Ling 566
Oct 27, 2020

Binding Theory, Imperatives

Overview

- Review of Ch 1 informal binding theory
- What we already have that's useful
- What we add in Ch 7 (ARG-ST, ARP)
- Formalized Binding Theory
- Binding and PPs
- Examples
- Imperatives
- Reading questions

Some Examples from Chapter 1

- *She likes herself*
- **She$_i$ likes her$_i$.*
- *We gave presents to ourselves.*
- **We gave presents to us.*
- *We gave ourselves presents*
- **We gave us presents.*
- **Leslie told us about us.*
- *Leslie told us about ourselves.*
- **Leslie told ourselves about us.*
- **Leslie told ourselves about ourselves.*

Some Terminology

- Binding: The association between a pronoun and an antecedent.
- Anaphoric: A term to describe an element (e.g. a pronoun) that derives its interpretation from some other expression in the discourse.
- Antecedent: The expression an anaphoric expression derives its interpretation from.
- Anaphora: The relationship between an anaphoric expression and its antecedent.

The Chapter 1 Binding Theory Reformulated

- Old Formulation:
  - A reflexive pronoun must be an argument of a verb that has another preceding argument with the same reference.
  - A nonreflexive pronoun cannot appear as an argument of a verb that has a preceding coreferential argument.
- New Formulation:
  - Principle A (version I): A reflexive pronoun must be bound by a preceding argument of the same verb.
  - Principle B (version I): A nonreflexive pronoun may not be bound by a preceding argument of the same verb.

Some Challenges

- Replace notions of "bound" and "preceding argument of the same verb" by notions definable in our theory.
- Generalize the Binding Principles to get better coverage.

A Question

- What would be a natural way to formalize the notion of "bound" in our theory?

- Answer: Two expressions are bound if they have the same INDEX value ("are coindexed").

Two More Questions

- Where in our theory do we have information about a verb's arguments?
- Answer: In the verb's VALENCE features.
- What determines the linear ordering of a verb's arguments in a sentence?
- Answer: The interaction of the grammar rules and the ordering of elements in the COMPS list.

The Argument Realization Principle

- For Binding Theory, we need (would like?) a single list with both subject and complements.
- We introduce a feature ARG-ST, with the following property (to be revised later):

$$\begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SPR} & \boxed{A} \\ \text{COMPS} & \boxed{B} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{A} \oplus \boxed{B} \end{bmatrix}$$

- This is a constraint on the type word

Notes on ARG-ST

- It's neither in SYN nor SEM.
- It only appears on lexical heads (not appropriate for type *phrase*)
- No principle stipulates identity between ARG-STs.

Poll!

Two Bits of Technical Machinery

- Definition: If *A* precedes *B* on some ARG-ST list, then *A* **outranks** *B*.

- Elements that must be anaphoric -- that is, that require an antecedent -- are lexically marked **[MODE ana]**. These include reflexive pronouns and reciprocals.

The Binding Principles

- Principle A: A [MODE ana] element must be outranked by a coindexed element.

- Principle B: A [MODE ref] element must not be outranked by a coindexed element.

Pronoun-Antecedent Agreement

- The Binding Principles by themselves don't block:
  * *I amused yourself.*
  * *He amused themselves.*
  * *She amused himself.*
- Coindexed NPs refer to the same entity, and AGR features generally correlate with properties of the referent.
- The Anaphoric Agreement Principle (AAP):
  Coindexed NPs agree.

Binding in PPs

- What do the Binding Principles predict about the following?

I brought a book with me.

**I brought a book with myself.*

**I mailed a book to me.*

I mailed a book to myself.

Two Types of Prepositions: the Intuition

- "Argument-marking": Function like case-markers in other languages, indicating the roles of NP referents in the situation denoted by the verb.
- "Predicative": Introduce their own predication.

