

# INTD0112 Introduction to Linguistics

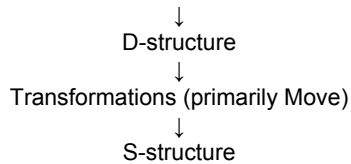
Lecture #14  
April 10<sup>th</sup>, 2007

## Announcements

- Your research paper proposal is due today.
- Part II of the *Human Language Series* movie on language acquisition is on reserve now. You're encouraged to watch it. Homework #5 will have questions on issues raised and discussed in that part.
- Any questions on Homework #4?

## Syntax cont.: The grammar model

Phrase structure grammar (or Merge + X'-theory)



- But if this language model is universal, why do languages differ then?

## UG: principles and parameters

- Languages differ because UG (*Universal Grammar*, remember?) includes two components: **principles** and **parameters**. The principles are invariant; they hold in all languages. Parameters are also universal, but unlike principles, they come in the form of (typically binary) options, and this is where the locus of cross-linguistic variation exists.

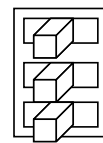
## UG: principles and parameters

- As Chomsky notes:

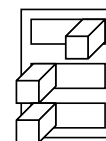
"We can think of the initial state of the faculty of language as a fixed network connected to a switch box; the network is constituted of the principles of language, while the switches are the options to be determined by experience. When the switches are set one way, we have Swahili; when they are set another way, we have Japanese. Each possible human language is identified as a particular setting of the switches—a setting of parameters, in technical terminology."

## UG: principles and parameters

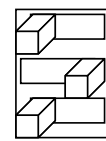
- Or, as Paul Haegstrom represents this graphically:



UG



Japanese



English

## UG: principles and parameters

- Under this approach, a child's job is to "set" the value of each parameter on the basis of the **primary linguistic data** (PLD) around her.
- This should explain the role of the environment in language acquisition: If you're born in Beirut, then your PLD are different from the PLD of someone born in Moscow, hence the acquired system will be different.
- Language acquisition is thus the result of interaction between *nature* (principles and parameters) and *nurture* (PLD).

## One UG principle: structure-dependency

- To illustrate UG principles, we discuss the **structure-dependency** principle, which states that rules in human languages have to make reference to sentence structure (and not to linear order for example).
- On Thursday, we'll discuss another example of universal principles of grammar.

## One UG principle: structure-dependency

- Let's consider how a child can learn the rule for yes-no question formation in English on the basis of the PLD around her. Here's a couple of sentences in the input:

*John must leave.*

*Must John leave?*

## One UG principle: structure-dependency

- Hypothesis #1 (structure-independent): Invert the first word and the second word to form a yes-no question.
- Does it work?  
Well, let's expand the PLD space:  
*This boy must leave.*  
*\*Boy this must leave?*
- Something went wrong here, and it wasn't the child's error. Children never make these mistakes.

## One UG principle: structure-dependency

- Hypothesis #2 (structure-independent): Move the auxiliary verb to the front to form a yes-no question.
- Does it work?  
*The boy should have left.*  
✓*Should the boy have left?*
- But:  
*\*Have the boy should left?*
- So, the modified rule may generate ill-formed questions. Can we do better?

## One UG principle: structure-dependency

- Hypothesis #3 (structure-independent): Move the first auxiliary verb to the front to form a yes-no question.
- Does it work? How about this:  
*The boy who must leave has been sick.*  
*\*Must the boy who leave has been sick?*
- This is not English, obviously. So, something went wrong again.

### One UG principle: structure-dependency

- Hypothesis #4 (structure-dependent): Invert the auxiliary verb of the matrix sentence and its subject to form a yes-no question.
- Does it work?  
*The boy who must leave has been sick.*  
*Has the boy who must leave been sick?*
- That worked.

### One UG principle: structure-dependency

- As it turns out, children never produce any of the bad forms above. Why?
- Because hypotheses like 1, 2 and 3, are not even considered. Why?
- Because they are not structure-dependent. Structure-dependency is a universal principle of grammar, and as such constrains language acquisition by children.

### Ok, what's a parameter then?

Can you give us an example?

### The null subject parameter

- Consider these data from English, French, and Italian, all of which allow SV (=Subject-Verb) orders:
  - (1) John will leave.
  - (2) Jean arrivera.                      French  
    Jean will-arrive
  - (3) Gianni verrá.                      Italian  
    Gianni will-come.

### The null subject parameter

- Italian, however, allows the subject of a tensed sentence to be omitted, an option that is not available in English or French:
  - (5) \*Will leave.
  - (6) \*Arrivera.                      French  
    will-arrive
  - (7) Verrá.                      Italian  
    will-come.

