Ling 566
Nov 23, 2011

Auxiliaries cont: NICE

Overview

- Brief review of our analysis so far
- NICE properties of auxiliaries
- The auxiliary *do*
- NICE properties (lexical rules)
- Reading questions

Descriptive Summary of the NICE Properties

Negation	Sentences are negated by putting *not* after the first auxiliary verb; they can be reaffirmed by putting *too* or *so* in the same position
Inversion	Questions are formed by putting an auxiliary verb before the subject NP
Contraction	Auxiliary verbs take negated forms, with *n't* affixed
Ellipsis	Verb phrases immediately following an auxiliary verb can be omitted

Negation (and Reaffirmation)

- Polar adverbs (sentential *not*, *so*, and *too*) appear immediately following an auxiliary
  Pat will not leave
  Pat will SO leave
  Pat will TOO leave

- What about examples like *Not many people left*?

- What happens when you want to deny or reaffirm a sentence with no auxiliary?
  Pat left
  Pat ***did not*** *leave*
  Pat ***did TOO*** *leave*

The Auxiliary *do*

- Like modals, auxiliary *do* only occurs in finite contexts:
  **Pat continued to do not leave*
- Unlike modals, *do* cannot be followed by other auxiliaries:
  **Pat did not have left*

$$\left\langle \text{do} , \begin{bmatrix} \textit{auxv-lxm} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{FORM} & \text{fin} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \text{X} , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{base} \\ \text{AUX} & - \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{RESTR} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

The ADV$_{pol}$-Addition Lexical Rule

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{X}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{POL} & - \\ \text{AUX} & + \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \boxed{1}\ \rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Y}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{Z}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \boxed{1}\ \rangle \oplus \left\langle \begin{bmatrix} \text{ADV}_{pol} & \\ \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{ARG} & s_1 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

What does the type *pi-rule* mean?

- It maps words to words (hence, “post-inflectional”)
- It preserves MOD values, HEAD values as a default, and (like other lexical rule types) SEM values as a default

$$\begin{bmatrix} \text{INPUT} & \left\langle \begin{bmatrix} / \boxed{0} \\ \begin{bmatrix} word \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & / \boxed{1} \\ \text{VAL} & \begin{bmatrix} \text{MOD} & \boxed{A} \end{bmatrix} \end{bmatrix} \\ \text{SEM} & / \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \begin{bmatrix} / \boxed{0} \\ \begin{bmatrix} word \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & / \boxed{1} \\ \text{VAL} & \begin{bmatrix} \text{MOD} & \boxed{A} \end{bmatrix} \end{bmatrix} \\ \text{SEM} & / \boxed{2} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Why doesn't ADV$_{pol}$-Addition LR mention VAL?

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{X}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{POL} & - \\ \text{AUX} & + \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1} \rangle \oplus \boxed{A} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Y}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \text{Z} \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1} \rangle \oplus \left\langle \begin{bmatrix} \text{ADV}_{pol} & \\ \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{ARG} & s_1 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \oplus \boxed{A} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

What is the role of these indices?

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{X}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{POL} & - \\ \text{AUX} & + \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \boxed{1}\ \rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \textbf{INDEX} & \textbf{s}_1 \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Y}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{Z}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \boxed{1}\ \rangle \oplus \left\langle \begin{bmatrix} \textbf{INDEX} & \overset{\text{ADV}_{pol}}{\textbf{s}_2} \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{ARG} & \textbf{s}_1 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \textbf{INDEX} & \textbf{s}_2 \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Which *not*s does the rule license?

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{X}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{POL} & - \\ \text{AUX} & + \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\, \boxed{1} \,\rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Y}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\, \text{Z} \,\rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\, \boxed{1} \,\rangle \oplus \left\langle \begin{bmatrix} \text{INDEX} & \overset{\text{ADV}_{pol}}{s_2} \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{ARG} & s_1 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Andy must <u>not</u> have been sleeping? ✓

