

Ling 566

Nov 22, 2022

Auxiliaries cont: NICE

Overview

- 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

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📱 Text **EMB** to **22333** once to join



W Kim is SO going to the party

Ungrammatical/meaningless

Unambig: responding to Kim is not...

Unambig: expressing certainty

Ambiguous between those two

What's the difference?

Means yet something else

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?

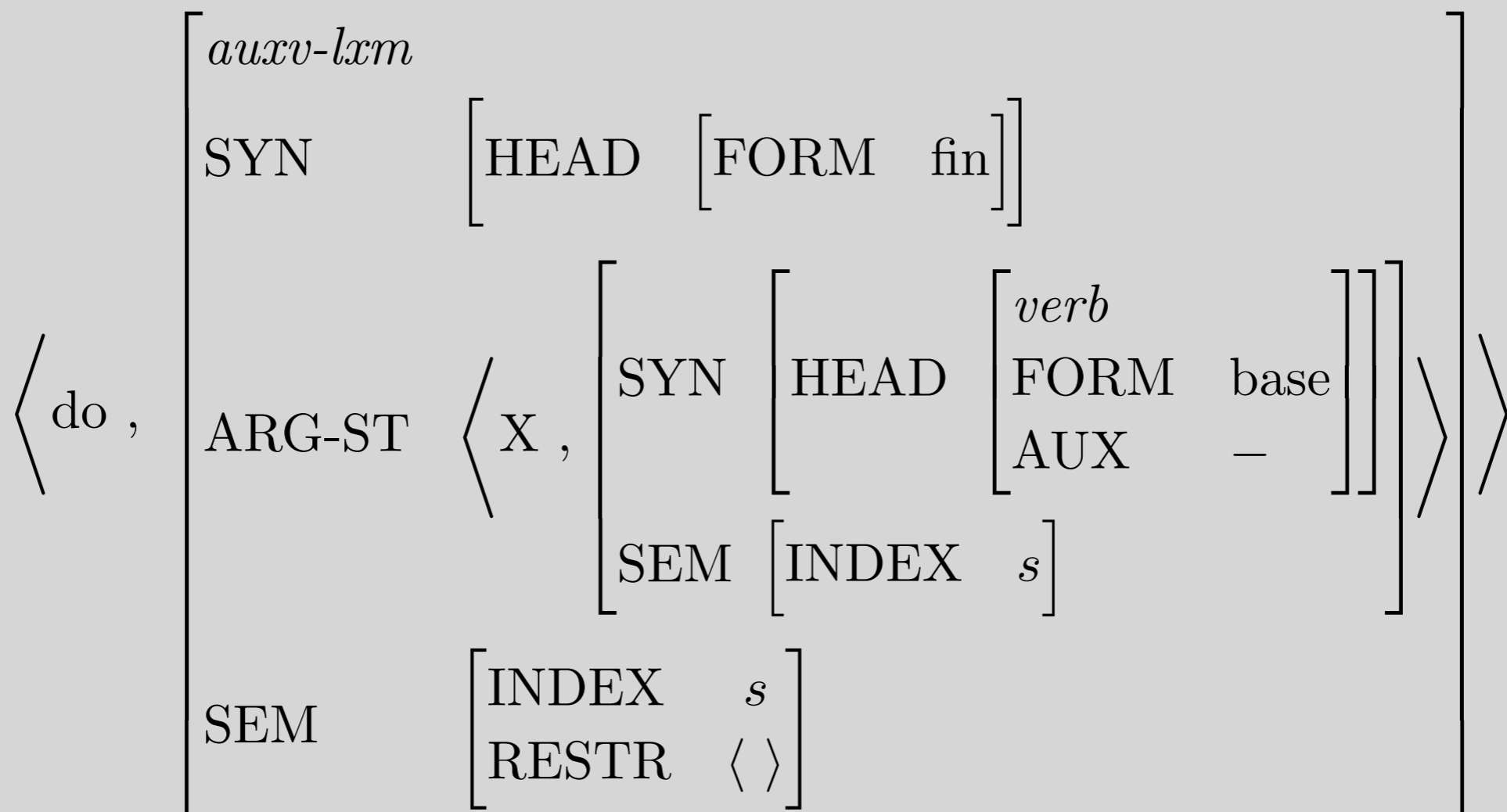
Pat left

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*



The ADV_{pol} -Addition Lexical Rule

$$\left[\begin{array}{l} \textit{pi-rule} \\ \\ \\ \end{array} \right]$$

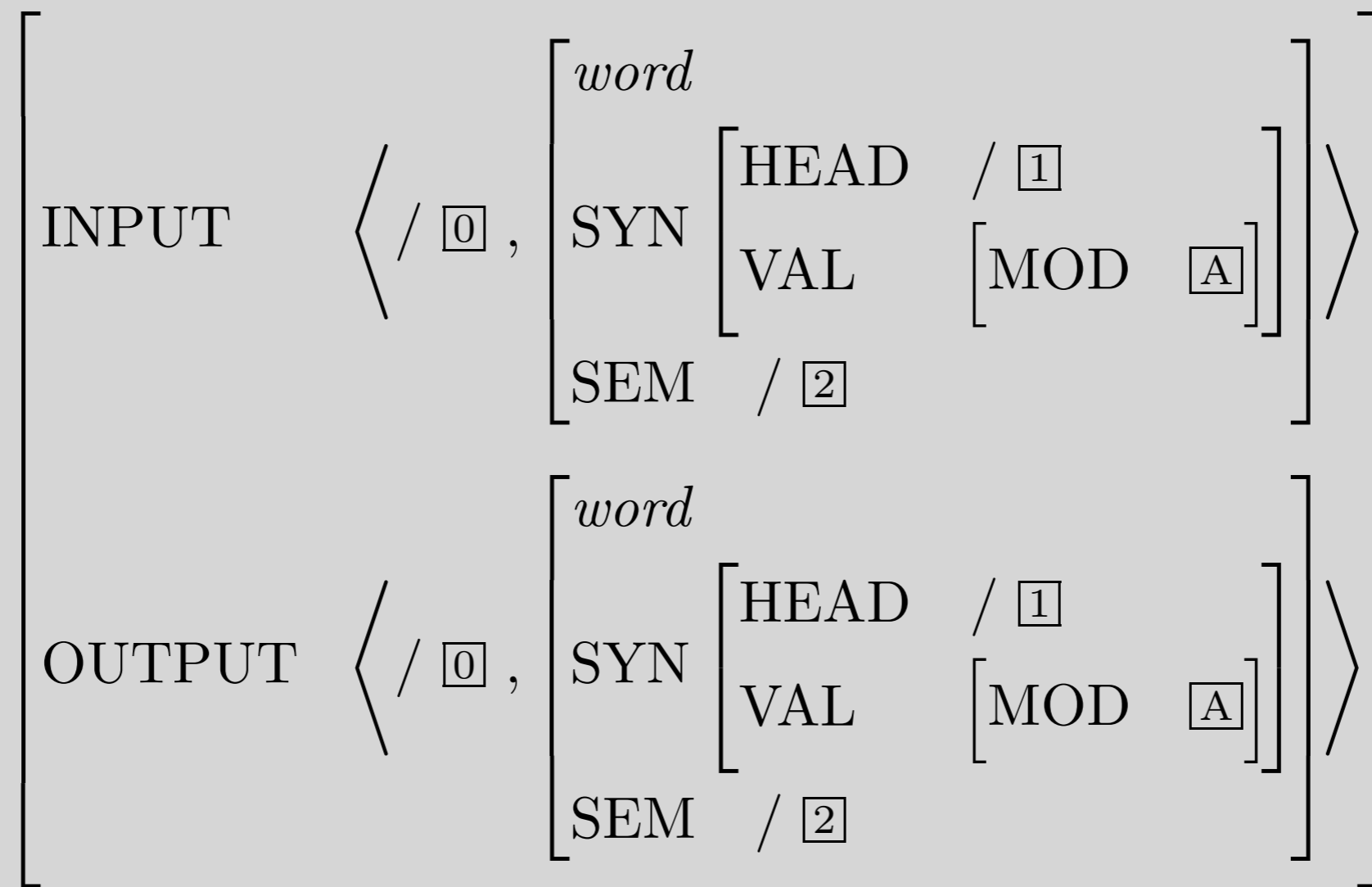
$$\left[\begin{array}{l} \text{INPUT} \\ \\ \text{OUTPUT} \end{array} \right]$$

$$\left\langle X, \left[\begin{array}{l} \text{SYN} \left[\begin{array}{l} \text{HEAD} \left[\begin{array}{l} \textit{verb} \\ \text{FORM} \quad \textit{fin} \\ \text{POL} \quad - \\ \text{AUX} \quad + \end{array} \right] \right] \\ \text{ARG-ST} \quad \langle \boxed{1} \rangle \oplus \boxed{A} \\ \text{SEM} \quad \left[\text{INDEX} \quad s_1 \right] \end{array} \right] \right\rangle$$

