Main question: How are SVO and SOV languages different?

- Japanese and English look very different on the surface, but the parametric approach attributes that to a single difference in head directionality: initial in English, final in Japanese.
- To see how, let's review the data quickly and then introduce some syntax.

### 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-POSS
  syasin-o miseta to omette iru
  “Taro thinks (literally, is thinking) that Hiro showed a picture of himself to Hanako.”

### Word order correlates in English and Japanese

<table>
<thead>
<tr>
<th>Element A</th>
<th>Element B</th>
<th>English</th>
<th>Japanese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td>Direct Object</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>Verb</td>
<td>Pre-/post-position phrase</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>Verb</td>
<td>Embedded Clause</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>Pre-/post-position</td>
<td>Related Noun Phrase</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>Noun</td>
<td>Pre-/post-position phrase</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>Complementizer</td>
<td>Embedded Clause</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
<tr>
<td>Auxiliary</td>
<td>Main verb</td>
<td>A precedes B</td>
<td>A follows B</td>
</tr>
</tbody>
</table>

### A crash course in theoretical syntax

- Syntax is the study of how words combine together to form larger units in human language.
- The larger units are typically called phrases and sentences, and the use of these combinatorial rules creates “structure”.
- In short, then, syntax is the study of structure in human language.

### Constituency

- Consider the following sentence:
  The linguist has drawn a tree.

- If I ask you to divide the sentence into two units, where would you draw the line?

- Right:
  (1) The linguist | has drawn a tree.
Constituency

- Intuitively, we “know” that certain words “hang together” in the sentence to the exclusion of others. We call such strings of words “constituents”.

- And we can actually determine constituency by means of “objective” diagnostic tests. Let’s consider a couple of these tests.

Substitution test for constituency

If a string of words can be replaced by one word and the result is a grammatical sentence while preserving the original meaning, then it must be that this string of words comprises a “constituent”.

Fronting test for constituency

If a string of words can be fronted in a sentence, then this string of words comprises a “constituent”:

(4) a. I first met him [at the party].
At the party I first met him.

b. I first met [him at the party].
*Him at the party I first met.

Substitution tests for constituency

(2) a. [The linguist] has drawn a tree.
 validated
He has drawn a tree.

b. The [linguist has drawn a tree].
*The ???

c. [The linguist has] drawn a tree.
*??? drawn a tree.

d. [The linguist has drawn a] tree.
*??? tree.

(3) a. [The tall boy] ate the burrito.
 validated
He ate the burrito.

b. The tall boy ate [the burrito].
The linguist ate it.

c. [The tall boy ate] the burrito.
*??? the burrito.

d. The tall boy [ate the burrito]
The tall boy did.

e. The tall boy ate the burrito [in the classroom]
The tall boy ate the burrito there.

Fronting tests for constituency

c. I knew he would [eat the whole pizza], and eat the whole pizza he did.

d. *I knew he [would eat the] whole pizza, and would eat the he did whole pizza.

e. I read [this book by Chomsky] before.
This book by Chomsky I read before.

f. I read this book [by Chomsky before].
*By Chomsky before I read this book.
Fronting test for constituency

- Once we determine that a string is a constituent, the next step is to determine its syntactic type, or category.
- As we mentioned last time, a string of more than one word will have a head and a complement, and the syntactic category of the whole string is that of the head:

Phrase structure grammar

- So, “picture of the boys” is a noun phrase (NP), since the head of the string is the N “picture”.
- “ate the sandwich”, by contrast, is a verb phrase, since the head of the string is the V “ate”.
- “in the office” is a prepositional phrase (PP) since the head of the string is the P “in”.

Phrase structure grammar

- We express this head-complement relationship by means of rewriting rules, which we call phrase structure rules, as in the following examples:
  
  NP → N PP
  VP → V NP
  PP → P NP
  etc.

Phrase structure grammar

- Notice that while complements may be obligatory (depending on the requirements of the head), a head may also have optional “satellite” elements, e.g., John’s picture of the boys quickly ate the sandwich right into the office
- These optional elements are called specifiers.