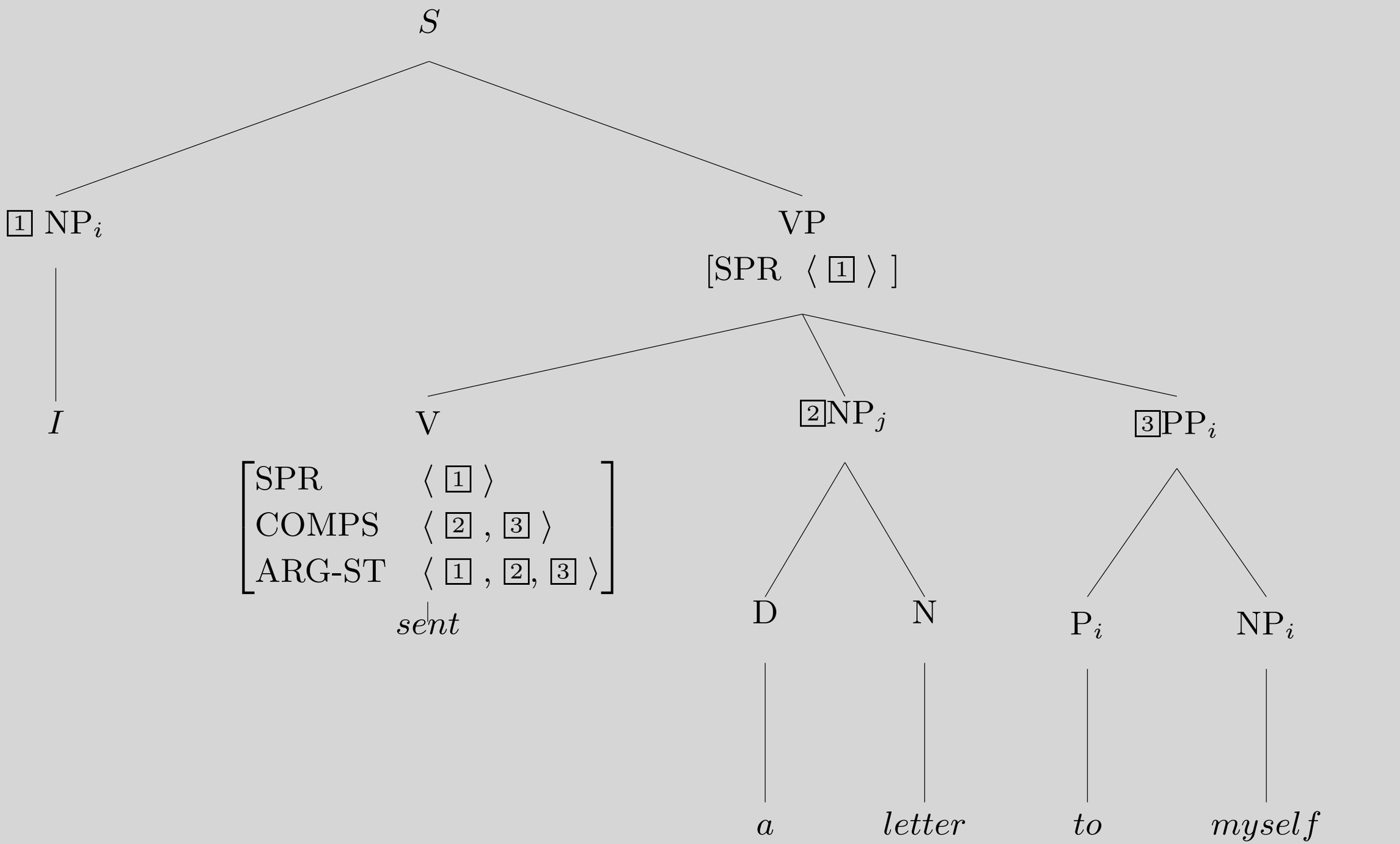
Two Types of Prepositions: a Formalization

- Argument-marking prepositions share their objects' MODE and INDEX values.
  - This is done with tagging in the lexical entries of such prepositions.
  - These features are also shared with the PP node, by the Semantic Inheritance Principle.
- Predicative prepositions introduce their own MODE and INDEX values.

Redefining Rank

- If there is an ARG-ST list on which *A* precedes *B*, then *A* outranks *B*.
- If a node is coindexed with its daughter, they are of equal rank -- that is, they outrank the same nodes and are outranked by the same nodes.

