Chomsky's Universal Grammar

Week 1.

Chomsky's approach to grammar

- … involves studying what native speakers **know** about the grammar of their language which makes them fluent in it
- To use relevant technical terminology, it involves studying their **grammatical competence** or **I-language** (i.e. internalised knowledge of the grammar of the language)

Chomsky's approach to grammar

- A linguist describing the syntax of a language aims to develop a **descriptively adequate** grammar of the language, describing the full range of structures found in the language
- But to attain a deeper understanding of the nature of language, we need to investigate the extent to which the properties of the grammar of a given language reflect general properties of all languages - i.e. we need to develop a theory of **Universal Grammar/UG**

Universal Grammar

The following aspects of grammar may well be universal:

- grammatical categories like **noun**, **verb**, etc.

NB: Saying these are universal means that they occur in a wide range of languages, but not necessarily in all

E.g. Chinese has numeral classifiers, English doesn't.
French has clitic pronouns, English doesn't

Universal Grammar

The following aspects of grammar may well be universal:

- grammatical categories
- grammatical operations like **Merge**,
  e.g. ***to*** + ***you*** = ***to you***;
  talk + ***to you*** = ***talk to you***

Universal Grammar

The following aspects of grammar may well be universal:

- grammatical categories and features
- grammatical operations like **Merge**, **Movement**, **Agreement**, **Ellipsis**
- grammatical principles such as the **Economy Principle**
  Structures and the operations used to form them should be as economical as possible
  e.g. You think **who** said **what**? > **Wh-Movement** >
  Who do you think said **what**?
  ***What** do you think **who** said?

We move ***who*** because it results in a shorter (more economical) movement than moving ***what***

Goal of Linguistics

Develop theory of **UG/Universal Grammar** which identifies the defining characteristics of natural/human languages differentiating them from **artificial languages** like those used in mathematics and computing (e.g. Java, Prolog, C etc.), and from **animal communication systems** (e.g. the tail-wagging dance performed by bees to communicate the location of food)

Chomsky's view of universals

Strong Minimalist Thesis/SMT

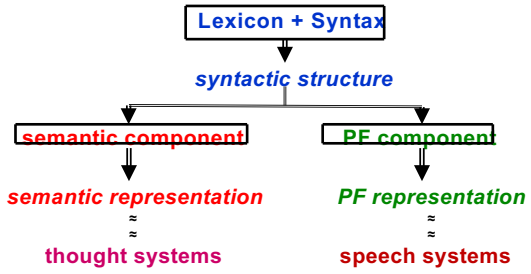
All syntactic universals are reducible to

(i) principles of **human cognition** *or*

(ii) principles of **natural law** (e.g. economy/ computational efficiency) *or*

(iii) **interface conditions** (i.e. semantic or phonetic requirements)

Chomsky's model of grammar



Interface conditions

Syntactic operations are driven by needs of the semantics or phonetics interface

Semantics interface requirement (scope)

He **didn't** fail **one of the students**

(i) There is not one student that he failed

not > **one** (= '**not** has scope over **one**')

(ii) There is one student that he did not fail

one > **not** (= '**one** has scope over **not**')

Interface conditions

Syntactic operations are driven by needs of the semantics or phonetics interface

Semantics interface requirement (scope)

He **didn't** fail **one of the students**

One of the students, he **didn't** fail

So, preposing **one of the students** serves the function at the semantics interface of unambiguously marking **one** as having scope over **not**

Interface conditions

Syntactic operations are driven by needs of the semantics or phonetics interface

Semantics interface requirement (scope)

He **didn't** fail **one of the students**

One of the students, he **didn't** fail

Phonetics interface requirement (French clitics)

T'as vu **Paul**? Oui, je **l'**ai vu

You've seen *Paul*? Yes, I *him* have seen

A clitic moves to attach to a prosodic host

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

All normally developing children acquire the grammar of their natural language/s within 5% of the normal human lifespan, and go through uniform stages of development

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

One-word stage

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

No inflection or determiner with count noun ***apple***

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

Two-word stage

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

Note the ***ing***-inflection on the verb ***eat***

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

Three-word stage

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

Subject pronoun ***me*** used, but in wrong form

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

2;6 ***I'm eating an apple***

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

2;6 ***I'm eating an apple***

Pronoun ***I*** is correct

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

2;6 ***I'm eating an apple***

Auxiliary ***(a)m*** is correct

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

2;6 ***I'm eating an apple***

Article ***an*** is correct

Language acquisition

Why is language acquisition (by children acquiring their native language/s) such a **rapid** and **uniform** process?

