Announcements

• Any quick questions on Assignment #5.
• Any comments on Monday’s talk on science vs. the humanities?
• Of genitives and Q-Non-Q coordination.

Transition from last class

• We made progress.
• Our theory of phrase structure is now simpler and more symmetrical across different categories (both lexical and functional).

Phrase structure under X’-Theory

Dividends of a simpler theory

• Learnability: Think child-like!
• Challenges of a simpler theory: Overgeneration.
• Constraining the theory is therefore needed.

Constraining X’-Theory

• X’-Theory has a lot going for it, but it overgenerates.
  - I slept.
  *I slept the dog.
  - Mary found the keys.
  *Mary found.
• Predicates have argument structure requirements, as you learned in Chapter 2.
Constraining X'-Theory

- Also:
  
  #My PC ate my lunch.
  #I drank the sky.
  #My syntax homework left early.

- Predicates have semantic **selectional restrictions** regarding their arguments.

Constraining X'-Theory

- The solution should be easy: X'-Theory has to reflect the lexical properties of predicates. Phrase structure must be constrained by argument structure.
- So, ‘find’ has to have a DP complement, whereas ‘sleep’ cannot have a complement.
- Argument structure is represented in the **lexicon** via so-called **theta grids**.

Introducing theta roles

- We won’t discuss this in detail, but the idea is simple: Arguments of predicates have some ‘semantic function’ with regard to the predicate. So:
  
  John kicked the ball.
- In the event of kicking expressed by the predicate, [John] is the *kicker* and [the ball] is the *kickee*.
- ‘kicker’ and ‘kickee’ express what we call **thematic relations/theta roles**.

Introducing theta roles

- The literature on theta-roles is rather messy but overall does not matter much for our purposes. But here are the main theta roles that you’ll likely come across:
  
  - Agent.
  - Experiencer.
  - Instrument.
  - Theme.
  - Goal.

Introducing theta roles

- The following sentences are bad because they violate the theta-grids of the predicate in each sentence.
  
  *I slept the dog.
  *Mary found.
  #My PC ate my lunch.
  #I drank the sky.
  #My syntax homework left early.

\[\text{\textit{love}}\]

\[
\begin{array}{||c|c||}
\hline
\text{Experiencer} & \text{Theme} \\
\hline i & j \\
\hline
\end{array}
\]

'Megan, loves Kevin, Jason'

\[
\begin{array}{||c|c||}
\hline
\text{Experiencer} & \text{Theme} \\
\hline i & j \\
\hline
\end{array}
\]

*
The theory design so far

- So, our theory of grammar has two main components: a **lexicon** (where words are listed) and a **computational system** that builds phrase structure in accordance with X'-Theory and constraints of argument structure (theta grids).

Linguistic variation

- This may be good and all, but what does it buy us when it comes to cross-linguistic variation? After all, languages are different. How does that happen?
- Let’s talk about some instances of word order variation in human languages and ways to explain them away via the notion of parameters that we introduced earlier in the semester.

Variation in basic word order

- Even though languages may allow several word orders in sentences, each language typically has one order that is used in “neutral” contexts. This is what is called **basic word order**.
- Consider English, for example: Which of these do you think represents the basic word order in English?
  - That I don’t like. **(OSV)**
  - Believe you me. **(VSO)**
  - Mary studies syntax. **(SVO)**

Basic word order

- If we confine ourselves to transitive clauses with three elements: Subject, Verb and Object (S, V, O), we should expect six possible basic word orders in human language:
  - **SVO**, **SOV**, **VSO**, **VOS**, **OVS**, **OSV**
- Do we find these attested in natural languages?
- You know from the midterm that we do, though with different frequencies.

Basic word order

- **SVO**: English (Germanic)
  - John loves Mary.
- **SOV**: Japanese (Japonic)
  - John-ga Mary-o butta
  - John-SU Mary-OB hit
  - “John hit Mary.”

Basic word order

- **VSO**: Welsh (Celtic)
  - Darllenais y llyfr
  - read I the book
  - “I read the book.”
- **VOS**: Malagasy (Austronesian)
  - manasa ni lamba ny vihavavy
  - wash the clothes the woman
  - “The woman is washing the clothes.”
Basic word order

- OVS: Hixkaryana (Carib)
  Kanawa yano toto
  canoe took person
  “The man took the canoe.”

