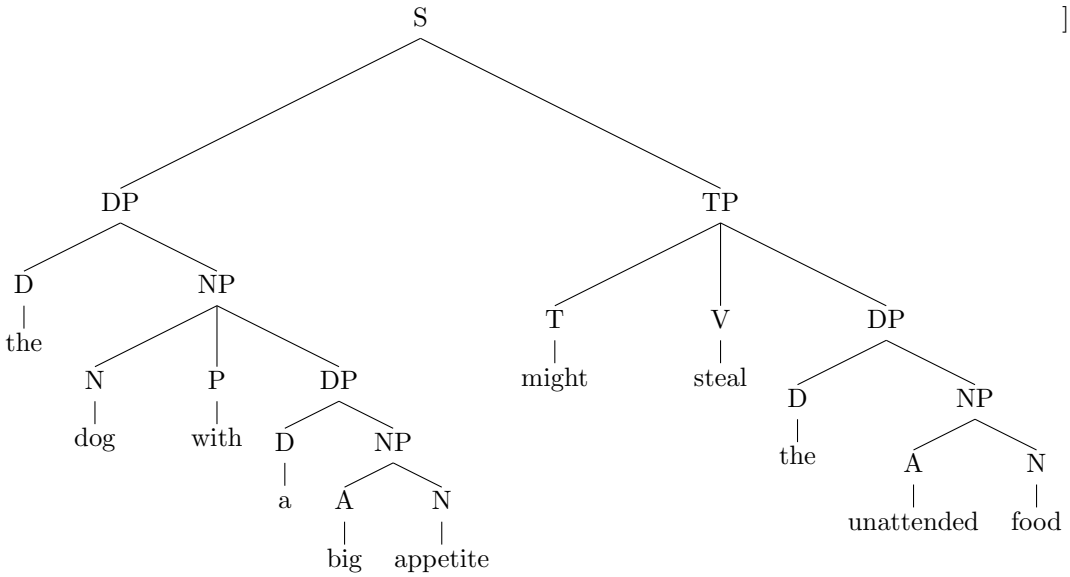
(iv) *the dog with a big*

Select the correct structure for this sentence, and state one reason why the other is wrong.

A.



B.



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A new category (10 points)

We slipped in a new category above, T. This stands for Tense. Elements of this category are words like *will, have, do, be, could, would, may, must*, etc. Briefly state why it is reasonable to create this new category by giving one piece of evidence to show that these words have a distribution that is slightly different than other verbs (such as *run, buy, give*, etc.)

Finer-grained constituency / subcategorization (10 points)

We saw in lecture that we had to be careful with substitutions because some words you substitute must take an argument and upon substituting that word, any leftover content from the original sentence not included in the substitution could be coerced into being an argument of the word substituted in. The example sentence in the slides was the one below, and we wondered whether or not *hit Janet with* was a constituent.

Alicia hit Janet with a broom.

So, we substituted the verb *buy* and saw that the sentence was actually grammatical, suggesting that *hit Janet with* was a constituent.

Alicia bought a broom.

Then, we reasoned that it wasn't actually a constituent because when substituting *buy* for *hit Janet with*, the verb *buy* coerced *a broom* to be its argument; this suggested that we weren't doing an appropriate test. We concluded that it wasn't a constituent because we substituted *sleep* for that same string of words, and then we saw ungrammaticality.

*Alicia slept the broom.

Consider the following pairs of sentences where there is a verb followed by a preposition. When considering the strings *blew out, blew up, turned off* and *rode out*, we see that the substitution with a single word verb phrase *sleep* does not work. Then, we see that the *there* substitution for a prepositional phrase doesn't work as well. Then then, we see that a substitution of a different type of verb works.

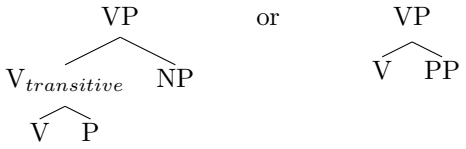
(i) He blew out the candle.
*He slept the candle.
*He blew there.
He lit the candle.

(ii) He turned off the light.
*He slept the light.
!He turned there. notated as ! because the meaning is not the same.
He turned the corner.

(iii) He blew up the relationship.
*He arrived the relationship.
*He blew there.
He rekindled the relationship.

(iv) He rode out the storm.
*He arrived the storm.
!He rode there.
He watched the storm.

