HG4041 Theories of Grammar

Binding Theory

Francis Bond

Division of Linguistics and Multilingual Studies

http://www3.ntu.edu.sg/home/fcbond/

bond@ieee.org

Lecture 5

Location: LHN-TR+36

Overview

➤ What we are trying to do

➤ Last week: Semantics

➤ Review of Chapter 1's 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

➤ Imperatives

What We're Trying To Do

➤ Objectives

  ➤ Develop a theory of knowledge of language
  ➤ Represent linguistic information explicitly enough to distinguish well-formed from ill-formed expressions
  ➤ Be parsimonious, capturing linguistically significant generalizations.

➤ Why Formalize?

  ➤ To formulate testable predictions
  ➤ To check for consistency
  ➤ To make it possible to get a computer to do it for us

How We Construct Sentences

➢ The Components of Our Grammar

    ➢ Grammar rules
    ➢ Lexical entries
    ➢ Principles
    ➢ Type hierarchy (very preliminary, so far)
    ➢ Initial symbol (S, for now)

➢ We combine constraints from these components.

➢ More in `hpsg.stanford.edu/book/slides/Ch6a.pdf`,
   `hpsg.stanford.edu/book/slides/Ch6b.pdf`

Review of Semantics

Overview

➤ Which aspects of semantics we'll tackle

➤ Semantics Principles

➤ Building semantics of phrases

➤ Modification, coordination

➤ Structural ambiguity

Our Slice of a World of Meanings

Aspects of meaning we won't account for (in this course)

➤ Pragmatics

➤ Fine-grained lexical semantics
The meaning of *life* is

   ➤ life or life′ or $\begin{bmatrix} \text{RELN} & \textit{life} \\ \text{INST} & i \end{bmatrix}$

   ➤ Not like wordnet: $\text{life}_1 \subset \text{being}_1 \subset \text{state}_1$ …

➤ Quantification   (covered lightly in the book)

➤ Tense, Mood, Aspect   (covered in the book)

Our Slice of a World of Meanings

$$
\begin{bmatrix}
\text{MODE} & \textit{prop} \\
\text{INDEX} & s \\
\text{RESTR} & \left\langle
\begin{bmatrix}
\text{RELN} & \textbf{save} \\
\text{SIT} & s \\
\text{SAVER} & i \\
\text{SAVED} & j
\end{bmatrix} ,
\begin{bmatrix}
\text{RELN} & \textbf{name} \\
\text{NAME} & \textit{Chris} \\
\text{NAMED} & i
\end{bmatrix} ,
\begin{bmatrix}
\text{RELN} & \textbf{name} \\
\text{NAME} & \textit{Pat} \\
\text{NAMED} & j
\end{bmatrix}
\right\rangle
\end{bmatrix}
$$

