

# CAS LX 522

## Syntax I

# 8

Binding theory, NPIs, c-command  
(4.3)

## Mary saw him

- A pronoun like *him* refers to somebody in (our mental model of) the world.
- A pronoun refers to somebody or something that's been part of the conversation, or that you are pointing at.
- When you hear a pronoun and want to interpret it, you have to resolve its reference.

## John arrived. Mary saw him.

- Here, *him* is likely to refer to John.
- Though we could be pointing at Bill, in which case *him* refers to Bill.
- The person who *hears* this has to figure it out.
- The person who *says* this knows who they meant.
- And had the grammar that generated the sentence.

## Indices

- To describe what the speaker intended (that is, which sentence the speaker actually used), we use an *index* on each referent.
  - 1) John<sub>i</sub> arrived. Mary<sub>j</sub> saw him<sub>i</sub>.
  - 2) John<sub>i</sub> arrived. Mary<sub>j</sub> saw him<sub>k</sub>.
- The index represents what you are “pointing at” (perhaps just mentally).
- Two noun phrases that share an index *necessarily* share the same reference. They are coreferential.

## Seeing him in the mirror

- Regard: Ike<sub>i</sub>, Jim<sub>j</sub>, Kristin<sub>k</sub>.
  - 1) There's Ike<sub>i</sub>. Kristin<sub>k</sub> saw him<sub>j</sub> in the mirror.
  - 2) There's Jim<sub>j</sub>. Kristin<sub>k</sub> saw him<sub>j</sub> in the mirror.
  - 3) There's Ike<sub>i</sub>. Jim<sub>j</sub> saw him<sub>i</sub> in the mirror.
  - 4) There's Jim<sub>j</sub>. \*Jim<sub>j</sub> saw him<sub>j</sub> in the mirror.
- What's wrong with that last one?

## Seeing himself in the mirror

- Right, ok. Jim<sub>j</sub> saw *himself*<sub>j</sub> in the mirror.
- For some reason, when *Jim* is the subject and *him* is an object, *him* can't refer to *Jim*. Furthermore:
  - 1) Jim's father<sub>k</sub> saw him<sub>i/j/\*k</sub> in the mirror.
  - 2) Jim's father<sub>k</sub> saw himself<sub>k/\*j/\*i</sub> in the mirror.
  - 3) Jim's father<sub>k</sub> said that Mary<sub>m</sub> saw him<sub>i/j/k</sub> in the mirror.
  - 4) Mary<sub>m</sub> introduced Jim<sub>j</sub> to him<sub>i/\*j</sub>.
  - 5) Mary<sub>m</sub> introduced Jim's father<sub>k</sub> to him<sub>i/j/\*k</sub>.

## Binding Theory

- **Binding Theory** consists of three Principles that govern the allowed distribution of NPs.
- Pronouns: *he, her, it, she, ...*
- Anaphors: *himself, herself, itself, ...*
- R-expressions: *Pat, the student, ...*

## R-expressions and anaphors

- R-expressions are NPs like *Pat*, or *the professor*, or *an unlucky farmer*, which get their meaning by referring to something in the world. Most NPs are like this.
- An anaphor does *not* get its meaning from something in the world—it depends on something else in the sentence.
  - 1) John saw himself in the mirror.
  - 2) Mary bought herself a sandwich.

## Pronouns

- A pronoun is similar to an anaphor in that it doesn't refer to something in the world but gets its reference from somewhere else.
  - 1) John told Mary that he likes pizza.
  - 2) Mary wondered if she agreed.
- ...but it doesn't *need* to be something in the sentence.
  - 1) Mary concluded that he was crazy.

## Constraints on coreference

- 1) John<sub>i</sub> saw himself<sub>i</sub>.
  - 2) \*Himself<sub>i</sub> saw John<sub>i</sub>.
  - 3) \*John<sub>i</sub>'s mother saw himself<sub>i</sub>.
- It is impossible to assign the same referent to *John* and *himself* in the (2) and (3). What is different between the good and bad sentences?

## John's mother

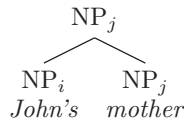
- *John's mother* is an NP.
  - 1) [John's mother]<sub>i</sub> saw herself<sub>i</sub>.
  - 2) She saw John.
- But it's an NP that is made up of smaller pieces (*John's* and *mother*).
- So what is the internal structure of the NP *John's mother*?

## [<sub>NP</sub> John's mother]

- Remember that pronouns come in three distinguishable forms (in English):
  - *I, he, she*      nominative
  - *Me, him, her*    accusative
  - *My, his, her*    genitive
- The genitive case forms seem to have pretty much the same kind of "possessive" meaning that *John's* does.
- So, let's suppose that *John's* is the genitive case form of *John*.