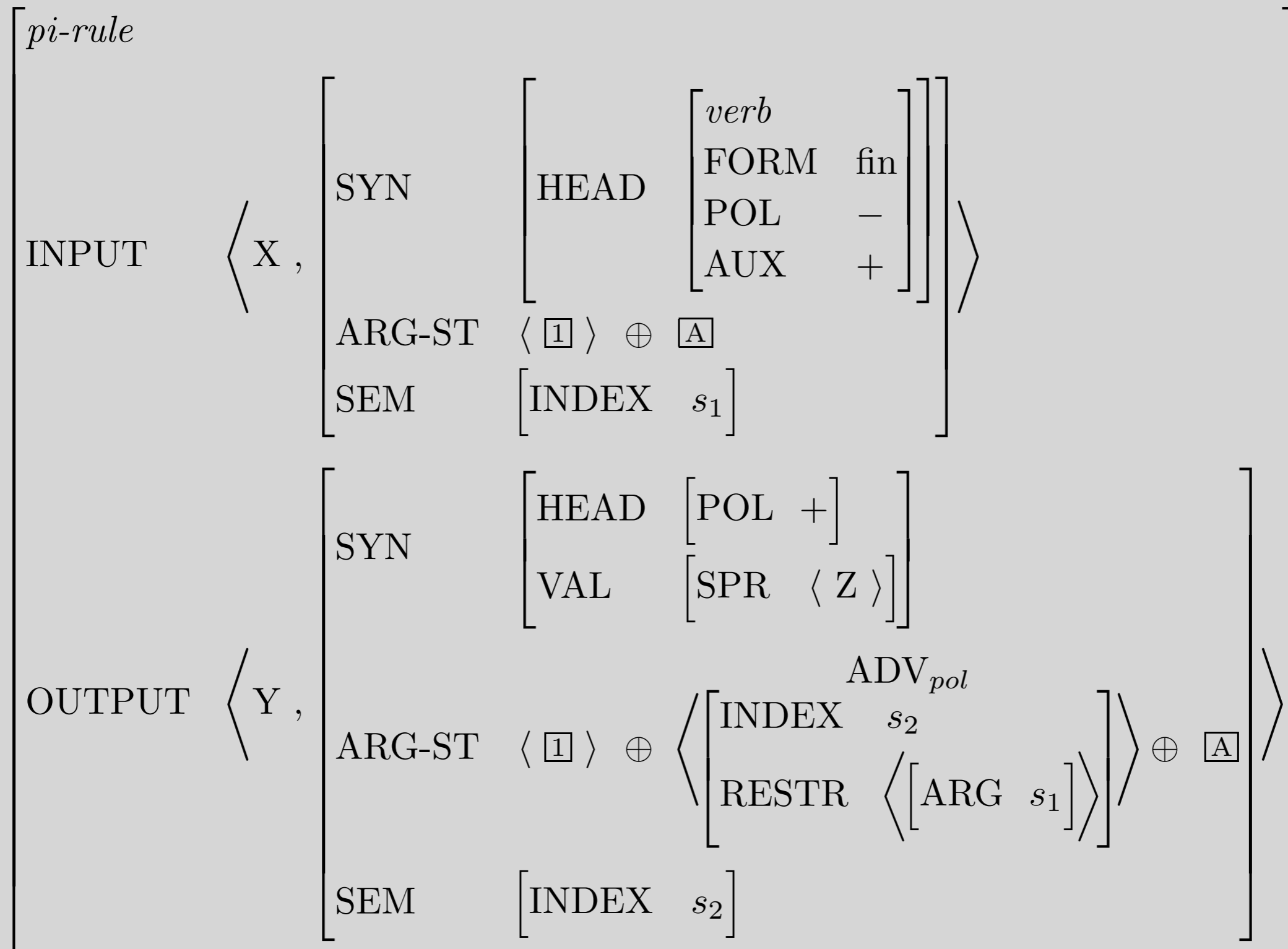
$$\left\langle Y, \left[\begin{array}{l} \text{SYN} \left[\begin{array}{l} \text{HEAD} \left[\text{POL} \quad + \right] \\ \text{VAL} \quad \left[\text{SPR} \quad \langle Z \rangle \right] \end{array} \right] \\ \text{ARG-ST} \quad \langle \boxed{1} \rangle \oplus \left\langle \begin{array}{l} \text{ADV}_{pol} \\ \left[\text{INDEX} \quad s_2 \right] \\ \text{RESTR} \quad \left\langle \left[\text{ARG} \quad s_1 \right] \right\rangle \right\rangle \oplus \boxed{A} \\ \text{SEM} \quad \left[\text{INDEX} \quad s_2 \right] \end{array} \right] \right\rangle$$

What does the type *pi-rule* mean?

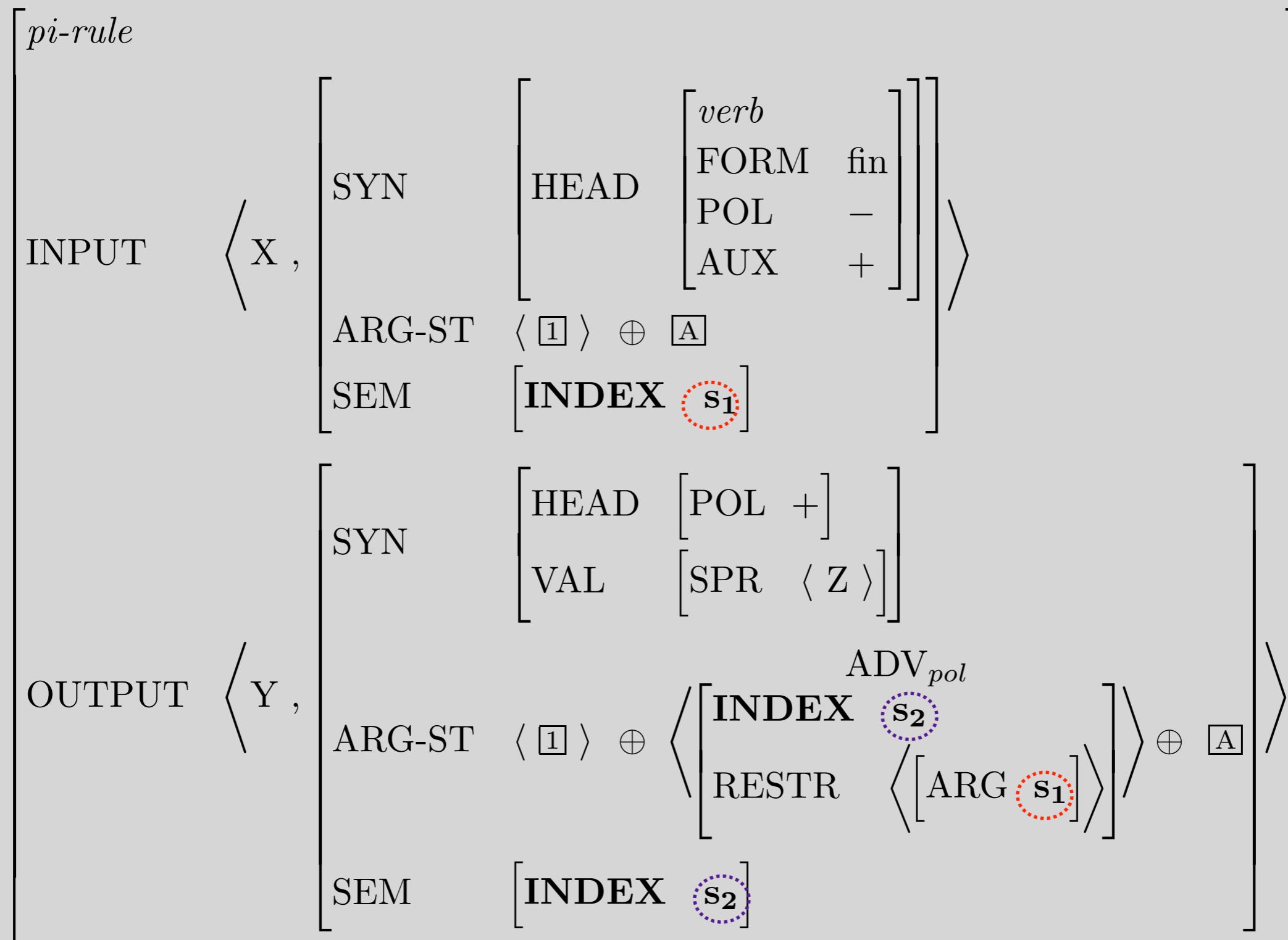
- It maps words to words (hence, “post-inflectional”)
- It preserves MOD values, HEAD values as a default, and (like other lexical rule types) SEM values as a default



