

Ling 566

Mar 4, 2019

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

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

- What happens when you want to deny or reaffirm a sentence with no auxiliary?

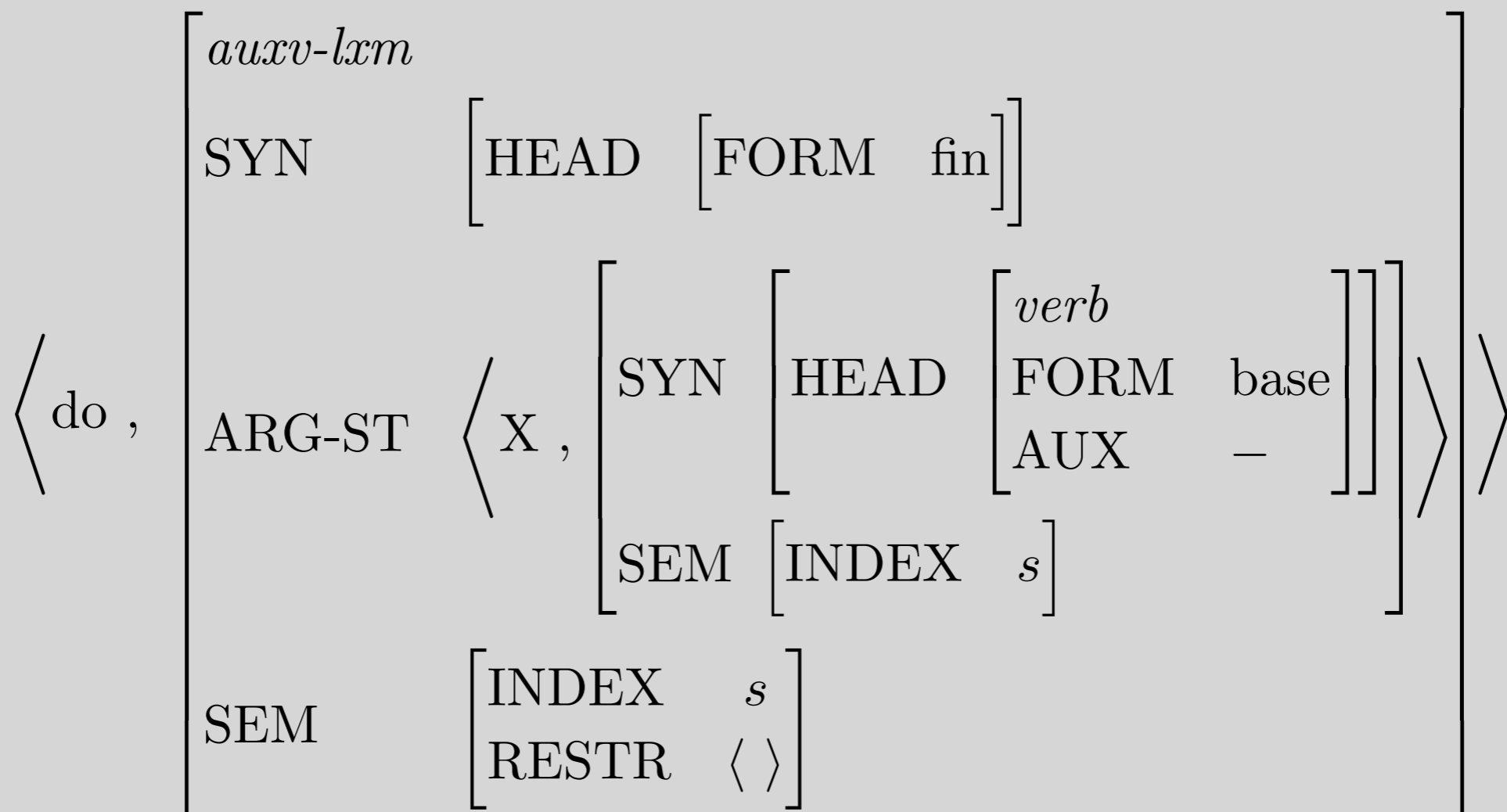
Pat left

Pat did not leave

Pat did TOO leave

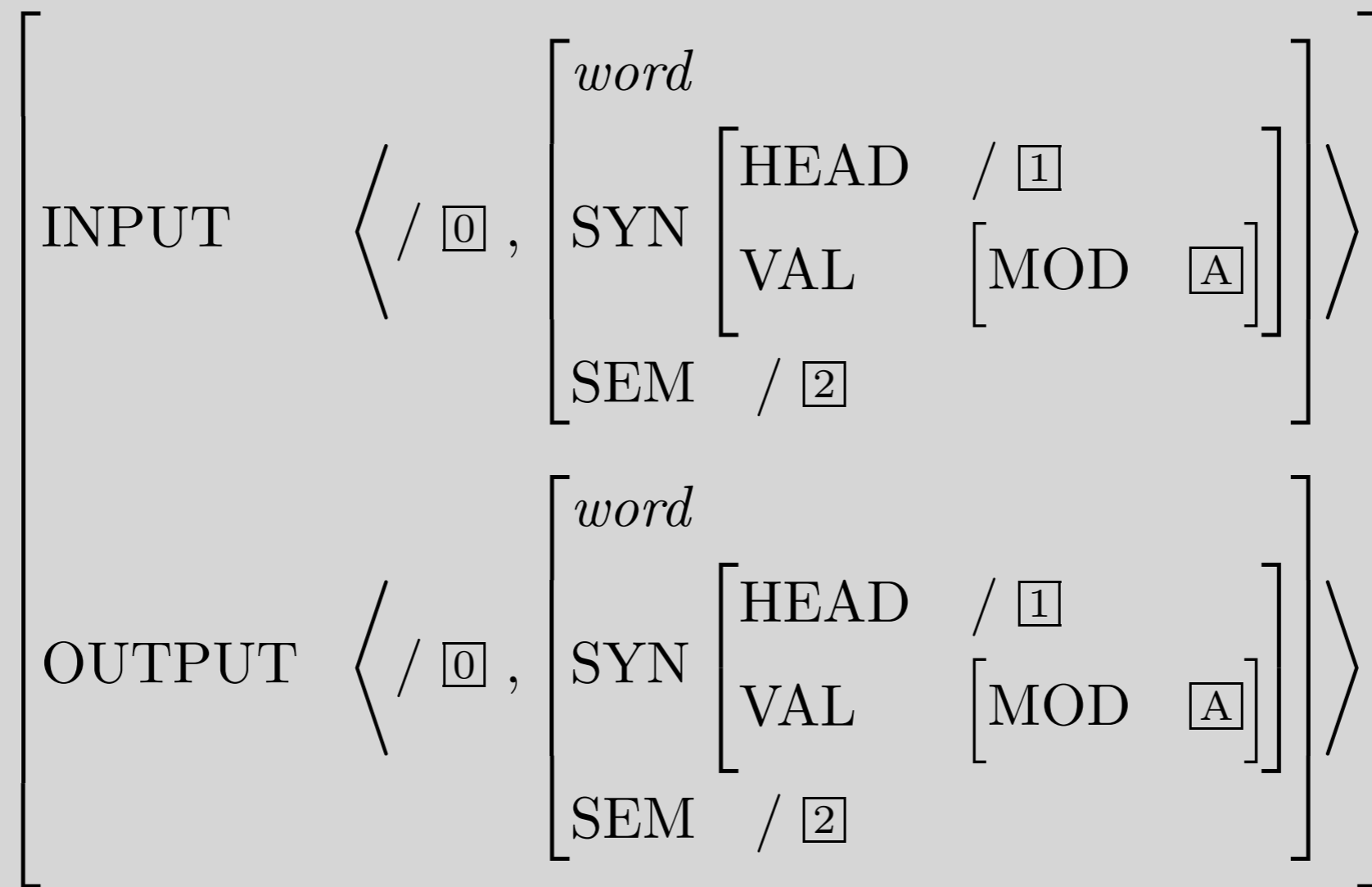