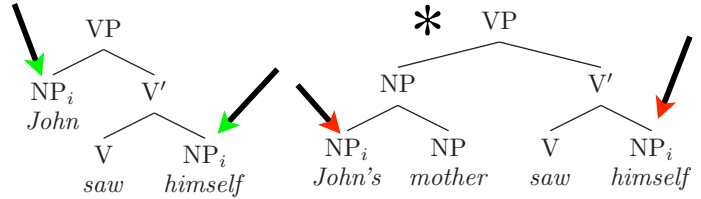
## [<sub>NP</sub> John's mother]

- Another point about *John's mother* is that it seems that the head should be *mother*.
- *John's* sort of modifies *mother*.
- Sort of like an adjective does... sort of like an adverb does for a verb...
- Let's suppose that *John's* is just adjoined to the NP *mother*.
  - Only for now! To be revised in ch. 7.
  - This is kind of hard to draw clearly.



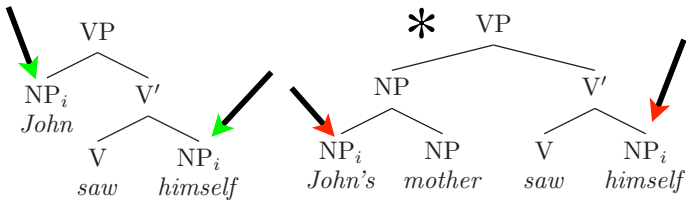
## Command domains

- What is the difference between the relationship between *John* and *himself* in the first case and in the second case?



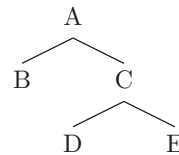
## Command domains

- We think of the position that *John* occupies in in the first tree as being a position from which it “commands” the rest of the tree. It is hierarchically superior in a particular way. (Really, “non-inferior”)



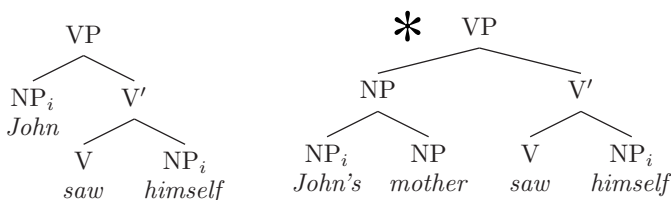
## Tree relations

- A node X c-commands its sisters and the nodes dominated by its sisters.
- B c-commands C, D, E.
- D c-commands E.
- E c-commands D.
- C c-commands B.
- A c-commands nothing.



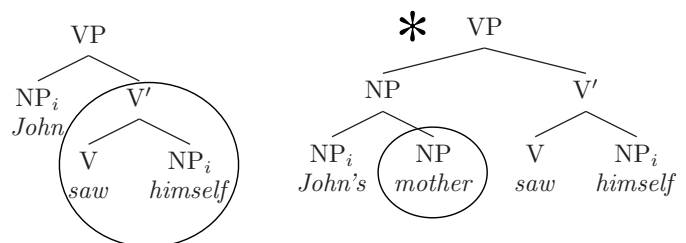
## C-command domains

- So, again, what is the difference between the relationship between *John* and *himself* in the first case and in the second case?



## C-command domains

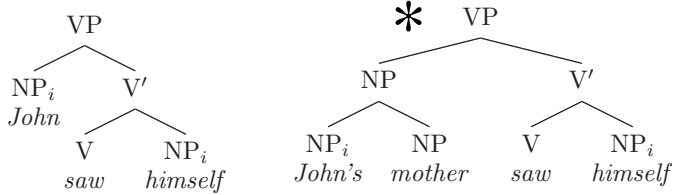
- In the first case, the NP *John* c-commands the NP *himself*. But not in the second case.



## Binding

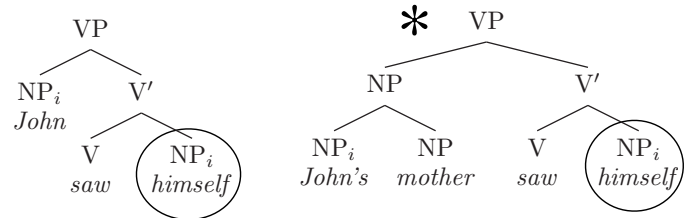
A binds B iff

- A c-commands B
- A is coindexed with B “if and only if”



## Principle A

**Principle A of the Binding Theory** (preliminary)  
An anaphor must be bound.



A is for anaphor? That's good enough for me.