An Example

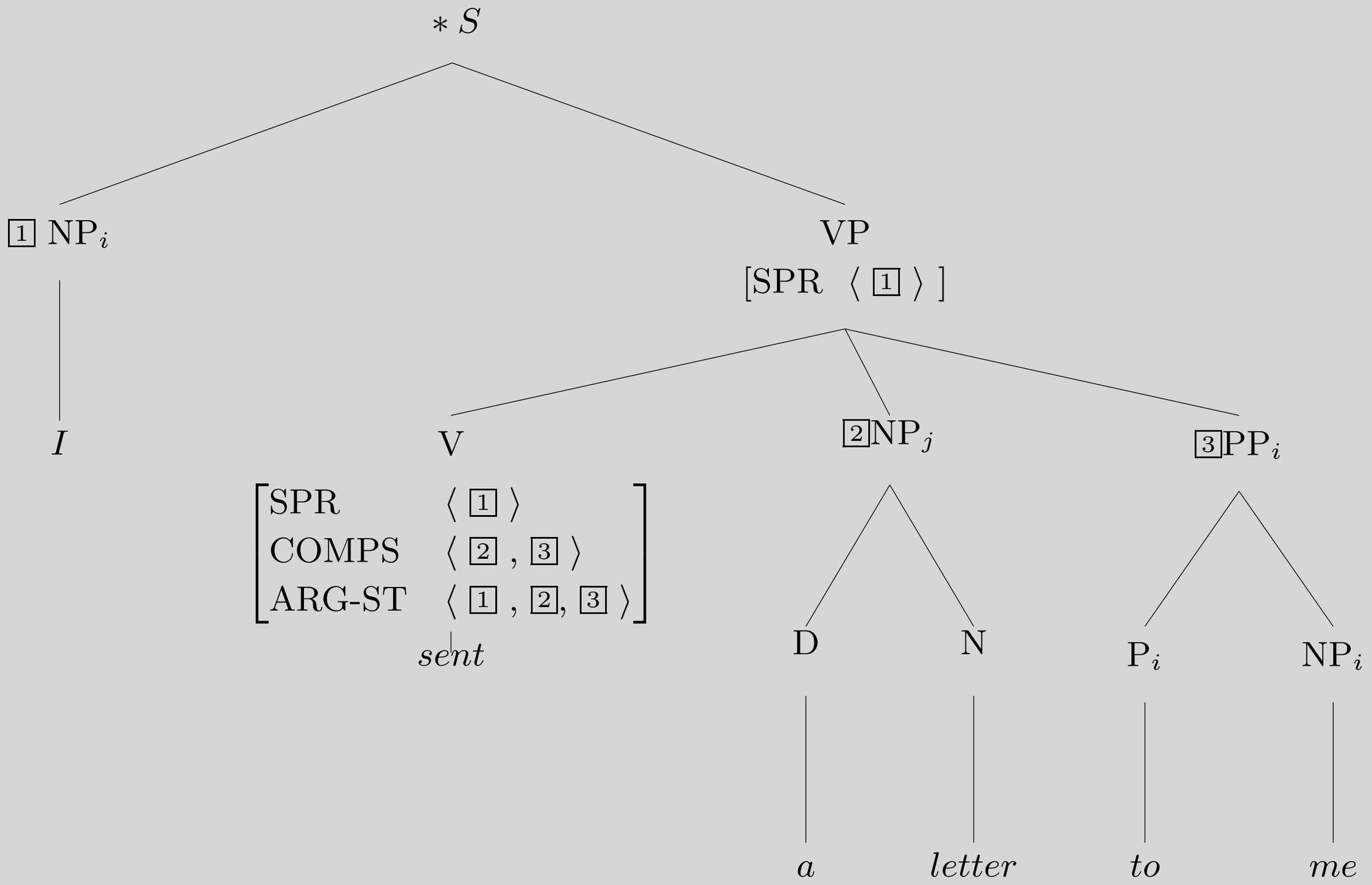


The ARG-ST

$$\left[\text{ARG-ST}\ \left\langle \begin{bmatrix}\text{NP}_i\\ \text{MODE ref}\end{bmatrix}, \begin{bmatrix}\text{NP}_j\\ \text{MODE ref}\end{bmatrix}, \begin{bmatrix}\text{PP}_i\\ \text{MODE ana}\end{bmatrix}\right\rangle\right]$$

- The PP is outranked by the first NP. (Why?)
- *myself* has the same rank as the PP. (Why?)
- So, *myself* is outranked by the first NP. (Why?)
- Therefore, Principle A is satisfied.

