Current Grammar

1. Organization

This is a quick summary of our theory, as of midterm week.   Our grammar has a few types of rules, which are organized roughly as in (1):

(1) Phrase Structure Rules ⇒ **Constituent Structure**   ⇐   Lexicon

                      Form Rules

                          ⇓
        Constituent Structure with morphological features

The CONSTITUENT STRUCTURE   is the representation that is the result of PHRASE STRUCTURE RULES and LEXICAL INSERTION.   The FORM RULES apply to add morphological features to some of the elements

2. Phrase Structure Rules

(2)   S   → NP VP
            NP   → {(DP) (AP) N (PP) , pn, Name}
            DP   → {D, NP Poss}
            VP   → {(V_m) (V_h) (V_b) V (NP) (AP) (PP),
                       VP {PP, Adv}}
   PP   → P NP
            AP   → (Int) A

3. Lexical Entries

Lexical entries contain everything that is idiosyncratic to particular lexical items.   This includes the phonological shape (which we represent with the standard English spelling), idiosyncratic morphological information (e.g. irregular verb forms, plurals, etc.), the syntactic category (N, V, P, etc.), subcategorization, and lexical semantics (what the word means).   Concentrating only on the phonology, syntactic category, and subcategorization, we see the following example:

(3)   *eat*, V, [__ (NP)]

The syntactic category and subcategorization information provides constraints on lexical insertion.   The lexical item can only be inserted under a terminal symbol that matches the

word's syntactic category.   Furthermore, if there is a subcategorizaton frame, it further restricts lexical insertion to structures that are consistent with the subcategorization.   Thus, because *eat* is of category V and subcategorizes for an optional NP, it must be inserted under a V that has either no sister or an NP sister:

(4) a.   b.
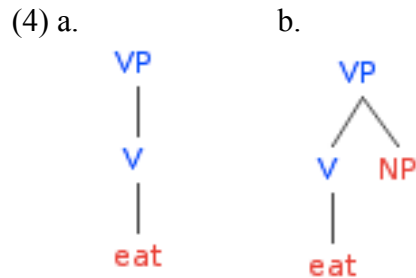
Here are some other lexical items and their subcategorizations:

(5) a. *faint*, V, [__]
      b. *see*,   V, [__NP]
      c. *fall*,   V, [__ (PP)]
      d. *send*, V, [__ NP (PP)]
      e. *put*,   V, [__ NP PP]
      f. *look*, V, [__ AP]

4. Arguments versus Adjuncts

The categories specified in a verb's subcategorization frame must be sisters of the verb in the Constituent Structure.   These are ARGUMENTS of the verb.   However, we have seen that any verb can occur with a wide range of optional PPs and Advs.   These are not specified in subcategorizations; rather, they are freely generated as ADJUNCTS.   Consider the phrase structure rule for VP:

(6) VP → {(V_m) (V_h) (V_b) V (NP) (AP) (PP),   - (i)
          VP {PP, Adv}}   -(ii)

This rule has two options: (i) a non-recursive rule that introduces a verb and its sisters, and (ii) a recursive rule that introduces a PP or AdvP as a VP sister.   (i) introduces the verb and its arguments, while (ii) introduces adjuncts.   The term ADJUNCT will be used in two ways: (a) to describe VP constituents that are not arguments, and (b) to describe a phrase structure configuration where an element is both sister and daughter to the same type of non-terminal; (b) is illustrated in (7):
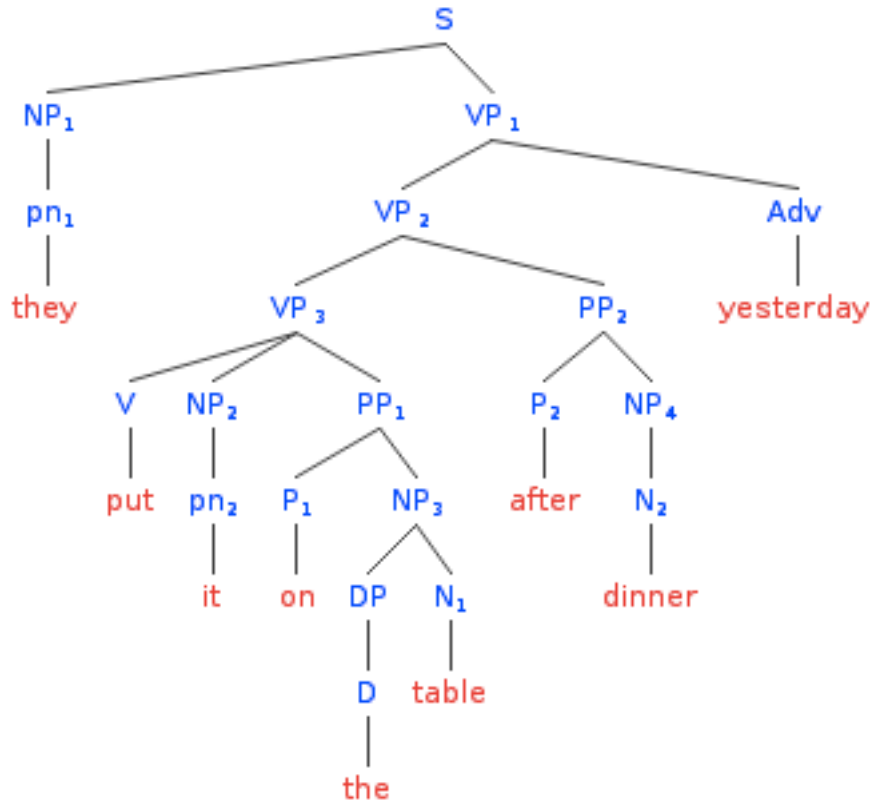
(7)