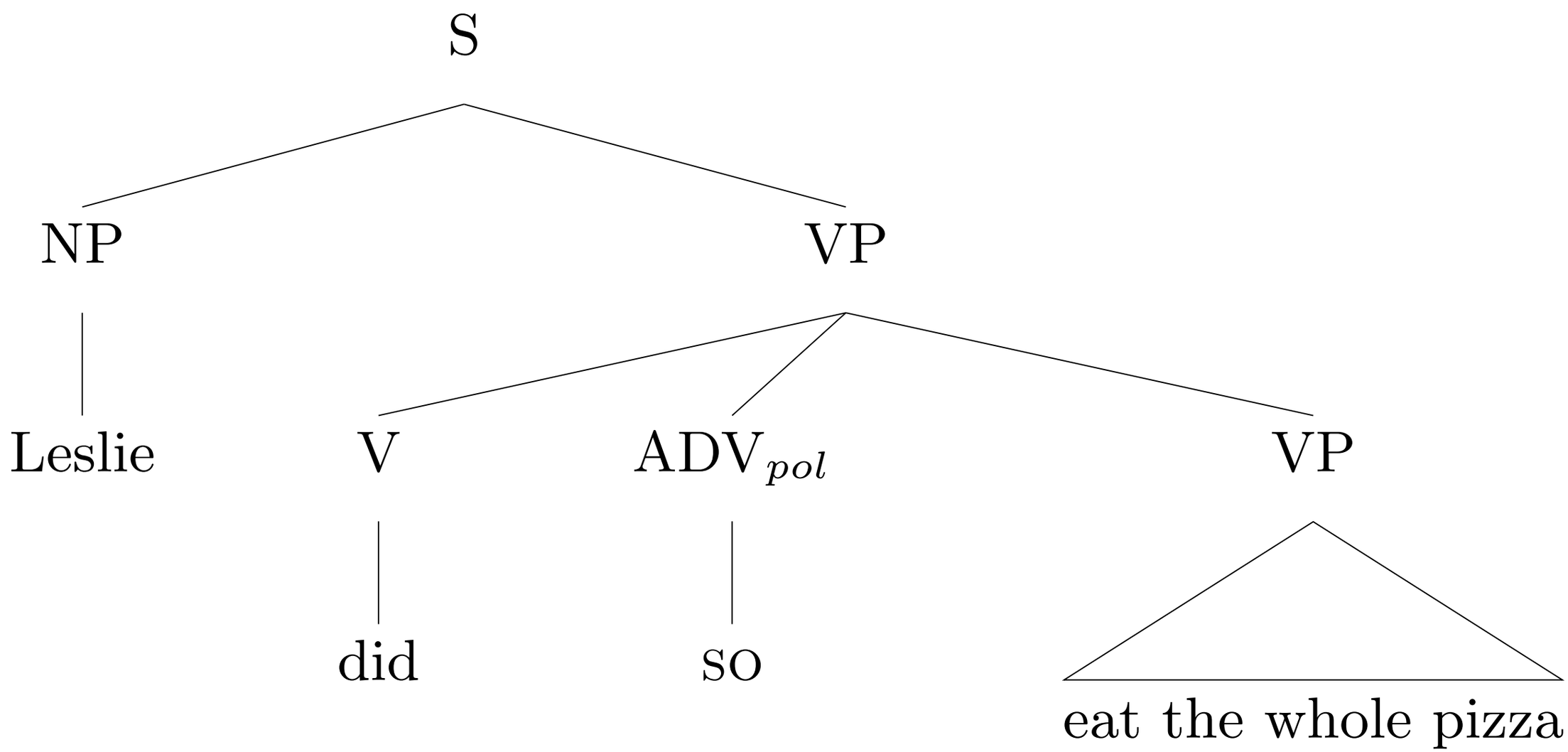
Andy must have <u>not</u> been sleeping? ✗

Andy must have been <u>not</u> sleeping? ✗

Kleptomaniacs can<u>not</u> not steal. ✓

Kleptomaniacs cannot <u>not</u> steal. ✗

Negation and Reaffirmation: A Sample Tree



Inversion

- Yes-no questions begin with an auxiliary:
  Will Robin win?
- The NP after the auxiliary has all the properties of a subject
  - Agreement: *Have they left?* vs. **Has they left?*
  - Case: **Have them left?*
  - Raising: *Will there continue to be food at the meetings?*
- What happens if you make a question out of a sentence without an auxiliary?
  Robin won
  Did Robin win?

