Lecture 22: Binding Theory – 1.

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LIN 311: Syntax

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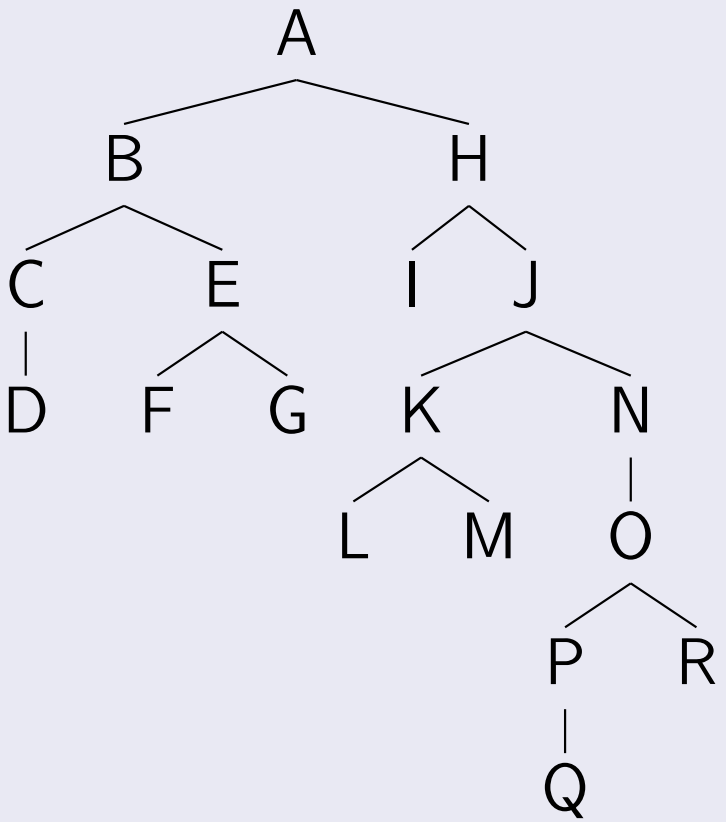
Outline

Tree Geometry and C-Command

Geometric relations in a tree

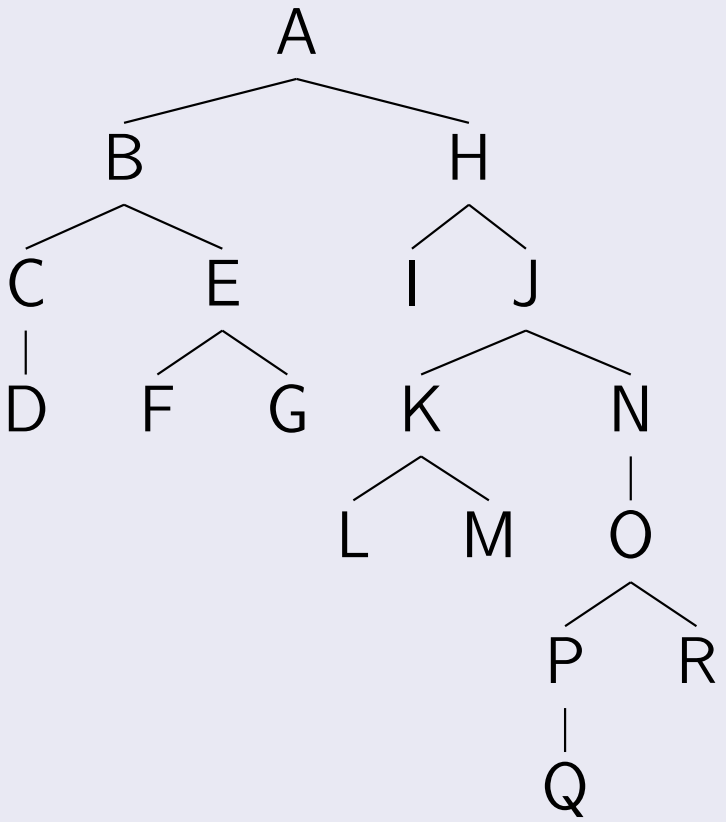
Relations in a tree:



- Mother and Daughter
  - A is a *mother* of B and H; K is a *mother* of L and M; etc.
  - B and H are *daughters* of A; F and G are *daughters* of E; etc.
- Sister
  - B and H; K and N; C and E; etc. are *sisters*.

Geometric relations in a tree

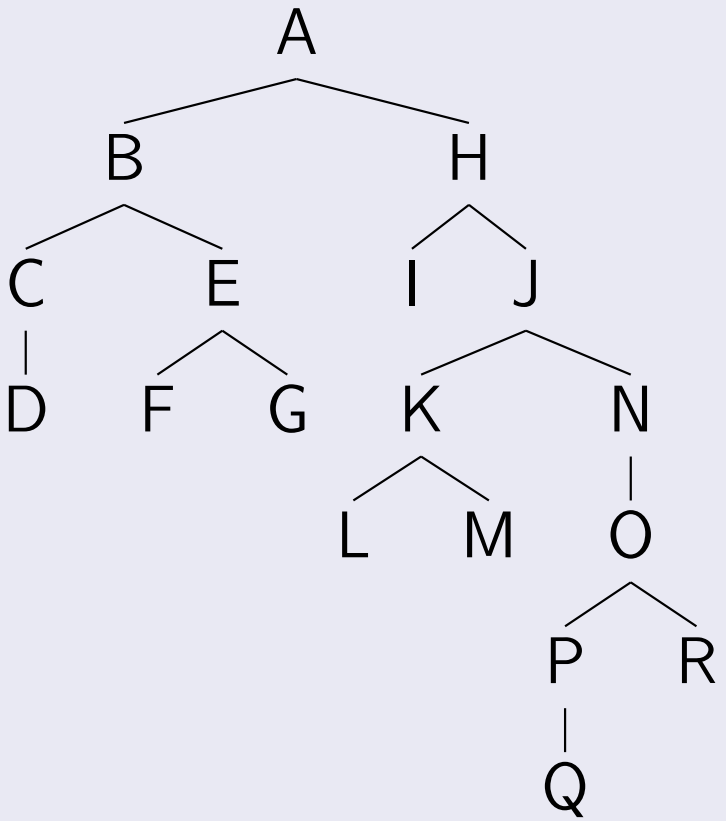
Relations in a tree:



- Dominance
  - A *dominates* all other nodes; K *dominates* L and M; N *dominates* O, P, Q, and R; H *dominates* nodes from I to Q; etc.
- Immediate Dominance
  - A *immediately dominates* B and H; K *immediately dominates* L and M; N *immediately dominates* O; H *immediately dominates* I and J; etc.