1;0 ***Apple***

1;6 ***Eating apple***

2;0 ***Me eating apple***

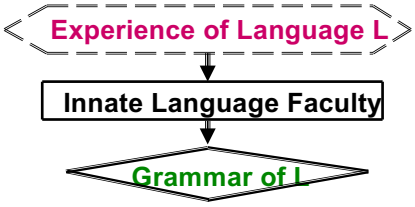
2;6 ***I'm eating an apple***

Grammar is acquired

Explaining course of acquisition

- **Q:** Why is acquisition so rapid and uniform?
- **A:** Chomsky maintains that the course of language acquisition is genetically guided by an innate **Language Faculty** (i.e. language acquisition program) which endows children with an innate knowledge of **Universal Grammar** (i.e. of those aspects of language which are universal)

Chomsky's model of acquisition



Why an innate language faculty?

- **species-specificity** of language

Experiments on teaching sign language to chimpanzees suggest that they can learn words, but not complex grammatical structures, so the ability to acquire **grammar** is unique to humans

Maybe the ability to form complex structures through **recursion** is unique to humans

Why an innate language faculty?

- **species-specificity** of language
- **involuntariness** of acquisition

Children can choose whether or not to learn chess but can't choose whether or not to to learn their first language

Why an innate language faculty?

- **species-specificity** of language
- **involuntariness** of acquisition
- **critical period** (puberty)

Children who start to learn a language before puberty become fluent in it but those who start after puberty don't become entirely fluent

Why an innate language faculty?

- **species-specificity** of language
- **involuntariness** of acquisition
- **critical period** (puberty)
- **rapidity and uniformity** of acquisition

All normally developing children acquire language rapidly, and go through uniform stages of development

Summary of Chomsky's view

- Certain aspects of language are universal. These don't have to be learned by children, because the **Language Faculty** endows them with an innate knowledge of Universal Grammar,
- However, not all aspects of language are universal, since languages vary along a number of **parameters** (e.g. word order)

Parameters

WH-PARAMETER

English: **What** do you think he will say?

What is the object of ***say***, so would be expected to be positioned after ***say*** (cf. ***say something***)

But in non-echoic questions, ***what*** has to move to the front of sentence

Hence English is a **wh-movement** language

But wh-questions work differently in Chinese

Parameters

WH-PARAMETER

English: **What** do you think he will say?

Chinese: Ni xiangxin ta hui shuo **shenme**?

You think he will say what?

Note that wh-word **shenme** 'what' remains in situ

Parameters

WH-PARAMETER

English: **What** do you think he will say?

Chinese: Ni xiangxin ta hui shuo **shenme**?

- English is a **wh-movement** language

Parameters

WH-PARAMETER

English: **What** do you think he will say?

Chinese: Ni xiangxin ta hui shuo **shenme**?

- English is a **wh-movement** language (i.e. the kind of language that moves a wh-word to the front of the relevant clause/sentence)

Parameters

WH-PARAMETER

English: **What** do you think he will say?

Chinese: Ni xiangxin ta hui shuo **shenme**?

- English is a **wh-movement** language
- Chinese is a **wh-in-situ** language (i.e. the kind of language that leaves wh-words *in situ*)

Now let's look at another parameter

HEAD POSITION PARAMETER

- English: **Eat** kimchi!
- Korean: Kimchi **meokeola**$_{eat}$!

In Korean, a head word follows its complement

In verb phrases a head verb follows its complement

HEAD POSITION PARAMETER

- English: **Eat** kimchi!
- Korean: Kimchi **meokeola**$_{eat}$!
- English is a **head-first** language (i.e. a language that positions heads before complements)
- Korean is a **head-last** language (i.e. a language that positions heads after complements)

Now let's look at a third parameter

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome

Now let's have the same conversation in Italian

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  Where's Maria?