X'-schema for phrase structure

- To generalize, using X as a variable ranging over all heads, every phrase has the internal structure below:

\[
(5) \quad XP \quad \begin{array}{c}
\text{Specifier} \\
\quad \quad \quad X'
\end{array} \quad \begin{array}{c}
\text{X} \\
\quad \quad \quad \text{complement}
\end{array}
\]

- We can then apply this X'-schema to all heads.

\[
(6) \quad NP \quad \text{John’s} \quad \text{picture} \quad \text{of} \quad \text{the} \quad \text{boys}
\]
And yet another category

- Consider now sentences such as
  (9) John will eat the pizza.
- Since we know that “John” is a constituent, it must be that “will eat the pizza” is also a constituent. But what kind of constituent is it?
- Suppose we assume that the head here is the auxiliary verb “will”, whose complement is the VP “eat the pizza”, and whose specifier is the subject “John”, as shown in the following diagram:

- The structure of “John ate the pizza” will look like that, then:
  (12) AuxP
    NP John
    Aux past
    V eat
    VP NP the pizza

Question: How does “eat” and “past” become the word “ate”? 
One more category

- Consider the embedded clause in
  (13) John says [that he will eat the pizza].

- Now, the embedded clause looks identical to the AuxP from the previous slide, except that it has an extra element, that is, the complementizer that, which carries the so-called *illocutionary force* of the clause, e.g., whether the clause is declarative or interrogative.

---

A mini-grammar for English phrase structure

- So putting all of this together, here's a mini-grammar for English phrase structure, where bracketing indicates optionality:

\[(16)\]

\[
\begin{align*}
CP & \rightarrow C \text{ AuxP} \\
\text{AuxP} & \rightarrow NP \text{ Aux'} \\
\text{Aux'} & \rightarrow \text{Aux VP} \\
\text{VP} & \rightarrow V (NP) \\
\text{VP} & \rightarrow V (PP) \\
\text{VP} & \rightarrow V (CP) \\
NP & \rightarrow N (PP) \\
PP & \rightarrow P NP
\end{align*}
\]
A mini-grammar for English phrase structure

- In addition, we have to assume a set of rules that insert words under "terminal" nodes in the tree, e.g.,
  - N → {man, dog, justice, ...}
  - V → {love, hit, leave, ...}
  - Aux → {will, must, Past, Future, ...}
  - etc.
- As you should expect, these are called **lexical insertion** rules.

The head directionality parameter

- Now, let's remind ourselves of the head **directionality parameter** from last time:
  - Heads occur initially (i.e., before their complements) or finally (i.e., after their complements) within phrase structure.
- Since Japanese is a head-final language, the mini-grammar for Japanese phrase structure will have the same rules as in English, except for the position of the head:

A mini-grammar for Japanese phrase structure

(17)

<table>
<thead>
<tr>
<th>CP</th>
<th>AuxP</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AuxP</td>
<td>NP</td>
<td>Aux'</td>
</tr>
<tr>
<td>Aux'</td>
<td>VP</td>
<td>Aux</td>
</tr>
<tr>
<td>VP</td>
<td>(NP)</td>
<td>V</td>
</tr>
<tr>
<td>VP</td>
<td>(PP)</td>
<td>V</td>
</tr>
<tr>
<td>VP</td>
<td>(CP)</td>
<td>V</td>
</tr>
<tr>
<td>NP</td>
<td>(PP)</td>
<td>N</td>
</tr>
<tr>
<td>PP</td>
<td>NP</td>
<td>P</td>
</tr>
</tbody>
</table>

So, why do English and Japanese look dramatically different then?

- Compare English and Japanese again:
  - John said that Mary read the book.
  - John-ga Mary-ga hon-o yon-da-tu it-ta
- Given the PSRs for both English and Japanese, the structural trees will look as follows:
The principles and parameters approach thus accounts for word order correlates in SVO and SOV languages in a straightforward manner. Notice also how a 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.

In addition, since the HD parameter does not apply to subjects, it follows that both English and Japanese will behave the same with regard to the position of subjects in sentences. Finally, since the HD parameter has two settings only, it predicts two types of languages, SOV and SVO, which is exactly what we find in language samples: these two orders represent about 90% of human languages.

But equally important, the HD parameter also predicts the non-existence or at least the rarity of Japenenglish-type languages, i.e., languages in which the verb precedes the object but that are also postpositional, or languages in which the verb follows the object but that are also prepositional, (in contradiction with Greenberg’s *Universal 4*).

As Baker notes, in such languages we expect to find structures like this:
- Chris put the book the table on.
- Chris the book on the table put.

But Japenenglish-type languages are very rare, if existent (but see assignment #1). This is good news for the parametric approach since Japenenglish is predicted to be an unattested human language under this approach.

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*.

But then the main difference in their word order as opposed to SVO and SOV languages is that the subject follows, rather than precedes, the verb.