"…the linguistic meaning of *Chris saved Pat* is a proposition that will be true just in case there is an actual situation that involves the saving of someone named Pat by someone named Chris."
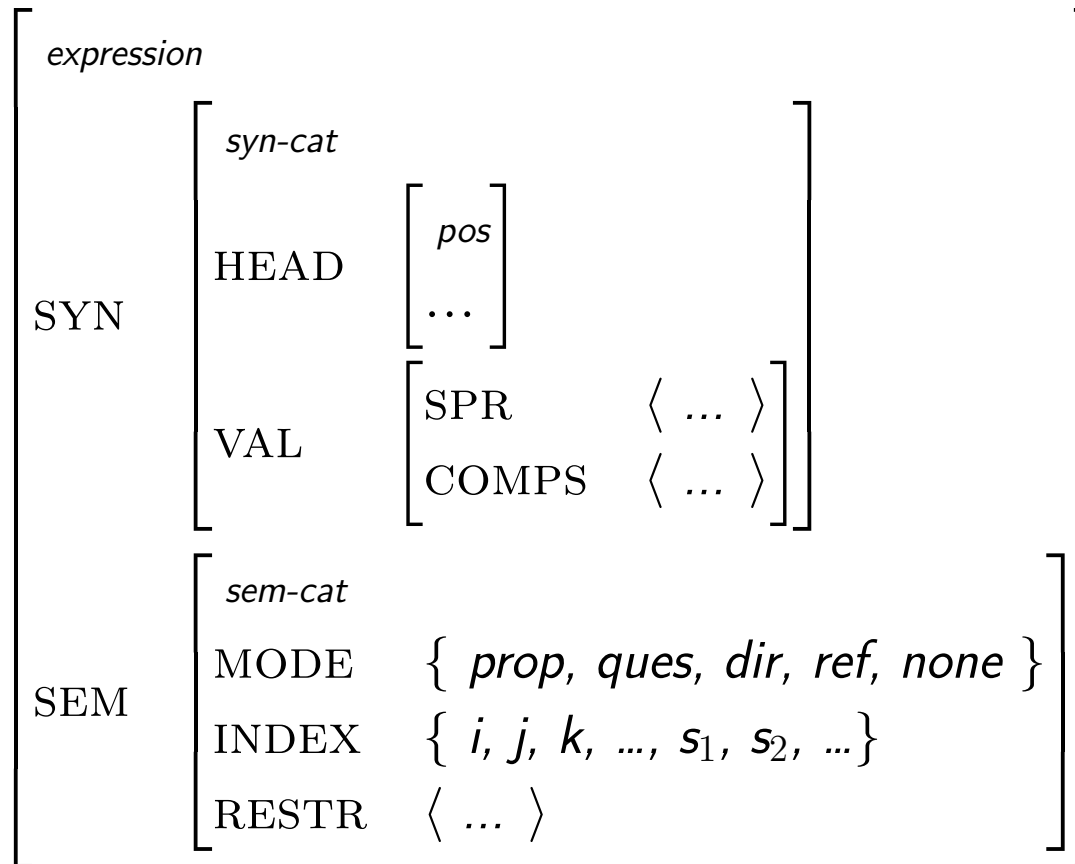
(Sag *et al*, 2003, p. 140)
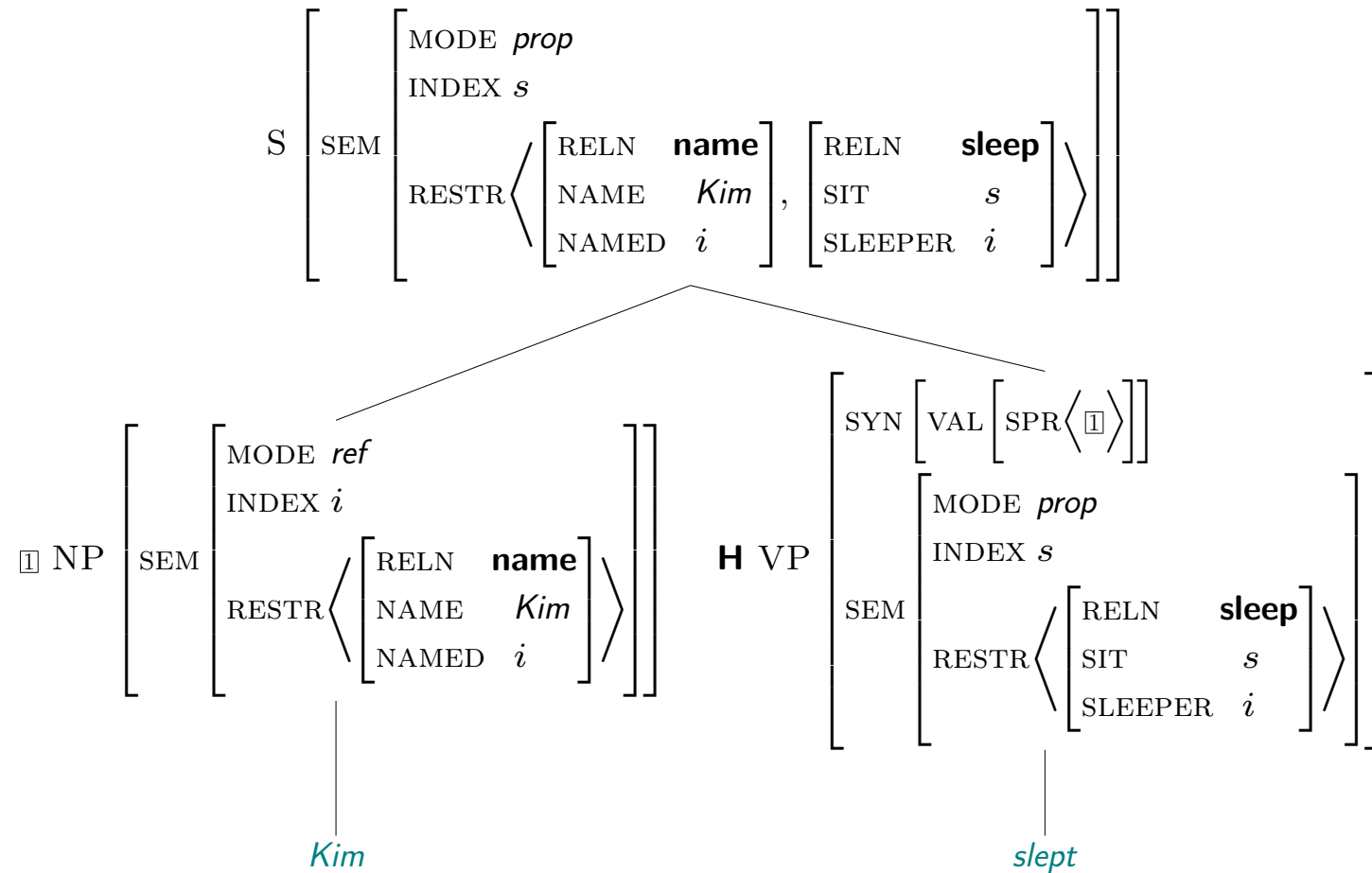
Semantics in Constraint-Based Grammar

➤ Constraints as (generalized) truth conditions

  ➤ **proposition**: what must be the case for a proposition to be true
  ➤ **directive**: what must happen for a directive to be fulfilled
  ➤ **question**: the kind of situation the asker is asking about
  ➤ **reference**: the kind of entity the speaker is referring to

➤ **Syntax/semantics interface**:

  Constraints on how syntactic arguments are related to semantic ones, and on how semantic information is compiled from different parts of the sentence.

Feature Geometry

$$
\begin{bmatrix}
\textit{expression} \\[4pt]
\text{SYN} \quad
\begin{bmatrix}
\textit{syn-cat} \\[4pt]
\text{HEAD} \quad
\begin{bmatrix}
\textit{pos} \\
\dots
\end{bmatrix} \\[12pt]
\text{VAL} \quad
\begin{bmatrix}
\text{SPR} & \langle \dots \rangle \\
\text{COMPS} & \langle \dots \rangle
\end{bmatrix}
\end{bmatrix} \\[30pt]
\text{SEM} \quad
\begin{bmatrix}
\textit{sem-cat} \\[4pt]
\text{MODE} & \{\ \textit{prop, ques, dir, ref, none}\ \} \\
\text{INDEX} & \{\ i,\ j,\ k,\ \dots,\ s_1,\ s_2,\ \dots\} \\
\text{RESTR} & \langle \dots \rangle
\end{bmatrix}
\end{bmatrix}
$$

An Example

$$
\text{S} \left[\text{SEM} \begin{bmatrix} \text{MODE } prop \\ \text{INDEX } s \\ \text{RESTR} \left\langle \begin{bmatrix} \text{RELN} & \textbf{name} \\ \text{NAME} & Kim \\ \text{NAMED} & i \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{sleep} \\ \text{SIT} & s \\ \text{SLEEPER} & i \end{bmatrix} \right\rangle \end{bmatrix} \right]
$$

⊡ NP $\left[\text{SEM} \begin{bmatrix} \text{MODE } ref \\ \text{INDEX } i \\ \text{RESTR} \left\langle \begin{bmatrix} \text{RELN} & \textbf{name} \\ \text{NAME} & Kim \\ \text{NAMED} & i \end{bmatrix} \right\rangle \end{bmatrix} \right]$

H VP $\left[\begin{matrix} \text{SYN} \left[\text{VAL} \left[\text{SPR} \left\langle \boxed{1} \right\rangle \right] \right] \\ \text{SEM} \begin{bmatrix} \text{MODE } prop \\ \text{INDEX } s \\ \text{RESTR} \left\langle \begin{bmatrix} \text{RELN} & \textbf{sleep} \\ \text{SIT} & s \\ \text{SLEEPER} & i \end{bmatrix} \right\rangle \end{bmatrix} \end{matrix} \right]$

Kim

slept

How to Share Semantic Information

➢ **The Semantic Inheritance Principle**

In any headed phrase, the mother's MODE and INDEX are identical to those of the head daughter.