Geometric relations in a tree

C-Command

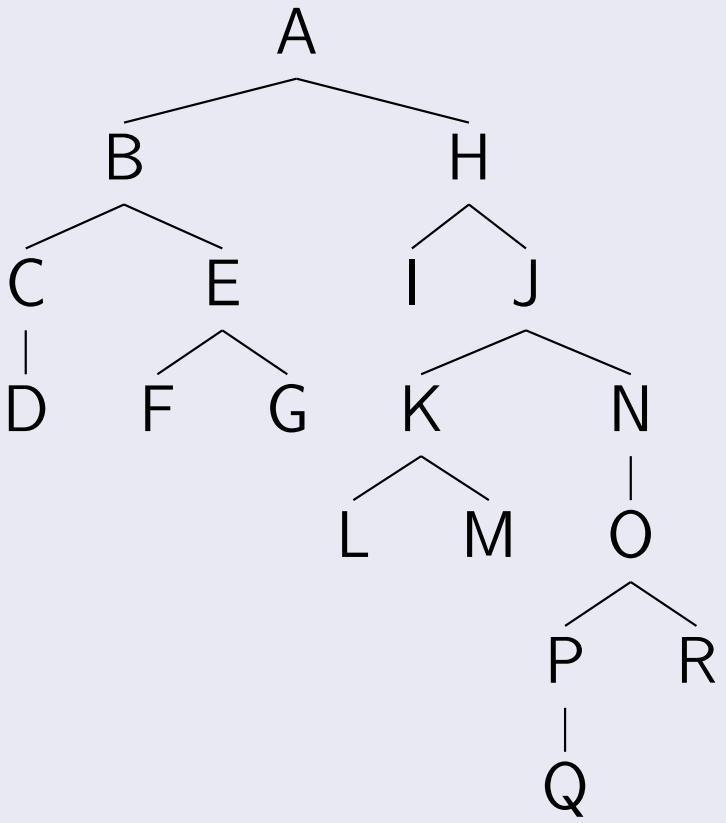


- C-Command: X c-commands Y if and only if the node that immediately dominates X dominates Y, and X does not dominate Y.

  Less formally, a node X c-commands its sisters and everything contained inside its sisters.

Geometric relations in a tree

C-Command

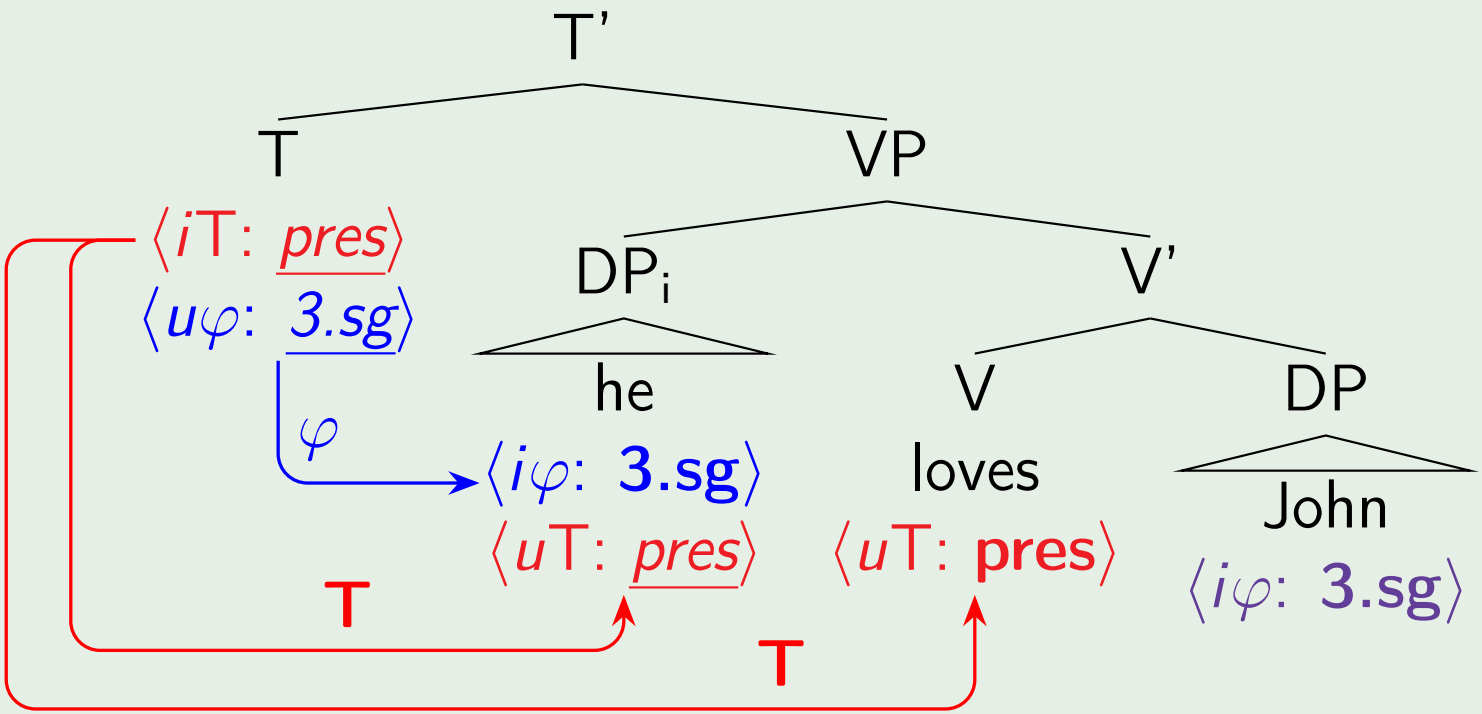


- A *doesn't c-command* anything;
- B *c-commands* H and everything under H, but not nodes C-G;
- H *c-commands* B and everything under B, but not nodes I-R;
- I *c-commands* nodes J-R;
- D *doesn't c-command* anything;
- L and M *c-command* each other;
- D is only *c-commanded* by E and H.

Agreement and c-command

(1) He loves John.

- Probes search for Goals that they c-command.
- There is never an upward search.



c-command

- c-command seems like a pretty arbitrary relation at first.
- We need more evidence that c-command is important for the grammar.
- Next lecture: Binding Theory!

Binding Theory

Referring to persons

There are several ways to refer to a particular person:

(2)
a. **John** came in.
b. Then, **John** left.
c. **He** took **his** umbrella.
d. **He** hurt **himself** with it when **he** tried to open it.
e. **The idiot** can't even open an umbrella!

Vocabulary

Referential Expression:	John
Pronoun:	he, his, him
Reflexive:	himself
Epithet:	the idiot

Pronouns and Reflexives

Why do we use pronouns and reflexives and when?

- We don't need to be more specific than necessary.
- We also need to have a way of finding out what the pronoun/reflexives refers to.
- To denote that two phrases are coreferential, i.e. refer to the same individual, we use indices.

(3) a. John$_i$ said that he$_i$ was sick.
b. The TA who graded him$_i$ says that John$_i$ did well.

Impossible coreference

In a lot of cases usage of pronouns and reflexives leads to ungrammaticality:

(4)
a. *Himself$_i$ should decide soon.
b. *Mary$_k$ wrote a letter to himself$_j$ last year.
c. *John$_j$ hurt him$_j$.
d. *John$_j$ says Mary$_k$ likes himself$_j$.
e. *Herself$_j$ likes Mary$_j$'s mother$_k$.
f. *He$_j$ heard that [the idiot]$_j$ should win.
g. *He$_j$ saw John$_j$.

Anaphors

Types of anaphors

Anaphors: Elements that have no independent reference, but depend on some other element for their interpretation.

- Reflexive pronouns: myself, yourself, herself, himself, itself, ourselves, yourselves, themselves
- Reciprocals: each other

(5) a. Sally$_i$ criticized herself$_i$.
b. [The puppies]$_i$ played with [each other]$_i$.