The Inversion Lexical Rule

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{W}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{X}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{prop} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Z}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{INV} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{ques} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

How the Rule Yields Inverted Order

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{W}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \textbf{SPR} & \langle\ \textbf{X}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{prop} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Z}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{INV} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \textbf{SPR} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{ques} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

...plus the ARP

The Feature INV

- What is the INV value of inputs to the Inversion LR?
  - Perhaps surprisingly, the input is [INV +]
  - Word-to-word rules (*pi-rules*) have default identity of HEAD features, and no INV value is given on the input
- Then what work is the feature doing?
  - It's used to mark auxiliaries that can't or must be inverted

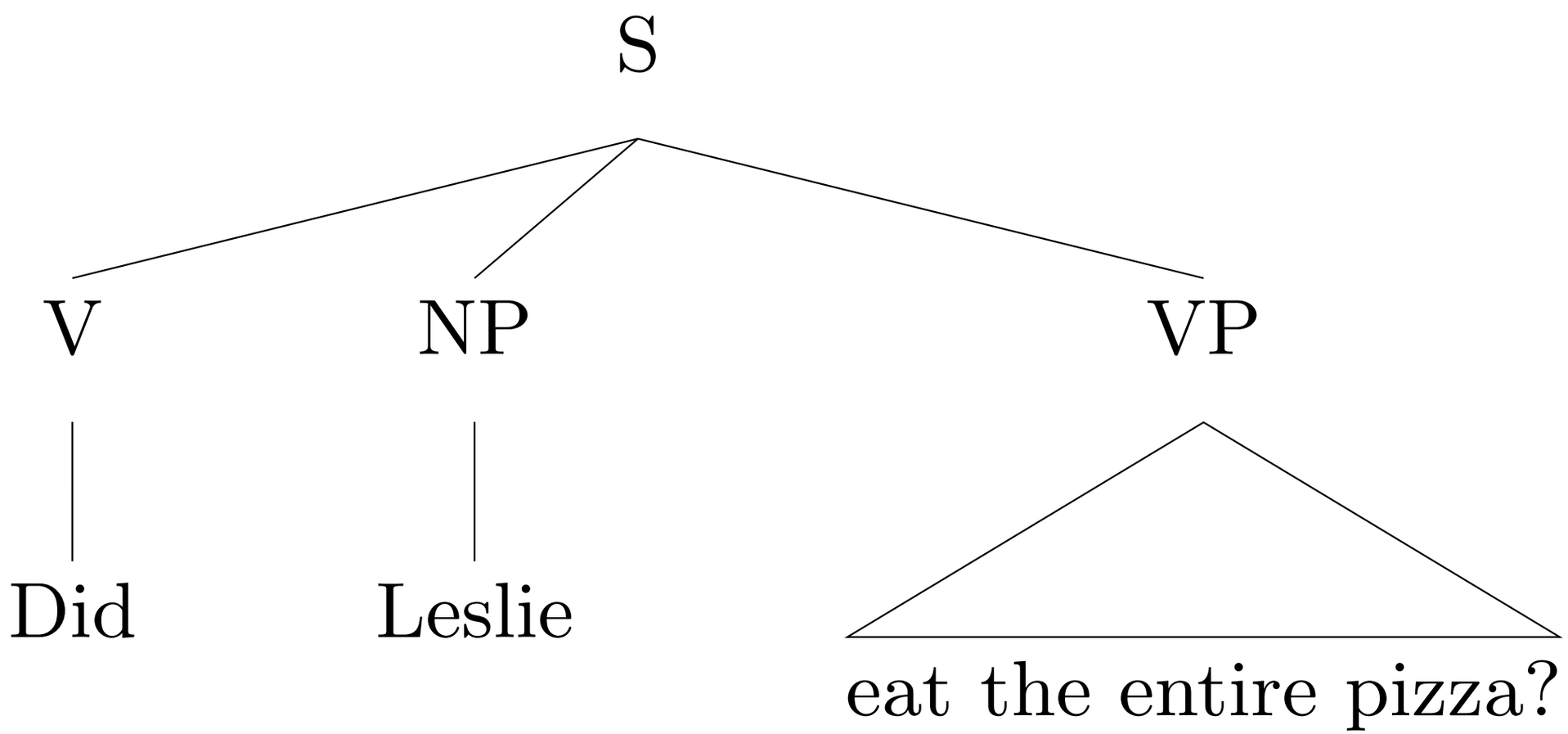
    You better watch out *vs.* **Better you watch out*