➢ **The Semantic Compositionality Principle**

In any well-formed phrase structure, the mother's RESTR value is the sum of the RESTR values of the daughters.

Where is the information

➢ Words

    ➢ Contribute predications

    ➢ 'expose' one index in those predications, for use by words or phrases

    ➢ relate syntactic arguments to semantic arguments

➢ Rules

    ➢ Identify (link) feature structures across daughters

    ➢ License trees which are subject to the semantic principles
        ∗ SIP: 'passes up' MODE and INDEX from head daughter
        ∗ SCP: 'gathers up' predications (RESTR list) from all daughters

➢ The semantics is strictly compositional — all of the meaning comes from the words, rules and principles.

Binding

Some Examples from Chapter 1

(1) *She likes herself*

(2) **She$_i$ likes her$_i$.*

(3) *We gave presents to ourselves.*

(4) **We gave presents to us.*

(5) *We gave ourselves presents*

(6) **We gave us presents.*

(7) **Leslie told us about us.*

(8) *Leslie told us about ourselves.*

(9) **Leslie told ourselves about us.*

(10) **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(version I):

  ➢ **Principle A**: A reflexive pronoun must be bound by a preceding argument of the same verb.
  ➢ **Principle B**: A nonreflexive pronoun may not be bound by a preceding argument of the same verb.

➢ Opaque names come from Chomsky (1981)

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.

How can we do this?

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

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

Q Where in our theory do we have information about a verb's arguments?

A In the verb's VALENCE features.

Q What determines the linear ordering of a verb's arguments in a sentence?

A The interaction of the grammar rules and the ordering of elements in the COMPS list.

The Argument Realization Principle

➤ For Binding Theory, we need a single list with both subject and complements.

➤ We introduce a feature ARG-ST, with the following property:

$$
\begin{bmatrix}
word \\[2pt]
\text{SYN} \quad \begin{bmatrix} \text{VAL} \quad \begin{bmatrix} \text{SPR} & \boxed{A} \\ \text{COMPS} & \boxed{B} \end{bmatrix} \end{bmatrix} \\[2pt]
\text{ARG-ST} \quad \left\langle \boxed{A} \oplus \boxed{B} \right\rangle
\end{bmatrix}
$$

➤ 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.

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.

Formalization

➤ 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.

Pronoun-Antecedent Agreement

➤ The Binding Principles by themselves don't block:

   (11)   * I amused yourself.

   (12)   * He amused themselves.

   (13)   * 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?

➤ The Binding Principles by themselves don't block:

    (14)   *I brought a book with me.*

    (15)   **I brought a book with myself.*

    (16)   **I mailed a book to me.*

    (17)   *I mailed a book to myself.*

Two Types of Prepositions: the Intuition

➢ **Argument-marking**: Function like casemarkers in other languages, indicating the roles of NP referents in the situation denoted by the verb.

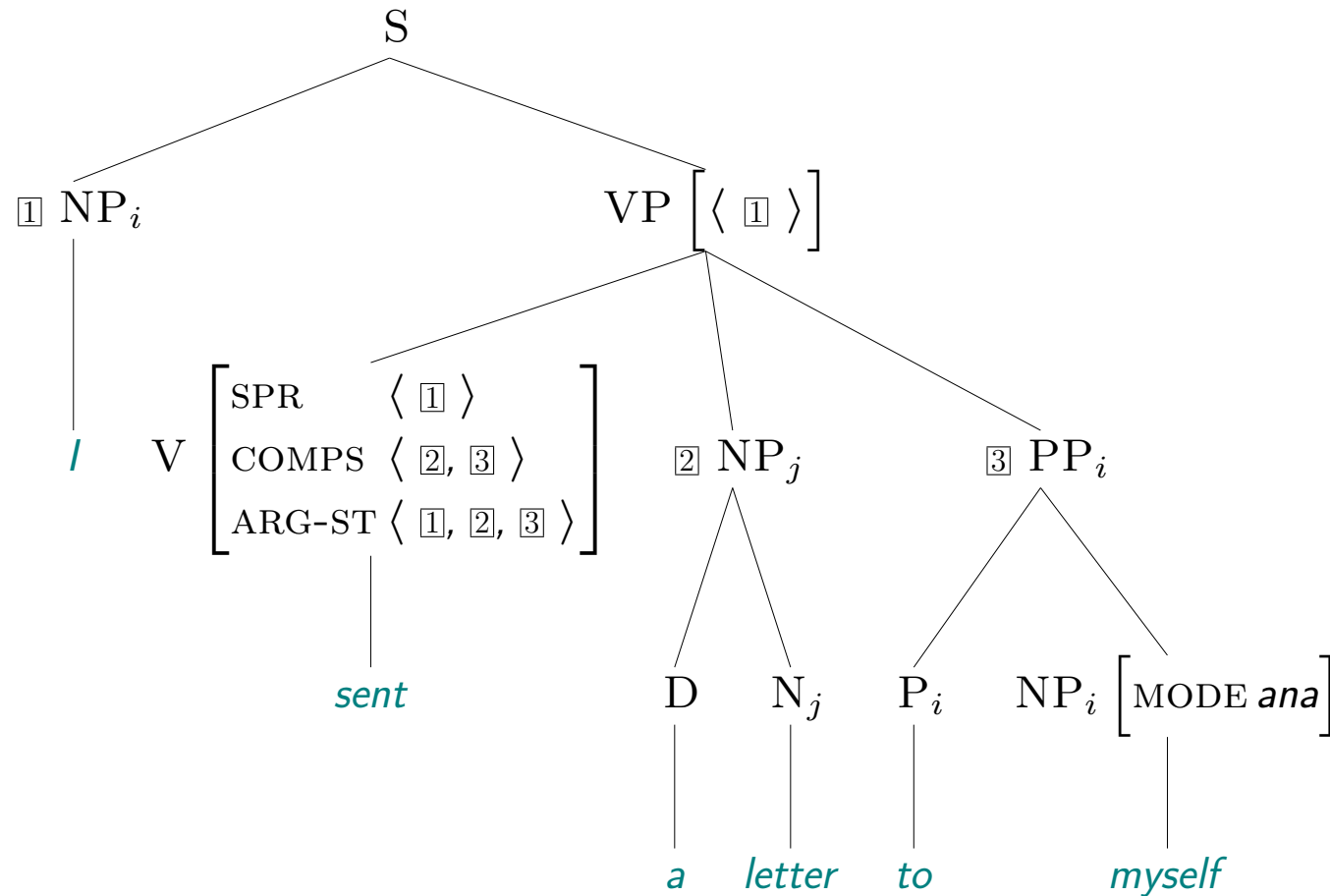➢ **Predicative**: Introduce their own predication.

