Where am I?

- HUL242: **Fundamentals of Language Sciences**
- **Syntax (Lecture-1)**
- Thursday, March 6th

Grades

	Quiz 1	Quiz 2	Minor	Total
Average	6.98	3.24	21.92	30.15
Maximum Marks	8	8	30	46

Syntax?

- Syntax refers to the study of the structure of sentences in a language.
  - How *words* are arranged in *sentences*, *clauses*, and *phrases* to form grammatically correct and meaningful expressions in a language.

Syntax: More than word order

(1) The dog bit the cat.
(2) The cat bit the dog.

- (1) and (2) have the exact words (*the*, *dog*, *bit*, *cat*) but different meanings. **Word order?**

- Word order will not be sufficient. Compare (1) with (3)

(3) The cat is bitten by the dog. (Passive sentence)

- In (3), *the cat* and *the dog* have different word orders, but the sentence has the same meaning concerning the verb *bite*.

Syntax: More than word order

- Meaning (i.e., semantic role) is divorced from word order.

- It is the different syntactic combinations that produce different meanings.

- The verb 'bite' needs
  - One who bites (i.e., agent) -> Subject
  - One that is being bitten (i.e., patient) -> object

  a) * The dog bit.
  b) The dog bit the cat.

Syntax: More than word order

- The meaning of a sentence depends on the meanings of the expressions it contains, and in a way, they are syntactically combined: principle of compositionality

Syntax and Meaning

1. Colourless green ideas sleep furiously. (Chomsky 1957)
   - colourless things cannot be green
   - ideas are not the kinds of things that sleep
   - unclear that sleeping is the kind of activity that can be carried out in a furious manner

2. The toothbrush is pregnant.
   - A toothbrush is a non-living thing. It cannot get pregnant.

(1) and (2) are perfectly grammatical sentences of English. Compare them with (3) & (4).

3. *Green sleep colourless furiously ideas.
4. *Toothbrush the is pregnant.

Syntactic vs. Semantic ill-formedness

- **Syntactic ill-formedness:** ungrammaticality due to the structure
  1. *Toothbrush the is blue.

- **Semantic ill-formedness:** ungrammaticality due to meaning
  2. #The toothbrush is pregnant.

- In Syntax, we care about the former.

  ‘The colourless green ideas sleep furiously.’

  - Grammatically correct but semantically does not make any sense.

Study of syntactic structure

- There are many ways to study the syntactic structure in a human language.

- The central one in theoretical linguistics
  - **well-formedness (or 'grammaticality') judgments**
    Roughly: Can you say *X* in your language?
    How do you say X in your language?

- Other options:
  - Psycholinguistic experiments (e.g., eye-tracking, brain scanning, self-paced reading, . . .)
  - Corpus research etc.

Study of syntactic structure

- **ill-formedness** also helps in studying syntactic structure.

1. a. *Three students the are studying.

   b. *Three the students are studying.

   c. * Students three the are studying.

   d. *Students the three are studying.

   e. *The students three are studying.

   f. The three students are studying.

- Ordering among determiners, numerals, and nouns in English is determiner -> *numeral* -> *noun*