### The null subject parameter

- This is an example of *parametric variation*:  
“In some languages (e.g., French, English, Edo) every tensed clause must have an overt subject. In other languages (e.g., Italian, Spanish, Romanian, Navajo, Arabic) tensed clauses need not have an overt subject.”
- This case of cross-linguistic variation is typically referred to as the **null subject (NS) parameter**.

### The null subject parameter

- The children's task in acquiring their language is to "set" the parameter value on the basis of the PLD in their linguistic environment.
- The interesting thing about the null subject parameter is that it also explains to us a "cluster" of differences between these two "types" of languages.

### The null subject parameter

- For one thing, unlike English and French, Italian also allows VS orders:
  - (8) \*Will leave John.
  - (9) \*Arrivera Jean.                      French  
will-arrive Jean
  - (10) Verrá Gianni.                      Italian  
will-come Gianni.

### The null subject parameter

- Similarly, an overt "dummy" subject with "weather verbs" is required in both English and French, but not in Italian:
  - (11) It is raining.
  - (12) Il pleut.                      French  
it rains
  - (13) Piove.                      Italian  
Is-raining.

### The null subject parameter

- Also, subject wh-questions that, as we've seen earlier in the semester, are disallowed in English (and French) when the embedded clause has "that," are fine in Italian:
  - (14) \*Who did you say that — saw Chris in the park?
  - (15) \*Qui veux-tu que — épouse Jean?  
who want-you that marries Jean?
  - (16) Chi crede che — verrá?  
who you-think that will leave

### The null subject parameter

- There are three reasons why linguists think this "cluster" of linguistic properties are interrelated.
- First, Spanish and Romanian behave exactly like Italian with regard to the three properties above, so it cannot be an accident that such properties occur or do not occur together in natural languages.

### The null subject parameter

- Second, Old French was exactly like Italian, i.e., it had all the properties discussed above. At one point in its historical development, though, French became just like English, i.e., it lost all these three properties. This makes sense only if there is a correlation in the occurrence or lack of occurrence of such syntactic properties.

## The null subject parameter

- Third, the properties are indeed interrelated, since they all involve the notion “subject of the sentence” in one way or another. Without getting into technical detail, somehow the “on”-setting of the NS parameter allows subjects to behave in a way that is not possible when the parameter is assigned an “off” value.

## The null subject parameter

- The parametric approach thus seems promising: Not only does it tell us why languages differ with regard to a particular property, but it also ties together what seem to be (at least on the surface) a set of unrelated linguistic phenomena.
- Now, can we account for other aspects of syntactic variation in human language in terms of parameters? We spend the rest of today’s lecture discussing this.

## Variation in basic word order

- One obvious difference between human languages has to do with **word order**.
- Even though languages may allow several word orders in their 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?

Seafood I like.	(OSV)
Believe you me.	(VSO)
John plays the piano.	(SVO)

## Basic word order

- If we confine ourselves to transitive clauses with three elements: Subject, Verb and Object (S, V, O), then 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?
- Actually, we do.

## Basic word order

- SVO: English  
John loves Mary.
- SOV: Japanese  
John-ga Mary-o butta  
John-SU Mary-OB hit  
“John hit Mary.”

## Basic word order

- VSO: Welsh  
Darllenais I y llyfr  
read I the book  
“I read the book.”
- VOS: Malagasy  
manasa ni lamba ny vihavavy  
wash the clothes the woman  
“The woman is washing the clothes.”

## Basic word order

- OVS: Hixkaryana  
 Kanawa yano toto  
 canoe took person  
 "The man took the canoe."
- OSV: Nadëb  
 samüüy yi qa-wùh  
 howler-monkey people eat  
 "People eat howler-monkeys."

## 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:

## Distribution of basic word order types in the world's languages

Word order	# of Languages	%
SOV	180	45
SVO	168	42
VSO	37	9
VOS	12	3
OVS	5	1
OSV	0	0

## Distribution of basic word order types in the world's languages

- With greater than chance frequency, then, SVO and SOV orders indicate a clear preference for word order in natural languages.
- But what's even more interesting is that each of these two common orders has a set of **correlates** that go with it. To see what this means, let's compare English and Japanese.

## 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  
 picture-OB showed that thinking be  
 "Taro thinks (literally, is thinking) that Hiro showed a picture of himself to Hanako."

