

CAS LX 522

Syntax I

7

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_i arrived. Mary_j saw him_i.
 - 2) John_i arrived. Mary_j saw him_k.
- 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_i, Jim_j, Kristin_k.
 - 1) There's Ike_i. Kristin_k saw him_j in the mirror.
 - 2) There's Jim_j. Kristin_k saw him_j in the mirror.
 - 3) There's Ike_i. Jim_j saw him_i in the mirror.
 - 4) There's Jim_j. *Jim_j saw him_j in the mirror.
- What's wrong with that last one?

Seeing himself in the mirror

- Right, ok. Jim_j saw *himself*_j 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_j's father_k saw him_{i/j/*k} in the mirror.
 - 2) Jim_j's father_k saw himself_{k/*j/*i} in the mirror.
 - 3) Jim_j's father_k said that Mary_m saw him_{i/j/k} in the mirror.
 - 4) Mary_m introduced Jim_j to him_{i/*j}.
 - 5) Mary_m introduced Jim_j's father_k to him_{i/j/*k}.

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_i saw himself_i.
 - 2) *Himself_i saw John_i.
 - 3) *John_i's mother saw himself_i.
- 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

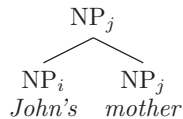
- *John's mother* is an NP.
 - 1) [John's mother]_i saw herself_i.
 - 2) She saw John.
- But it's an NP that is made up of smaller pieces (*John's* and *mother*).
- So what is the internal structure of the NP *John's mother*?

[_{NP} 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*.

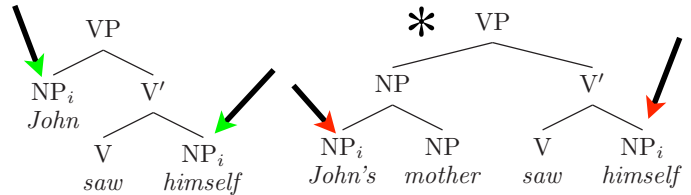
[_{NP} John's mother]

- 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.



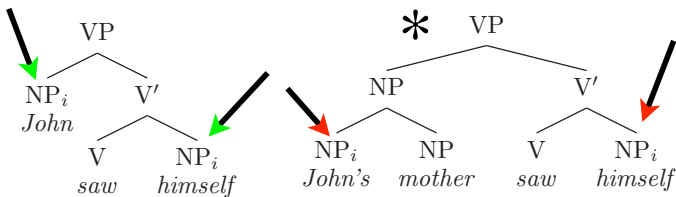
Command domains

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



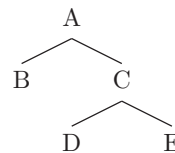
Command domains

- 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”)



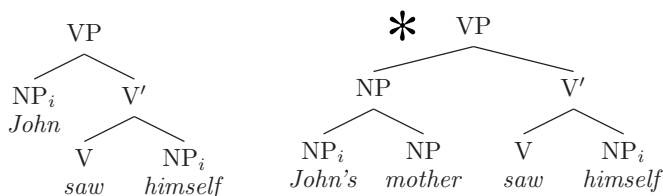
Tree relations

- 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.



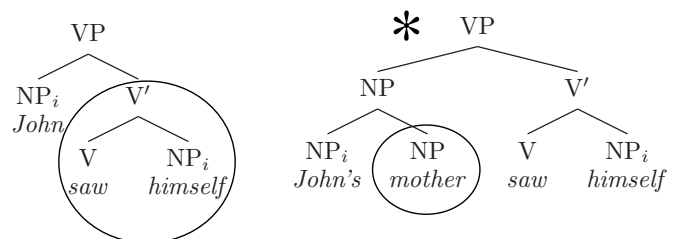
C-command domains

- 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

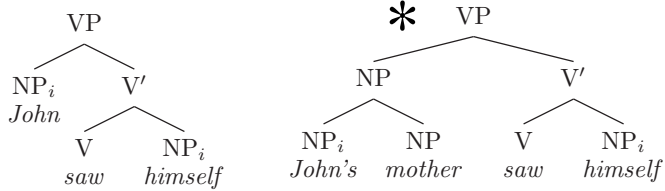
- In the first case, the NP *John* c-commands the NP *himself*. But not in the second case.