The Auxiliary *do*

- 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*

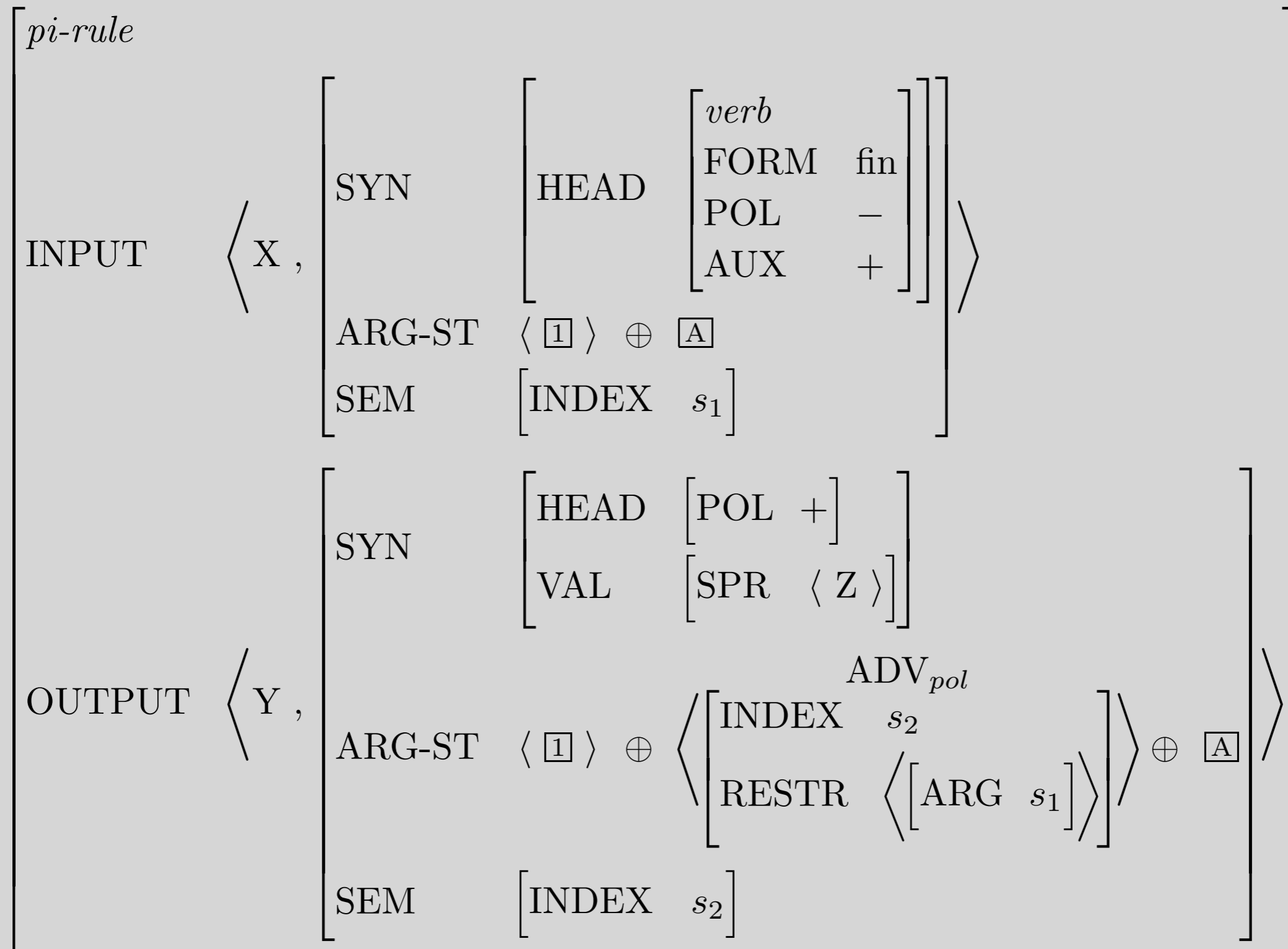


What does the type *pi-rule* mean?