    I shall go (*shall* ~ 'will') *vs.* *Shall I go?* (*shall* ~ 'should')

Other Cases of Inversion

- Inversion is not limited to questions
  - Preposed negatives: *Never **have I** been so upset!*
  - Conditionals: ***Had we** known, we would have left.*
  - Exclamations: ***May your teeth** fall out!*
- Does our rule account for these?
  - No. Our rule's output says [MODE ques]. And each construction has slightly different idiosyncrasies.
- How might we extend our analysis to cover them?
  - Define a type of inversion lexical rules, sharing certain properties, but with some differences.

Inversion: A Sample Tree



Contraction

- There are several types of contraction in English, but we're only talking about words ending in *n't*
- It may seem like just *not* said fast, but there's more to it
  - Only finite verbs can take *n't*:
    **Terry must haven't seen us*
  - There are morphological irregularities:
    won't, not **willn't* *%shan't*, not **shalln't*
    mustn't pronounced *mussn't*
    don't pronounced *doen't*, not *dewn't*
    **amn't*

The Contraction Lexical Rule

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \boxed{2}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \\ \text{POL} & - \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{B} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{A} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{F}_{NEG}(\boxed{2}), \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{X}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{B} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{not} \\ \text{SIT} & s_2 \\ \text{ARG} & s_1 \end{bmatrix} \right\rangle \oplus \boxed{A} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Most of the work is in the semantics

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \boxed{2}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \\ \text{POL} & - \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{\text{B}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{\text{A}} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{F}_{NEG}(\boxed{2}), \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{X}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{\text{B}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{not} \\ \text{SIT} & s_2 \\ \text{ARG} & s_1 \end{bmatrix} \right\rangle \oplus \boxed{\text{A}} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Why?

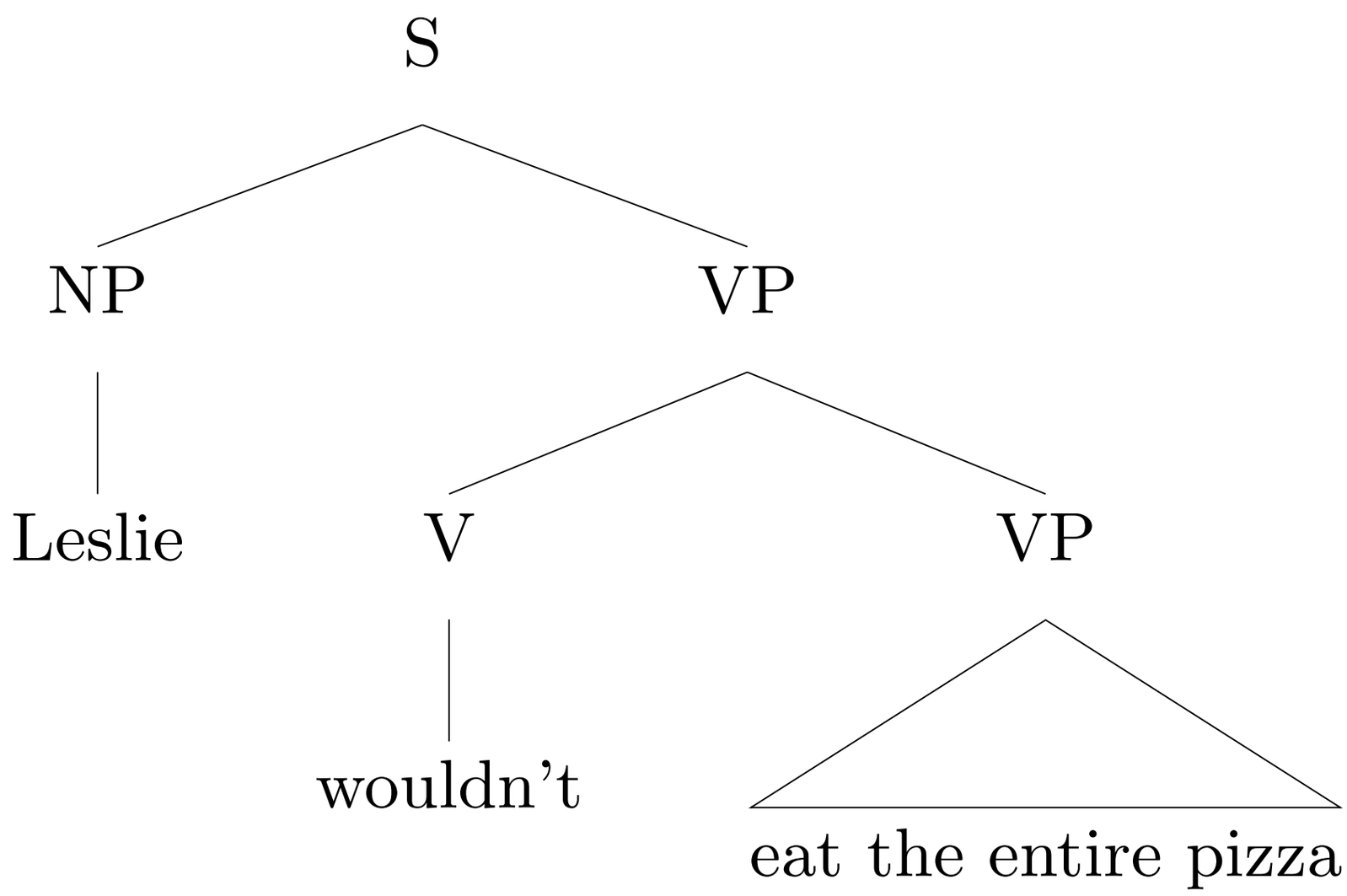
What does POL do?