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.
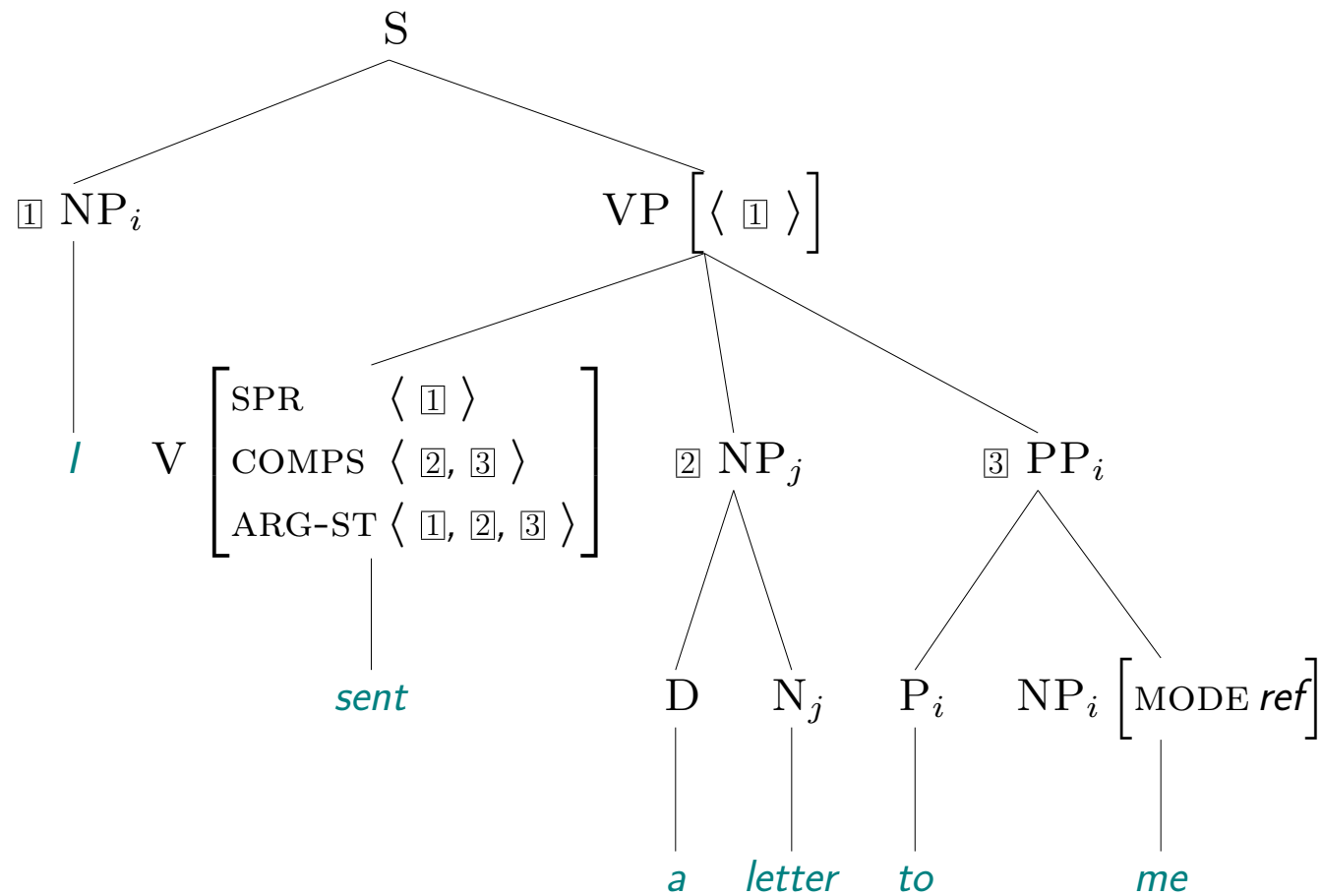
I sent a letter to myself

S

┌─────────────────────┴─────────────────────┐

1⃣ NP$_i$

VP $\left[\ \langle\ 1⃣\ \rangle\ \right]$

│

I   V $\begin{bmatrix} \text{SPR} & \langle\ 1⃣\ \rangle \\ \text{COMPS} & \langle\ 2⃣,\ 3⃣\ \rangle \\ \text{ARG-ST} & \langle\ 1⃣,\ 2⃣,\ 3⃣\ \rangle \end{bmatrix}$