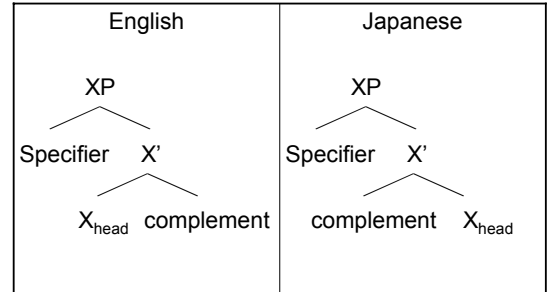
## Word order correlates

Element A	Element B	English	Japanese
V	NP	A precedes B	A follows B
V	PP	A precedes B	A follows B
V	embedded CP	A precedes B	A follows B
P	NP	A precedes B	A follows B
N	PP	A precedes B	A follows B
C	embedded IP	A precedes B	A follows B
I	VP	A precedes B	A follows B

## Phrase structure in 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 X'-schema in English vs. Japanese



## Phrase structure rules in English vs. Japanese

Sample English PSRs	Sample Japanese PSRs
CP → C IP	CP → IP C
IP → NP I'	IP → NP I'
I' → I VP	I' → VP I
VP → V NP	VP → NP V
VP → V PP	VP → PP V
VP → V CP	VP → CP V
NP → N PP	NP → PP N
PP → P NP	PP → NP P

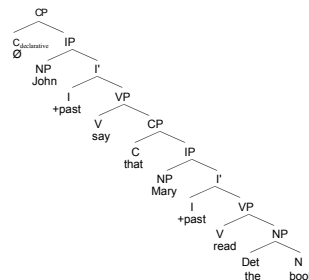
## The head directionality parameter

- This is another instance of parametric variation. It's called the **head directionality parameter (HD parameter)**.
- Notice that even though the difference between English and Japanese is in the setting of a single parameter, the resulting cumulative effect across all heads and their complements leads to massive variation between the two languages on the surface. To see that, let's draw trees for two sentences from both languages.

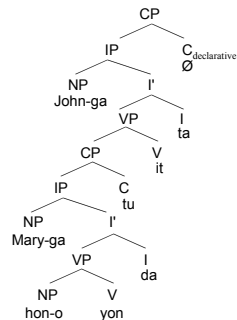
## The head directionality parameter

- Compare English and Japanese again:  
John said that Mary read the book.
- John-ga Mary-ga hon-o yon-da-tu it-ta  
John-SU Mary-OB book-OB read-past-comp say-past
- Given the PSRs for both English and Japanese, the structural trees will look as follows:

## First: English



## Second: Japanese



## So, ...

- The principles and parameters approach accounts for word order correlates in SVO and SOV languages in a straightforward manner.
- Notice also how the simple difference in head directionality leads to a dramatic variation on the surface, due to its cumulative effect on all heads and their complements in a language.

## And ...

- 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.

## Japenenglish!

- 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.

## Japenenglish!

- In Japenenglish-type 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. This is good news for the parametric approach since Japenenglish is predicted to be an unattested human language under this approach.

## How about VSO languages, then?

- 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 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

- 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 IP (as in English).”

## The subject placement parameter

- The subject placement parameter then has to do with the phrase structure rule that introduces subjects :

*English:*

IP → NP I'

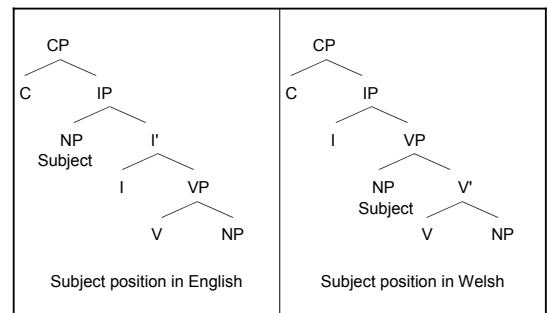
I' → I VP

*Welsh:*

IP → I VP

VP → NP V'

## The English-Welsh contrast

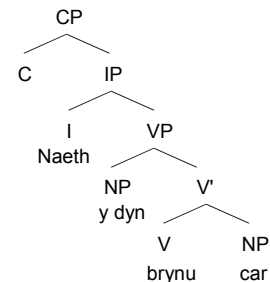


## Welsh

- Given the subject placement parameter, the structure of Welsh sentences with auxiliaries becomes straightforward. Here’s an example, followed by a tree:

Naeth y dyn brynu car  
 did the man buy car  
 “The man did buy a car.”

## Welsh



## Welsh

- Ok, but how about this other Welsh example, then?  
 bryn-odd y dyn gar  
 buy-Past the man car  
 "The man bought a car."
- There's no auxiliary here, so how come the verb precedes the subject?
- Maybe time for another parameter?

