LING2005 Syntax I
Tutorial: Binding Theory I

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Before we start...

- I just realized that we have quite a few AIST and CSE students here...
    - I'm not sure how syntax is gonna help with your area of study (that's probably not gonna be helpful even if you do NLP because nowadays everything is deep learning), but I'd be happy to address your questions wrt. how syntax is relevant to NLP, ML, etc. if you have any.
    - Still, the course only concerns syntax of natural languages (cf. programming languages & compilers)
- It is alright if your midterm grade is not satisfying. We still have the other assignment and the final ahead!
- **If you have difficulties to follow, please do stop me.** I know what we are covering can be very hard as this is a brand new system to you. It's normal to feel overwhelmed, but don't give up.
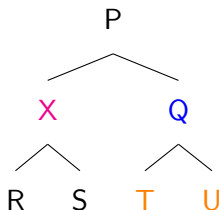- We will not cover *wh*-movement this term

- Both X' or $\overline{X}$ are good to represent the bar level
  - Head: X or X^0
  - Bar level: X' or $\overline{X}$
  - Phrase level: XP or X'' or $\overline{\overline{X}}$
- Note that the notations were **not** borrowed from mathematics
  - X' or $\overline{X}$ does not denote the complement of X
  - $\overline{X}$ does not denote the mean
  - X' does not denote the first order derivative

- Specifier Rule: XP → (WP) X'
- Adjunct Rule: XP → (YP) XP or XP (YP)
- Complement Rule: X' → X (ZP)
- Note: the **linear order** above is language-specific, i.e., works for English
    - The way a language possesses the specifier, complement, and adjunct positions is universal. We consider all languages to have specifiers as the sister of X' (unique for a phrase) and complements as the sister of X head (unique for a phrase except for ditransitive).
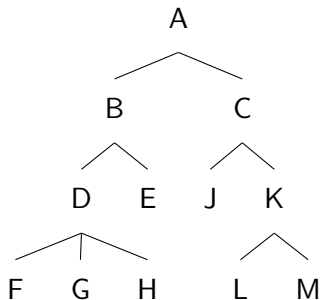   - The linear orders can be different, depending on whether the language is head-initial or head-final.

- C-command: Node X c-commands its sisters and all the descendants of its sisters.

What do C, D and E c-command?

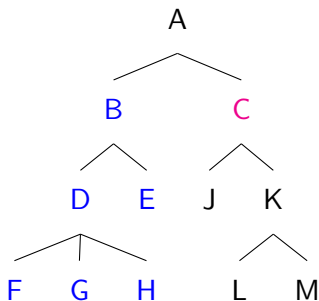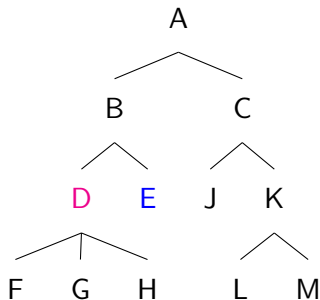C c-commands B, D, E, F, G, H
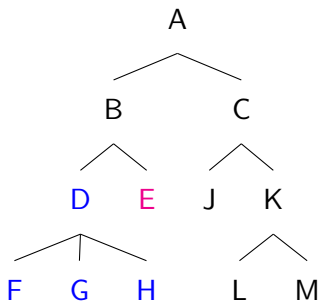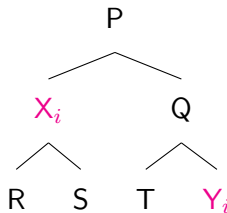
D c-commands E

E c-commands D, F, G, H

- Principle A: An anaphor must be bound.
  - To be revised!
  - Hint: an anaphor must be bound... but **where** shall it be bound?
- Binds: X binds Y if and only if
  1. X c-commands Y
  2. X and Y are coindexed.

Does Principle A of the Binding Theory explain the grammaticality pattern in (1)—(5)?

1. They$_i$ trusted each other$_i$.
2. *Mary$_i$'s mother hurt herself$_i$.
3. In John$_i$'s paper, Peter$_j$ criticized himself$_{j/*i}$.
4. Their$_i$ agreement with <u>each other</u>$_i$ is unusual.
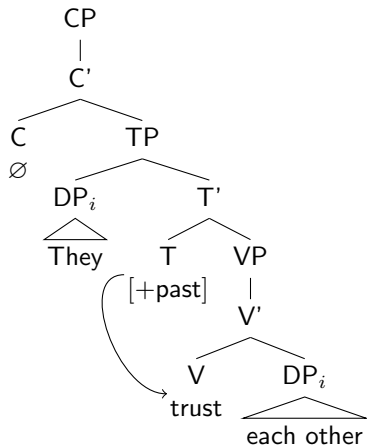5. *[John and Mary]$_i$ think that <u>each other</u>$_i$ is/are talent(s).