2⃣ NP$_j$

3⃣ PP$_i$

sent

D   N$_j$

P$_i$ NP$_i$ $\left[\text{MODE}\ \textit{ana} \right]$

a   *letter*

to   *myself*

The ARG-ST

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

➤ 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.
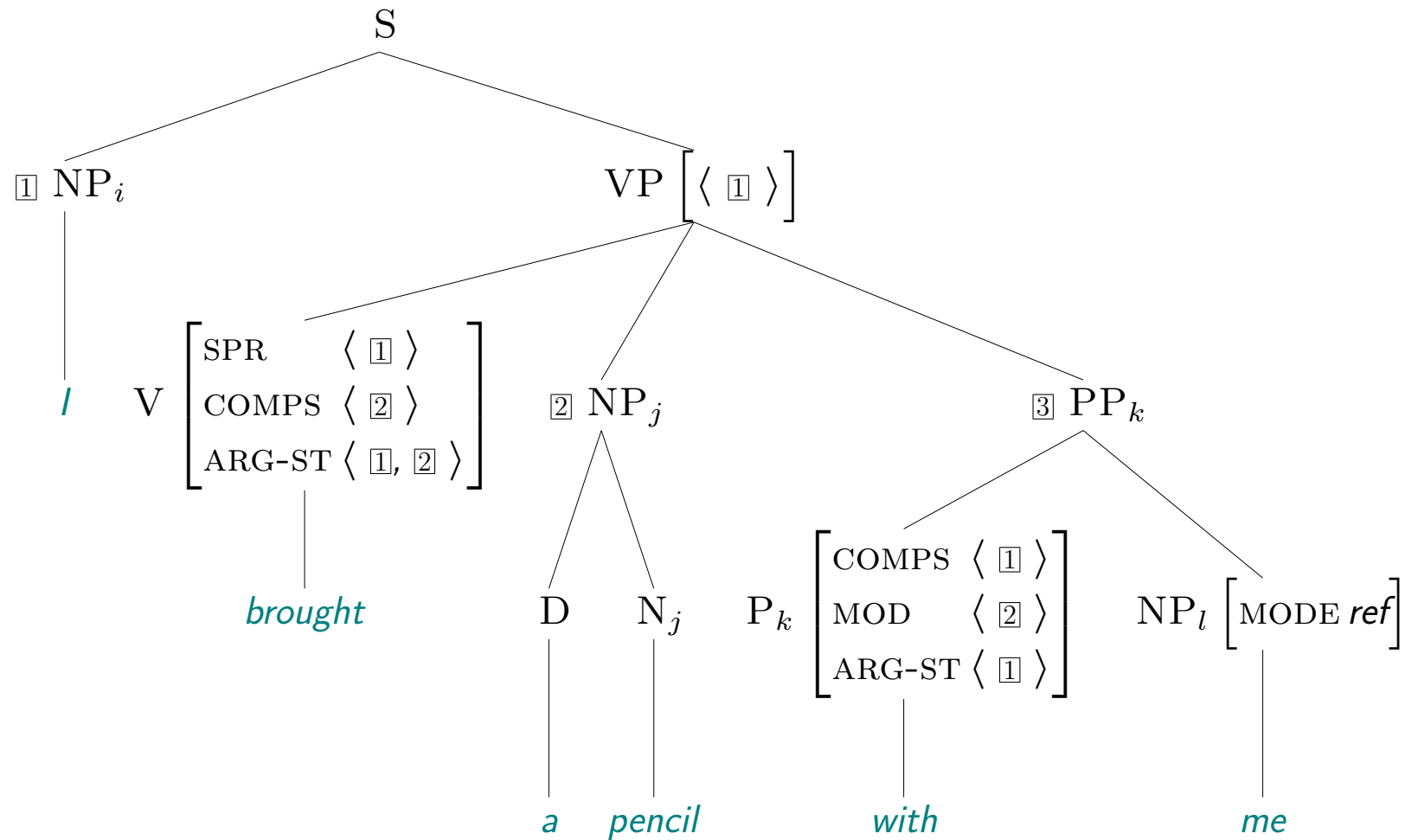
*I sent a letter to me

The ARG-ST

$$\begin{bmatrix} \text{ARG-ST} & \left\langle \text{NP}_i \begin{bmatrix} \text{MODE} & \mathit{ref} \end{bmatrix}, \text{NP}_j \begin{bmatrix} \text{MODE} & \mathit{ref} \end{bmatrix}, \text{PP}_i \begin{bmatrix} \text{MODE} & \mathit{ref} \end{bmatrix} \right\rangle \end{bmatrix}$$
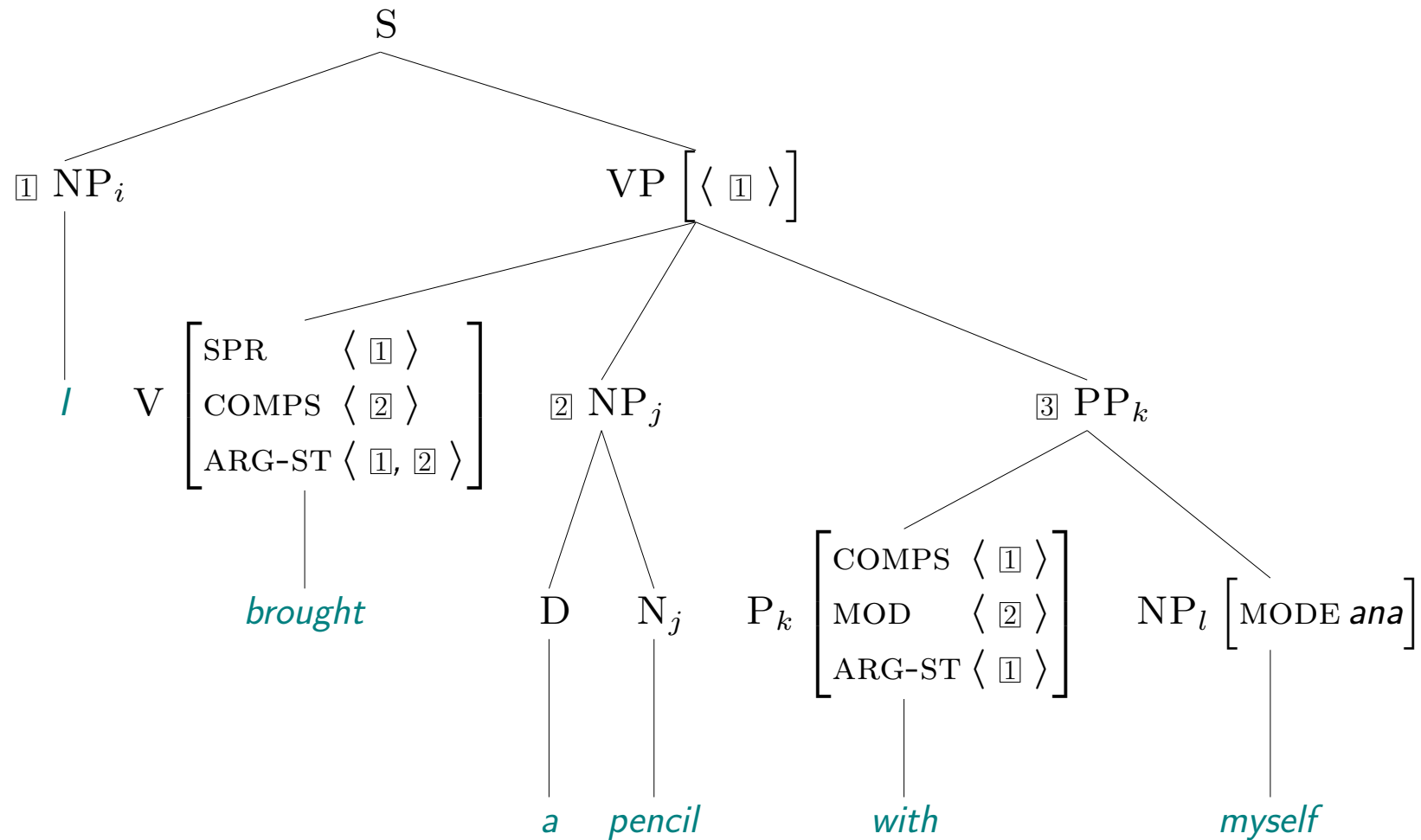
➢ The PP is outranked by the first NP.