## The verb movement parameter

- So far, we have been ignoring the question of how the verb and the inflectional head come to form a single word.
- Since this requires mapping of a structure onto another structure, the rule involved has to be a transformation, more precisely a movement rule.
- There are two options: Either V moves to I (as in Welsh), or I moves to V (as in English). This is the so-called **verb movement parameter**.

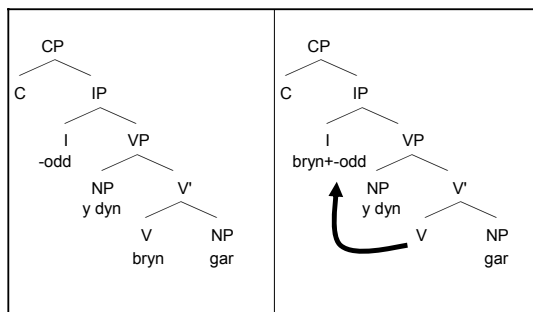
## The verb movement parameter

- So, the reason why Welsh is always verb-initial is because the I head has to host a verb (either an auxiliary verb, or a main verb, if an auxiliary is not present).
- *Notice that this means if I is already filled, then the verb cannot be there, as we saw in the first Welsh example.*

## Welsh

- The tree structures for the Welsh example on Slide 54 before and after verb movement takes place would be as follows:

## Welsh



## Welsh

- In sum, VSO languages like Welsh and Irish are possible because of the interaction between two parameters: the subject placement parameter and the verb movement parameter.
- One should wonder, though, 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 embarrasse Marie.

Jean often kisses Marie.

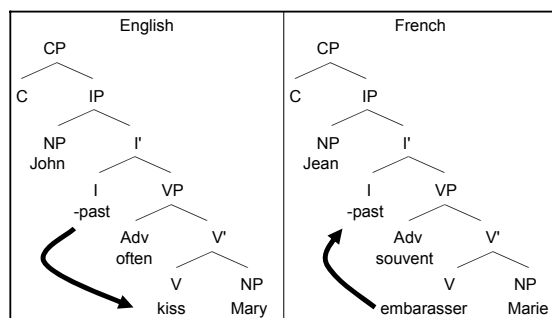
Jean embarrasse souvent Marie.

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 I, but in English I moves "down" to V.

## Verb position in English vs. French



## Interim summary

- So, here's the story so far:  
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 IP.
- English differs from both French and Welsh in having I move down to V. In French and Welsh V moves up to I.
- 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 I, 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 in declarative sentences?
- Obviously, this language can't be English or French, since both have the subject before the verb.
- Well, how about this language:

## Sprechen Sie Deutsch?

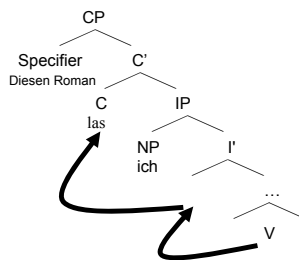
Ich las letztes Jahr diesen Roman  
 I read last year this book  
 Diesen Roman las ich letztes Jahr  
 this book read I last year  
 Letztes Jahr las ich diesen Roman  
 last year read I this book

- 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, a fronted object, or an adverbial.
- If that is the case, then it must be that German, like French, has V move up to I.
- Unlike French, though, German moves V further up to C, hence its occurrence following any material in the specifier of C.

## German: The V2 effect



## German: The V2 effect

- Do we have evidence for V-to-I-to-C movement in German?
- Sure. Consider:  
 Ich denke daß Hans den Ball geschlagen hat  
 I think that Hans the ball hit has  
 "I think that Hans hit the ball."
- What do you notice here?

## Parameters and languages

Parameter	English	Japanese	French	German	Welsh
HD parameter	Head-initial	Head-final	Head-initial	?	Head-initial
Subject placement parameter	Specifier of IP	Specifier of IP	Specifier of IP	?	Specifier of VP
Verb movement parameter	I down to V	?	V up to I	V up to I	V up to I
V2 parameter	No	?	No	Yes	?

## Agenda for next class

- VOS/OVS/OSV languages.
- More on *wh*-movement: Islands.
- Syntax and semantics: Binding (from chapter 6 in the textbook).
- Hopefully, also first language acquisition. Chapter 11.

## References

- Baker, M. 2001. *The atoms of language*. New York: Basic Books.
- Tomlin, Russell S. 1986. *Basic Word Order: Functional Principles*. Croom Helm, London.