Anaphor properties

(6) a. *Herself$_i$ is tired.
b. I saw John$_i$.
*Sally$_k$ likes himself$_i$.
c. I saw John$_i$.
*Himself$_i$ laughed.

Antecedent in the same sentence

- An anaphor needs an antecedent within the same sentence.
- Antecedent is an element which provides the value for an anaphor, i.e. an element that the anaphor is coreferential with.

Anaphor properties

(7) a. The girl$_i$ criticized herself$_i$.
b. *The girl$_i$ criticized himself$_i$.
c. *The girl$_i$ criticized themselves$_i$.

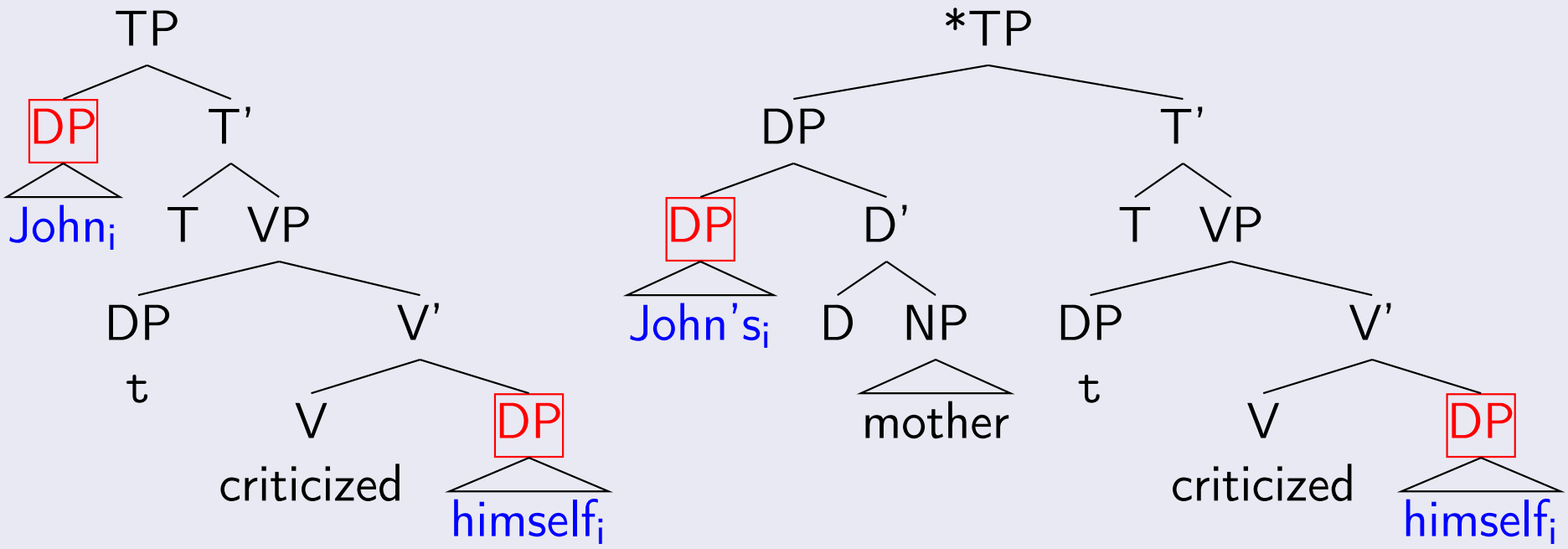
Agreement

- Reflexives often have person, number, gender marking: himself, herself, themselves, myself, etc.
- A reflexive must agree with its antecedent in person, number, and gender.
- **Note:** Some languages do not have gender/person/number on reflexives (reflexive is just *self*).

Anaphor properties

(8) a. John$_i$ criticized himself$_i$.
b. *[John$_i$'s mother]$_k$ criticized himself$_i$.

Relation between the anaphor and its antecedent?

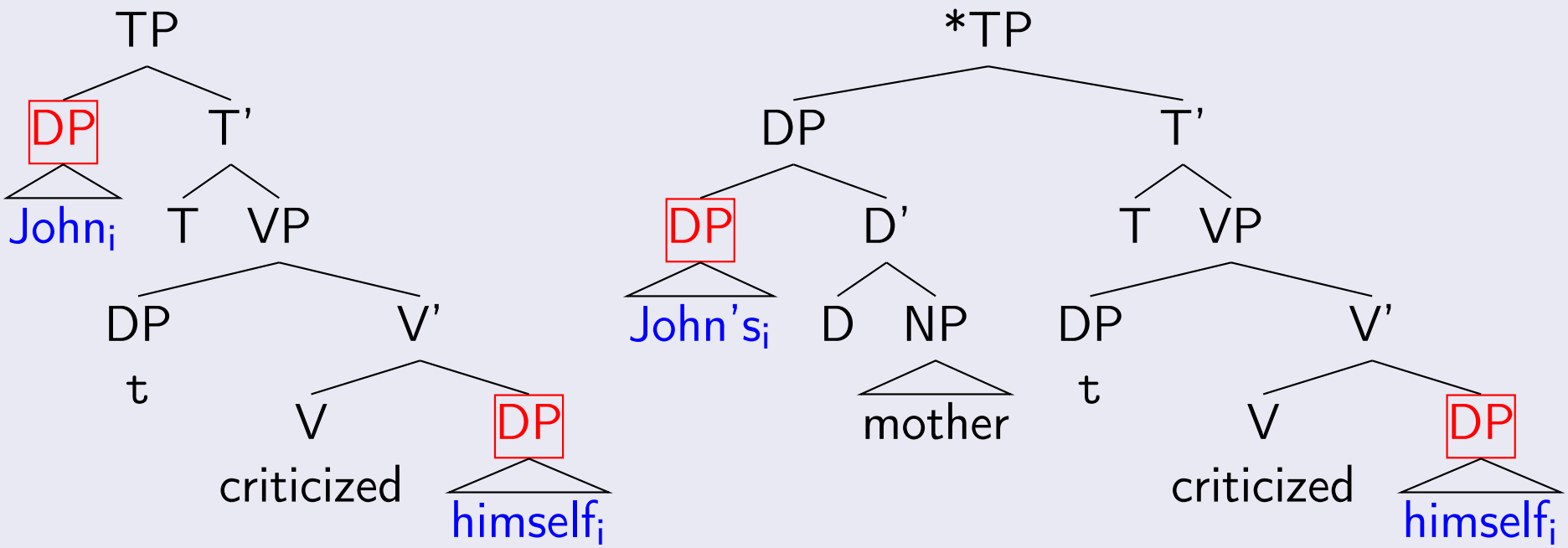


Anaphor properties

c-command

- The DP antecedent of a reflexive or reciprocal must c-command the reflexive.

Relation between the anaphor and its antecedent?