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \boxed{2}, \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{AUX} & + \\ \text{POL} & - \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{B} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \\ \text{RESTR} & \boxed{A} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{F}_{NEG}(\boxed{2}), \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle \text{X} \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{B} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{not} \\ \text{SIT} & s_2 \\ \text{ARG} & s_1 \end{bmatrix} \right\rangle \oplus \boxed{A} \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

**We can'tn't stop*

**They won't TOO mind*

Contraction: Sample Tree



Ellipsis

- Ellipsis allows VPs to be omitted, so long as they would have been preceded by an auxiliary

∗ *Pat couldn't have been watching us, but Chris* _____

- Unlike the other NICE properties, this holds of all auxiliaries, not just finite ones.

- What is the elliptical counterpart to a sentence with no auxiliary?

Whenever Pat watches TV, Chris watches TV
Whenever Pat watches TV, Chris does

The Ellipsis Lexical Rule

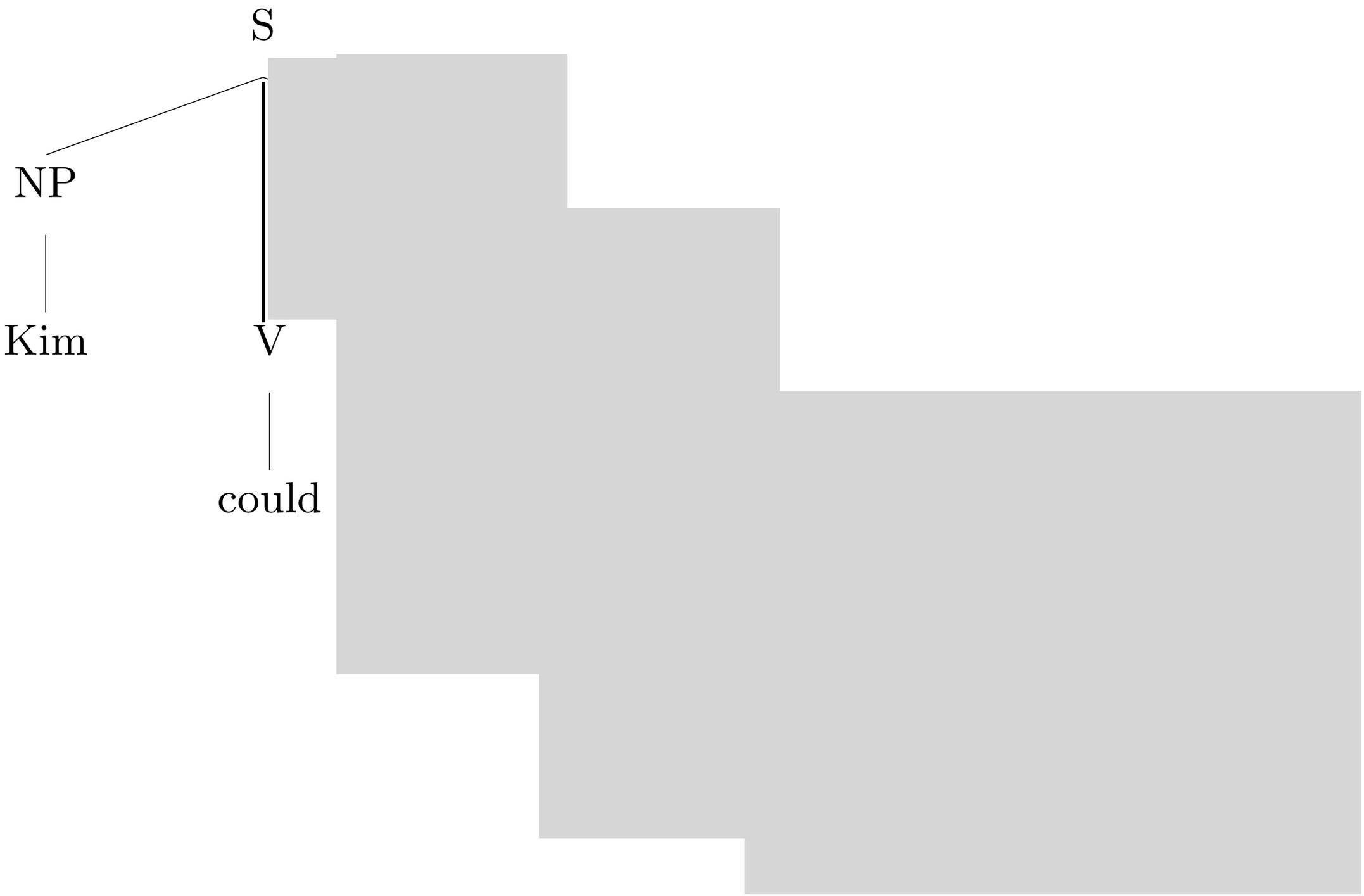
$$\begin{bmatrix} \textit{d-rule} & \\ \text{INPUT} & \left\langle \boxed{1}, \begin{bmatrix} \textit{auxv-lxm} \\ \text{ARG-ST} \ \langle \boxed{2} \rangle \oplus \boxed{A} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \boxed{1}, \begin{bmatrix} \textit{dervv-lxm} \\ \text{ARG-ST} \ \langle \boxed{2} \rangle \end{bmatrix} \right\rangle \end{bmatrix}$$

- Note that this is a derivational LR (*d-rule*) -- that is, lexeme-to-lexeme
- This means that SYN and SEM are unchanged, by default

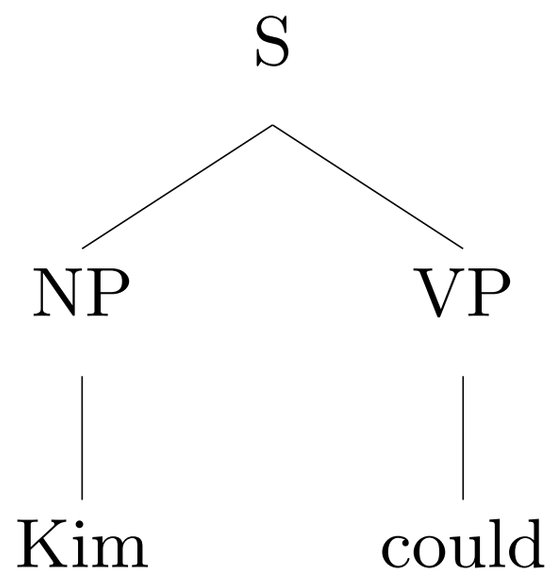
Ellipsis: A Sample Output

$$\left\langle \text{could}\ ,\ \begin{bmatrix} \textit{auxv-lxm} & \\ \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{FORM} & \text{fin} \\ \text{AUX} & + \\ \text{POL} & - \\ \text{AGR} & \boxed{1} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ [\text{AGR}\ \boxed{1}]\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \text{NP}\ \rangle \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \text{prop} \\ \text{INDEX} & s_1 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{could} \\ \text{SIT} & s_1 \\ \text{ARG} & s_2 \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$