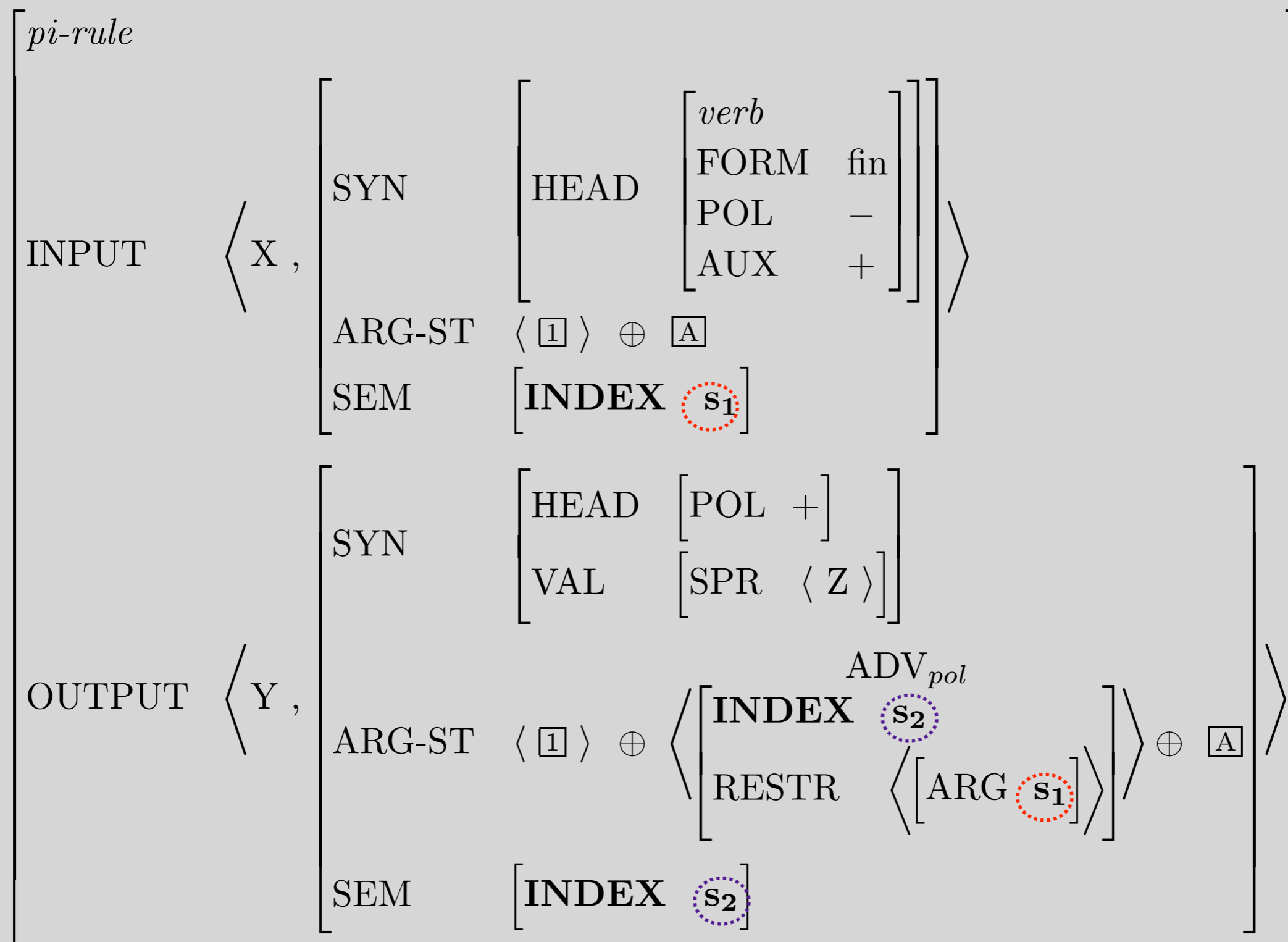
- It maps words to words (hence, “post-inflectional”)
- It preserves MOD values, HEAD values as a default, and (like other lexical rule types) SEM values as a default