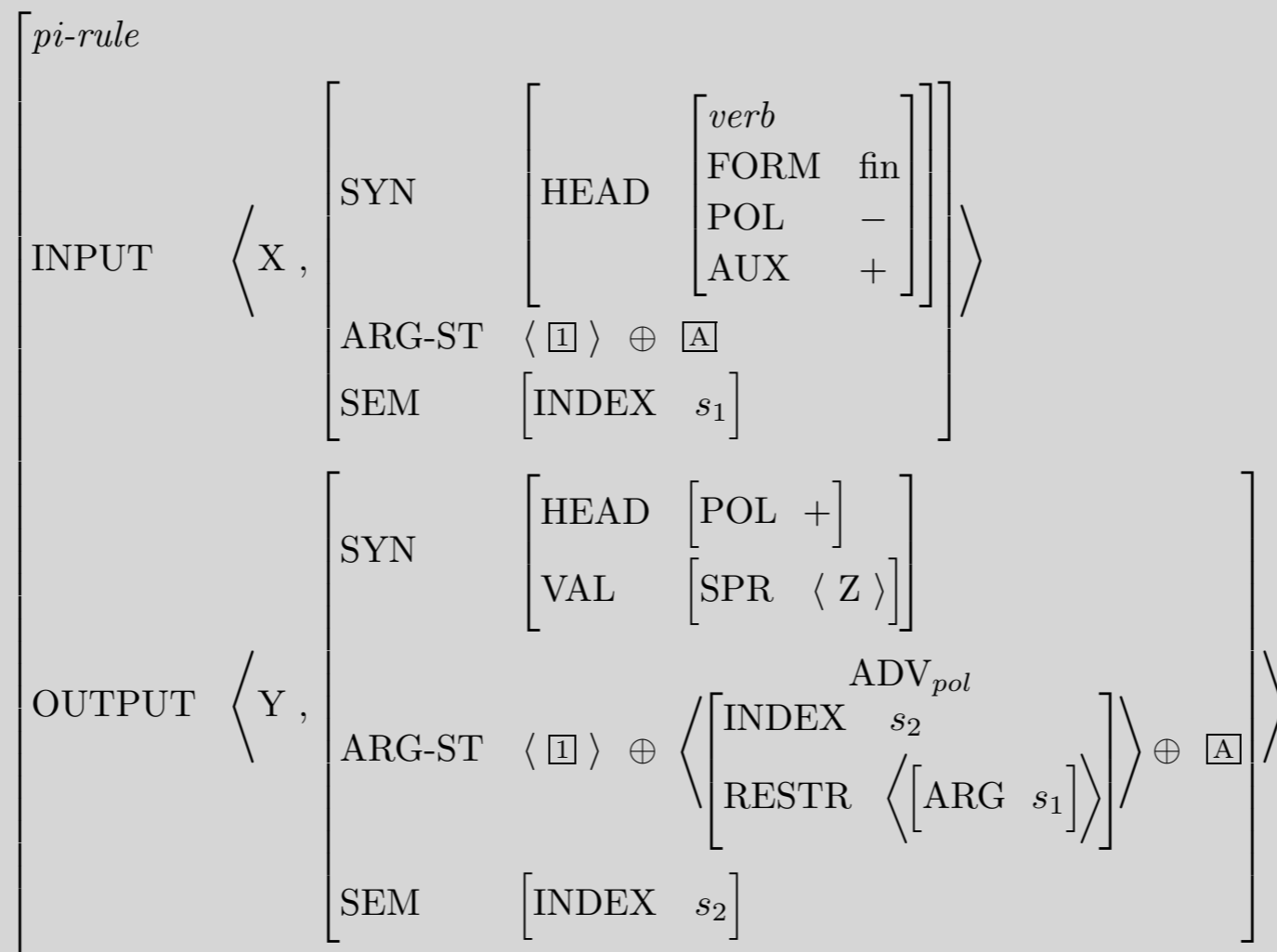
Why doesn't ADV_{pol} -Addition LR mention VAL?



What is the role of these indices?



Which *nots* does the rule license?



Andy must not have been sleeping?



Andy must have not been sleeping?



Andy must have been not sleeping?



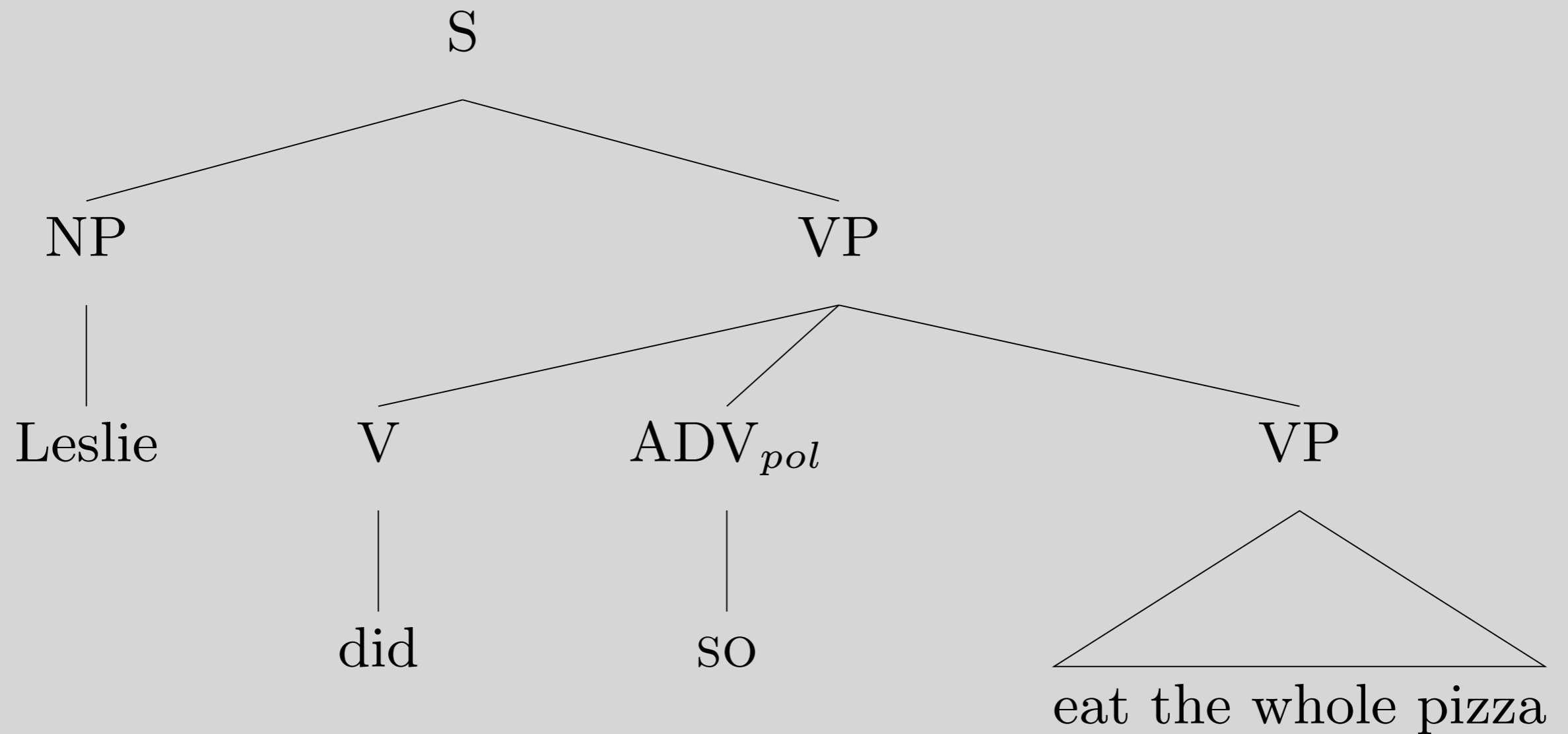
Kleptomaniacs cannot not steal.



Kleptomaniacs cannot not steal.