What should we make of this? There are two salient options: one is that the structure of these verb and preposition sequences is [[V P] NP] and the other is that they are [V [P NP]] — both shown below for reference and intuition. Briefly explain why one hypothesis may be better than the other; a piece of evidence to support your argument is not necessary, but would be better.



Problem 2: Consequences of hierarchical structure — structural ambiguity (20 points)

There are many consequences of the theory we have built up: one of them is structural ambiguity. This occurs when the same string of words can have different meanings. We account for this by arguing that there is a difference in the structures, but these different structures just map on to the same linear ordering of words (i.e. the mapping from syntactic structures to well-formed strings of words is surjective). So, this gives us another reason to believe in hierarchical structure: it is relevant for the semantic component of the grammar. For this reason, many of the most prominent theories of formal semantics depend directly on the structures generated by the syntax (this type of semantic theory is called interpretative semantics, as the semantics 'interprets' syntactic structure).[1] Consider the following two sentences with contexts A and B which make one reading true and the other false.

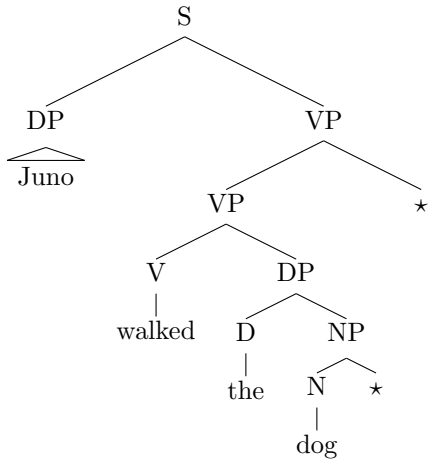
(i) Juno walked the dog in her room.
A: There is a dog in Juno's room, and she took it on a walk outside.
B: There was a dog outside that Juno found, and Juno walked it inside of her room.

(ii) Maggie instructed Mojo to pick up her sister at five o'clock.
A: When it was five o'clock, Maggie told Mojo to pick up her sister in ten minutes.
B: Maggie's sister gets out of school at five o'clock, and at noon she instructed Mojo to pick her up.

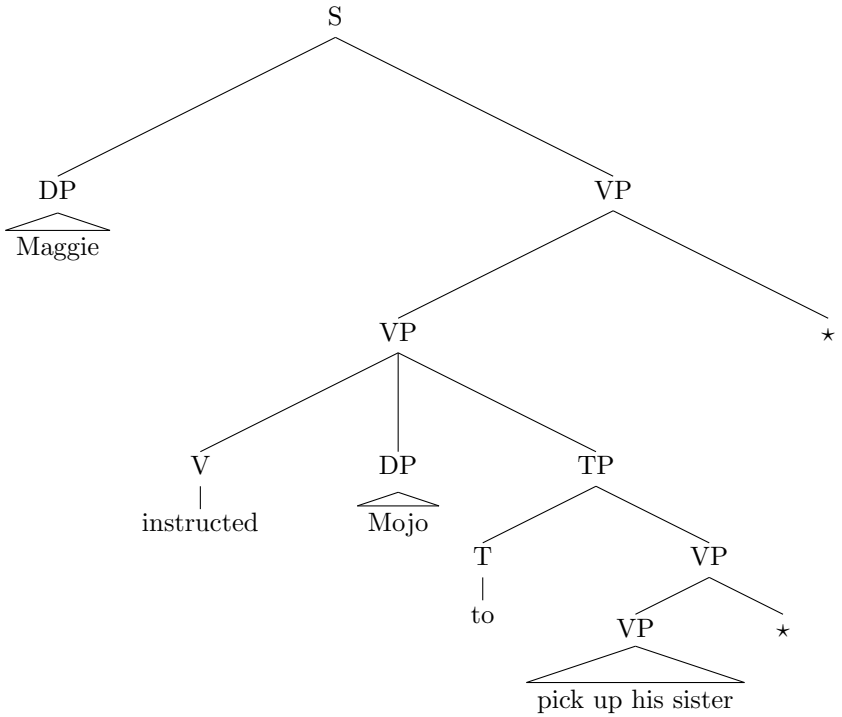
The semantic ambiguity occurs because our grammar generates structures where there are multiple positions in the structure at which the prepositional phrases can attach but the linear ordering of the words is the same. For the representation of each sentence, we've put a $\star$ where the prepositional phrase attaches for one of the readings. Label each star with an A or B to indicate which position of this attachment leads to which reading.