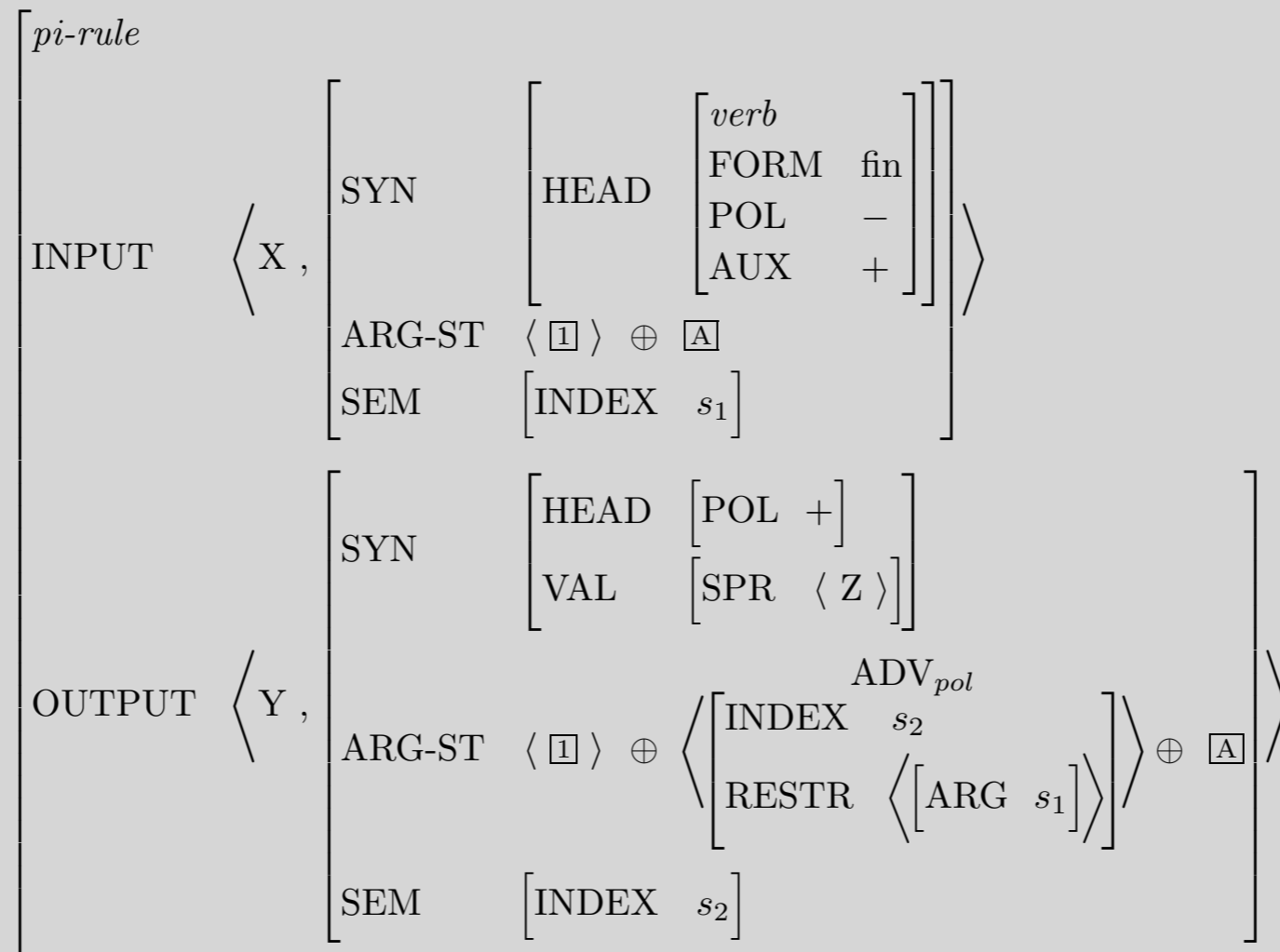
Why doesn't ADV_{pol} -Addition LR mention VAL?