Replacing *myself* with *me*

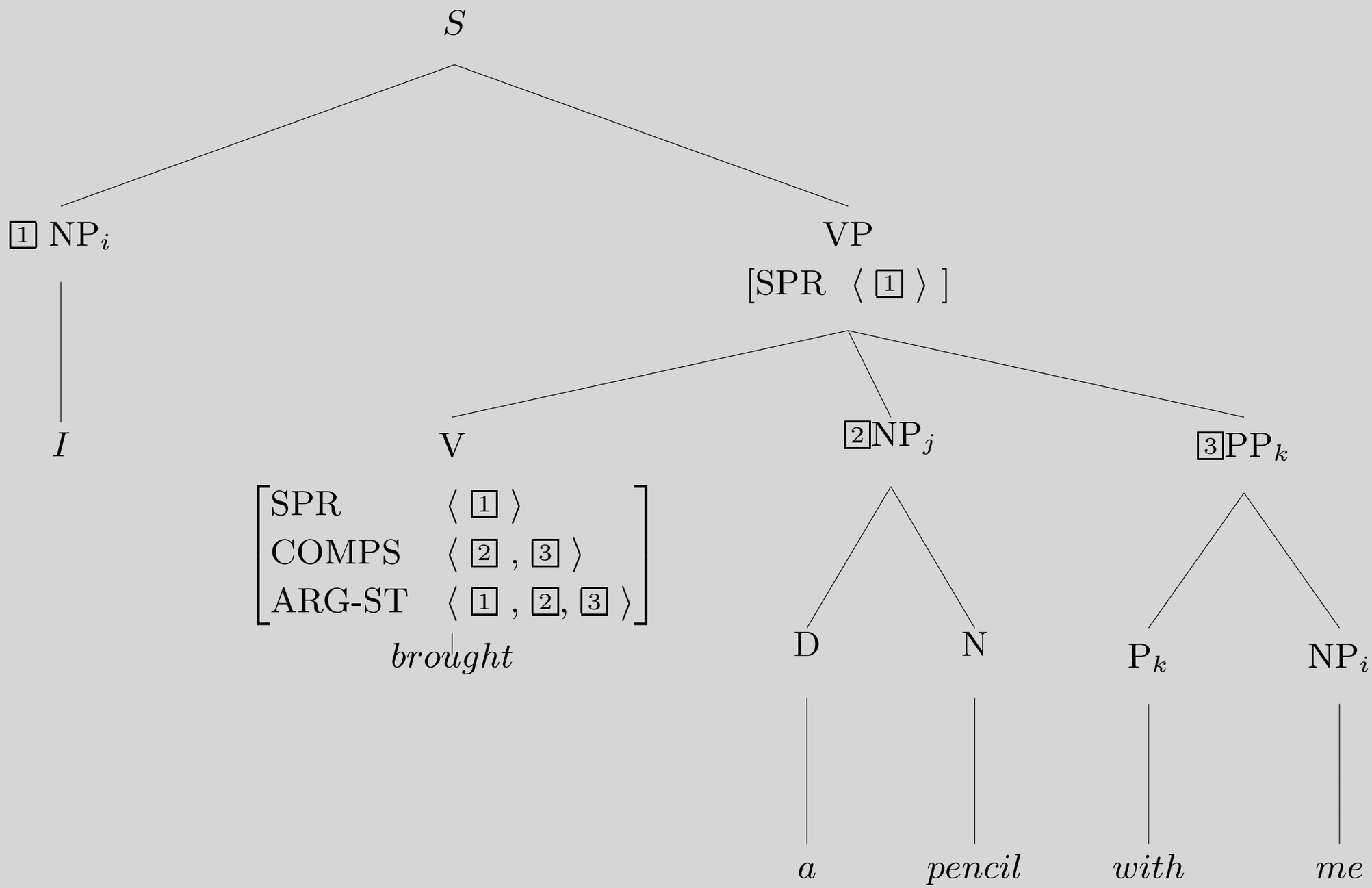


The ARG-ST

$$\left[\text{ARG-ST}\ \left\langle \begin{bmatrix}\text{NP}_i\\ \text{MODE ref}\end{bmatrix}, \begin{bmatrix}\text{NP}_j\\ \text{MODE ref}\end{bmatrix}, \begin{bmatrix}\text{PP}_i\\ \text{MODE ref}\end{bmatrix} \right\rangle\right]$$