So, how can our phrase structure grammar “derive” VSO orders then?
— Head directionality can’t do it. So, there must be another parameter involved. What could that be?
The subject placement parameter

- This is what Baker calls the Subject Placement parameter (p. 130):
  "The subject of a clause is in the specifier of VP (as in Welsh), or in the specifier of AuxP (as in English)."

The English-Welsh contrast

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

- Ok, but how about this other Welsh example, then?
  (23) bryn-odd y dyn gar
      "The man bought a car."

Welsh

- There’s no auxiliary here, so how come the verb precedes the subject?
- Maybe time for another parameter?
The verb attraction parameter

- “Aux attracts V to its position (Welsh), or V attracts Aux to its position (English).”

Quick note on “movement”

- Importantly here, we need a second type of rule: A rule that can derive one tree structure from another tree structure.
- Formalists typically talk about that in terms of “movement”.
- So, in Welsh, V “moves” to Aux, but in English Aux “moves” to V.

Welsh

- The tree structures for the Welsh example in (23) before and after movement takes place would be as follows:

In sum, VSO languages like Welsh and Irish are possible because of the interaction between two parameters: the subject placement parameter and the verb attraction parameter.

But if Mr or Mrs. Advocate were here, they would’ve asked if there is any evidence for the existence of these parameters in natural languages other than in Welsh and Irish.

Luckily, there is. And in familiar languages.
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.

Verb position in English vs. French

- We mentioned before that adverbs are sometimes in the specifier of VP. So, given the contrast between English and French in adverb position with regard to the main verb, it must be that V is outside VP in French, but inside VP in English.
- Since verbs all start in the same position, the only explanation has to be that in French verbs move “up” to Aux, but in English Aux moves “down” to V.

Verb position in English vs. French

<table>
<thead>
<tr>
<th>English</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
<td>CP</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>AuxP</td>
<td>AuxP</td>
</tr>
<tr>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td>John</td>
<td>Jean</td>
</tr>
<tr>
<td>Aux</td>
<td>Aux</td>
</tr>
<tr>
<td>-s</td>
<td>present</td>
</tr>
<tr>
<td>Adv</td>
<td>Adv</td>
</tr>
<tr>
<td>often</td>
<td>souvent</td>
</tr>
<tr>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>kiss</td>
<td>embarasser</td>
</tr>
<tr>
<td>Mary</td>
<td>Marie</td>
</tr>
</tbody>
</table>

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, which is head-final.
  - But:

Interim summary

- Welsh differs from both English and French in having the subject placed inside the VP. English and French subjects are in the specifier of AuxP.
- English differs from both French and Welsh in having Aux move down to V. In French and Welsh V moves up to Aux.
- The interaction of parameters give us English, Japanese, Welsh, and French. Any more parameters today?

One more before we go

- If V can move up to Aux, one can imagine a language where it can keep moving all the way up to C, right? At least, the system we’re developing does not prevent that from happening.
- So, are there languages where the verb ends up in C?
- Obviously, this language can’t be English or French, since both have the subject before the verb.
- Well, how about this language:
Sprechen zie Deutsch?

Ich las letztes jahr diesen Roman
I read last year this book
Diesen Roman las ich letztes jahr
this book read I last year
Letztes jahr las ich diesen Roman
last year read I this book

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

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 move up to Aux.
➢ Unlike French, though, German moves V further up to C, hence its occurrence following any material in the specifier of C.

German (sketchy since it’s part of your assignment)

German: The V2 effect

CP
Specifier
Diesen Roman
C’
AuxP
Diesen Roman
C
ich
Aux’
ich
V

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 parameter</td>
<td>Specifier of AuxP</td>
<td>Specifier of AuxP</td>
<td>Specifier of AuxP</td>
<td>?</td>
<td>Specifier of VP</td>
</tr>
<tr>
<td>Verb attraction parameter</td>
<td>Aux down to V</td>
<td>?</td>
<td>V up to Aux</td>
<td>V up to Aux</td>
<td>V up to Aux</td>
</tr>
<tr>
<td>V2 parameter</td>
<td>No</td>
<td>?</td>
<td>No</td>
<td>Yes</td>
<td>?</td>
</tr>
</tbody>
</table>

Agenda for next class

➢ VOS/OVS/OSV languages: Malagasy/Hixkarayana/Nadêb
➢ A quick introduction to morphology: Synthesis and fusion continua (Whaley chapters 7 and 8)
➢ Languages with freedom of word order (aka nonconfigurational languages): Warlpiri and polysynthetic languages (Mohawk) (Baker chapter 4).