Binding

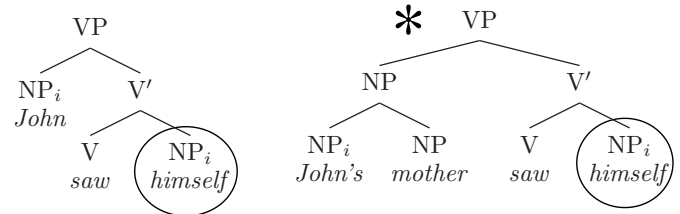
A binds B iff

- 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_i saw John_i in the mirror.
 - 2) *Herself_i likes Mary_i's father.
 - 3) *Himself_i likes Mary's father_i.
 - 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_i said that himself_i likes pizza.
 - 2) *John_i said that Mary called himself_i.
- 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_i saw himself_i in the mirror.
 - 2) John_i gave a book to himself_i.
 - 3) *John_i said that himself_i is a genius.
 - 4) *John_i said that Mary dislikes himself_i.
- 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_i saw him_i in the mirror.
 - 2) John_i said that he_i is a genius.
 - 3) John_i said that Mary dislikes him_i.
 - 4) John_i saw him_i 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_i saw him_i.
- 2) John_i's mother saw him_i.



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_i saw him_i in the mirror.
- Stuart_i's mother saw him in the mirror.
- *He_i saw Stuart_i in the mirror.
- His_i mother saw Stuart_i 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_i likes John_i.
- *She_i said that Mary_i fears clowns.
- His_i mother likes John_i.
- His_i mother said that John_i 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

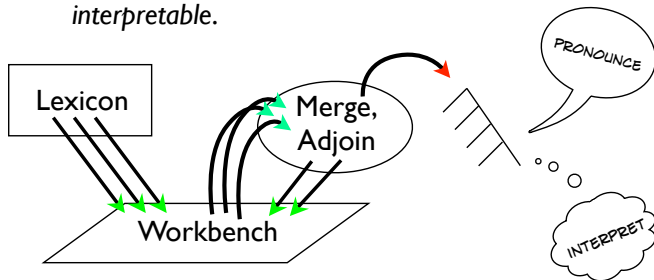
Binding Domain

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

Binding Theory

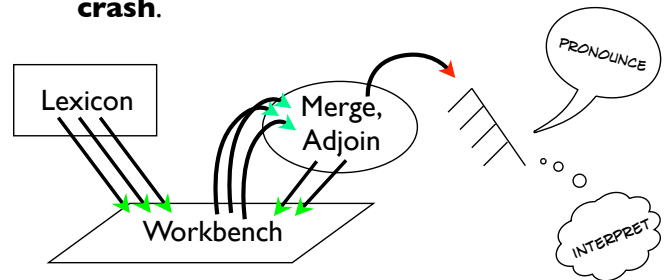
Constraints on interpretation

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



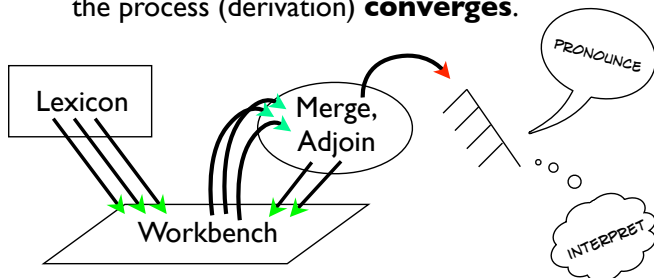
Constraints on interpretation

- 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:

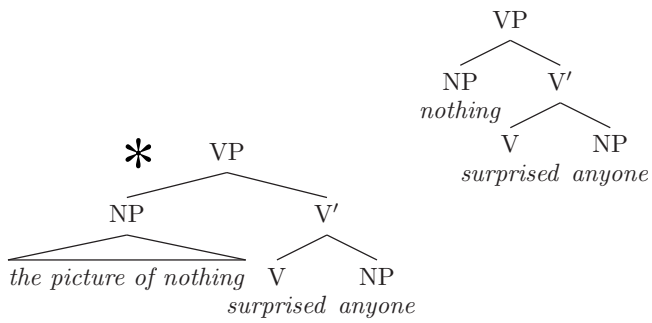
- 1) I didn't see anyone.
- 2) *I saw anyone.
- 3) *Anyone didn't see me.
- 4) *Anyone saw me.

- 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?