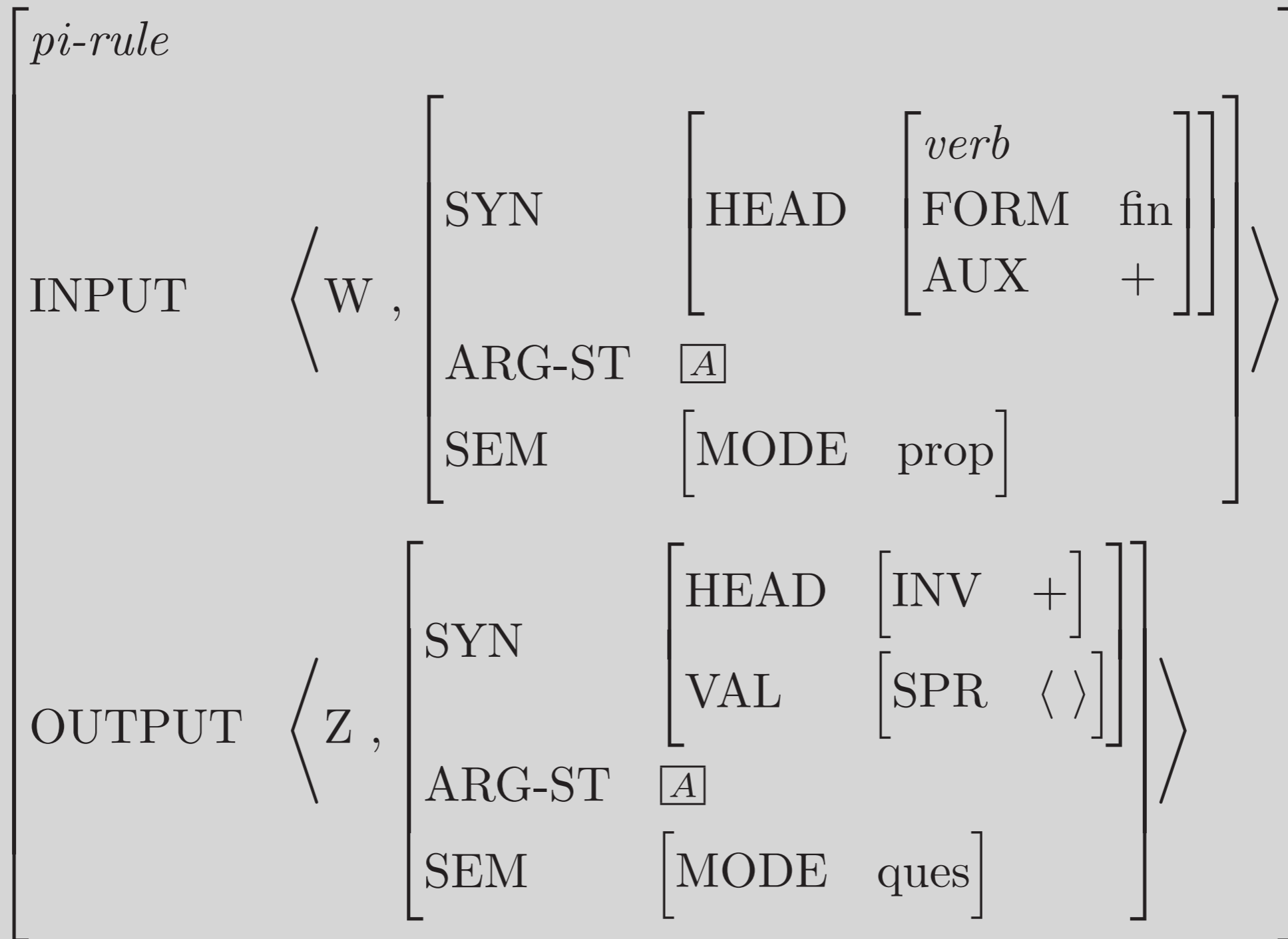
Negation and Reaffirmation: A Sample Tree