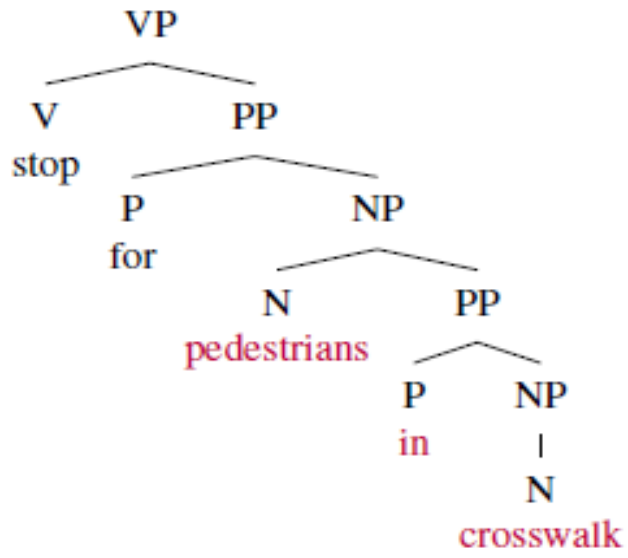
Syntax: more than liner ordering

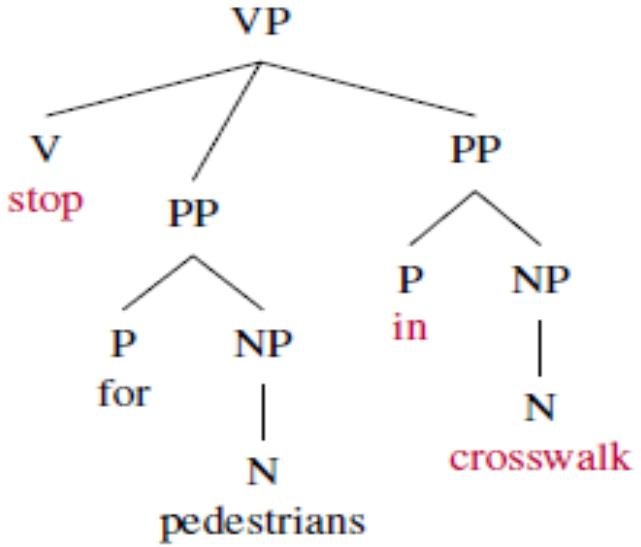
Syntax: more than liner ordering

Stop for pedestrians in crosswalk

Stop for pedestrian in crosswalk

Syntax: more than liner ordering





- Don’t worry about the tree yet. Don’t take it as official either (They’re for illustration). This is where we are headed.

The richness of syntactic knowledge

(1) John believes her to be intelligent.
(2) John believes that she is intelligent.

- The words *her* and *she* refer to the same individual and have the same meaning.

- However, they differ in pronunciation. Why?
  - They are in a different structural relationship/syntactic dependency.

Note: Nobody teaches this to a child.

Form - Related Syntactic Dependencies

1. He saw her.
2. *She saw he.
3. She saw him.
4. *Him saw her.

- The form of the pronoun is dependent on its syntactic position (Case assignment in subject vs object position)

Note: Nobody teaches this to a child.

Form - Related Syntactic Dependencies

(1) India is beautiful.
(2) The girls from India are singing.

- The form of the verb is not determined by the adjacent words.
- *India* is adjacent to the verb in both (1) & (2) but it is in a different structural relationship in (1) & (2). (feature sharing between the verb and the subject noun = Agreement).
- Note: Nobody teaches this to a child.

The richness of syntactic knowledge

- Who can *them* refer to in (1)? Does *them* have the same interpretation in (2)?

  (1) The men expected to see them.
  (2) I wonder who the men expected to see them

- In (1), *them* cannot be *the men*. In (2), it can (indeed, this is the most natural interpretation.). However, in both cases, we have *the men expected to see them*.

- A personal pronoun must be free in its local domain.

Meaning-Related Dependencies

1. John saw himself/*him.
2. Mary saw herself/*her.

- A reflexive pronoun must be bound in its local domain.

Note: Nobody teaches this to a child.

The richness of syntactic knowledge

1. The dog jumped.
2. The dog fell.

- Jump <*Agent*>: *Agent* maps to the subject position
- Fell <*patient*>: *patient* maps to the object position

Derivation
2’ fell the dog. (for semantics interpretation)
2” the dog fell ___. (for syntactic interpretation)

- The structural subject position must be filled in English: the dog moves to the subject position in (2).

Position Related Dependencies

- The structural subject position must be filled in English.

1a. A dog is in the house.
 b. There is a dog in the house.
 c. *is a dog in the house.

2a. It is 8 o'clock.
 b. *is 8 o'clock.

Note: Nobody teaches this to a child.

The richness of syntactic knowledge: Movement

1. John can eat an apple.
2. What can John eat?

- Unlike (1), the object appears in the front of the sentence in (2). Compare with Hindi where it does not.

3. John sev khaa sakataa hai.
4. John kyaa khaa sakataa hai.

2.' John can eat what?
2" What can John _ eat _?

- When a single pronounced item enters two (or more) dependencies in a structure, it is called movement/displacement.

Constraint on Movement

- You think John bought bananas.
  Q: Who do you think ____ bought bananas?

- You wonder what John bought.
  Q: *Who do you wonder what ____ bought?

  - So, who can move across think, but not wonder.

- More complex yet very clear facts, ones that native speakers are **never explicitly taught.**

Universal Grammar

- Linguists, after Chomsky (1987), consider these points highly suggestive (if perhaps not totally conclusive) evidence that there is an innate aspect to human language.