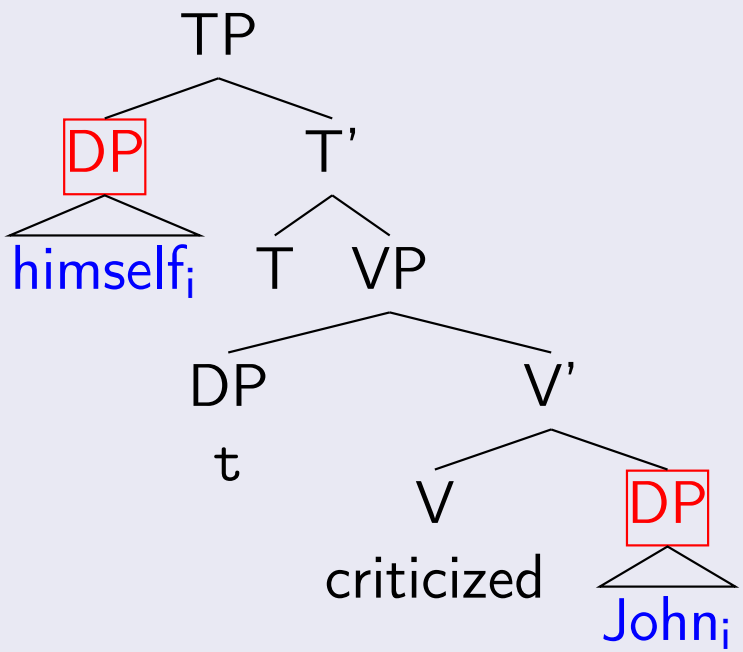


Anaphor properties

(9) *Himself$_i$ criticized John$_i$.

Relation between the anaphor and its antecedent?

- c-command solution explains the ungrammaticality!



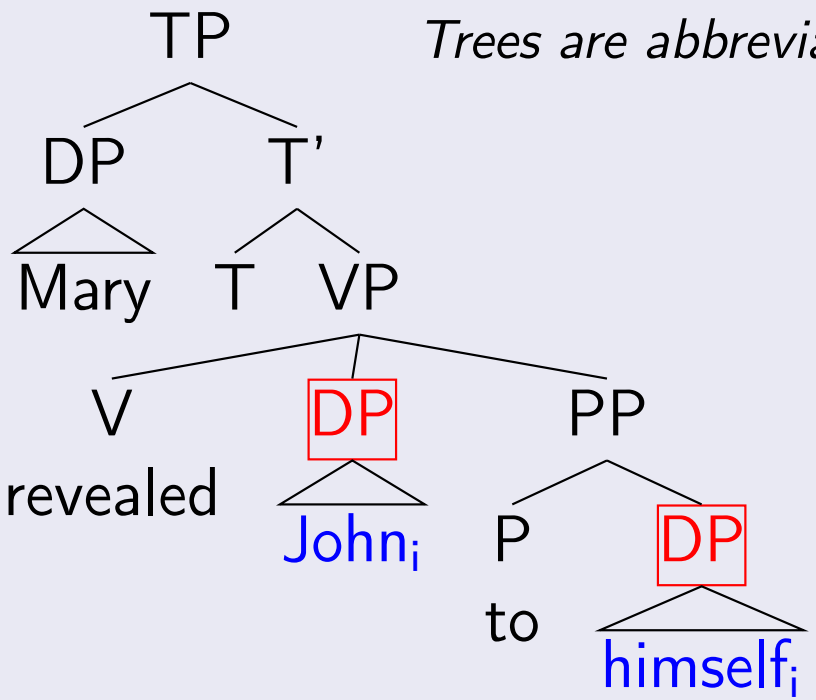
Multiple complements

(10) *Verbs with two complements:*

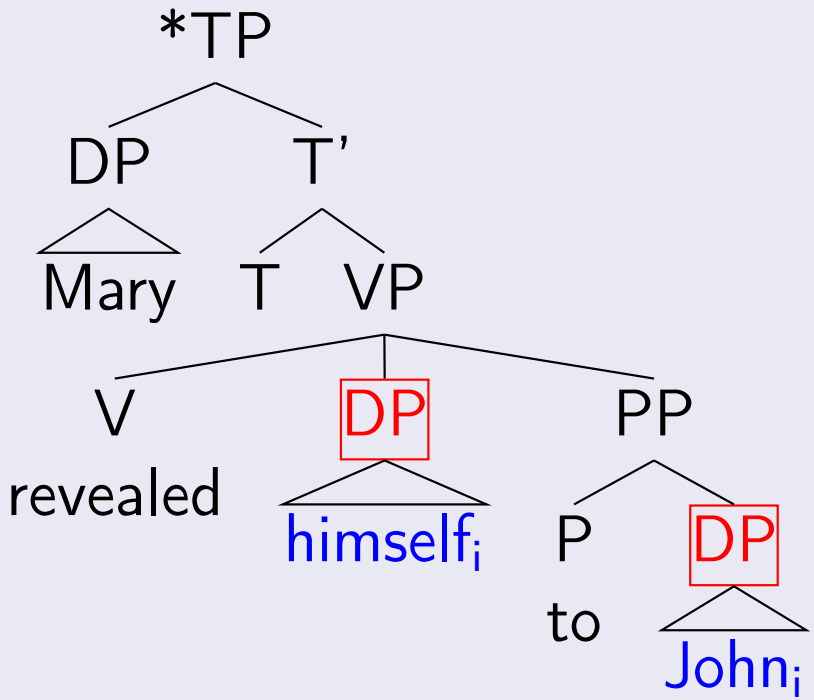
a. Mary revealed John_i [PP to himself_i].

b. *Mary revealed himself_i [PP to John_i].

- Our theory correctly predicts the contrast!



Trees are abbreviated



Intermediate summary

Conditions on anaphors

- Antecedents must be present in the same sentence as anaphors.
- Anaphors must share person/number/gender features with their antecedent.
- DP antecedent must c-command the anaphor.