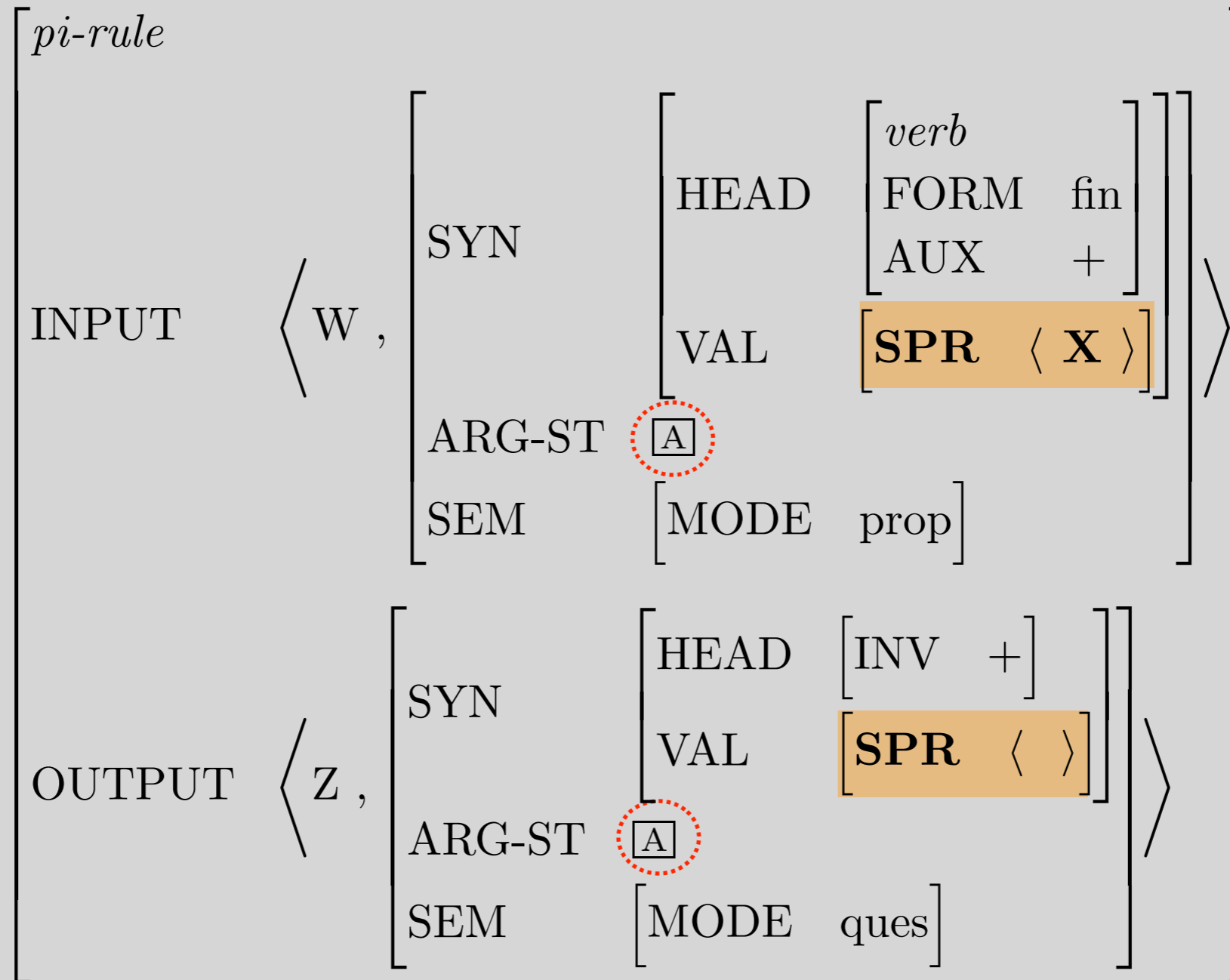
Inversion

- 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



How the Rule Yields Inverted Order



...plus the ARP

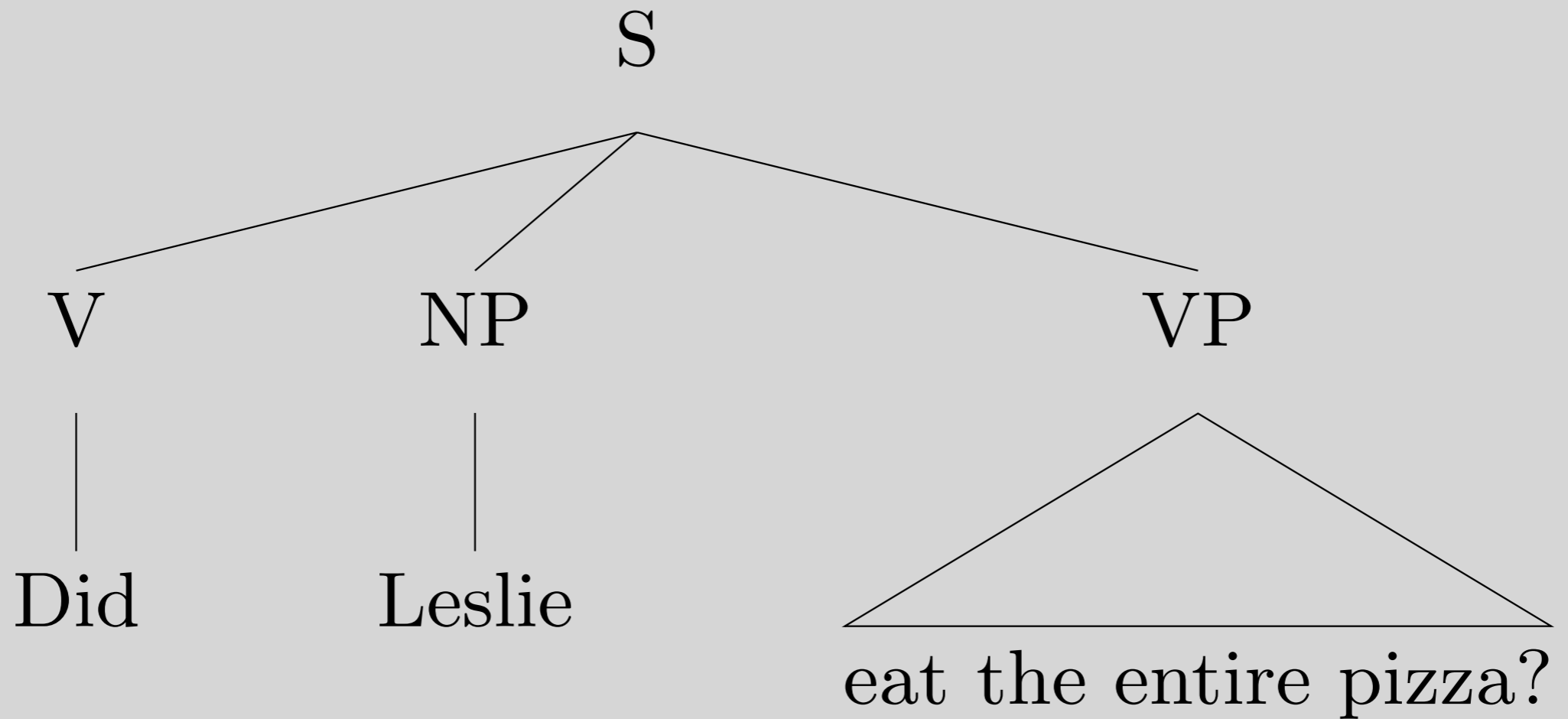
The Feature INV

- 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.