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  B: Gianni dice che pro $è_{3.S}$ $andata_{F.S}$ a Roma

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  B: Gianni dice che pro $è_{3.S}$ $andata_{F.S}$ a Roma
  Gianni says that pro is ('has') gone to Rome

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  B: Gianni dice che pro $è_{3.S}$ $andata_{F.S}$ a Roma

We can 'drop' the subject pronoun in Italian

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  B: Gianni dice che pro $è_{3.S}$ $andata_{F.S}$ a Roma

However, the sentence must contain a null (silent) counterpart of English ***she*** (= pro)

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  B: Gianni dice che pro **$è_{3.S}$** **$andata_{F.S}$** a Roma

However, the sentence must contain a null (silent) counterpart of English ***she*** (= pro) because the verbs ***è*** and ***andata*** agree with it

NULL SUBJECT PARAMETER

(*aka* **PRO-DROP PARAMETER**)

- A: Where's Maria?
  B: John says **she** has gone to Rome
  *John says pro has gone to Rome
- A: Dov'è Maria?
  B: Gianni dice che pro $è_{3.S}$ $andata_{F.S}$ a Roma

Italian is a **null-subject/pro-drop** language

English is a **non-null-subject/non-pro-drop** language (so doesn't allow a subject pronoun to be dropped/null/silent)

What children acquiring a language L do and don't have to learn

- Children ***don't*** have to learn ***universal*** aspects of syntax
- Children ***do*** have to learn ***parametrized*** aspects of syntax, e.g. for a given language L
  - Is L a ***wh-movement*** language or not?
  - Is L is a ***head-first*** language or not?
  - Is L is a ***null subject*** language or not?
- Children's syntactic learning task is that of ***parameter-setting***

Very Early Parameter Setting

- Since setting parameters requires little evidence, children set them correctly at a very early stage (according to Wexler 1998)
- **HEAD POSITION PARAMETER**: Jem 1;8

  Touch heads. **Cuddle** book. **Want** crayon

  On Mummy. **To** lady. **With** potty. **In** school

  Jem positions **prepositions** before complements

  He seems to know English has **head-first** order

Very Early Parameter Setting

- Since setting parameters requires little evidence, children set them correctly at a very early stage (according to Wexler 1998)
- **HEAD POSITION PARAMETER**: Jem 1;8

  Touch heads. **Cuddle** book. **Want** crayon

  On Mummy. **To** lady. **With** potty. **In** school
- **WH PARAMETER** (children aged around 2;0)

  What Daddy doing? **Where** Nana gone?

  Children correctly prepose wh-words from outset

Principles-and-Parameters Theory Summary

- Some aspects of grammar are universal, and these don't have to be learned because children have innate knowledge of **Universal Grammar**
- Other aspects of grammar vary along a number of **parameters** (wh-parameter, null subject parameter, head position parameter, etc.)
- Children have to learn to **set** each parameter at the right value.
- Parameter-setting requires little evidence, so is a **rapid** process. Children set parameters correctly from the onset of multiword speech.

Exercise 1.1

The idea is to use the data in this exercise to test **Very Early Parameter Setting** model, by analysing utterances produced by Lucy at age 1;11 to see if she has correctly set

- the **Head Position Parameter**
- the **Wh-Parameter**
- the **Null Subject Parameter**

3) Daddy play with me

- If Lucy has correctly set the Head Position Parameter, we expect her to position all words before their complements
- She correctly positions the preposition ***with*** before its complement ***me***
- She correctly positions the verb ***play*** before its complement ***with me***

Conclusion: Lucy has already set the **Head Position Parameter** correctly and knows that English is a **head-first language** in which head words precede their complements

5) Where Daddy gone?

- The wh-word ***where*** is the complement of the verb ***gone***
- Complements are normally positioned after heads in English (cf. ***Go home***)
- The fact that Lucy positions the wh-word ***where*** at the beginning of the sentence and not in the normal complement position after the verb ***gone*** suggests she knows English is a **wh-movement** language which positions wh-words at beginning of interrogative clauses, and hence that she has correctly set the **Wh-Parameter**

8) Daddy doing?