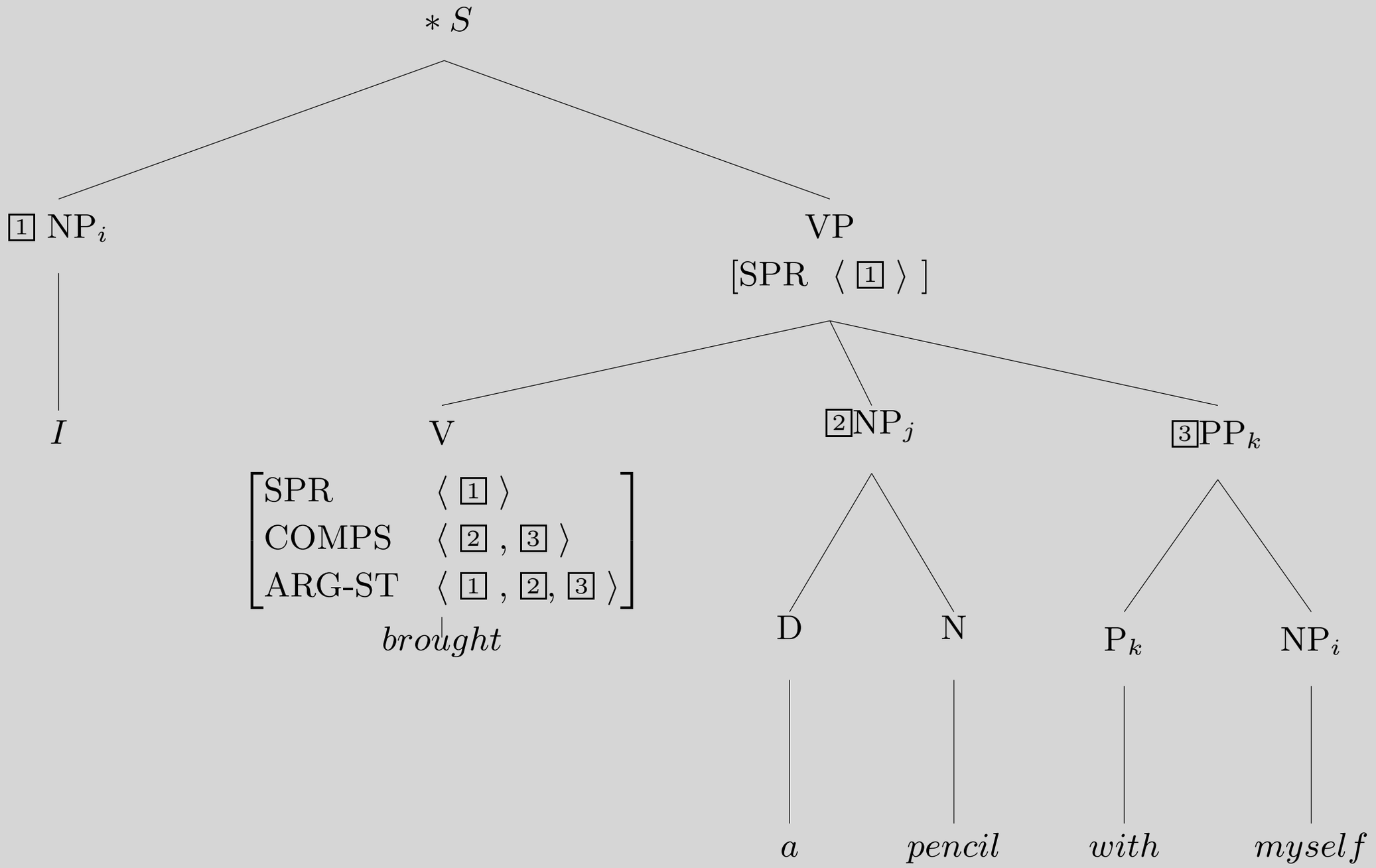
- The PP is outranked by the first NP.
- *me* has the same rank as the PP.
- So, *me* is outranked by the first NP.
- Therefore, Principle B is violated.

Another Example



- Here *I* does not outrank *me*, so Principle B is satisfied.

Replacing *me* with *myself*



- Here *I* does not outrank *myself*, so Principle A is violated.

Imperatives

- Have the internal structure of a VP

  Leave!
  Read a book!
  Give the dog a treat!
  Put the ice cream in the freezer!