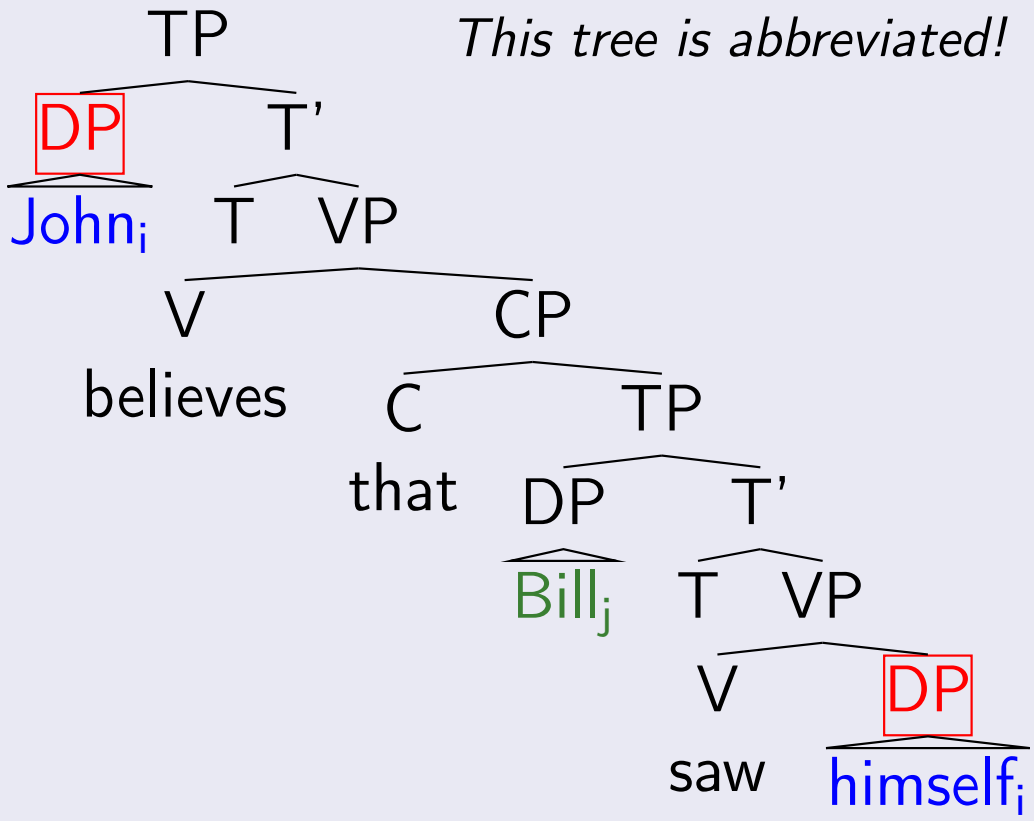
Locality

(11) a. John$_i$ believes that Bill$_j$ saw himself$_j$.
b. *John$_i$ believes that Bill$_j$ saw himself$_k$.
c. *John$_i$ believes that Bill$_j$ saw himself$_i$.

Our theory so far correctly predicts the status of (11-a) and (11-b), but what is wrong with (11-c)?

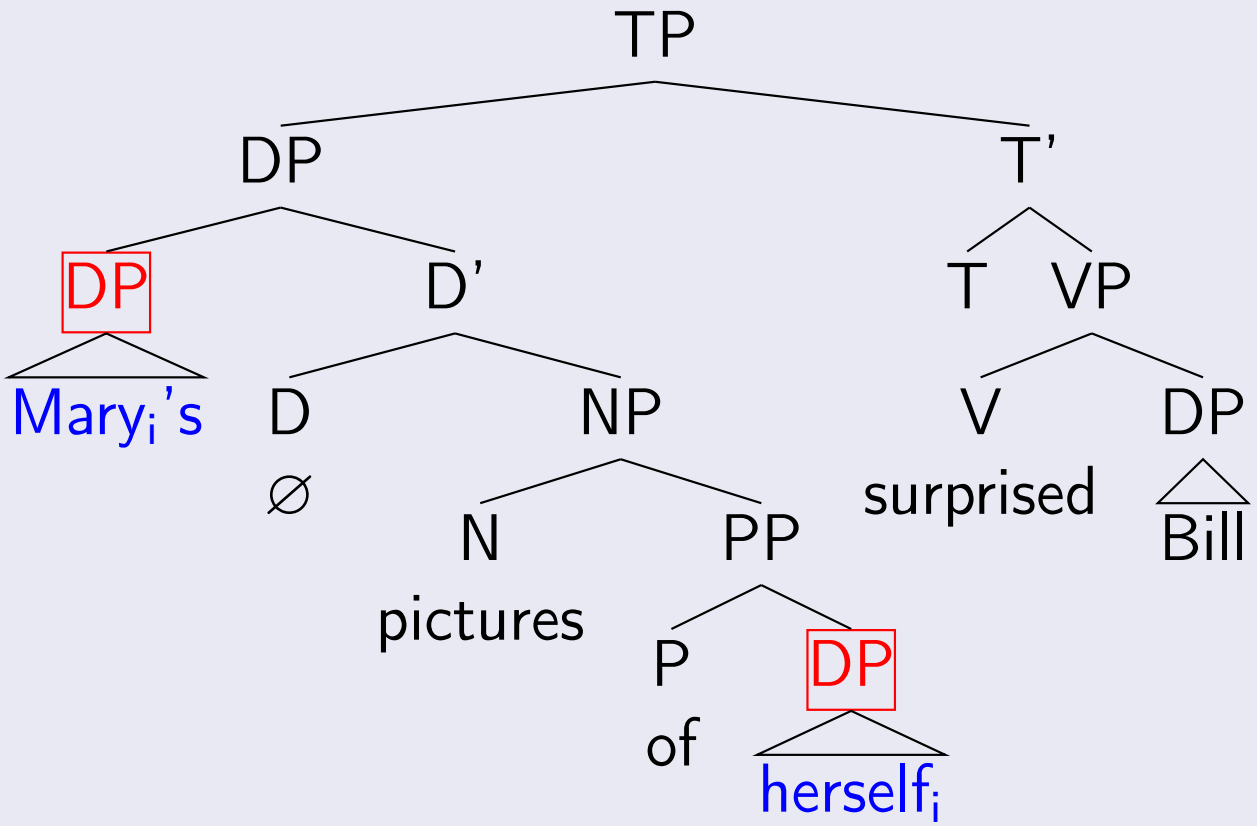
- The antecedent John$_i$ is *too far away*!
- The reflexive and its antecedent must be in the same TP/same clause.

This tree is abbreviated!