## Principle A

- We now know why these are ungrammatical too:
  - 1) \*Himself<sub>i</sub> saw John<sub>i</sub> in the mirror.
  - 2) \*Herself<sub>i</sub> likes Mary<sub>i</sub>'s father.
  - 3) \*Himself<sub>i</sub> likes Mary<sub>i</sub>'s father<sub>i</sub>.
    - There is nothing that c-commands and is coindexed with *himself* and *herself*.
    - The anaphors are not bound, which violates Principle A.

## Binding domains

- But this is not the end of the story; consider
  - 1) \*John<sub>i</sub> said that himself<sub>i</sub> likes pizza.
  - 2) \*John<sub>i</sub> said that Mary called himself<sub>i</sub>.
- In these sentences the NP *John* c-commands and is coindexed with (=binds) *himself*, satisfying our preliminary version of Principle A—but the sentences are ungrammatical.

## Binding domains

- 1) John<sub>i</sub> saw himself<sub>i</sub> in the mirror.
  - 2) John<sub>i</sub> gave a book to himself<sub>i</sub>.
  - 3) \*John<sub>i</sub> said that himself<sub>i</sub> is a genius.
  - 4) \*John<sub>i</sub> said that Mary dislikes himself<sub>i</sub>.
- What is wrong? *John* binds *himself* in each case. What is different?
  - In the ungrammatical cases, *himself* is in an embedded clause.

## Binding domains

**Principle A of the Binding Theory** (revised)  
An anaphor must be bound in its binding domain.

**Binding Domain** (preliminary)

The binding domain of an anaphor is the smallest clause containing it.

- It seems that not only does an anaphor need to be bound, it needs to be bound nearby (or locally).

## Pronouns

- 1) \*John<sub>i</sub> saw him<sub>i</sub> in the mirror.
  - 2) John<sub>i</sub> said that he<sub>i</sub> is a genius.
  - 3) John<sub>i</sub> said that Mary dislikes him<sub>i</sub>.
  - 4) John<sub>i</sub> saw him<sub>i</sub> in the mirror.
- How does the distribution of pronouns differ from the distribution of anaphors?
  - It looks like it is just the *opposite*.

## Principle B

### Principle B of the Binding Theory

A pronoun must be free in its binding domain.

#### Free

Not bound

- 1) \*John<sub>i</sub> saw him<sub>i</sub>.
- 2) John<sub>i</sub>'s mother saw him<sub>i</sub>.



B is for bpronoun, that's good enough for me.

## Principle C

- We now know where pronouns and anaphors are allowed. Consider the following.
- \*Stuart<sub>i</sub> saw him<sub>i</sub> in the mirror.
- Stuart<sub>i</sub>'s mother saw him in the mirror.
- \*He<sub>i</sub> saw Stuart<sub>i</sub> in the mirror.
- His<sub>i</sub> mother saw Stuart<sub>i</sub> in the mirror.

## Principle C

- What's going wrong with these sentences? The pronouns are unbound as needed for Principle B. What are the binding relations here?
- \*He<sub>i</sub> likes John<sub>i</sub>.
- \*She<sub>i</sub> said that Mary<sub>i</sub> fears clowns.
- His<sub>i</sub> mother likes John<sub>i</sub>.
- His<sub>i</sub> mother said that John<sub>i</sub> fears clowns.



## Principle C

- Binding is a means of assigning reference.
- R-expressions have intrinsic reference; they can't be assigned their reference from somewhere else.
- R-expressions can't be bound, at all.

### Principle C of the Binding Theory

An R-expression must be free.

C is for r-expression, that's... oh, never mind.

### Principle A

An anaphor must be bound in its binding domain.

### Principle B

A pronoun must be free in its binding domain.

### Principle C

An R-expression must be free.

### Binding

X binds Y iff X c-commands Y and X and Y are coindexed (a.k.a.: "Y is bound by X").

### Free

Not bound

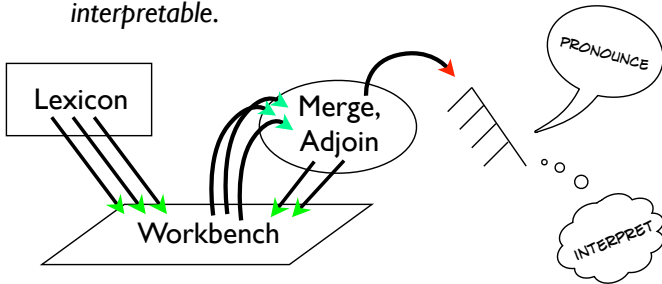
### Binding Domain

The binding domain of an anaphor is the smallest clause containing it.