- Function as ***directives***
- Have the verb in base form

  Be careful! not **Are careful!*

- Allow 2nd person reflexives, and no others

  Defend yourself! vs. **Defend myself/himself!*

The Imperative Rule

$$\begin{bmatrix} \textit{phrase} \\ \text{HEAD} \quad \textit{verb} \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \langle\ \rangle \end{bmatrix} \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} \quad \text{dir} \\ \text{INDEX} \quad s \end{bmatrix} \end{bmatrix} \rightarrow \bigcirc \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \textit{verb} \\ \text{FORM} \quad \text{base} \end{bmatrix} \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \left\langle \text{NP}\begin{bmatrix} \text{PER} \quad \text{2nd} \end{bmatrix} \right\rangle \\ \text{COMPS} \quad \langle\ \rangle \end{bmatrix} \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \end{bmatrix} \end{bmatrix}$$

- Internal structure of a VP
- Directive function
- Base form
- Only 2nd person reflexives

- Note that this is not a headed rule. Why?
- Answer: It would violate the HFP and the SIP.

Imperative example (Combining constraints again)

Poll!

What's the SPR value on S?

Why?

What's the SPR value on VP?

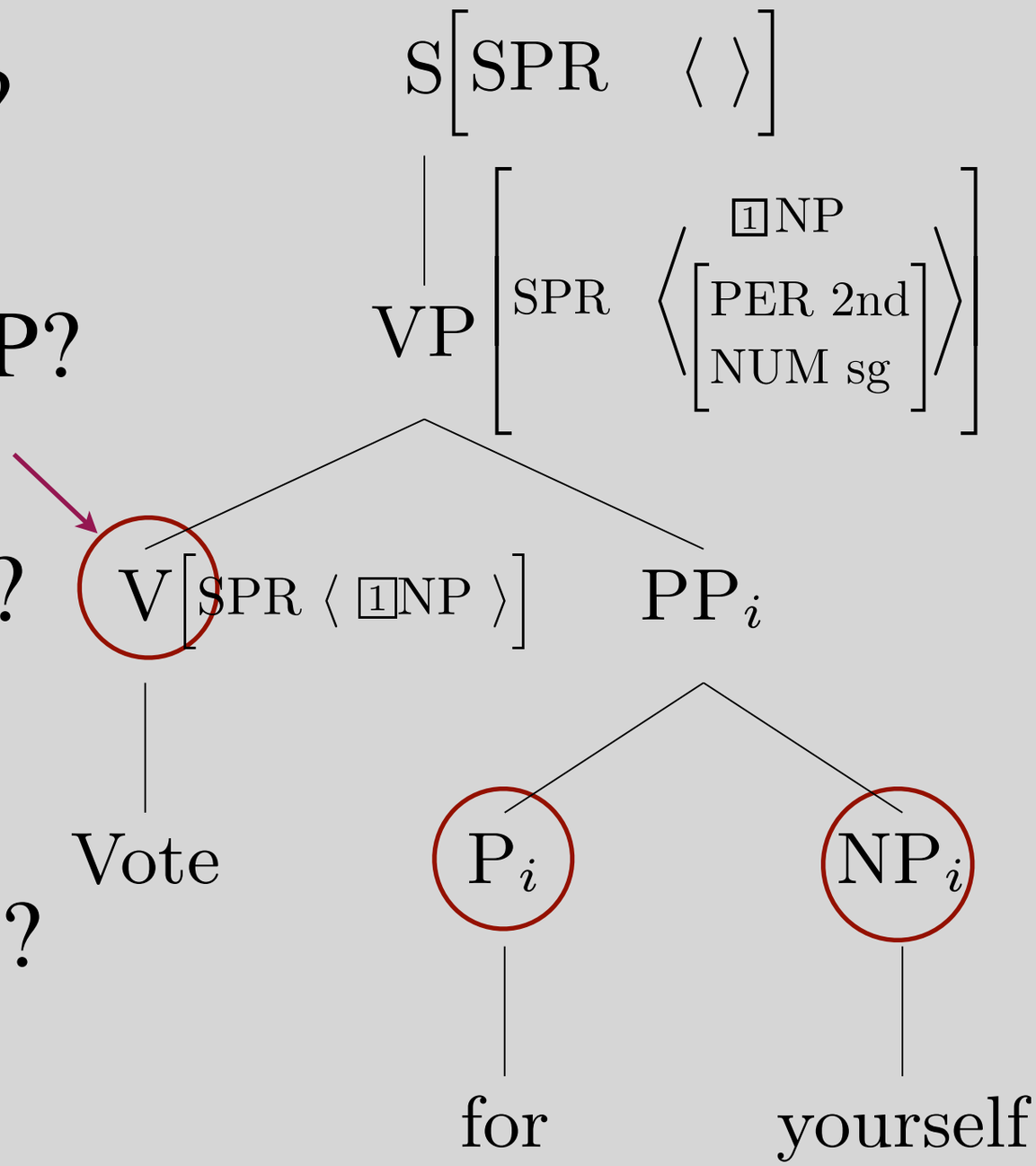
Why?