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?



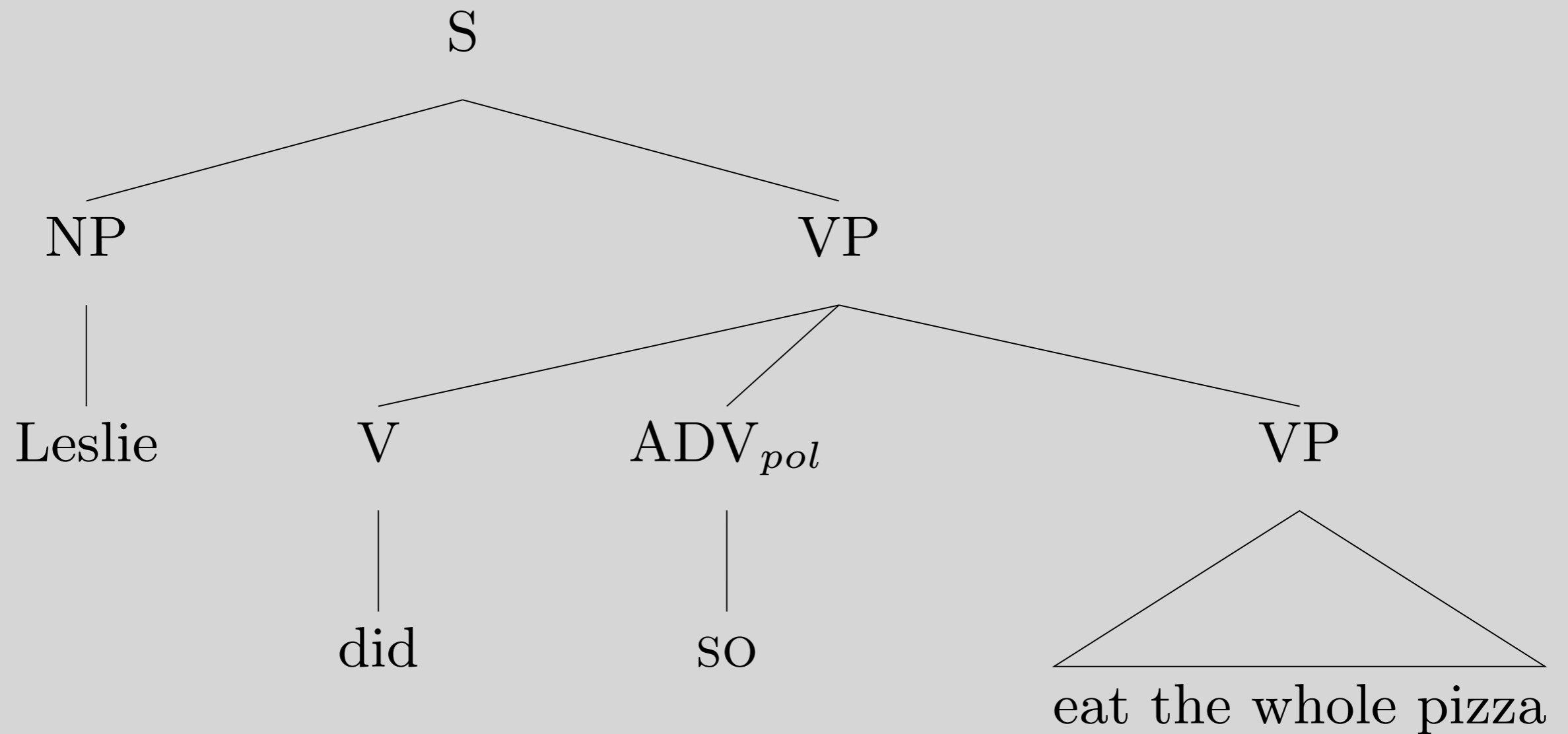
Kleptomaniacs cannot not steal.