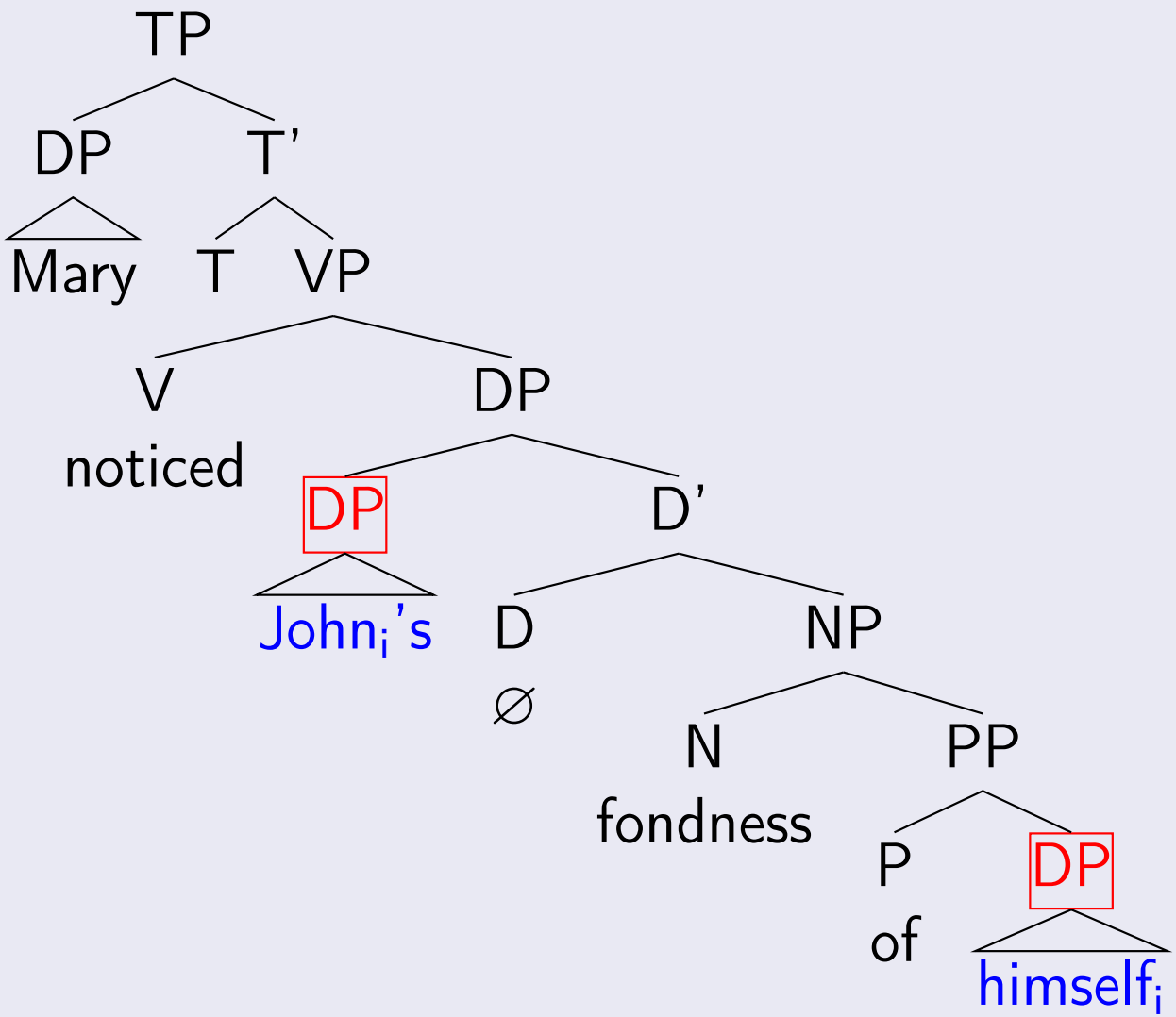


Anaphors inside DPs

(12) a. [$_{DP}$ Mary$_i$'s pictures of herself$_i$] surprised Bill.
b. Mary noticed [$_{DP}$ John$_i$'s fondness of himself$_i$].



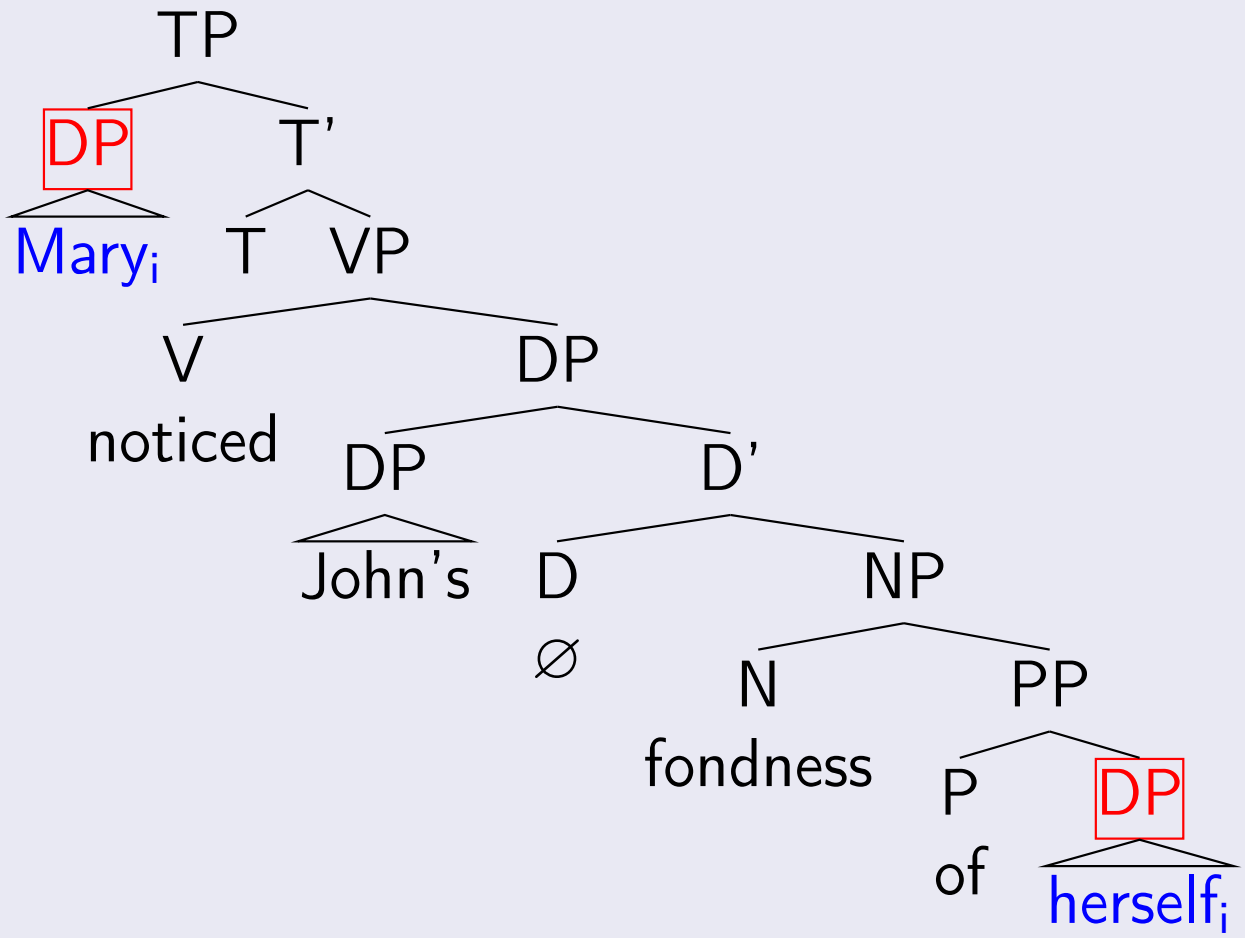
Anaphors inside DPs



Anaphors inside DPs

What is wrong with (13)?

(13) *Mary$_i$ noticed John's fondness of herself$_i$.