Ellipsis: A Sample Tree



Semantics of Ellipsis



What is the SEM value of the S node of this tree?

$$\begin{bmatrix} \text{INDEX} & s_1 \\ \text{MODE} & \text{prop} \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Kim} \\ \text{NAMED} & i \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{could} \\ \text{SIT} & s_1 \\ \text{ARG} & s_2 \end{bmatrix} \right\rangle \end{bmatrix}$$

Note: s_2 has to be filled in by context.

Infinitival *to* Revisited

- VP Ellipsis can occur after *to*:

  We didn't find the solution, but we tried to.

- This is covered by our Ellipsis LR if we say *to* is [AUX +].

- Since AUX is declared on type *verb*, it follows that *to* is a verb.

do Revisited

- Chomsky's old analysis: in sentences w/o auxiliaries...
  - Tense can get separated from the verb in various ways
    - Negation/Reaffirmation inserts something between Tense and the following verb
    - Inversion moves Tense to the left of the subject NP
    - Ellipsis deletes what follows Tense
  - When this happens, *do* is inserted to support Tense

- Our counterpart:
  - NICE properties hold only of auxiliaries
  - *do* is a semantically empty auxiliary, so negated, reaffirmed, inverted, and elliptical sentences that are the semantic counterparts to sentences w/o auxiliaries are ones with *do*.

Summary

- Our analysis employs straightforward mechanisms
  - Lexical entries for auxiliaries
  - 3 new features (AUX, POL, INV)
  - 4 lexical rules
- We handle a complex array of facts
  - co-occurrence restrictions (ordering & iteration)
  - the NICE properties
  - auxiliary *do*
  - combinations of NICE constructions

Overview

- Brief review of our analysis so far
- NICE properties of auxiliaries
- The auxiliary *do*
- NICE properties (lexical rules)
- Reading questions

Reading Questions

- If *dervv-lxm* doesn't apply any constraints beyond those inherited from *verb-lxm*, why can't we just call the result a *verb-lxm*? Is it simply because *verb-lxm* is not a leaf node? Or are there derivational rules that we don't want to accidentally apply to a *dervv-lxm* that would apply to *verb-lxms*?

Reading Questions

- In (51) on p. 406 (ADV*pol*-Addition LR), why is does the output have SPR <Z> instead of SPR<[1]> to match the ARG-ST?