➢ *me* has the same rank as the PP.

➢ So, *me* is outranked by the first NP.

➢ Therefore, Principle B is violated.

I brought a pencil with me

*I brought a pencil with myself

S
- ① NP$_i$
  - *I*
- VP $\left[\langle\,①\,\rangle \right]$
  - V $\begin{bmatrix} \text{SPR} & \langle\,①\,\rangle \\ \text{COMPS} & \langle\,②\,\rangle \\ \text{ARG-ST} & \langle\,①, ②\,\rangle \end{bmatrix}$
    - *brought*
  - ② NP$_j$
    - D
      - *a*
    - N$_j$
      - *pencil*
  - ③ PP$_k$
    - P$_k$ $\begin{bmatrix} \text{COMPS} & \langle\,①\,\rangle \\ \text{MOD} & \langle\,②\,\rangle \\ \text{ARG-ST} & \langle\,①\,\rangle \end{bmatrix}$
      - *with*
    - NP$_l$ $\left[\text{MODE } \textit{ana} \right]$
      - *myself*

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

Imperatives

➤ Have the internal structure of a VP

    (18)   *Leave!*

    (19)   *Read a book!*

    (20)   *Give the dog a treat!*

    (21)   *Put the ice cream in the freezer!*

➤ Function as **directives** (commands or requests)

➤ Have the verb in base form: *Be careful!* not **Are careful!*

  ➤ Allow 2nd person reflexives, and no others

    (22)   *Defend yourself!*

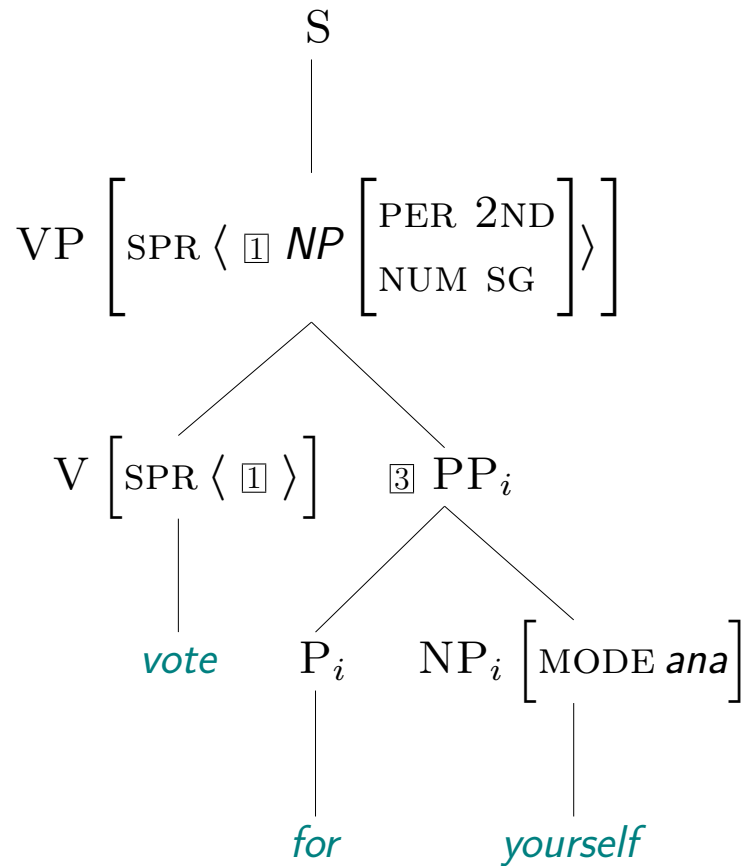   (23)   **Defend myself/himself!*

The Imperative Rule

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

➤ Internal structure of a VP

➤ Directive function

➤ Base form

➤ Only 2nd person reflexives

Q Note that this is not a headed rule. Why?

A It would violate the HFP and the SIP.

Imperative example

S

$$\text{VP} \left[\text{SPR} \left\langle \; \boxed{1} \; \textit{NP} \begin{bmatrix} \text{PER 2ND} \\ \text{NUM SG} \end{bmatrix} \right\rangle \right]$$

$$\text{V} \left[\text{SPR} \left\langle \; \boxed{1} \; \right\rangle \right] \qquad \boxed{3} \; \text{PP}_i$$

vote

$$\text{P}_i \qquad \text{NP}_i \begin{bmatrix} \text{MODE} \; \textit{ana} \end{bmatrix}$$

for   *yourself*

➤ What's the SPR value on S?

➤ What's the SPR value on VP?

➤ What's the SPR value on V?

➤ Which nodes have ARG-ST?

➤ Which ARG-ST matters for the licensing of *yourself*?

arg-st on vote

$$\left[\text{ARG-ST} \quad \left\langle \text{NP}_i \begin{bmatrix} \text{MODE} & \textit{ref} \\ \text{PER} & \textit{2nd} \\ \text{NUM} & \textit{sg} \end{bmatrix}, \text{PP}_i \begin{bmatrix} \text{MODE} & \textit{ana} \end{bmatrix} \right\rangle \right]$$

➤ Is Principle A satisfied?