XP_1

XP YP

(YP is an ADJUNCT ; both its mother and sister are XPs – it is ADJOINED to XP)

The two XPs in (7) are called SEGMENTS of the adjunction structure.

Note that the PPs and AdvPs introduced by VP option (ii) are adjuncts in both senses.

The structure in (8) shows these two VP rules in action:

(8)

S
NP_1 VP_1
pn_1 VP_2 Adv
they VP_3 PP_2 yesterday
          V NP_2 PP_1 P_2 NP_4
          put pn_2 P_1 NP_3 after N_2
                    it   on   DP N_1 dinner
                              D   table
                              the

Note that arguments are predicted to form a single constituent with the verb, while adjuncts are predicted to be separate constituents from their VP sisters.   Thus, constituency tests, such as *wh*-clefts, can serve as a diagnostic for whether a PP should be analyzed as an argument or an adjunct.   Because the PP *on the table* is treated as an argument in (8), it is predicted that it should be impossible to cleft the remainder of the VP, stranding only *on the table*.   This

prediction is correct:

(9)   *What they did on the table after dinner yesterday was *put it.*

This is evidence that *put it* is not a constituent, hence, *on the table* is correctly analyzed as a sister to the verb - therefore, it is an argument.   On the other hand, since *after dinner* is analyzed as an adjunct in (8), it is predicted that its VP sister should be able to be a focus of a cleft - this is also a correct prediction:

(10) What they did after dinner yesterday was *put the book on the table*.

(10) shows evidence that *put the book on the table* is a constituent, separate from *after dinner*; hence, it provides evidence that *after dinner* is an adjunct.   Notice that when using the wh-cleft test as a diagnostic for whether a PP is an argument or an adjunct, **you do not focus the PP you are testing**; instead you focus everything in the VP up until the PP you are testing.   Also, bear in mind that adjuncts are always optional, while arguments can either be optional or obligatory.

5. Modifiers

Syntactic arguments are linked to semantic roles – that is, they identify the major players in the event described by the verb (more on this in coming weeks).   Other syntactic constituents semantically modify other entities.   For example, the AP in (11) modifies the head noun:

(11) *old* dogs

What this means is that the AP *old* restricts the class of dogs under discussion - hence the NP in (11) denotes the class of *old dogs*.

As part of the syntax-semantics interface, we need to specify under which structural relations modification is predicted.   In the structure (12) that our grammar assigns the NP in (11), we note that the AP is sister to the head N.   This suggests that modification is predicted when a modifier is sister to the thing it modifies

(12)

We can formalize our assumptions about modification through the Principle of Modification:

(13)   **Principle of Modification**: A modifier M is predicted to semantically modifies a head H if
       if M and H are sisters.
           Where the class of MODIFIERS includes DP, AP, Adv, non-argument PP, and Int
           and – a HEAD is either the obligatory terminal X in an XP or a segment of an
   adjunction structure.

     (A non argument PP is any PP that is not sister to a V – an adjunct or a PP inside an NP.)

We have seen how the AP is predicted to modify the N in (11).   Returning to (8), we see that
the adjunct PP *after dinner* is predicted to modify the VP *put it on the table*, because this VP is a
segment of an adjunction structure (and therefore counts as a head) and the two (PP and VP) are
sisters.   In this case, semantic modification means that the class of events that involve 'putting it
on the table' is narrowed down to just those that take place after dinner.   Similarly, the adjunct
Adv *yesterday* is predicted to modify the VP *put it on the table after dinner*.   Thus,
semantically, the class of events that involve 'putting it on the table after dinner' is narrowed
down to just those that take place 'yesterday'.

Our phrase structure rules assign a particular constituent structure to a sentence.   The Principle
of Modification makes predictions about how this phrase structure will be interpreted
semantically.   For example the sentence in (14) is STRUCTURALLY AMBIGUOUS (the PS rules
assign it two possible structures).