Kleptomaniacs cannot not steal.



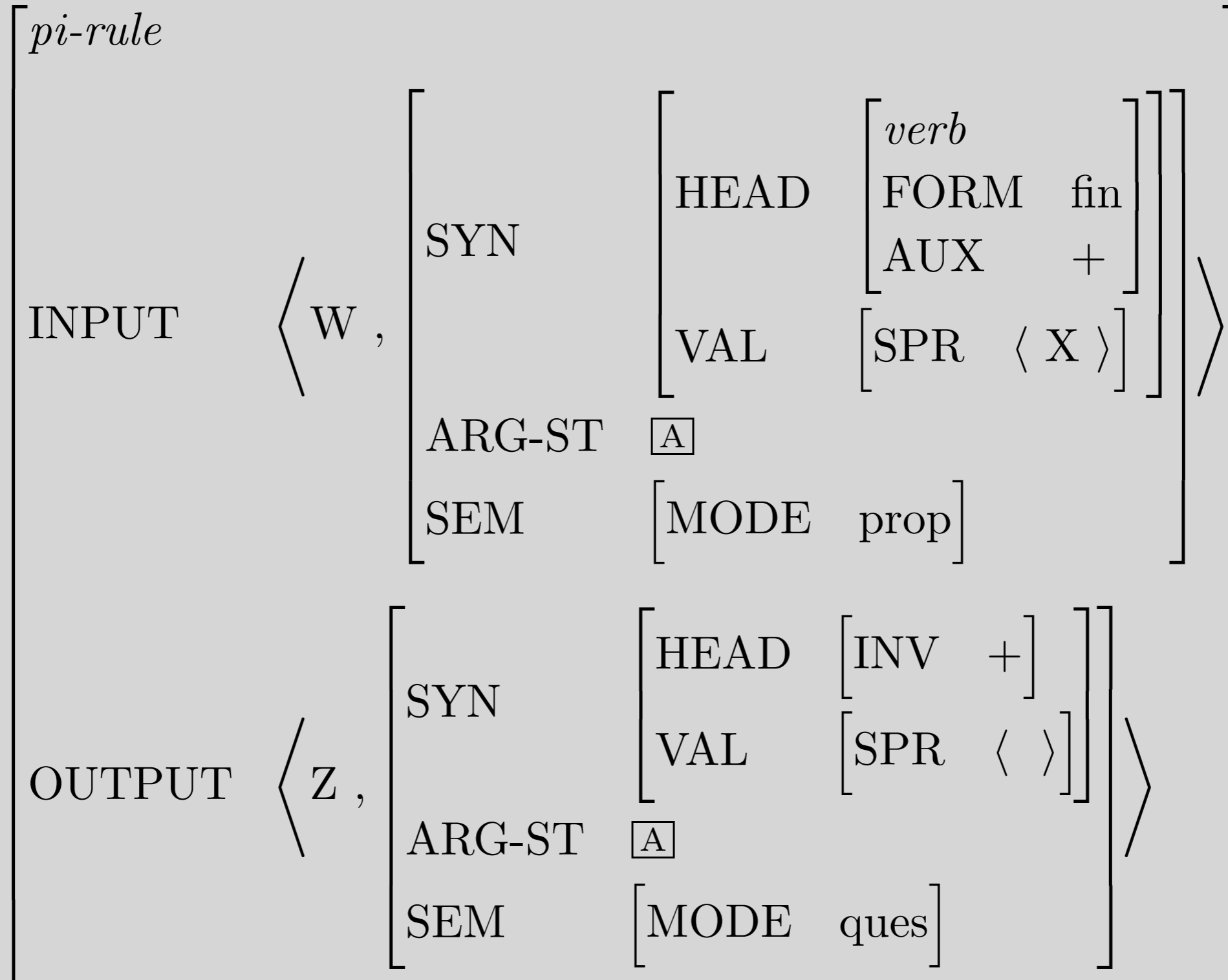
Negation and Reaffirmation: A Sample Tree