➤ How?

➤ Is Principle B satisfied?

➤ How?

Day 1 Revisited

➤ Recall

    (24)   *Screw yourself!*

    (25)   *Go screw yourself!*

    (26)   *screw you!*

    (27)   **Go screw you!*

➤ *Screw NP!* has two analyses

    ➤ As an imperative
    ➤ As a truly subjectless fixed expression.

➤ *Go screw NP!* can only be analyzed as an imperative.

Overview

➤ Review of Chapter 1 informal binding theory

➤ Formalized Binding Theory

    ➤ **Argument Realization Principle** (ARP)
        ARG-ST = SPR $\oplus$ COMPS

    ➤ **Anaphoric Agreement Principle** (AAP)
        Coindexed NPs agree.

    ➤ **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.

➤ Binding and PPs

➤ Imperatives

P1: Prepositions

For each of the following sentences,

(a) classify the underlined preposition into **predicative** or **argument marking** and

(b) justify by showing what reflexive and nonreflexive coreferential pronouns can or cannot appear as the preposition's object.

(i) *The dealer dealt an ace <u>to</u> Bo.*

(ii) *The chemist held the sample away <u>from</u> the flame.*

(iii) *Hiromi kept a flashlight <u>beside</u> the bed.*

(iv) *We bought flowers <u>for</u> you.*

(v) *The car has a scratch <u>on</u> the fender.*

(vi) *The pronoun agrees <u>with</u> its antecedent.*

P2: Imperative 'Subjects'

➤ Some imperatives look like they have a subject:

   (i) *You get out of here!*
   (ii) *Everybody take out a sheet of paper!*

➤ But agreement is wierd:

   (iii) *Everybody found $^?$himself/*yourself/themselves/*myself a seat.*
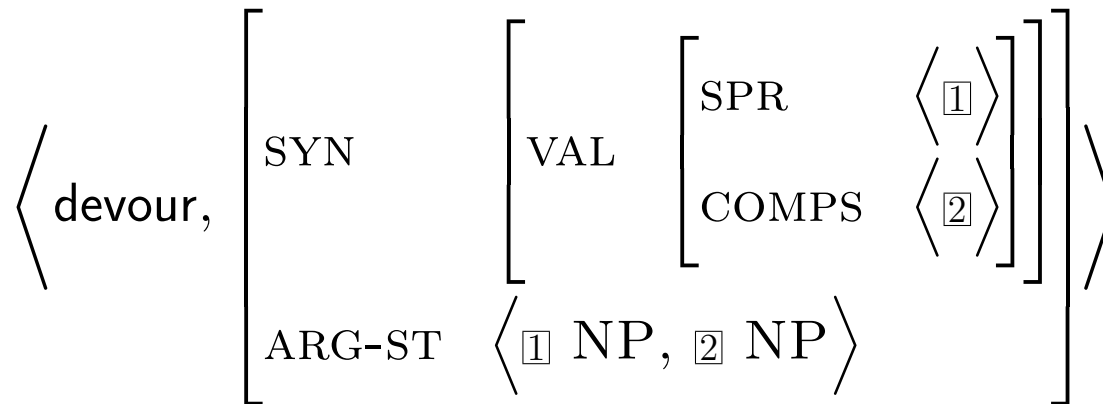   (iv) *Everybody find $^?$himself/yourself/*themselves/*myself a seat.*

➤ What minimal modification of the Imperative Rule would account for the indicated data? (don't worry about the semantics)

Acknowledgments and References

➢ Course design and slides borrow heavily from Emily Bender's course: *Linguistics 566: Introduction to Syntax for Computational Linguistics*
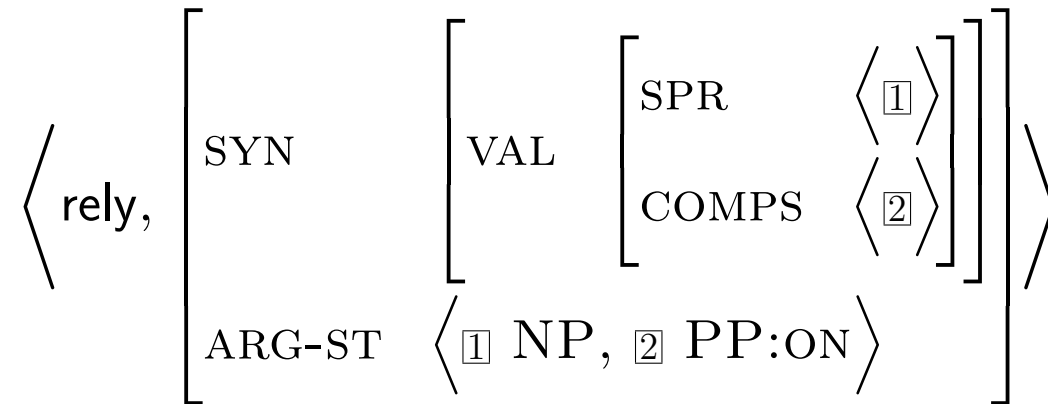`http://courses.washington.edu/ling566`

C: While doing the readings, I realised I was not certain about the first Argument Realization Principle (Version I) because I had difficulty coming up with the answer for the first exercise on page 206, Practice ARG-ST lists. Would you kindly check if my understanding is correct for the below?

$$
\left\langle \text{devour}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SPR} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \left\langle \boxed{2} \right\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \boxed{1}\ \text{NP}, \boxed{2}\ \text{NP} \right\rangle \end{bmatrix} \right\rangle
$$

because of the sentence: *She devours it*.

While *rely on* will have the structure:

$$
\left\langle \text{rely},
\begin{bmatrix}
\text{SYN} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SPR} & \left\langle \boxed{1} \right\rangle \\ \text{COMPS} & \left\langle \boxed{2} \right\rangle \end{bmatrix} \end{bmatrix} \\
\text{ARG-ST} & \left\langle \boxed{1}\ \text{NP},\ \boxed{2}\ \text{PP:ON} \right\rangle
\end{bmatrix}
\right\rangle
$$

because of the sentence: *I rely on Kim.*

However, I was unable to come with the formula for the other words given such as the noun *letter* or preposition *of*. Kindly advise what we can do if the word is not a verb.