What's the SPR value on V?

Why?

Which nodes have ARG-ST?

Which ARG-ST matters for the licensing of yourself?



ARG-ST on *vote*

$$\left\langle \begin{bmatrix} \text{NP}_i \\ \text{PER} \quad \text{2nd} \\ \text{NUM} \quad \text{sg} \end{bmatrix}, \begin{bmatrix} \text{PP}_i \\ \text{MODE} \quad \text{ana} \end{bmatrix} \right\rangle$$

- Is Principle A satisfied?
- How?
- Is Principle B satisfied?
- How?

Day 1 Revisited

- Recall

F---- yourself!	*F---- you!*
Go f---- yourself!	**Go f---- you!*

- *F--- NP!* has two analyses
  - As an imperative
  - As a truly subjectless fixed expression.

- *Go f---- NP!* can only be analyzed as an imperative.

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Reading Questions

- What is happening with the SPR for imperatives? I understand that it helps ensure the verb is in 2nd person, but why don't we just specify that in the lexical entries for verbs of mode dir rather than having an NP reference that doesn't actually materialize?

- In the imperative rule in (40), the [MODE dir] disappeared once we introduced [FORM base], is this simply omitted for examples?

- For imperative sentences, we made a special case using VP as the only daughter. Isn't it also possible to maintain the existing structure but allowing an "invisible" NP subject? For example: [You] get a job, [You] protect yourself!

The Imperative Rule

$$\begin{bmatrix} \textit{phrase} \\ \text{HEAD} \quad \textit{verb} \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \langle\, \rangle \end{bmatrix} \\ \text{SEM} \quad \begin{bmatrix} \text{MODE} \quad \text{dir} \\ \text{INDEX} \quad s \end{bmatrix} \end{bmatrix} \rightarrow \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \textit{verb} \\ \text{FORM} \quad \text{base} \end{bmatrix} \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} \quad \left\langle \text{NP}\left[\text{PER} \quad \text{2nd}\right] \right\rangle \\ \text{COMPS} \quad \langle\, \rangle \end{bmatrix} \\ \text{SEM} \quad \begin{bmatrix} \text{INDEX} \quad s \end{bmatrix} \end{bmatrix}$$

- Internal structure of a VP
- Directive function
- Base form
- Only 2nd person reflexives

Reading Questions

- In the Imperative Rule, it seems arbitrary to say that a phrase may consist of a verb head with a second-person NP on its SPR list, but then simply not have this NP ever materialize. I understand it's allowed by the way the rule is written, but it feels unfair to let the verb have a filled SPR list and its mother have an empty SPR list without the item on the SPR list "going anywhere".

- I do love pro-dropping but it just feels wrong to not have the subject anywhere. Should I be thinking about entries in SPR/COMPS/etc. list as entities in their own rights instead of specifically shaped holes? Are we allowed syntactic items that don't make it into the realized utterance? Can we have an explicit null?

Reading Questions

- Does AAP apply to both predicational and argument-making propositions?

- The Anaphoric Agreement Principle (AAP) got me thinking a lot about the gender neutral singular usage of "they." I have seen variously "themself" and "themselves," but I have never seen "they is." Assuming the general use is exclusively in the plural, i.e., "they are" and "themselves," how do we reconcile these with the AAP? Can we denote exceptions to this principle in the lexical entry? It seems like we can have two entries for "themselves" in which one is plural and one is singular, but what about "they?" The antecedent is singular, but the verb it is a specifier for is plural. Would this be an example of the words being coreferential but not coindexed?

Reading Questions

- What is the difference between coindexing and coreference? Coindexing applied to the index values of words, where the index was the same. Coreference (in the back of the book) is to two referring expressions that refer to the same entity. Would things that are coindexed also be coreferences? When are expressions coreferences but not coindexes, or is that not possible?