- The wh-word ***what*** has been truncated/omitted

..so you might think such a sentence can't possibly tell us about whether Lucy has correctly set the Wh-Parameter and 'knows' that English fronts wh-words.

But

8) Daddy doing?

- The wh-word ***what*** has been truncated/omitted
- Truncation only affects words **at the beginning of a sentence**

  It's a nice day, isn't it?
  What time is it?

8) Daddy doing?

- The wh-word ***what*** has been truncated/omitted
- Truncation only affects words **at the beginning of a sentence**
- So, ***what*** must move to the front of the sentence before being truncated

  Daddy doing **what** > **wh-movement** >
  What Daddy doing > **truncation** >
  What Daddy doing
- To prepose (and truncate) the wh-word, Lucy must know English is a wh-movement language and must have set the **Wh-Parameter** correctly

9) Cry (Reply to: What do you do when Daddy gets cross with you?)

- The verb ***cry*** has a ('silent') **null subject** – but what kind of null subject?
- Nina Hyams (1986) argues that children initially assume that English is a Null Subject Language, and so start out '**talking Italian**' (Hyams, 1986)
- She claims that English children start out with the **wrong setting** (Italian one) 'allows null finite subjects' for Null Subject Parameter and have to learn to **reset** the parameter to 'doesn't allow null finite subjects'
- But an alternative is that English children simply use **types of null subject found in English**

Types of null subject in adult English

- **Truncated** null subject (sentence-initial)

  Can't find my mobile. Must have lost it
- **Imperative** null subject (null variant of ***you***)

  Please be nice! Please don't move!
- **Nonfinite** null subject (= **PRO**)

  Why be difficult?

Question that arises

- Do English children ever use Italian-style null *pro* subjects?
  Or do they use **English-style null subjects** like those found in adult English?
- **Important complication**
  Two-year-old children go through an **Optional Infinitives** stage when they sometimes use **infinitives** where adults use **finite** verbs

adult Where did you go yesterday?
child ***I went to Macdonalds / Me go Macdonalds***

9) Cry (Reply to: What do you do when Daddy gets cross with you?)

Could the silent subject of **cry** be an **English-style imperative null subject**?

Is the sentence **imperative** and is the missing subject **you**? **No**

Hence the silent subject could not be an **English imperative null subject**

9) Cry (Reply to: What do you do when Daddy gets cross with you?)

Could the silent subject of **cry** be an **English-style truncated null subject**?

Could the silent subject be the first word in the sentence? **Yes**

Hence the silent subject could be an **English truncated null subject**

I cry > truncation > I cry

9) Cry (Reply to: What do you do when Daddy gets cross with you?)

Since children go through an Optional Infinitives/OI stage could the subject of **cry** be **English-style nonfinite null subject**?

Could **cry** be an infinitive? **Yes**

Hence the silent subject of **cry** could be an English **nonfinite null PRO subject**

PRO cry

cf. adult English Why PRO cry?

9) Cry (Reply to: What do you do when Daddy gets cross with you?)

Overall conclusion

- The silent subject of ***cry*** could be an English-style **truncated** or **nonfinite** null subject
- There is no evidence that English children like Lucy ever **mis-set** the **Null Subject Parameter** and wrongly assume English allows Italian-style null finite **pro** subjects

10) I play

Sentence 10 has an overt subject ***I***. What does this tell us?

- A true Italian-style Null Subject Language uses null rather than overt subjects in such a context
  Adult: **Cosa**$_{\text{What}}$ **fai**$_{\text{do}}$ **nel**$_{\text{in+the}}$ **parco**$_{\text{park}}$?
  'What do you do in the park?
  Child: **Gioco**$_{\text{play}}$ 'I play'

So it is unlikely that Lucy has **mis-set** the Null Subject Parameter and misanalysed English as an Italian-style Null Subject Language, since true NSLs don't use overt subject pronouns unless they are **emphatic/contrastive**

Rather, the types of null subject she uses are precisely those found in adult English