- OSV: Nadëb (Maku)
  samũũ yĩ qa-wũh
  howler-monkey people eat
  “People eat howler-monkeys.”

Distribution of basic word order types in the world’s languages

<table>
<thead>
<tr>
<th>Word order</th>
<th># of Languages</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOV</td>
<td>180</td>
<td>45</td>
</tr>
<tr>
<td>SVO</td>
<td>168</td>
<td>42</td>
</tr>
<tr>
<td>VSO</td>
<td>37</td>
<td>9</td>
</tr>
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<td>VOS</td>
<td>12</td>
<td>3</td>
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<tr>
<td>OVS</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>OSV</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Distribution of basic word order types in the world’s languages

- As it turns out, typological studies reveal preferences for certain word orders than others.

- Consider the frequencies reported in Tomlin’s (1986) language sample, for example:

English vs. Japanese

- English:
  The child might think that she will show Mary’s picture of John to Chris.

- Japanese:
  Taroo-ga Hiro-ga Hanako-ni zibun-no
  Taroo-SU Hiro-SU Hanako-to self-POS
  syasin-o miseta to omotte iru
  picture-OB showed that thinking be
  “Taro thinks (literally, is thinking) that Hiro showed a picture of himself to Hanako.”

Word order correlates

<table>
<thead>
<tr>
<th>Element A</th>
<th>Element B</th>
<th>English</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>NP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>V</td>
<td>PP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>V</td>
<td>embedded CP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>P</td>
<td>NP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>N</td>
<td>PP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>C</td>
<td>embedded TP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>T</td>
<td>VP</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
</tbody>
</table>
Phrase structure: English vs. Japanese

- How do we express the difference between English and Japanese in terms of the X'-schema for phrase structure then?
- Obviously, in English, heads precede their complements; in Japanese heads follow their complements.

The head directionality parameter

- The difference between English and Japanese thus comes down to the “directionality” of the head within the phrase: heads are initial in English, but final in Japanese. This is referred to as the head directionality (HD) parameter:
  Heads occur initially (i.e., before their complements) or finally (i.e., after their complements) within phrase structure.

How about subjects?

- Notice that the HD parameter does not say anything about the position of subjects in sentences, since these are not complements (they are specifiers, remember?).
- This is actually good, since English and Japanese are both subject-initial. We don’t want to parameterize that. Rather, in both languages, the subject is the specifier of T: TP → NP T'

The X'-schema in English vs. Japanese

- The head-initial setting of the HD parameter holds in English, Edo, Thai, Khmer, Indonesian, Zapotec and Salish, while the head-final setting holds in Japanese, Lakhota, Turkish, Basque, Navajo, the languages of the Eskimos, and Quechua.

English vs. Japanese

- Now, let’s draw trees for English and Japanese to see how and why the two languages do look dramatically different on the surface.
English vs. Japanese

John said that Mary read the book.

John-ga Mary-ga hon-o yon-da-to it-ta
John-SU Mary-SU book-OB read-past-comp say-past

• Given the head directionality difference between English and Japanese, how would the tree for each sentence look like?

Head directionality

• The principles and parameters approach accounts for word order correlates in SVO and SOV languages in terms of the HD parameter.

• This simple difference in head directionality leads to a dramatic variation on the surface, due to its cumulative effect on all heads and complements in a language.

Let’s do VSO!

• Can X'-Theory help? Let’s try to draw a tree for a VSO sentence. Can we?
• Remember that 9% of the languages in Tomlin’s sample are VSO. Why do these languages exist? Do they follow from the head directionality parameter?
• Well, the first thing to notice is that in these languages the verb comes before the object. So, they must be ...
• Right, head-initial.
Deriving VSO basic word order
- But how can our theory of grammar “derive” VSO orders then?
- Head directionality can’t do it by itself. So, there must be another parameter or parameters involved. What could these be?

The subject placement parameter
- Let’s follow Mark Baker, the author of The Atoms of Language, and call it the Subject Placement parameter:
  “The subject of a clause is in the specifier of VP (as in Welsh), or in the specifier of TP (as in English).”