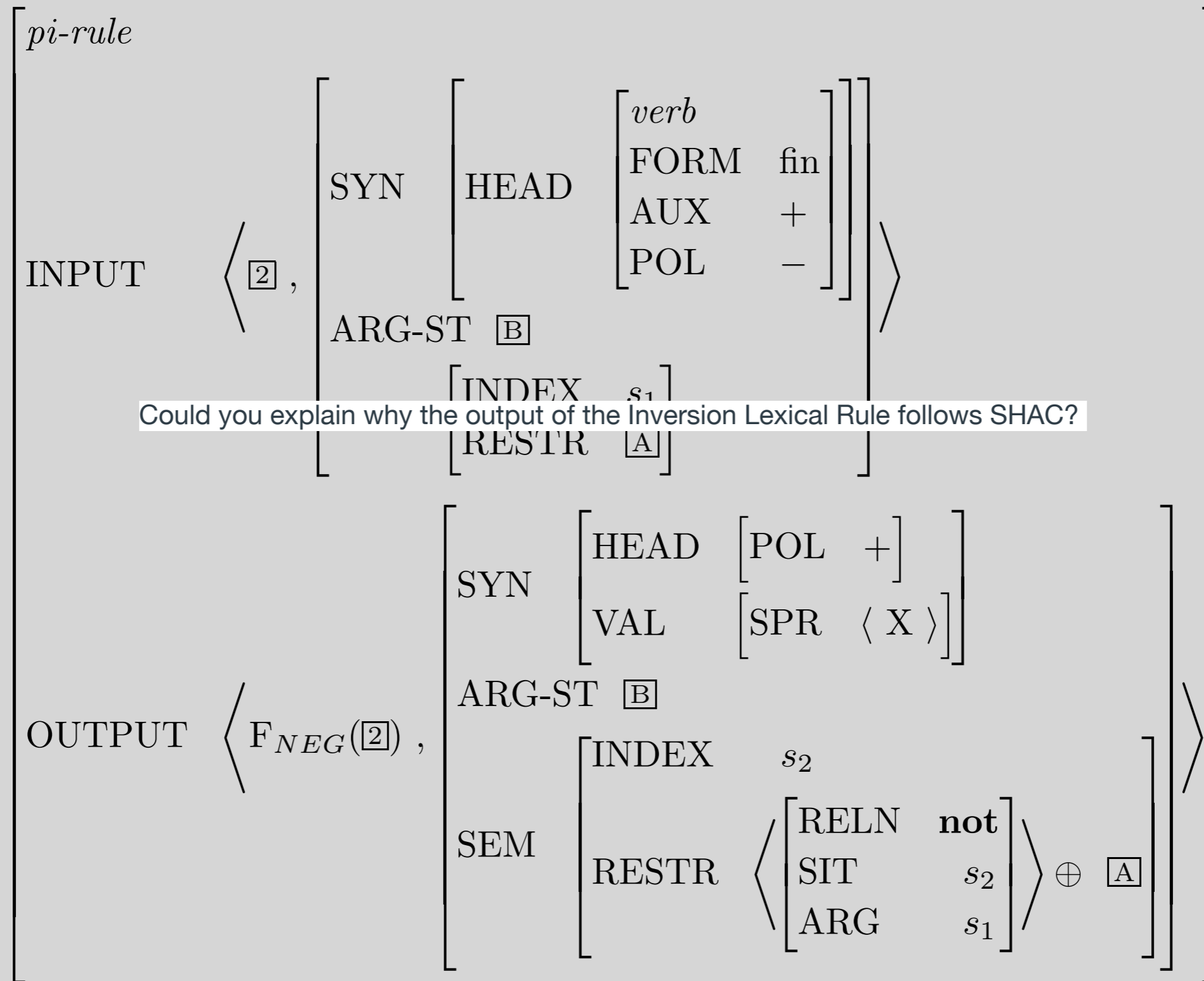
Inversion: A Sample Tree



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*

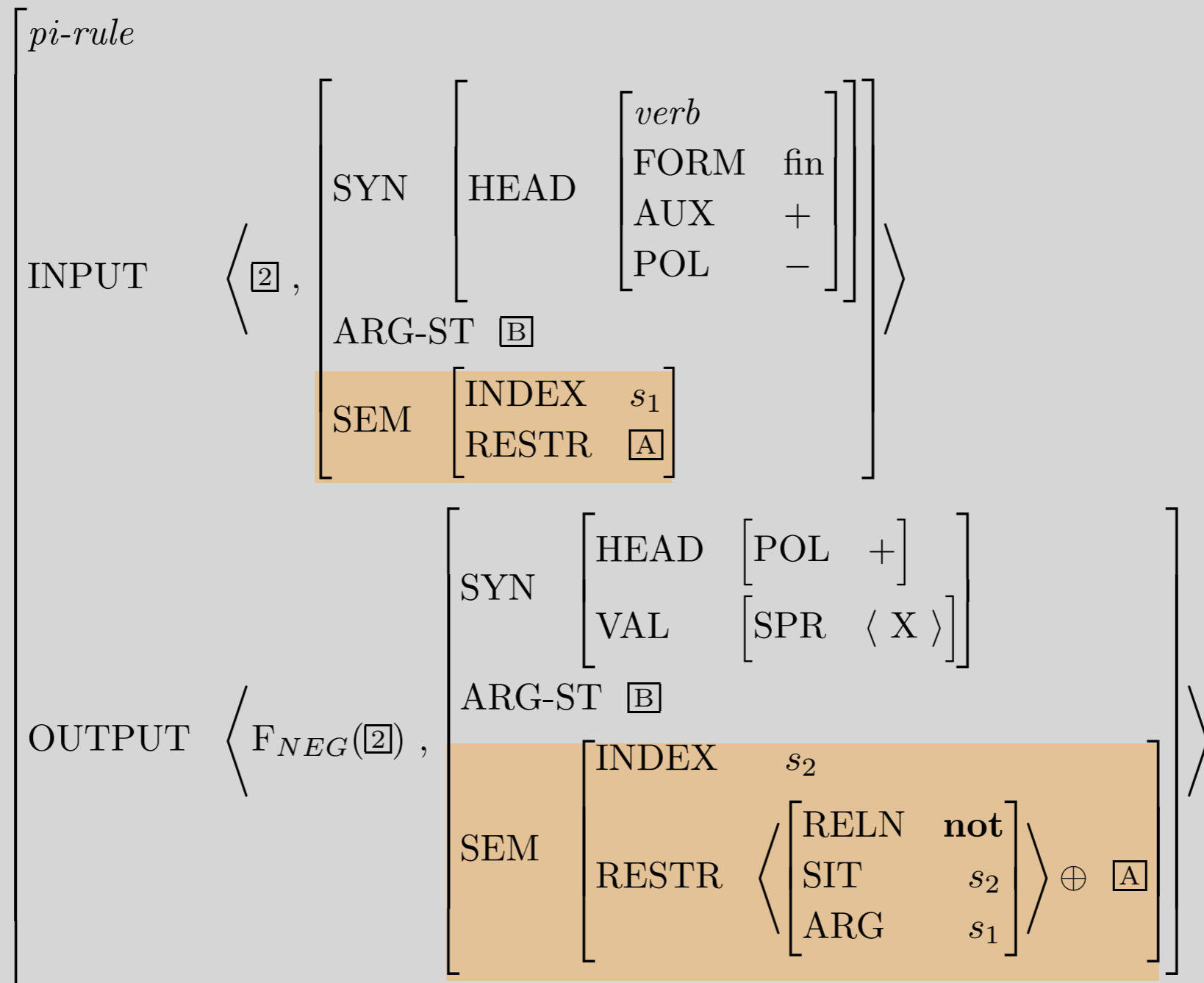
The Contraction Lexical Rule



Reading question

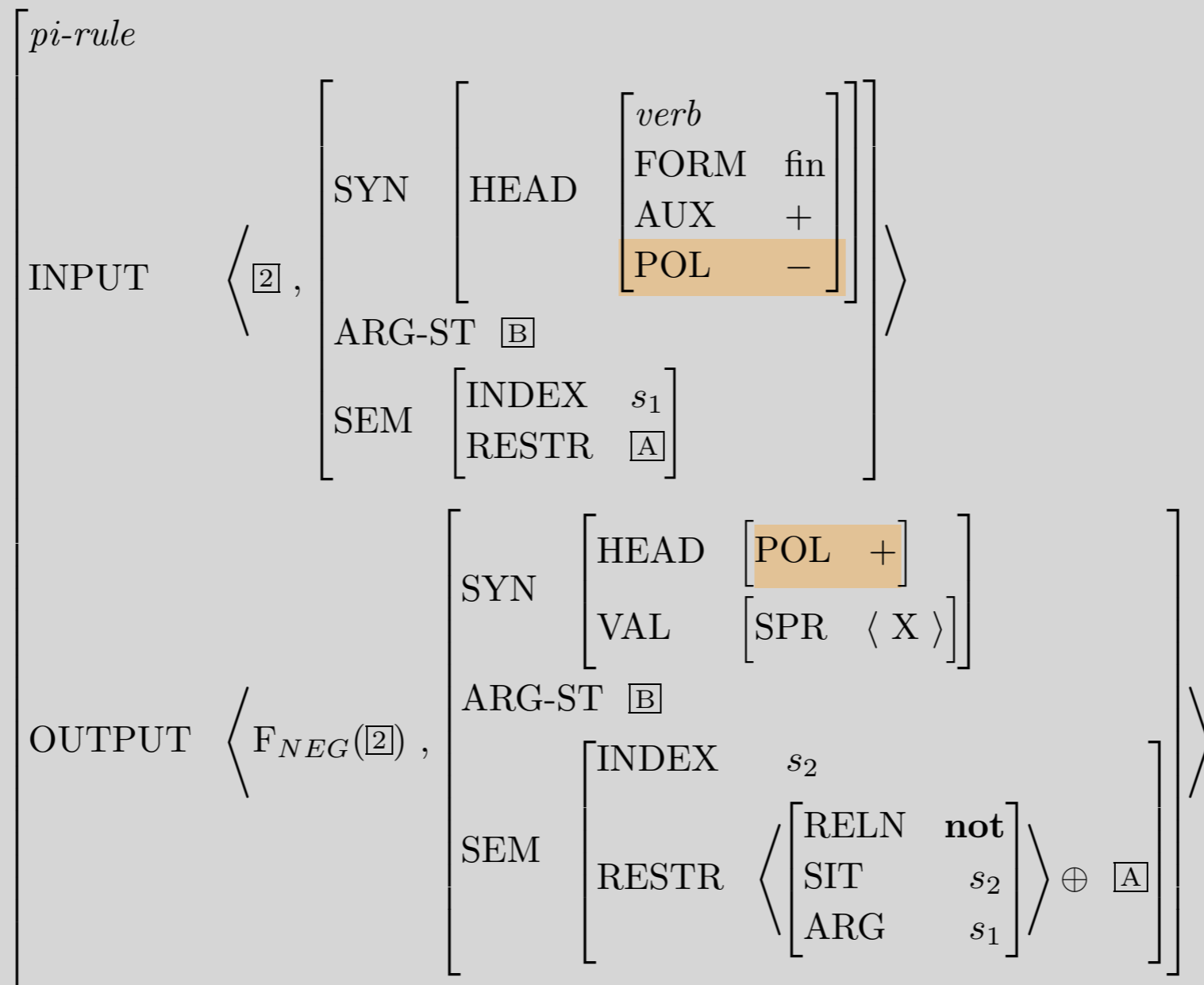
- Could you explain why the output of the Inversion Lexical Rule follows SHAC?

Most of the work is in the semantics



Why?

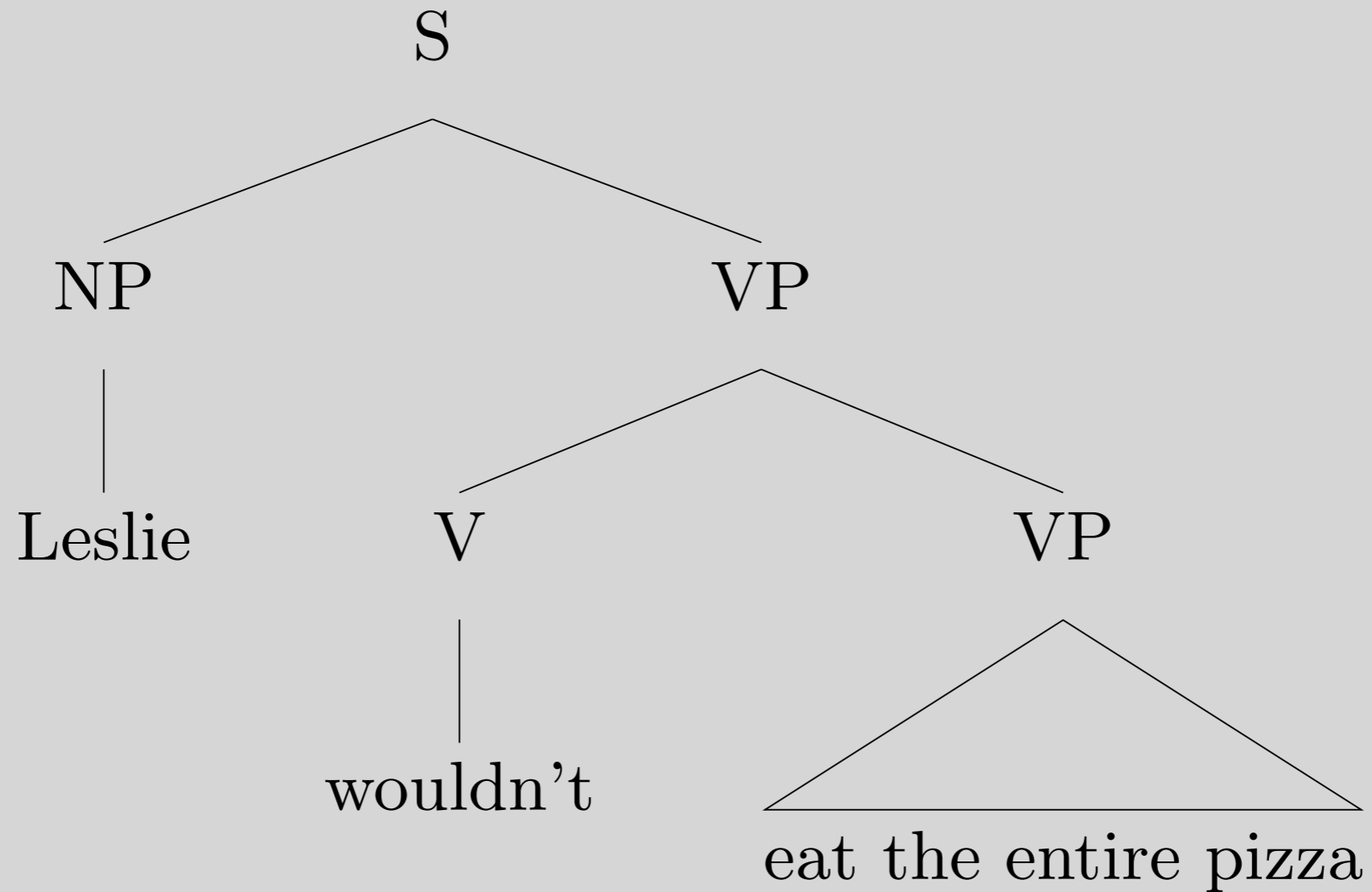
What does POL do?