- Something gets us to learn (and agree on!) all these deep, complex facts, without explicit instruction.

- That innate linguistic capability is known as **Universal Grammar.**

Universal Grammar

It would be absurd to try to teach such facts as these to people learning English as a second language, just as no one taught them to us or even presented us with evidence that could yield this knowledge by any generally reliable procedure. This is knowledge without grounds, without good reasons or support by reliable procedures in any general or otherwise useful sense of these notions.

Chomsky, Knowledge of Language (1986: 12)

Universal Grammar

Noam Chomsky

- Humans must have underlying principles that help them to acquire a language easily and quickly.

- Humans are born with an innate ability to acquire languages, and some universal principles/rules form the basis for language acquisition across different cultures and languages.

- UG provides a sort of language template in our brains, making it easier for us to grasp the grammar of the specific language we are learning.

Properties of languages

Properties of languages

Language is infinite — Recursion

- We can produce and comprehend an infinite number of sentences, including countless ones you've never heard before (like this one! right!).
- We can also produce sentences of infinite length.

A finite set of rules but an infinite number of sentences

- Some phrase structural rules in the English language.

S	→	NP VP
NP	→	(D) (AdjP+) N (PP+)/(CP)
VP	→	(AdvP+) V (NP) ({NP/CP}) (AdvP+) (PP+) (AdvP+)
PP	→	P NP
AdjP	→	(AdvP) Adj
AdvP	→	(AdvP) Adv
CP	→	(C) S

Infinite length: Recursion

- A phrase can be embedded inside another phrase of the same kind.
  - A clause inside a clause: *John thinks cheese is great*.
  - A noun inside a noun: *the man who ate the cheese*.

- Whenever you have recursion, you have (in principle) infinity:
  - John thinks Mary said cheese is great.
  - Bill thinks that John thinks Mary said cheese is great.
  - ….

- Recursion is a unique property of human language.

Phrase structure rules are recursive

S → NP VP
VP → (AdvP+) V (NP) ({NP/CP}) (AdvP+) (PP+) (AdvP+)
CP → (C) S

NP → (D) (AdjP+) N (PP+)/(CP)
PP → P NP

Recursion: what's wrong here?

- Recursion is a property of a human language.
  Bill thinks that John thinks Mary said cheese is great

- Interestingly, not all recursion goes down so smoothly, an example from 'center -embedding'

1. A woman that a man loves
2. A woman that a man that a child knows loves ??
3. A woman that a man that a child that a nanny watches knows loves ??? (almost impossible)

Recursion: what's wrong here?

1. A woman that a man loves
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3. A woman that a man that a child that a nanny watches knows loves ??? (almost impossible)

- Too many center-embeddings is crushingly bad, as opposed to 'right-embedding' that can go on indefinitely. But center embedding looks in principle to be ok.

- So, what goes wrong?

Competence vs. Performance

- We have difficulty with center-embeddings because they place too high demands on *working memory*.

- Think of the recent iOS 18.3.1 into iPhone 4.
  - incompatibility between the competence of iOS and its performance

- The basic idea: there is a distinction between our grammatical knowledge (**competence**) and how that knowledge is deployed with limited working memory (**performance**).

Performance impinging on competence

(1) The cotton shirts are made from comes from India.

- This sentence is so hard to process that it almost seems ungrammatical. But once you find the parse, it's not too bad (unlike the multiple center embeddings, which never get any easier).

- What's going on here?
  - When trying to understand a sentence, you're biased in certain ways.
  - More often than not, those biases are good ones.
  - But sometimes, they lead you astray.
  - Here, you're expecting the thing after *from to be a noun phrase*. When you hit *comes instead, it's a shock. You go back and* re-analyze *'"the cotton shirts are made from" as a noun phrase.*
- Such sentences are called **garden-path sentences** (they lead you down the garden path).

Competence and Performance

- **Competence** : the speaker-hearer's knowledge of his/her language
- **Performance**: the actual use of language in concrete situations

Internal knowledge (system) of speakers' mind	Set of sentences in a particular setting
What speakers of a language could produce	Sentences that speakers of a language have actually produced

- Generative/theoretical linguists are interested in studying **competence**.

Next class

- Problem with the traditional definition of Parts of speech
- Syntactic view of parts of speech

  Reading: **Carnie, Ch. 2 “Parts of speech”**