• Complement options
• Clauses as complements

Background reading:
• CL Ch 5, §2
1. Review and context for this discussion

- Syntax is **creative**: humans can produce and understand sentences never seen before
- Linguists want to know: How does this work?
- Goal is to build a syntax **model** that can:
  - Produce only sentences that native speakers find **grammatical**
  - Make the right predictions about which words in a sentence form **constituents** (units, subgroups)
- We hypothesize that the characteristics of our model are like those of human mental grammar
1. Review and context for this discussion

• A big piece of our model of the syntax component of human mental grammar is the **X' schema**
  - Word combinations that **don’t fit** into the X' schema are predicted to be **ungrammatical**
  - Anything that is an **XP** in the X' schema is predicted to be a **constituent**

• If human speakers differ from our model in terms of what is grammatical or what is a constituent, we need to **adjust** our model!
1. Review and context for this discussion

- In this slide set, we are focusing on aspects of the syntax of **complements** inside the XP (phrase)

**X' schema:**

```
XP
   (SPECIFIER)  X'
   |
   X  (COMPLEMENT)
   |
   HEAD
```

- **complement**—a **phrase**-level category that “provide[s] information about entities and locations implied by the meaning of the head” (*CL*, p 173)
1. Review and context for this discussion

- Complement and specifier have different structure
  - A **complement** is a sister to the head — it is attached under the lowest X' level
  - A **specifier** is a daughter of the phrase — it is attached under the XP level

```
XP
   /       \
  /         \
(SPECIFIER) X'
     /     \ 
    /      \ 
   X       (COMPLEMENT)
        /   \
      HEAD
```
Here is a test for our model of the mental grammar:

- Are these sentences grammatical to a native speaker of English?

  1. *The puppy devoured.*
  2. *Oscar demanded.*
  3. *Grover slept the baby.*
2. Complement options

Here is a test for our model of the mental grammar:

• Are these sentences grammatical to a native speaker of English? | No!
  
  (1) *The puppy devoured.
  (2) *Oscar demanded.
  (3) *Grover slept the baby.

• Does the X' schema correctly predict this grammaticality judgment?
  - Try it: Can we draw ‘legal’ trees for these?
2. Complement options

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• Does the X' schema correctly predict this grammaticality judgment? | No!

  - Try it: Can we draw ‘legal’ trees for these?
    
    Yes! (oops) — model doesn’t match speakers here
2. Complement options

• The X' schema does not correctly predict that (1)–(3) are ungrammatical to native speakers
  → The trees *fit* the X' model!
  - We need to **modify our model** of mental grammar, because it isn’t predicting the same grammaticality judgments as native speakers
2. Complement options

• The X' schema does not correctly predict that (1)–(3) are ungrammatical to native speakers
  → The trees *fit* the X' model!
- We need to **modify our model** of mental grammar, because it isn’t predicting the same grammaticality judgments as native speakers

• We need to add another element to our model of syntax: **complement options**

A head can have **requirements** about complements: they can be mandatory, prohibited, or optional
2. Complement options

• These sentences are ungrammatical not because of their overall X' structure, but because the requirements of some head are not being met

(1) *The puppy devoured.

\( \text{devour} \_V \text{ requires NP complement in its VP} \)

(2) *Oscar demanded.

\( \text{demand} \_V \text{ requires NP complement in its VP} \)

(3) *Grover slept the baby.

\( \text{sleep} \_V \text{ does not permit NP complement in its VP} \)
2. Complement options

• Are complement options **predictable** from the meaning of the verb?