Anaphors inside DPs

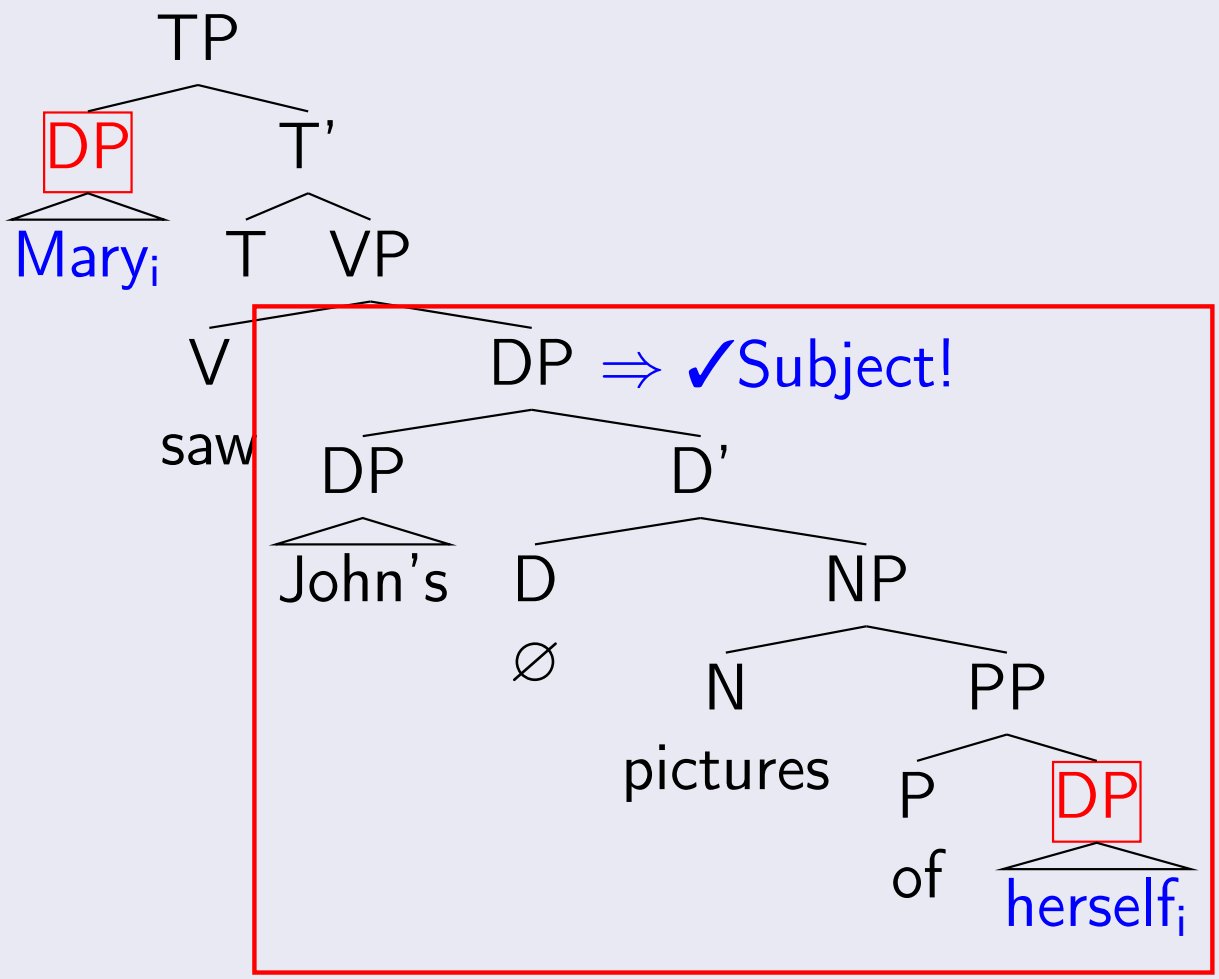
(14) a. *Mary$_i$ noticed John's fondness of herself$_i$.
b. Mary noticed John$_j$'s fondness of himself$_j$.

- It seems that not only TP/Clause can be a binding domain, but also DP.
  - Binding domain — a domain (part of the structure), where the anaphor can have an antecedent.
- But it is not just any DP, only DPs with subjects — POSSESSORs or AGENTs.

(15) a. Mary$_i$ saw [$_{DP}$ John$_j$'s pictures of himself$_j$].
b. *Mary$_i$ saw [$_{DP}$ John's pictures of herself$_i$].
c. Mary$_i$ saw [$_{DP}$ several pictures of herself$_i$].

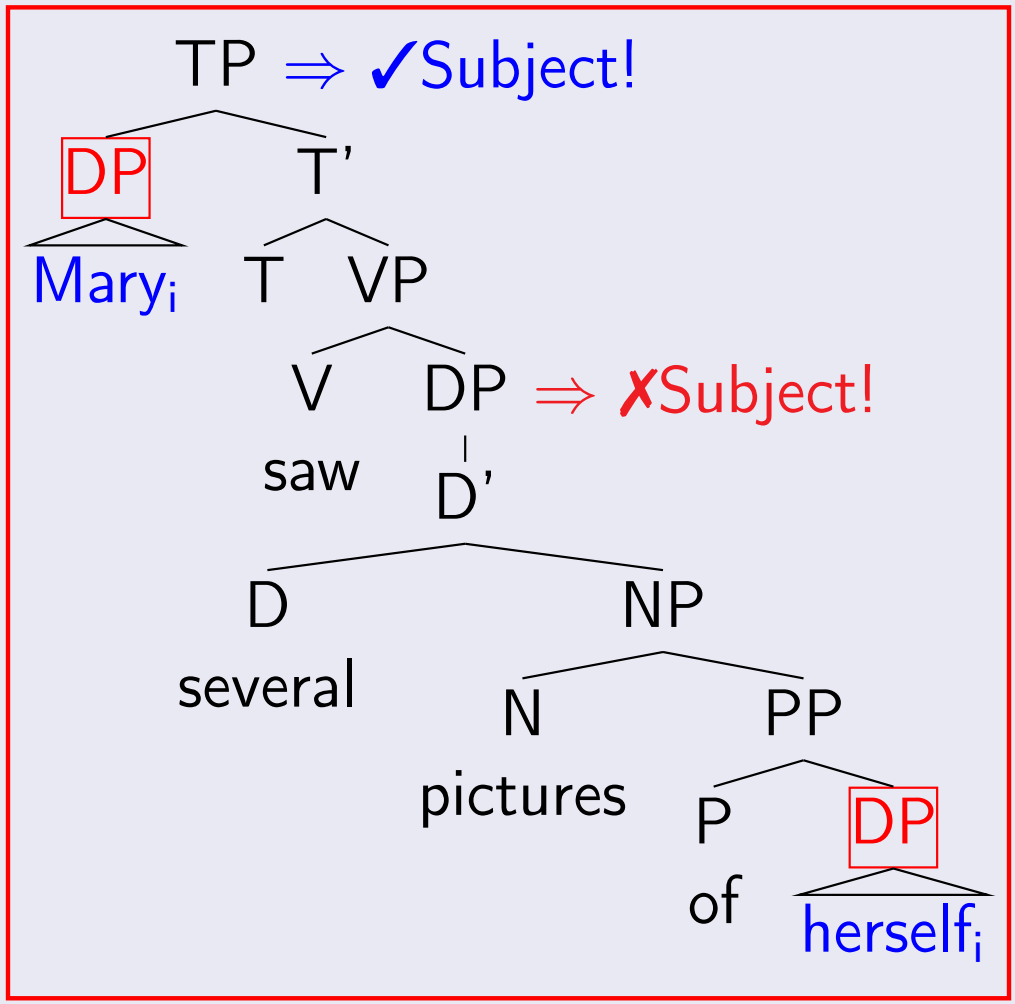
Anaphor domains

(16) *Mary$_i$ saw John's pictures of herself$_i$.