## Binding Theory

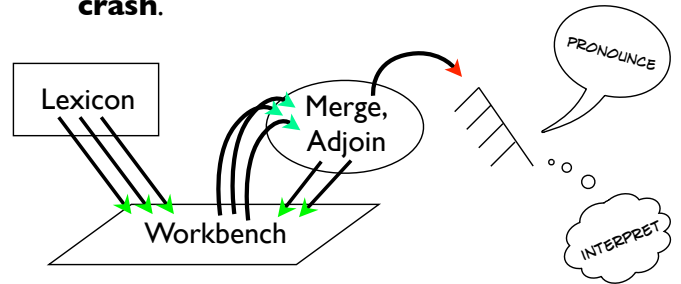
## Constraints on interpretation

- Binding Theory is about interpretation.
- Only a structure that satisfies Binding Theory is *interpretable*.



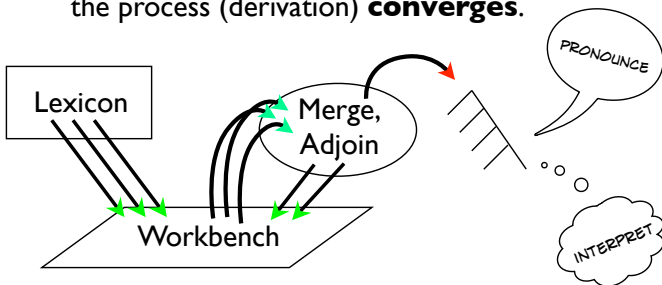
## Constraints on interpretation

- If we put together a tree that isn't interpretable, the process (derivation) is sometimes said to **crash**.



## Constraints on interpretation

- If we succeed in putting together a tree that is interpretable (satisfying the constraints), we say the process (derivation) **converges**.



## I hadn't seen anyone ever lift a finger yet.

- |   |  |
|---|--|
| 1) Pat didn't invite anyone to the party.   | 7) *Pat invited anyone to the party.       |
| 2) Pat does not know anything about syntax. | 8) *Pat knows anything about syntax.       |
| 3) Pat hasn't ever been to London.          | 9) *Pat has ever been to London.           |
| 4) Pat hasn't seen <i>Forrest Gump</i> yet. | 10) *Pat has seen <i>Forrest Gump</i> yet. |
| 5) Pat didn't lift a finger to help.        | 11) *Pat lifted a finger to help.          |
| 6) Pat didn't have a red cent.              | 12) *Pat had a red cent.                   |

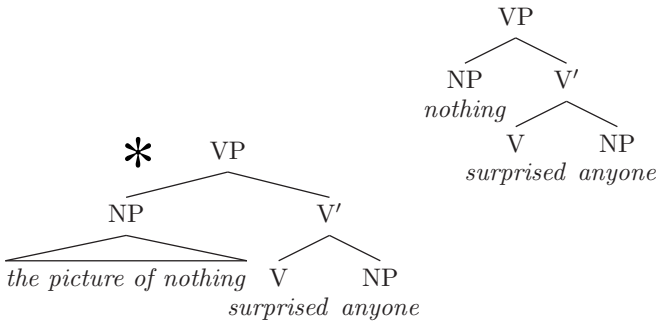
## Licensing

- NPIs (Negative Polarity Items) are permitted, given "license to appear" by a negative expression. Without a licenser, an NPI is not possible.
  - 1) John didn't invite Mary/anyone to the party (, did he?)
  - 2) John invited Mary/\*anyone to the party (, didn't he?)
  - 3) Nobody invited Mary/\*anyone to the party (, did they?)
- NPIs are licensed by negation in a sentence.

## Negative Polarity Items

- But it isn't quite as simple as that. Consider:
  - 1) I didn't see anyone.
  - 2) \*I saw anyone.
  - 3) \*Anyone didn't see me.
  - 4) \*Anyone saw me.
- It seems that simply having negation in the sentence isn't *by itself* enough to license the use of an NPI.
- Negation has to precede the NPI?
  - 5) \*The picture of nobody pleased anyone.

# Negative Polarity Items



# Pondering some apparent early disobedience

- Young kids (5-6 years) seem to accept sentences like (1) as meaning what (2) means for adults.
  - 1) Mama Bear is pointing to her.
  - 2) Mama Bear is pointing to herself.
- Suppose that, contrary to appearances, kids *do* know and obey Principle B. Look carefully at the definitions of Binding Theory. If Principle B isn't the problem, what do you think kids are getting wrong to allow (1) to have the meaning of (2)?
- Think in particular about how you decide which index to assign to *her*. What is the implication of having the same index? What is the implication of having different indices?