• No! Compare these two verbs:

  (1)  *The puppy devoured.* | NP complement **required**
  (4)  *The puppy ate.* | NP complement **optional**

• The meanings of these two verbs are very similar
  - But they have different complement requirements
2. Complement options

• Are complement options **predictable** from the meaning of the verb? | **No!**

• Where is **unpredictable information** represented in the linguistic knowledge of a native speaker?
2. Complement options

• Where is **unpredictable information** represented in the linguistic knowledge of a native speaker?
  - In the mental lexicon

• So: the **lexical entry** of a head contains...
  - its sound shape
  - its meaning
  - its irregular morphology, if any
  - its complement options
  - (...other unpredictable information...)
3. Verbs with two complements

• Some verbs have **two** mandatory complements

  (5)    I put the book on the table.  \( \text{put}_V: \text{NP, PP required} \)
  
  (5')   *I put the book.
  
  (5'')  *I put on the table.

  (note: this is not the particle-verb ‘put on’ meaning ‘to wear’)

• How do we include this in the X' schema, where there is only space for **one** complement in an XP?
3. Verbs with two complements

• How do we include this in the X' schema, where there is only space for one complement in an XP?
  - We could expand the lowest V' level to include both complements when a verb really does require both (see Figure 5.13 on p 181 of CL)
  - Alternative:
    We could put one of the complements outside the lowest V' level, and basically not allow the model to represent its status as a complement
3. Verbs with two complements

• This is a controversial topic in linguistic theory
  - Advantage of 3-branch V' approach:
    All **complements** are sisters of the head, so they all have the **same structure**
  - Disadvantage of 3-branch V' approach:
    Now, some X' nodes have >2 branches (otherwise, all nodes in the tree have at most 2 branches)

• We will follow the textbook and use the 3-branch V'
  - This prioritizes the **structural** definition of complement
Try it — How would you draw a tree for:

(6) Grover put the book on the table.

(answer is on next slide — but try it yourself first)
3. Verbs with two complements

- Both NP and PP complements are in the V'
4. A new kind of phrase...

• Our X’ schema as developed thus far can’t handle sentences like the following:

  (7) *The coach thinks* [ *that* the team should win ]
  (8) *The coach knows* [ *whether* the team should win ]

• What kind of **structure** can we see inside the brackets (especially if we ignore the underlined word)?
  - Are the structures inside the brackets constituents?
  - What relationship do they have to the V?
4. Clauses as complements

- These are cases where a whole clause (sentence) is the complement of a verb — that is, we have an embedded sentence

  (7) The coach thinks [that the team should win]
  (8) The coach knows [whether the team should win]

- There is often a word like *that, whether, if* that introduces an embedded sentence
  - These words belong to the word category known as complementizer (C)
4. Clauses as complements

• A C is the head of a CP (phrase) — this is the syntactic representation of an embedded sentence
  - A C takes a TP (a sentence) as its complement
  - (We’ll talk about specifiers for CP another day)

• A C is called a complement+iz(e)+er because it turns a TP (a sentence) into something that can be a complement (typically of a V)

• English also has another C that is a null or zero morpheme
  - Can you think of an example of an embedded sentence with a null C?
4. Clauses as complements

• Try it — How would you draw a tree for:

(9) The journalist told the spy that the mayor was angry.

- Hint: What is the word category for the highlighted words?

(answer is on next slide — but try it yourself first)
4. Clauses as complements

(9)

\[ TP \rightarrow T' \rightarrow V' \rightarrow CP \rightarrow C' \rightarrow TP \rightarrow T' \rightarrow VP \rightarrow +Pst \]

\[ NP \rightarrow N' \rightarrow Det \rightarrow N \rightarrow V \rightarrow Det \rightarrow N \rightarrow C \rightarrow Det \rightarrow N \rightarrow V \rightarrow A \rightarrow AP \rightarrow A' \]

*The journalist told the spy that the mayor was angry.*
4. Clauses as complements

• For this class, we will propose that every time a verb occurs with a CP, that CP is a complement
  
  - This means we will need to use the three-branch V' (double-complement) structure if we have [V NP CP] or [V PP CP] in our VP

• Note: There are two morphemes *that* in English
  
  - One is a Det
  
  - One is a C
  
  - How can you tell which is which? (Is there a difference in where they occur?)