A: nouns and prepositions still have SPR and COMPS, so do the same for them.

e.g.:

$$
\left\langle \text{rof,} \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle \boxed{1} \rangle \\ \text{MOD} & \langle \boxed{2} \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1}\ \text{NP} \rangle \end{bmatrix} \right\rangle
$$

Q: In the case of 'double pronouns' (i.e. 'You youself/they themselves), do we consider these as a separate category like 7.6 Imperatives Binding since they do not fit in with the conventional Binding Theory? There seems to be some sense of emphasis with the use of double pronouns in a sentence.

A: I would treat them as a single pronoun. Then think about how they pattern:

(28)   *You$_i$ respect you+yourself$_i$*

(29)   **You$_i$ respect you$_i$*

(30)   *You$_i$ respect yourself$_i$*

(31)   *Screw you*

(32)   **Screw yourself*

(33)   **Screw you+yourself*

Q: With regards to the values in a verb's Argument Structure list (ARG-ST), must we put the tags (eg. $< [1]NP, [2]PP >$) or can we just list them (eg. $< NP, PP >$).

A: Unless you want to emphasize the link, then you can just list them.

Q: By that thought is it safe to say that the first item in the ARG-ST list will always be the value for SPR and all values after the first is COMPS?

A: Yes, that is so by the **Argument Realization Principle**

Q: With reference to eg (13) in the book, how do you determine the order of the members (NP, PP, VP) in the ARG-ST list?

A: They must be the same as SPR $\oplus$ COMPS

Q: In section 7.4.1, why is pronominal agreement an issue at all? Won't "coindexed element" in Principle A lead us to assume that agreement is automatically required for the antecedents & reflexive pronouns in question?

A: We don't want to assume, we want to make explicit

Q: With reference to eg (29), could you clarify on the function of the ARG-ST feature & how the SYN / SEM features under ARG-ST differ from the SYN / SEM features in the rest of the lexical entry?

A: ARG-ST is a list of phrases, the information is the same whether you write it in the SPR position or the ARG-ST

Q: How do we treat relative pronouns in such e.g. of "It was Susan who blamed herself." or Susan was the one who blamed herself. How is 'who' and 'the one' registered in the ARG-ST where they all seem to coindex and coreference with Susan the subject NP?

A: Wetreat realtive pronouns as not adding any semantics, they just serve to link things. Thus *blamed* has only two things on its ARG-ST: $<$ Susan, herself $>$. Crucially, it is different from *blame*. Chapter 10 tells us more. *one* is just another referential entity.

Q: I kind of understand the difference between predicate-like prepositions and argument-marker prepositions. But I don't quite know how to prove or predict it.

Q: Is it possible to clarify how to identify and differentiate independent predicates and argument markers?

A: Look at the distribution of reflexives and think of the meaning. Probably, we are making a clearer distinction in our model than the facts warrant (there has been some work on re-analyzing binding as more of a semantic/pragmatic thing than a syntactic

one).

Q: With regard to Principle A and B of Binding Theory, why must the term 'outrank' be used instead of 'precede'? Is there a significance or advantage to it? I ask because I find it more confusing to mentally comprehend when the term 'outrank' is used instead of 'precede'.

(**Q**: A outranks B. Is the term "outrank" simply means that A precedes B?)

A: No idea. But sometimes things that are ahead on ARG-ST end up being behind in linear order so 'precede' can be confusing: *Myself, I like!*

Q: Could we dedicate a time (maybe around 30 minutes?) in the seminar to revise and summarise the past 6-7 chapters? This is because the first 6-7 chapters are foundational, and I believe there's a good deal of new unfamiliar technical terms (VAL, MOD, RESTR, etc.) that are rather hard to mentally comprehend quickly. Given that density, I worry that, if we do not have a good grasp on a lot of things, we might get more lost going into the next chapters.

A: We revise things again in Chapter 7, but I may try to do a quick revision.

Q: In 7.4.2, they say that "wind" suggests the preposition that follows while "had" does not. However, doesn't "wrap" also clearly suggest the proposition around? Why is it that cases like (27c) are treated as having prepositions that are ambiguous?

A: I agree with you that it is a weak argument.

Q: Does the order of the contents in the AGR-ST list matter? What's the difference in examples 33 and 34?

A: Yes — outranking is defined on the order: iji jii

Q: How can you tell an AGR-ST list is in grammatical just by looking at it (as in e.g. 38)

A: Two things are coindexed and on the same ARG-ST but the last one is not *ana*

Q: And what does being bounded means?

A: A variable is **bound** if it has a specified value. A pronoun is bound if we can identify its antecedent.

Q: (a) A_i love himself$_i$. (b) *A_i told B to love himself$_i$.
(c) A_i told B to love him$_i$.
Is the binding theory relevant here? And can it be applied to (b) and (c)?

A: Yes. B and him/himself are both on *love*'s ARG-ST. We find out how in Chapter 12

Q: Why is the ARG-ST a constraint on the type word instead of phrase?

A: Because it doesn't get changed by phrase structure rules.

C: I chanced upon this sentence: "Everyone consider yourself lucky"

Q: Everyone here is 3rd person plural, but yourself is 2nd person singular. Is this just normalized to be grammatically correct? If not how do we deal with sentences like this?

A: This is problem 2 :-).

Q: Why is the Imperative Rule a not a headed rule? I thought it would be since the rule is specifying that the HEAD should contain feature [FORM base].

A: because the HEAD information is not identical in mother and daughter

Q: On page 206 and 207 of the textbook, it tries to explain the importance of the ARG-ST feature. However, I still have trouble understanding what it adds to the feature structure besides creating an additional step that perhaps makes things slightly clearer? I considered that while it seems somewhat redundant to me, it may be because

Q: It may be because the examples we have seen so far are relatively straightforward?

This. As the grammar gets more complicated it becomes more useful.

Q: I only applied it to the English language and the significance of this feature may be more obvious in different languages which have more abnormal argument structures?

A: Even for English, there is no easy way of clearly stating the binding principle without the ARG-ST

Q: I am somewhat confused regarding the need for AGR-ST: if the information inside it is already present in the other syntactic features, why can't the rule apply to the

information in those features instead?

A: the fact that they are specially ordered is important.