- Does coreferentiality come entirely from outside semantics? It seems like when we use our rules to mark two words as the same that is always coindexing in our ruleset.

- I don't quite understand the difference between coindexed and coreferential. I get coindexed means through rules / principles the indexes are the same, but what is a formal way to state coreference? Or is it simply understanding that two phrases refer to the same thing?

Reading Questions

- The "outranking" idea seems to rely on the order of the specifier and complement being fixed. Is this always the case?
- How is the Binding Theory applied in languages that have a flexible word order? Given that the order of arguments on ARG-ST list determines the ranking of elements, how are Principle A and Principle B interpreted in the languages that have a free or flexible word order?
- Is 'outrank' analogous to 'c-command' in the traditional binding theory of Syntax?

Reading Questions

- With the introduction of ARG-ST, it seems like SPR and COMPS have been obsoleted in our structures. While it seems they're still useful as an abstraction to apply the Head Specifier/Complement rules, will we eventually be moving toward a more ARG-ST focused theory of grammar?

- When talking about ARG-ST on page 207 it states that "SPR and COMPS, with the help of the Valence Principle, keep track of elements that a given expression needs to combine with. As successively larger pieces of a tree are constructed, the list values of these features get shorter". Why would the lists of SPR and COMPS get shorter?

Reading Questions

- Why is ARG-ST a feature in word structures but not phrases?
- Previously we saw that SCP "added" RESTR lists together in the head node's RESTR. Given that COMPS and SPR are already part of the grammar, can we do something similar with the Argument Realization Principle without ARG-ST? Why did we need to add a new feature this time?
- Finally: word vs. phrase. It seemed like we were moving away from this distinction some earlier, but with ARG-ST we've very clearly gone with maintaining it. What does this distinction give us? Do we break our complement rule if we can't ensure that we're only adding complements to words, and adding all complements at once?

Reading Questions

- How can we know which verb can select argument-marking prepositions? Since these kind of prepositions encode the MODE and INDEX of their objects in their ARG-ST list, I imagine a candidate verb would have a mechanism to examine the value in ARG-ST list?

- Is there an intuitive way to think about why a PP should have the same MODE and INDEX values as the NP it dominates in the case of argument-marking prepositions, aside from making it possible for that information to appear on the ARG-ST list?

- It seems like we've put in a workaround to get information from the NP to the P so that it can be inherited through the mother-head daughter relationship. If the features on the NP are the ones we want the head to have, why isn't the NP itself the head? I know that treatment might not be any more elegant and that it could take some complication of rules in unfortunate ways, but having the P as a surrogate head to keep it as a PP, even though it's clearly meaningfully different from other PPs, is a little unsatisfying to me.

Reading Questions

- Where is the coindexing coming from in this chapter? For example, in (32),where Susan and herself are indexed i, while story is indexed j, what is determining these indices and which words share indices?
- The chapter also seems to rely on using the subscript notation which shows the index of pronouns. Is the index always unambiguous?

Reading Questions

- Could you elaborate on the 'relativization' described on p.223 in example (45)? Looking at the gaps I can't think of what noun phrases would fit there.
  - I met the person [who __ left]
  - I met the person [who they visited __]

Reading Questions

- Additionally, a more silly question: would the popular construction *me, myself and I* be licensed by our current grammar? I don't think the NPs joined by the conjunction outrank one another, so Principle A doesn't seem to apply.

- Are intensive and emphatic pronouns (such as "I *myself* will go" or "Why don't you do it *yourself*) [MODE ana] or [MODE ref]? I could see an argument for the former because of principle B, but in that case. phrase/valence-wise how to we handle these pronouns? Are they modifiers since they aren't really necessary and can be dropped entirely?

- On page 222, example (42), we see that imperatives like "protect yourself" and "protect yourselves" are acceptable but imperatives like "protect myself" are not because imperatives are limited to 2nd person. However, I see imperatives like "f*** myself" acceptable, what's different here?

Reading Questions

- This isn't particularly related to binding theory, but how easily can coindexing be implemented and applied to other linguistic subfields like say semantic parsing? When I read the section discussing the differences between coindexing and coreference, I became curious about whether approaches and concepts similar to those laid out in the book can be used to approximate complex coding operations by conveying this information through natural language.