**We can't stop*

**They won't TOO mind*

Contraction: Sample Tree



🌐 When poll is active, respond at pollev.com/emb

📱 Text **EMB** to **22333** once to join



W How do you feel about very simple trees in our NICE analyses?

Satisfyingly
elegant/simple

Seems to hide a
lot of complexity

That's it?!

Other

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

$$\left[\begin{array}{l}
 \text{INPUT} \\
 \text{OUTPUT}
 \end{array} \right. \begin{array}{l}
 \left\langle \boxed{1}, \left[\begin{array}{l}
 \text{auxv-}lxm \\
 \text{ARG-ST} \langle \boxed{2} \rangle \oplus \boxed{A}
 \end{array} \right] \right\rangle \\
 \left\langle \boxed{1}, \left[\begin{array}{l}
 \text{deriv-}lxm \\
 \text{ARG-ST} \langle \boxed{2} \rangle
 \end{array} \right] \right\rangle
 \end{array} \left. \right]$$

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

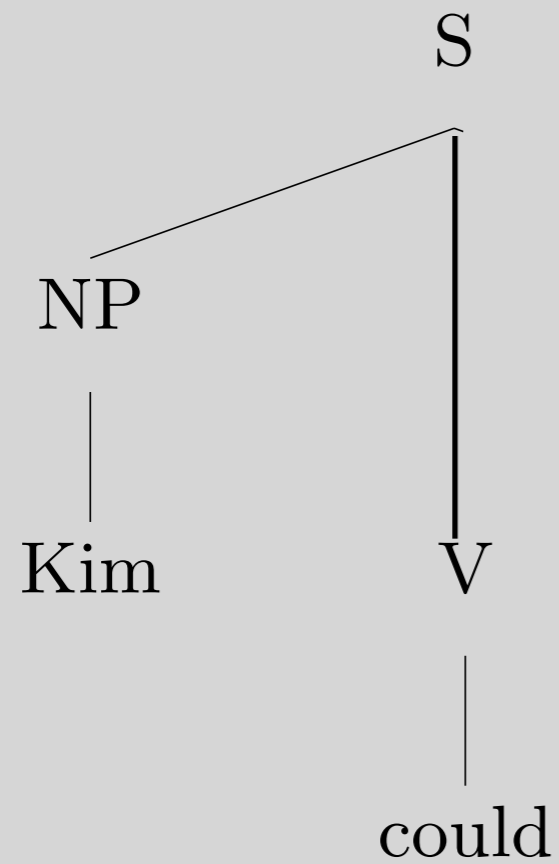
Ellipsis: A Sample Output

	<i>derivv-lxm</i>									
SYN	HEAD	<table style="border: none;"> <tr><td style="border: none;">FORM</td><td style="border: none;">fin</td></tr> <tr><td style="border: none;">AUX</td><td style="border: none;">+</td></tr> <tr><td style="border: none;">POL</td><td style="border: none;">-</td></tr> <tr><td style="border: none;">AGR</td><td style="border: none;">[1]</td></tr> </table>	FORM	fin	AUX	+	POL	-	AGR	[1]
FORM	fin									
AUX	+									
POL	-									
AGR	[1]									
VAL	[SPR	< [AGR [1]] >								
ARG-ST	< NP >									
SEM	MODE	prop								
	INDEX	s_1								
RESTR	< [RELN	could								
	SIT	s_1								
	ARG	s_2								

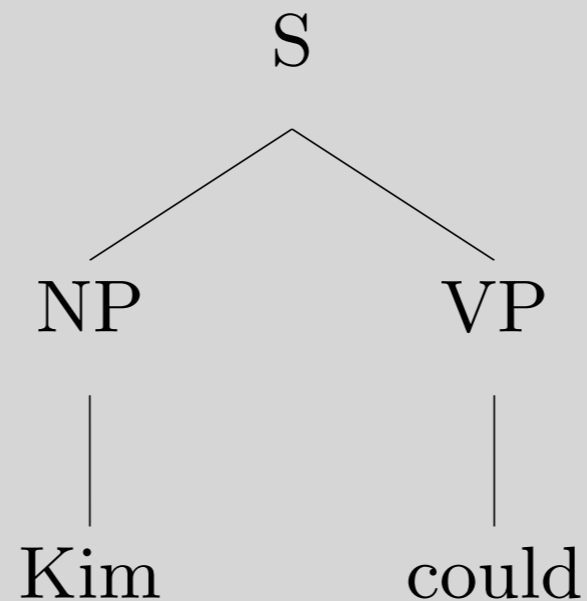
< could ,

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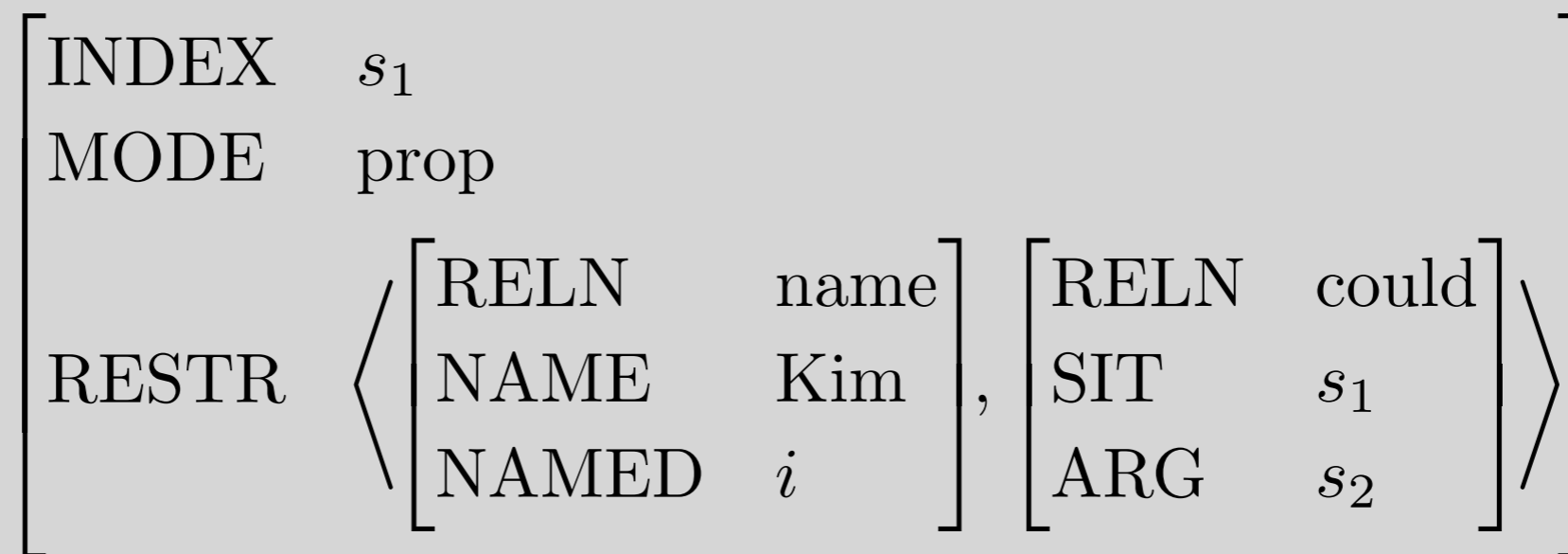
Ellipsis: A Sample Tree



Semantics of Ellipsis



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



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*.