(14) The ranger saw the moose *with binoculars*.

a.
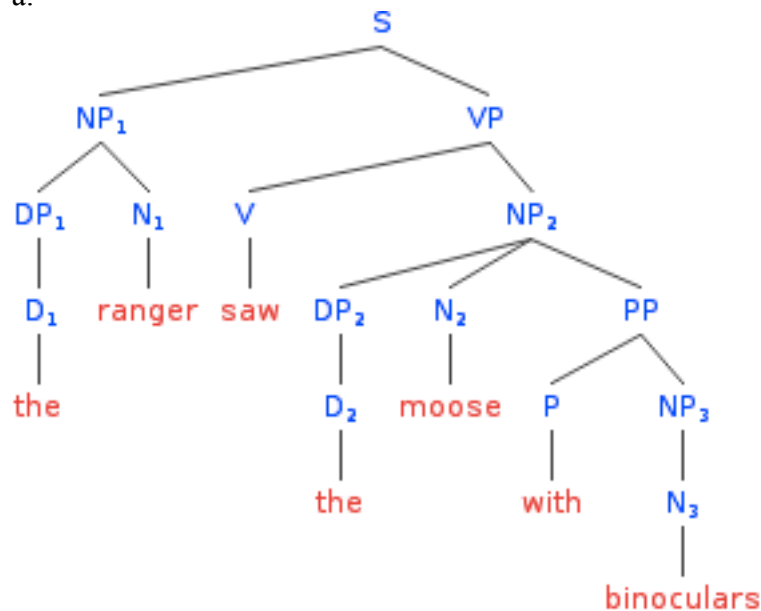
b.
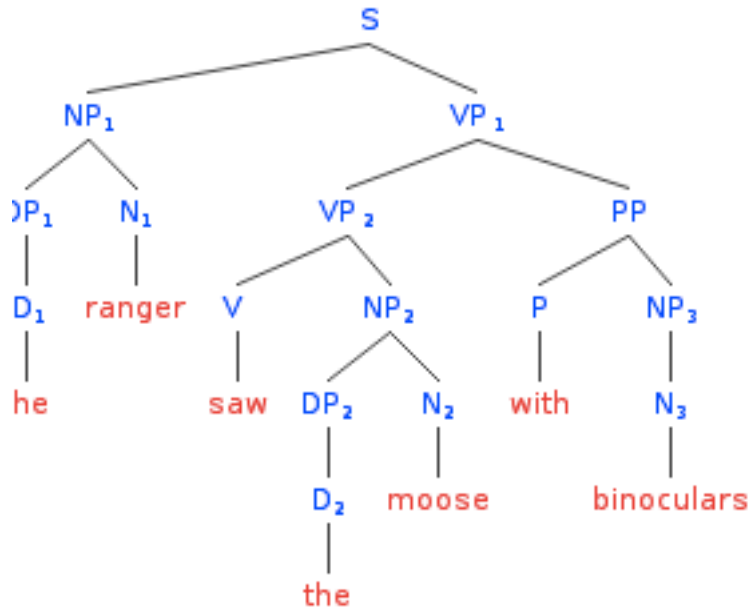
Each of these structures has the PP modifier *with binoculars*, but they are crucially sisters to different things - in structure (14a), the PP is a daughter of the NP (and sister to the N); it is predicted to semantically modify the head noun *moose* (narrowing down the class of moose to only those with binoculars); in (14b), the PP is an adjunct – adjoined to the VP *saw the moose*. In this structure, the PP is predicted to semantically modify its VP sister (the event of 'seeing the moose' is narrowed down to those that use binoculars).   Since native speakers find that the sentence is, in fact, semantically ambiguous, the syntactic structural ambiguity, along with the Principle of Modification correctly predicts this semantic ambiguity.   We have also seen correct predictions about semantic ambiguity follow from the structural ambiguity that our grammar predicts for some possessive constructions.

6. Form Rules

Form rules (also known as morphosyntactic rules) express generalizations about the form that a category has (= the way it is pronounced) depending on where it is located in Constituent Structure.   Form rules are particularly useful in determining verb forms.   Form rules add morphological features to a category depending on a category that is immediately adjacent to it. Later, the morphology interprets the features as instructions for how (the words in) this category should be pronounced.   Form rules are obligatory.   Form rules cannot alter phrase structure; they cannot delete or add structure.   They can only add morphological features.   A list of our current form rules are given in (15):

(15) **FORM RULES**: (all obligatory)

$V \rightarrow V_{\text{[PAST] or [PRESENT]}}$ / NP ____

$V \rightarrow V_{\text{[α NUMBER, β PERSON]}}$ / $NP_{\text{[α NUMBER, β PERSON]}}$ ____

$V \rightarrow V_{\text{[BARE]}}$ / V_m ____

$V \rightarrow V_{\text{[EN]}}$ / V_h ____

$V \rightarrow V_{\text{[ING]}}$ / V_b ____

Note: in these rules, 'V' stands for the syntactic categories, V, V_m, V_h, and V_b