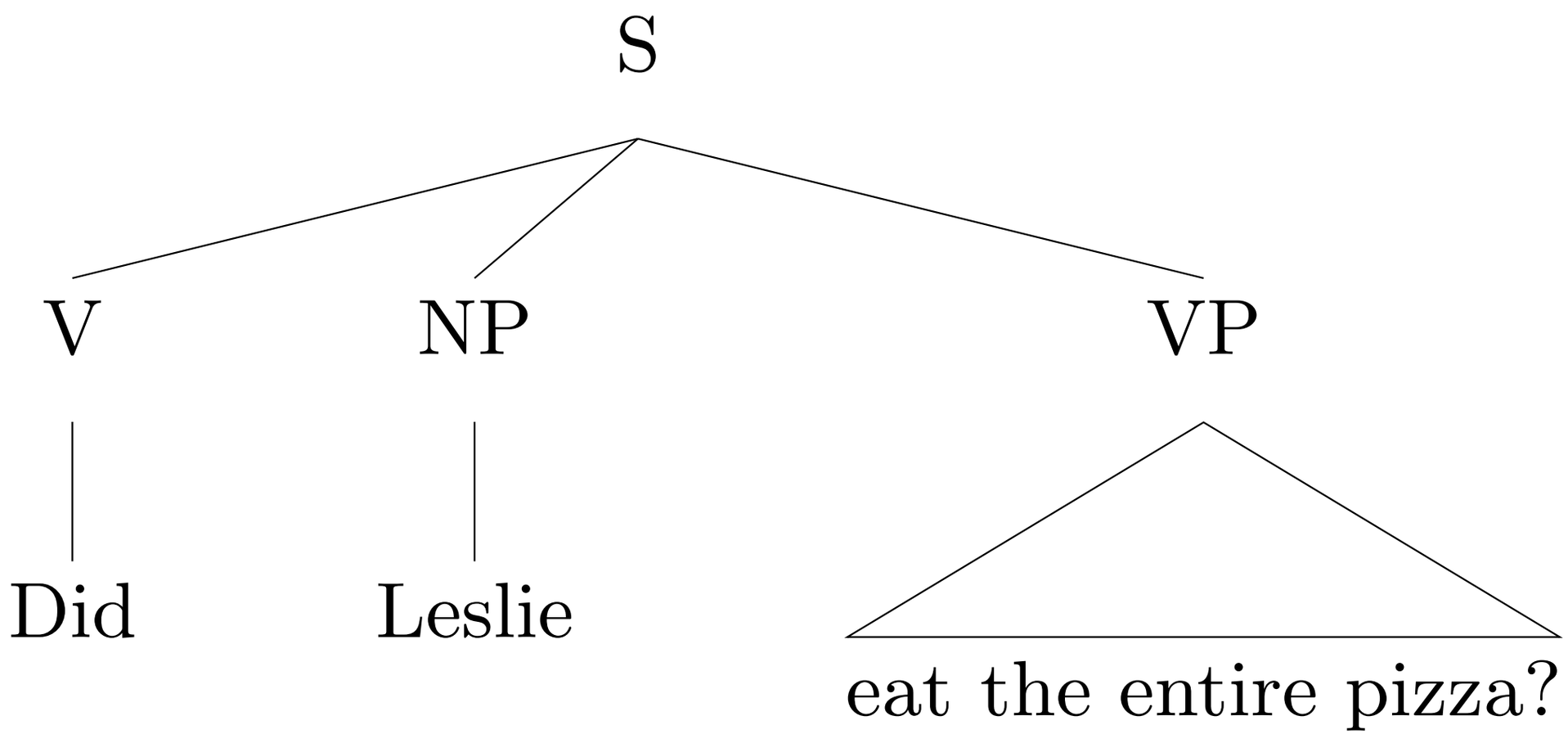
The ADV$_{pol}$-Addition Lexical Rule

$$\begin{bmatrix} \textit{pi-rule} & \\ \text{INPUT} & \left\langle \text{X}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \textit{verb} & \\ \text{FORM} & \text{fin} \\ \text{POL} & - \\ \text{AUX} & + \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \boxed{1}\ \rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_1 \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{OUTPUT} & \left\langle \text{Y}\ , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{POL} & + \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} & \langle\ \text{Z}\ \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \langle\ \boxed{1}\ \rangle \oplus \left\langle \begin{bmatrix} \text{ADV}_{pol} & \\ \text{INDEX} & s_2 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{ARG} & s_1 \end{bmatrix} \right\rangle \end{bmatrix} \right\rangle \oplus \boxed{\text{A}} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s_2 \end{bmatrix} \end{bmatrix} \right\rangle \end{bmatrix}$$

Reading Questions

- In (57) on p. 410, what happened to the VP node that formerly dominated the VP tap-dance and of which "can" was formerly the head daughter? Similarly, when "be" is the head verb of a sentence, whathappens to its original mother VP (and its complements) when it undergoes the Inversion Lexical Rule?

Inversion: A Sample Tree



Reading Questions

- If *better* is an auxiliary verb, then doesn't that violate (5e) on iteration?
  - The twins had better have gone to bed.
- Or is that a different *have* or a different *better*?

Reading Questions

- Footnote 11 describes what I was thinking when I sent the reading question forwarded below, when I figured there was a difference between a VP with an NP COMPS and a VP with and adverb. Turns out they're COMPS either way. :) "He loves easily and often."
- Examples from fn 11:
  - This book reads (easily).
  - They treated Sandy (contemptuously).

Reading Questions

- Let me see if I'm following: it looks like we could apply the Ellipsis Lexical Rule and then later the Inversion Lexical Rule to end up with something like this, right?
  - A: I've been reading the papers.
  - B: Have you?