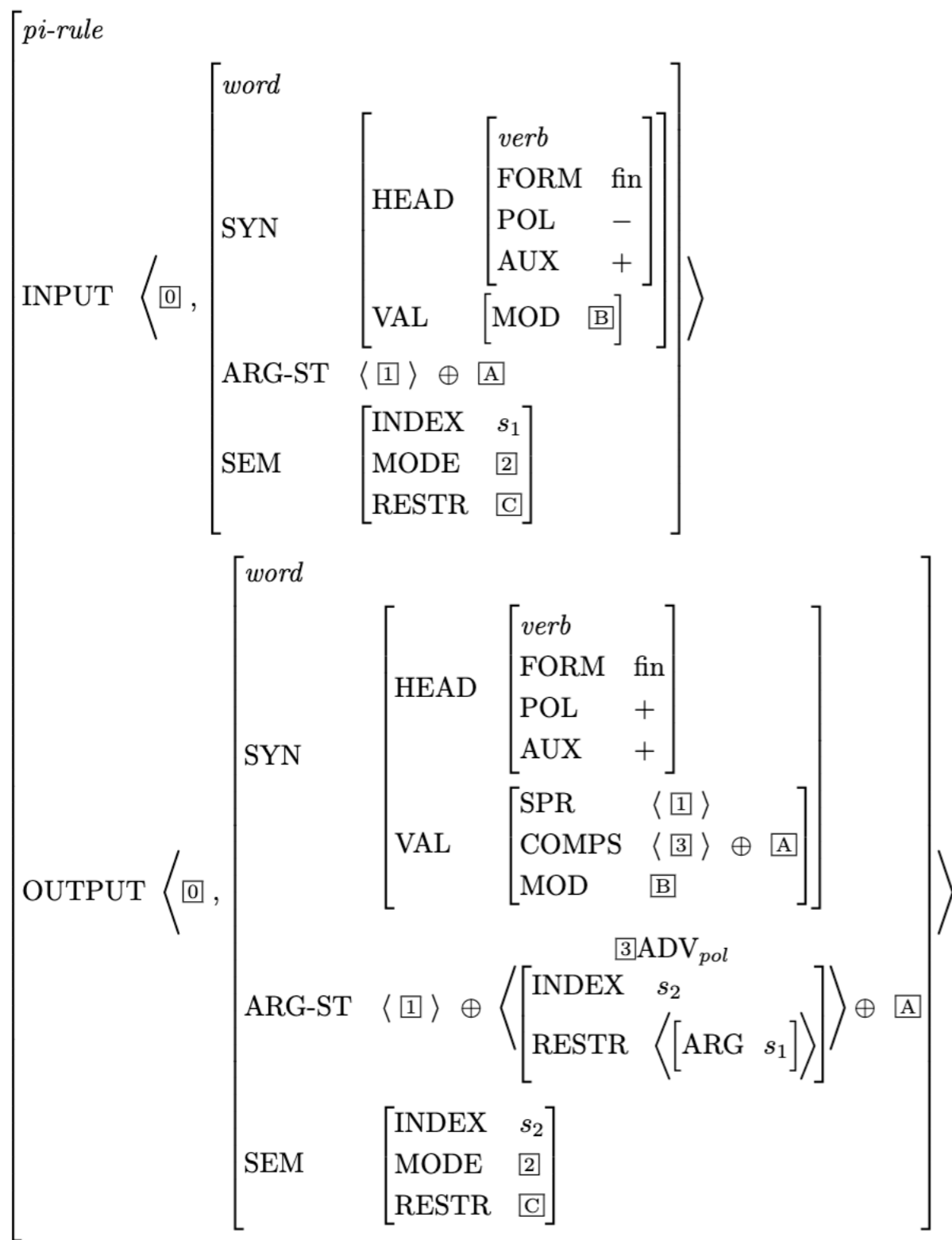
Summary

- 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

- NICE properties of auxiliaries
- The auxiliary *do*
- NICE properties (lexical rules)
- Reading questions

(52) ADV_{pol} -Addition Lexical Rule (with inherited constraints)



Here it is important to see that the INPUT and OUTPUT specify conflicting values for POL and INDEX.¹⁴ As a result, the inherited defeasible identity constraints ‘push down’ to identify the values of all other features within HEAD and SEM whose values are not specified as incompatible.

Questions

- What does ‘push down’ mean here?

Reading Questions

- Most of the lexical rules we have seen invertible but with the ellipsis lexical rule, it seems like we are losing information by tossing part of the ARG-ST. How would we reconstruct the original lexical sequence that underwent the ellipsis lexical rule?
- For (68) on page 415, is there a reason not to limit the input to the Contraction Lexical Rule to auxv-lxm specifically?

Reading Questions

- I thought that the order of elements on the RESTR list wasn't semantically significant (from 5.3.2). In the negation section, it mentions that for a sentence like "Kim is not happy", negation should be the 'highest' predication to arrive at the correct semantics. Does higher here mean something different from order?
- How can we be sure that the semantics of certain auxiliaries are actually empty?

Reading Questions

- I'm taken a bit off guard by the context dependence that comes into play when considering reaffirmations. The RESTR list of a sentence that involves a reaffirmation ("so" or "too") seems like it would have an element that would be missing from the RESTR list of a comparable sentence that does not involve a reaffirmation. (e.g. "Pat can tap dance" vs "Pat can too tap dance"). But, if I consider these sentences as they stand without context then it seems like they should be semantically equivalent. So, considering these as stand-alone sentences, how exactly do we interpret the semantic additions that come with the reaffirmation?

Reading Questions

- Page 418 mentions that we don't account for the fact that ellipses is only possible in contexts where an antecedent phrase provides an interpretation of the missing complement. How is this generally accounted for in other literature?

Reading Questions

- For example (52) when there is a change of INDEX in the input and output from s1 to s2 it has a footnote "Whenever a single description mentions distinct indices (e.g. s1 and s2), the intention is that any feature structure satisfying that description will contain distinct indices in the relevant positions." I'm having trouble understanding this statement. Does this mean that the elements in the ARG-ST follow their indices in the order s1, s2, s3? Or am I misinterpreting the statement.

The ADV_{pol} -Addition Lexical Rule

$$\left[\begin{array}{l} \textit{pi-rule} \\ \\ \text{INPUT} \left\langle X, \right. \\ \\ \text{OUTPUT} \left\langle Y, \right. \end{array} \left[\begin{array}{l} \left[\begin{array}{l} \text{SYN} \\ \text{ARG-ST} \\ \text{SEM} \end{array} \left[\begin{array}{l} \text{HEAD} \\ \langle \boxed{1} \rangle \oplus \boxed{A} \\ \left[\text{INDEX} \quad s_1 \right] \end{array} \right] \left[\begin{array}{l} \left[\begin{array}{l} \textit{verb} \\ \text{FORM} \quad \textit{fin} \\ \text{POL} \quad - \\ \text{AUX} \quad + \end{array} \right] \\ \\ \left[\begin{array}{l} \text{SYN} \\ \text{VAL} \end{array} \left[\begin{array}{l} \left[\text{POL} \quad + \right] \\ \left[\text{SPR} \quad \langle Z \rangle \right] \end{array} \right] \\ \\ \left[\begin{array}{l} \text{ARG-ST} \\ \text{SEM} \end{array} \left[\begin{array}{l} \langle \boxed{1} \rangle \oplus \left\langle \left[\begin{array}{l} \text{INDEX} \quad s_2 \\ \text{RESTR} \quad \left\langle \left[\text{ARG} \quad s_1 \right] \right\rangle \right\rangle \right] \oplus \boxed{A} \\ \left[\text{INDEX} \quad s_2 \right] \end{array} \right] \end{array} \right] \right] \end{array} \right] \right] \right] \right]$$

Reading Questions

- Can you say a bit more about the differences that motivated a distinction between "not" used in sentential negation as opposed to constituent negation? (They seem like they would function very similarly...)
- Is the "polarized" in ADVpol the same concept as polarity items in semantics?

Reading Questions

- For (39c) on page 404, are there semantic differences between these variations:
 - Pat must not have been listening.
 - Pat must have not been listening.
 - Pat must have been not listening.
- And how would we handle something like this? Are all 3 of these examples of constituent negation, or is the first one a

Reading Questions

- How does the contraction rule prevent idiosyncrasies like "amn't" and "mayn't"? Does it output "am not" and "may not" as $F_neg(am)$ and $F_neg(may)$ or does it simply not apply to these auxiliary verbs? If it doesn't apply, why is it necessary to include POL since already contracted negations of auxiliaries do not have their own contracted negated forms (can'tn't)?

Reading Questions

- On page 414, two versions of shall are hypothesized: One [INV -] and one [INV +]. The [INV +] one is described as having a modal predication in its RESTR list. Maybe I just missed this but was is a modal predication? What other differences are there between these two words? Can the difference in semantics between the examples in (66) just be attributed to an idiomatic usage of shall in [MODE ques]? Or perhaps to pragmatics? It just makes me hesitate when we have to posit a new lexical entry for a specific type of structure. And as far as lexical variation, would we expect there to be a dialect or idiolect of English where there is no [INV -] shall?

Reading Questions

- For English WH-questions, are there lexical rules that would take as INPUT the OUTPUT of the Inversion LR?

Reading Questions

- This question is a bit leftover from Chapt 12, but for the four-part diagnostic test for raise vs control, are there any instances when the parts are contradictory? For example, if a verb passed the first two, but not the final two, or some other combination, does that make it automatically control? Or are there exceptions? What do we do when the diagnostic parts conflict? Or does this simply not occur?

Reading Questions

- Are there languages whose auxiliaries are a subset of those described in NICE, or include an additional component that consistently show up?