The subject placement parameter
- The subject placement parameter then has to do with the phrase structure rule that introduces subjects (for simplicity, the trees will not reflect bar-levels and will use NP rather than DP):

  English:
  \[ TP \rightarrow NP \; T' \]
  \[ T' \rightarrow T \; VP \]

  Welsh:
  \[ TP \rightarrow T \; VP \]
  \[ VP \rightarrow NP \; V' \]

The English-Welsh contrast

Welsh
- Given the subject placement parameter, the structure of Welsh sentences with auxiliaries becomes straightforward. Here’s an example, followed by a tree:
  (1) Naeth y dyn brynu gar
  past the man buy car
  “The man bought a car.”
Welsh

- Ok, but how about this other Welsh example, then?
  (2) bryn-odd y dyn gar
  buy-Past the man car
  “The man bought a car.”
- There’s no overt auxiliary here, so how does the verb come to precede the subject?

The verb movement parameter

- I guess it’s time for me to come clean on how T and V eventually get together. It turns out there are two options, thereby formulating another parameter: The **verb movement parameter**:
  “V moves up to T (Welsh), or T moves down to V (English).”

The verb movement parameter

- So, the reason why Welsh is always verb-initial is because the T head has to host a verb (either an auxiliary verb, or a main verb, if an auxiliary head is absent).
- The tree structures for the Welsh example in (2) before and after movement takes place would be as follows:

Welsh

- VSO languages like Welsh and Irish are thus the result of the interaction between two parameters: the **subject placement** parameter and the **verb movement** parameter.
- If you understood these syntactic gymnastics, you must be asking: How do we prove this? Is there any evidence for the assumption that in English T moves down to V?
- Luckily, there is. Let’s contrast English and French.

Parlez vous français?

- Compare the position of adverbs in English and French:
  John often kisses Mary.
  *John kisses often Mary.
  *Jean souvent embarasse Marie.
  Jean often kisses Marie.
  Jean embarasse souvent Marie.
  Jean kisses often Marie.
Interim summary

• So, here’s the story:
  • English, French, and Welsh, all share the same head-initial setting for the HD parameter, as opposed to Japanese/Turkish/Navajo, which are all head-final.
  • But:

Sprechen Zie Deutsch?

a. Ich las letztes jahr diesen Roman
   I read last year this book
b. Diesen Roman las ich letztes jahr
   this book read I last year
c. Letztes jahr las ich diesen Roman
   last year read I this book

• So, what do you notice here about the position of the verb in German?

German: The V2 effect

• The verb is always the second constituent in German sentences, following the subject, or a fronted object, or an adverbial.
  • If that is the case, then it must be that German, like French, has V-to-T movement.
  • Unlike French, though, German can even have the verb before the subject.
  • Hmmm ... what’s going on here?
German: The V2 effect

• If V can move up to T in declarative clauses (as in French and Welsh), one can imagine a language where V can keep moving all the way up to C, right?
• And that seems to be what is happening in German main clauses. Let’s call this the V2 parameter. The parameter also holds in Scandinavian languages.

German: The V2 effect

German (sketchy since German word order is a matter of debate)

Parameters and languages so far

<table>
<thead>
<tr>
<th>Parameter</th>
<th>English</th>
<th>Japanese</th>
<th>French</th>
<th>German</th>
<th>Welsh</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD parameter</td>
<td>Head-initial</td>
<td>Head-final</td>
<td>Head-initial</td>
<td>?</td>
<td>Head-initial</td>
</tr>
<tr>
<td>Subject placement</td>
<td>Specifier of TP</td>
<td>Specifier of TP</td>
<td>Specifier of TP</td>
<td>Specifier of TP</td>
<td>Specifier of VP</td>
</tr>
<tr>
<td>Verb movement</td>
<td>T down to V</td>
<td>?</td>
<td>V up to T</td>
<td>V up to T</td>
<td>V up to T</td>
</tr>
<tr>
<td>V2 parameter</td>
<td>No</td>
<td>?</td>
<td>No</td>
<td>Yes</td>
<td>?</td>
</tr>
</tbody>
</table>

Next class agenda

• Movement: DP and wh-movement.