They$_i$ trusted each other$_i$.

- Reminder: Principle A: An anaphor must be bound (by an antecedent). That is, a DP is co-indexed with the anaphor, and the DP c-commands the anaphor. (This definition, though largely correct, will be revised further in the next class.)

They$_i$ trusted each other$_i$.

- "Each other" is an anaphor, and is governed by Principle A of the Binding Theory. In (1),
    1. "They" and "each other" are co-indexed (i.e. they refer to the same group of people), and
    2. the DP "they" c-commands the DP "each other" (since the DP "each other" is a descendent of the sister (T') of the DP "they").

In other words, the DP "each other" is bound by the antecedent DP "they", fulfilling Principle A. The Binding Theory correctly predicts the grammaticality of the anaphor "each other".
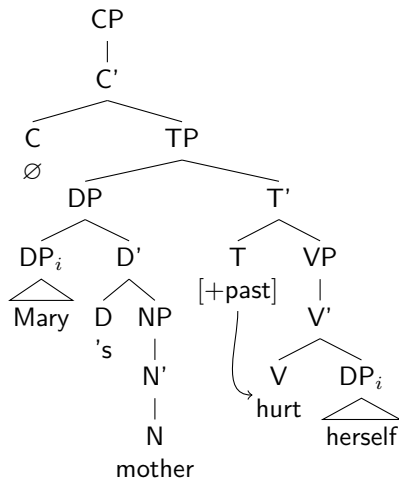
*Mary$_i$'s mother hurt herself$_i$.

- Note: The index indicates that "herself" is intended to be interpreted as the DP "Mary". (2) is bad on this particular interpretation. The sentence is good if "herself" is interpreted as "Mary's mother", i.e. *[Mary's mother]$_j$ hurt herself$_i$.

*Mary$_i$'s mother hurt herself$_i$.

- "Herself" is an anaphor. It is governed by Principle A of the Binding Theory. In (2),
    1. "Mary" and "herself" are co-indexed (i.e. they refer to the same person), BUT
    2. the DP "Mary" does NOT c-command the DP "herself".

  As a result, the DP "herself" is NOT bound by the antecedent DP "Mary". The violation of the Principle A correctly predicts the ungrammaticality of the anaphor "herself".

In John$_i$'s paper, Peter$_j$ criticized himself$_{j/*i}$.

- Convention: Syntacticians often use the convention shown in (3) to discuss two potentially different interpretations of "himself" of the same sentence. On the i-interpretation, "himself" refers to "John"; on the j-interpretation, "himself" refers to "Peter". "himself$_{j/*i}$" means that native speakers' judgment is that the i-interpretation is not ungrammatical but the j-interpretation is good.

- You can treat "In John's paper" as a CP adjunct.

In John$_i$'s paper, Peter$_j$ criticized himself$_{j/*i}$.
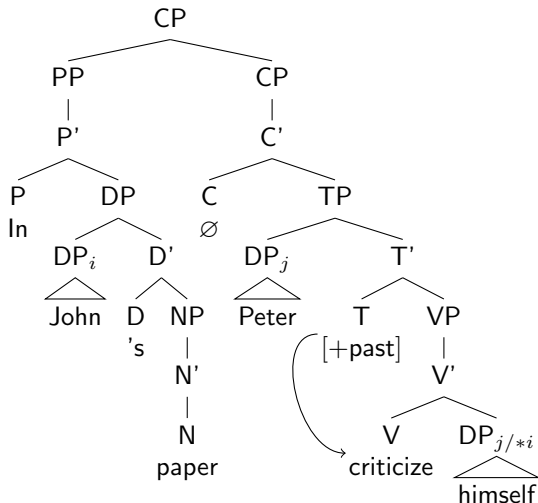
Q2. Anaphor

- Part A – i-interpretation of "himself"
  - "Himself" is an anaphor. It is governed by Principle A of the Binding Theory. In (3),
    1. "John" and "himself" are co-indexed (i.e. they refer to the same person), BUT
    2. the DP "John" does NOT c-command the DP "himself".