[1] This is not the only way of doing semantics, though. Others think that the syntax and semantics work directly in tandem to generate structure.

Sentence (i)



Sentence (ii)



RECALL: You are only responsible for answering **one** of the following questions.

Problem 3.1: Context-free grammar rules[2] in Malagasy (30 points)

Consider the following data from Malagasy, an Austronesian language spoken throughout Madagascar. In these examples, the glosses for some words have been simplified, omitting translations of some morphemes.

(1) namangy anay ny ankizy
visited us the children
'The children visited us.'

(2) mihinana ahitra ny omby
eat grass the cow
'Cows eat grass.'

(3) matory ny mpamboly
sleep the farmer
'The farmer(s) is/are sleeping'

(4) tonga taorian' ny rahalahi-ko ny mpampianatra antitra
arrived after the brother-my the teacher old
'The old teacher arrived after my brother.'

(5) namono ny akoho tamin' ny antsy ny vehivavy
killed the chicken with the knife the women
'The women killed the chicken(s) with the knife'

Please answer the following questions.

(i) What is the basic word order in Malagasy? (By word order, we mean any permutation of the letters S(ubject) V(erb) O(bject) — English is SVO)

(ii) Construct phrase structure rules for an NP [3].

(iii) Construct phrase structure rules for a VP [4].

(iv) Construct a phrase structure rule for the PP.

[2] **Context-free grammar rules are also called phrase structure rules.**
[3] Don't forget to include rules involving adjectives and determiners
[4] Don't forget to include rules for adjuncts involving PPs

(v) Construct a phrase structure rule for the S.

(vi) Bonus (3 points): Draw a tree for (4), using your rules.

Problem 3.2: Grammaticality and acceptability (30 points)

Use the phrase structure rules and category symbols given below to draw a tree structure for the sentence *The log buried in the sand decayed.*

D	N	C	P	D	N	V
the	log	buried	in	the	sand	decayed

NP $\longrightarrow$ N (CP)
DP $\longrightarrow$ D NP
PP $\longrightarrow$ P DP
VP $\longrightarrow$ V
CP $\longrightarrow$ C PP
S $\longrightarrow$ DP VP

Now, use the same phrase structure rules to draw a tree for *The horse raced by the grandstand tripped*. If the tree is the same as the one above, please feel free to say 'this is redundant' and proceed.

D	N	C	P	D	N	V
the	horse	raced	by	the	grandstand	tripped

Remember that we say a sentence is **grammatical** if it is generated by the syntax of a language. We might distinguish this from a notion of **acceptability**, which would measure whether the sentence sounds natural to native speakers of the language. Grammaticality and acceptability should be strongly correlated, but for some sentences, they do not match. Briefly explain how the sentence *The horse raced by the grandstand tripped* might be grammatical, but unacceptable.

Problem 3.3: Complementation v. adjunction (30 points)

We saw that some words must take arguments, such as the transitive verbs *devour* or *spare*, and some words optionally take arguments, such as the nouns *student* or *player*; in addition, we saw that modification of phrases is rampant and seemingly unrestricted. We can add as many verb or noun phrase modifiers as we want, and perhaps the only thing stopping us from doing so in speech behavior is the inability to maintain such a long working memory or sustain such a long breath.

Anderson walked the cat with a studded leash in his garden at his palatial estate with ...

Now, we are going to look closer into restrictions on arguments and modification. Take the following noun, *student* and the prepositional phrases *of linguistics, with a drone* and *at the beach* and list the six possible permutations of prepositional phrases after the noun. Mark each one as grammatical or ungrammatical.

1. student _____
2. student _____
3. student _____
4. student _____
5. student _____
6. student _____

What do the grammatical noun phrases have in common?

We currently have the rules NP $\rightarrow$ N and NP $\rightarrow$ NP PP to account for a noun phrase with just a noun and a noun phrase which is modified by a prepositional phrase. In light of the data above, we need another rule. What should that rule be? (Maybe don't think too much into this if it leads you astray because it isn't important, but there is a similarity of this problem to the one above with the verb and preposition sequences of *blew up, blew out, ...* The similarity is in the spirit and not really the technicality of this question).

Food for thought but not for grade: think about similarities can you draw to other things we have studied, such as subcategories of verbs and where modification (adjunction) can occur with their argument structures. With transitive verbs, think about the linear ordering of complements (arguments) v. adjuncts (modifiers) we have there.