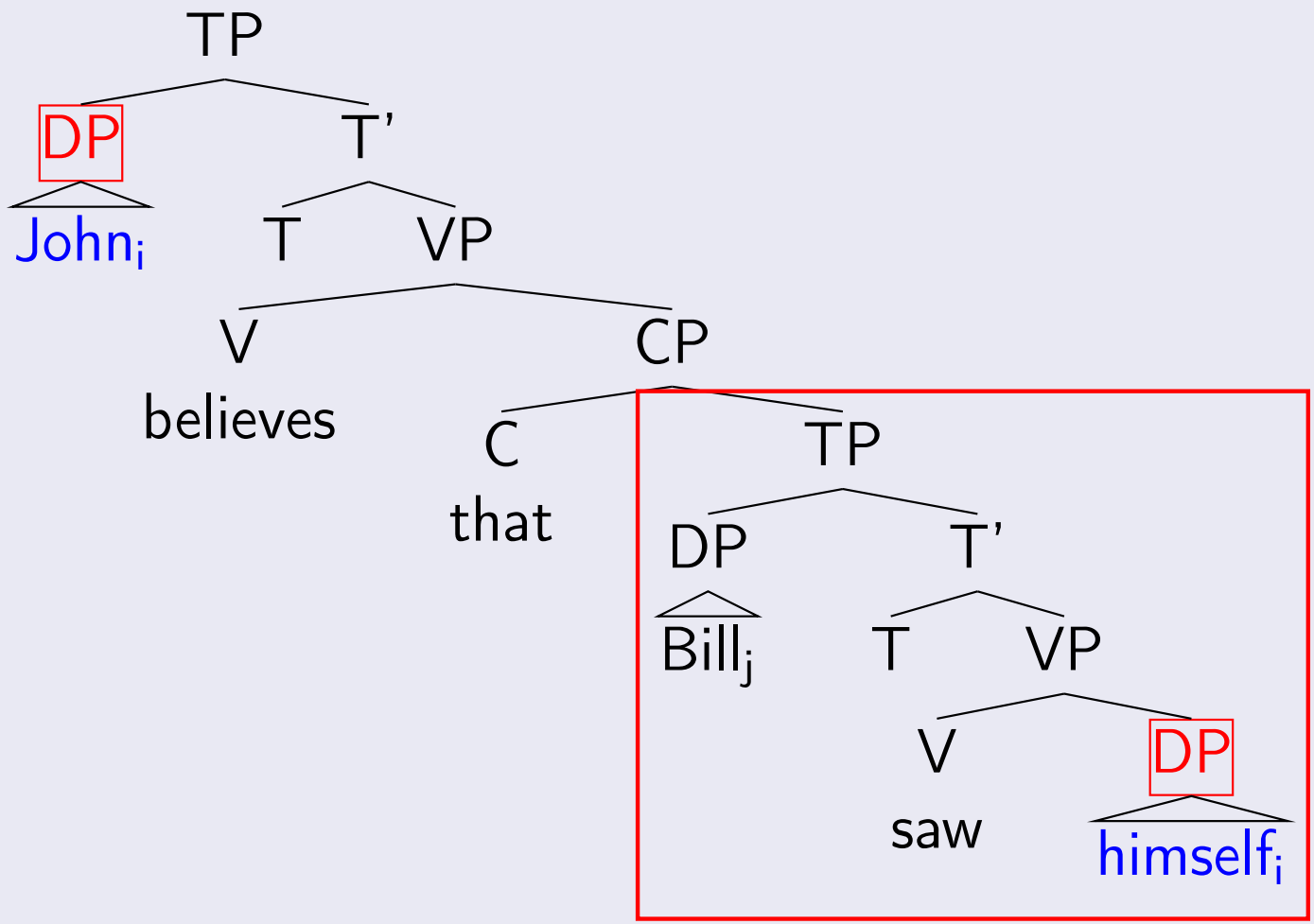
Anaphor domains

(17) Mary$_i$ saw several pictures of herself$_i$.



Anaphor domains

(18) *John$_i$ believes that Bill saw himself$_i$.



Reciprocals

Reciprocals, such as each other, behave in the same way:

(19) a. John$_i$ heard their$_j$ criticism of each other$_j$.
b. John$_i$ heard their$_j$ criticism of themselves$_j$.

(20) a. *They$_i$ heard John$_j$'s criticism of each other$_i$.
b. *They$_i$ heard John$_j$'s criticism of themselves$_i$.

(21) a. John$_j$ heard that they$_i$ criticized each other$_i$.
b. John$_j$ heard that they$_i$ criticized themselves$_i$.
c. *They$_i$ heard that John$_j$ criticized each other$_i$.

Principle A

- A DP is bound if and only if it is coreferential with a c-commanding antecedent.
- The domain of an anaphor is an XP with a subject that the anaphor is contained in. XP can be either DP or TP.
- Principle A: An anaphor must be bound in its domain:
  - an anaphor must have an antecedent;
  - the antecedent must c-command the anaphor;
  - the antecedent must be in the domain of the anaphor, i.t. in the same XP with a subject as the anaphor.

Anaphors vs. Pronouns

(22) a. Mary$_i$ likes herself$_i$.
b. *Mary$_i$ likes her$_i$.

(23) a. I saw John$_i$. *Bill likes himself$_i$.
b. I saw John$_i$. Bill likes him$_i$.

(24) a. *John$_i$'s mother likes himself$_i$.
b. John$_i$'s mother likes him$_i$.

(25) a. John$_i$ believes that Bill$_j$ saw himself$_j$.
b. *John$_i$ believes that Bill$_j$ saw him$_j$.

(26) a. *John$_i$ believes that Bill$_j$ saw himself$_i$.
b. John$_i$ believes that Bill$_j$ saw him$_i$.

Anaphors vs. Pronouns

(27) a. *Mary$_i$ noticed [John$_j$'s fondness of herself$_i$].
b. Mary$_i$ noticed [John$_j$'s fondness of her$_i$].

(28) a. Mary$_i$ noticed [John$_j$'s fondness of himself$_j$].
b. *Mary$_i$ noticed [John$_j$'s fondness of him$_j$].

Pronouns vs. Anaphors

- Pronouns seems to be in complementary distribution with anaphors.

- Principle B: A pronoun must be free in its domain:
  - a pronoun cannot have a c-commanding antecedent in its domain.

Intermediate Summary

Definitions

X **binds** Y if

- X and Y are coreferential; and
- X c-commands Y.

X is **free** if it is not bound.

Domains

Domain of Y (anaphor or pronoun): a minimal XP (=TP or DP) that contains Y and a subject.

Anaphors and Pronouns

Principle A: Anaphors must be bound in their domain.
Principle B: Pronouns must be free in their domain.

R-Expressions

(29) a. *He$_i$ likes John$_i$.
b. *He$_i$ likes [the student]$_i$.

(30) a. *He$_i$ knows that Mary likes John$_i$.
b. *He$_i$ knows that Mary likes [the student]$_i$.

- None of these sentences can be accounted for by Principles A and B.
- Expressions like Mary, the student are called R-Expressions (Referential Expressions).
- Antecedent in these cases is a Pronoun
- R-Expression is below its antecedent.

R-Expressions

It's not about linear order

(31) a. *He$_i$ said that Peter$_i$ took the car.
b. After you spoke to him$_i$, Peter$_i$ took the car.
c. The builder of his$_i$ house visited Peter$_i$.

- **Principle C:** An R-expression must be free.
  - an R-expressions cannot have a c-commanding antecedent.

Non-locality

No locality involved!

- This Principle C is non-local: there is no need to specify the binding domain (binding domain is the entire sentence!)

(32) a. *He$_i$ said that John$_i$ would leave.
b. *He$_i$ said that Mary thought that you talked to the person who saw Peter$_i$.

- Antecedent can also be another R-expression:

(33) a. *?John$_i$ said that John$_i$ would leave.
b. *The student$_i$ said that Mary thought that you talked to the person who saw Peter$_i$.

Binding Theory Summary

Definitions

X **binds** Y if

- X and Y are coreferential; and
- X c-commands Y.

X is **free** if it is not bound.

Domains

Domain of Y (anaphor or pronoun): a minimal XP (=TP or DP) that contains Y and a subject.

Principle A: Anaphors must be bound in their domain.
Principle B: Pronouns must be free in their domain.
Principle C: R-Expressions must be free.