    As a result, the DP "himself" is NOT bound by the antecedent DP "John". The violation of the Principle A correctly predicts the ungrammaticality of the i-interpretation of "himself".

- Part B – j-interpretation of "himself"
  - "Himself" is an anaphor. It is governed by Principle A of the Binding Theory. In (3),
    1. "Peter" and "himself" are co-indexed (i.e. they refer to the same person), BUT
    2. the DP "Peter" c-commands the DP "himself" as the DP "himself" is a descendent of the sister of the DP "Peter".

    As a result, the DP "himself" is bound by the antecedent DP "Peter". The observation of the Principle A by "himself" correctly predicts the grammaticality of the j-interpretation of "himself".
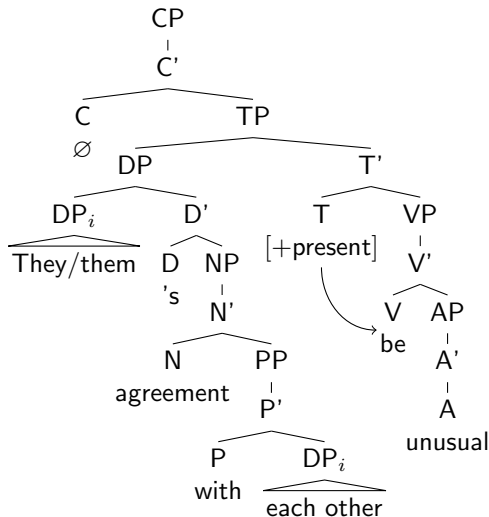
Their$_i$ agreement with <u>each other</u>$_i$ is unusual.

- What is the subject of the whole sentence?

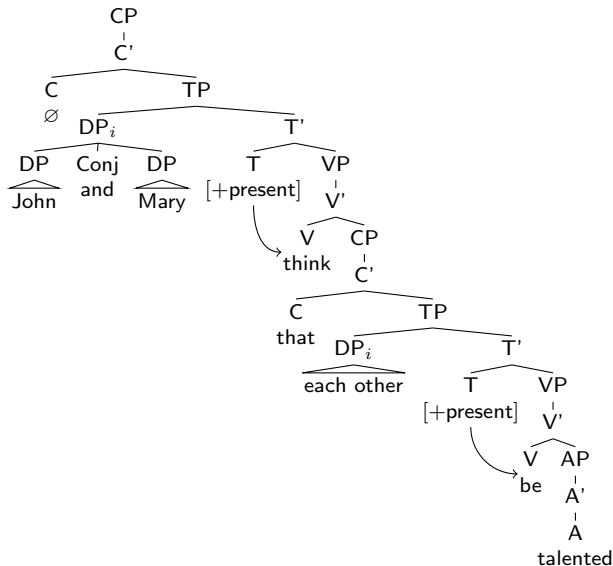Their$_i$ agreement with <u>each other$_i$</u> is unusual.

- "Each other" is an anaphor. It is governed by Principle A of the Binding Theory. In (4),
    1. "They" and "each other" are co-indexed (i.e. they refer to the same group of people), and
    2. the DP "they" c-commands the DP "each other" (since the DP "each other" is a descendent of the sister (D') of the DP "they").

As a result, the DP "each other" is bound by the antecedent DP "they", fulfilling Principle A. The Binding Theory correctly predicts the grammaticality of the anaphor "each other".

*[John and Mary]$_i$ think that <u>each other</u>$_i$ is/are talent(s).

- "Each other" is an anaphor. It is governed by Principle A of the Binding Theory. In (5),
  1. "John and Mary" and "each other" are co-indexed (i.e. they refer to the same group of people), and
  2. the DP "John and Mary" c-commands the DP "each other" (since the DP "each other" is a descendent of the sister (T') of the DP "they").

  As a result, the DP "each other" is bound by the antecedent DP "John and Mary", fulfilling Principle A. Based on Principle A, one would predict that the use of the anaphor "each other" is grammatical.

- NEVERTHELESS, native speakers of English's judgment is that (5) is bad. In other words, Principle A makes the wrong prediction.

- (This is not good as the prediction of the rule is INCONSISTENT with native speaker's judgment. We will have to modify the definition of Principle A in the next class to fix this problem.)

- Assignment 2 due on 27 Nov
- Please scan the QR code and complete the attendance form