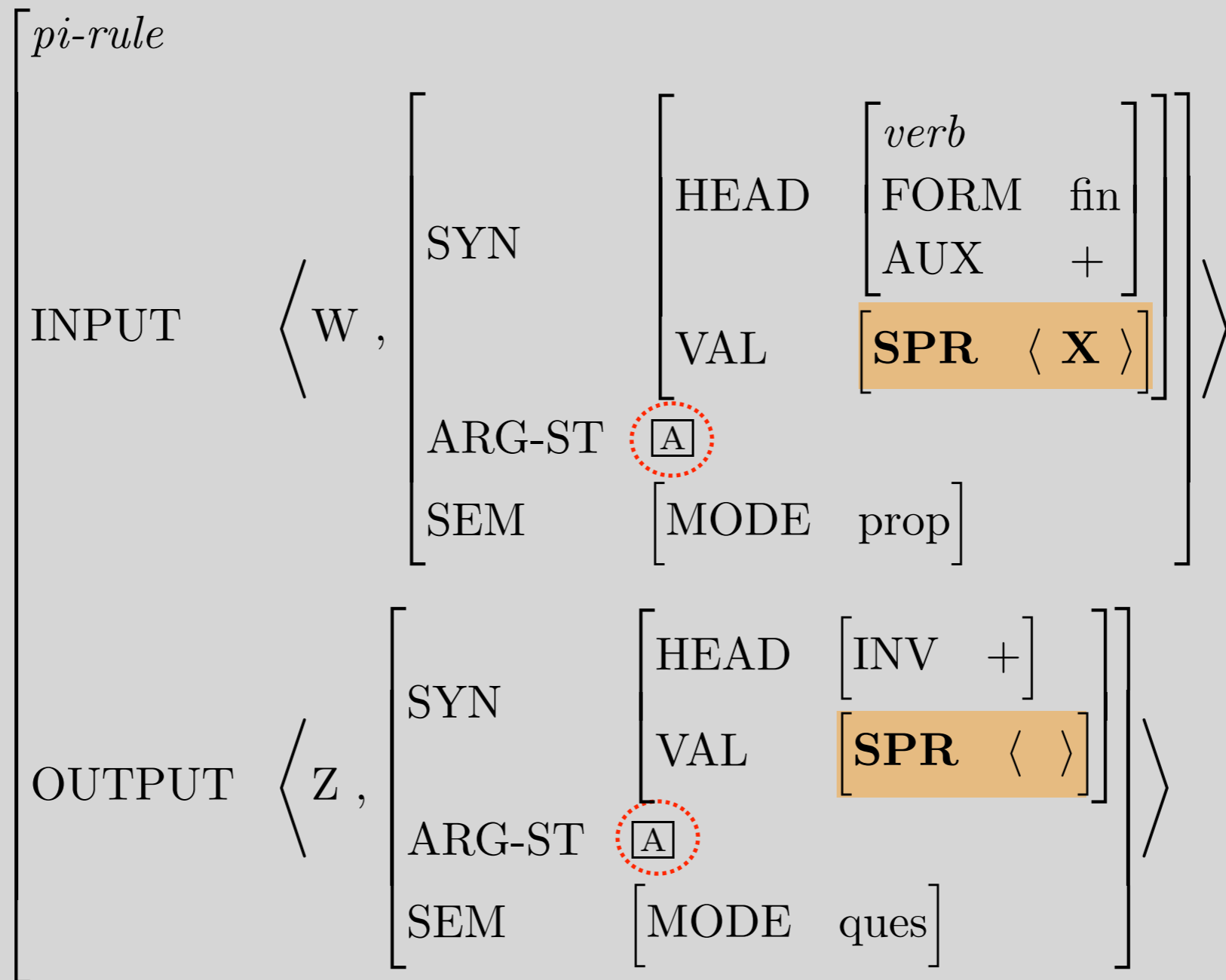
Inversion

- 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

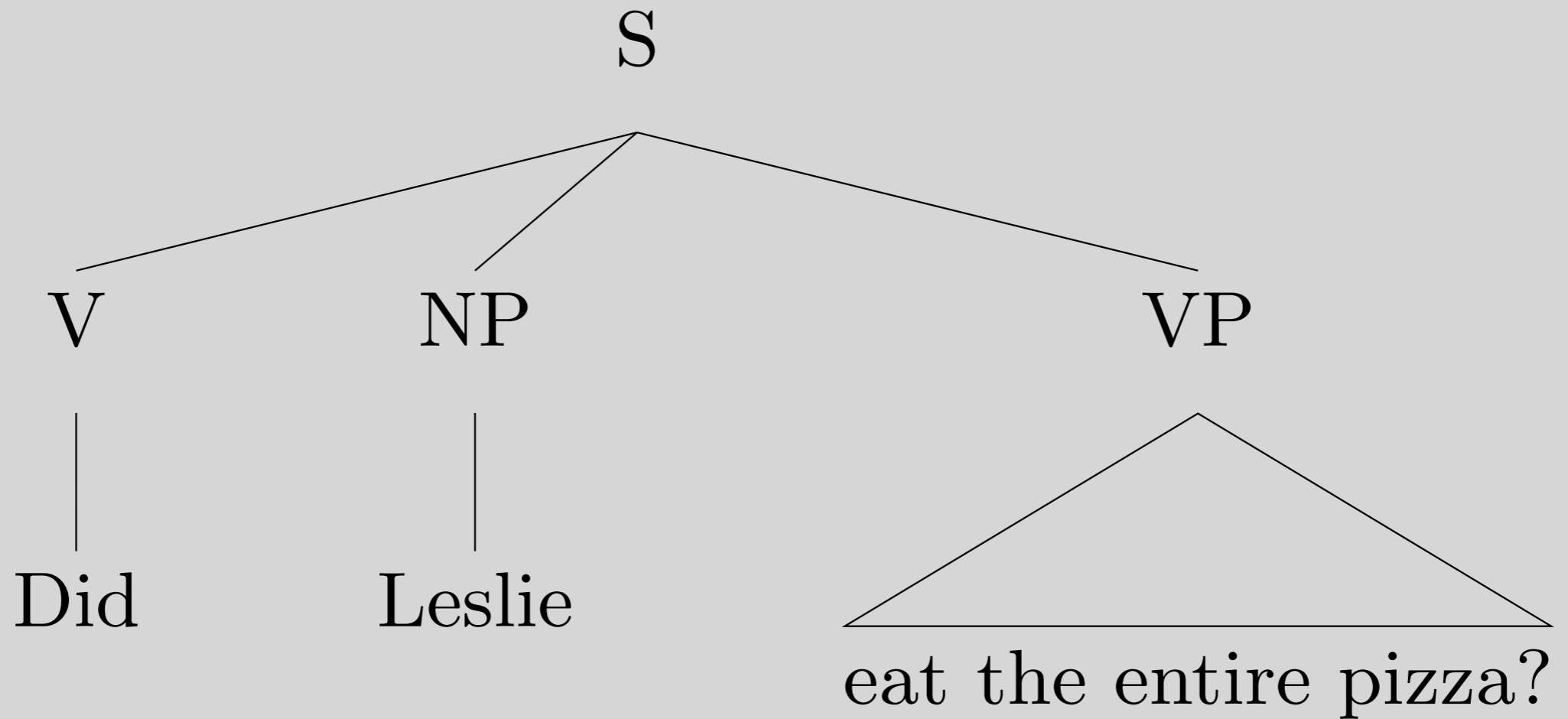
The Feature INV

- 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.

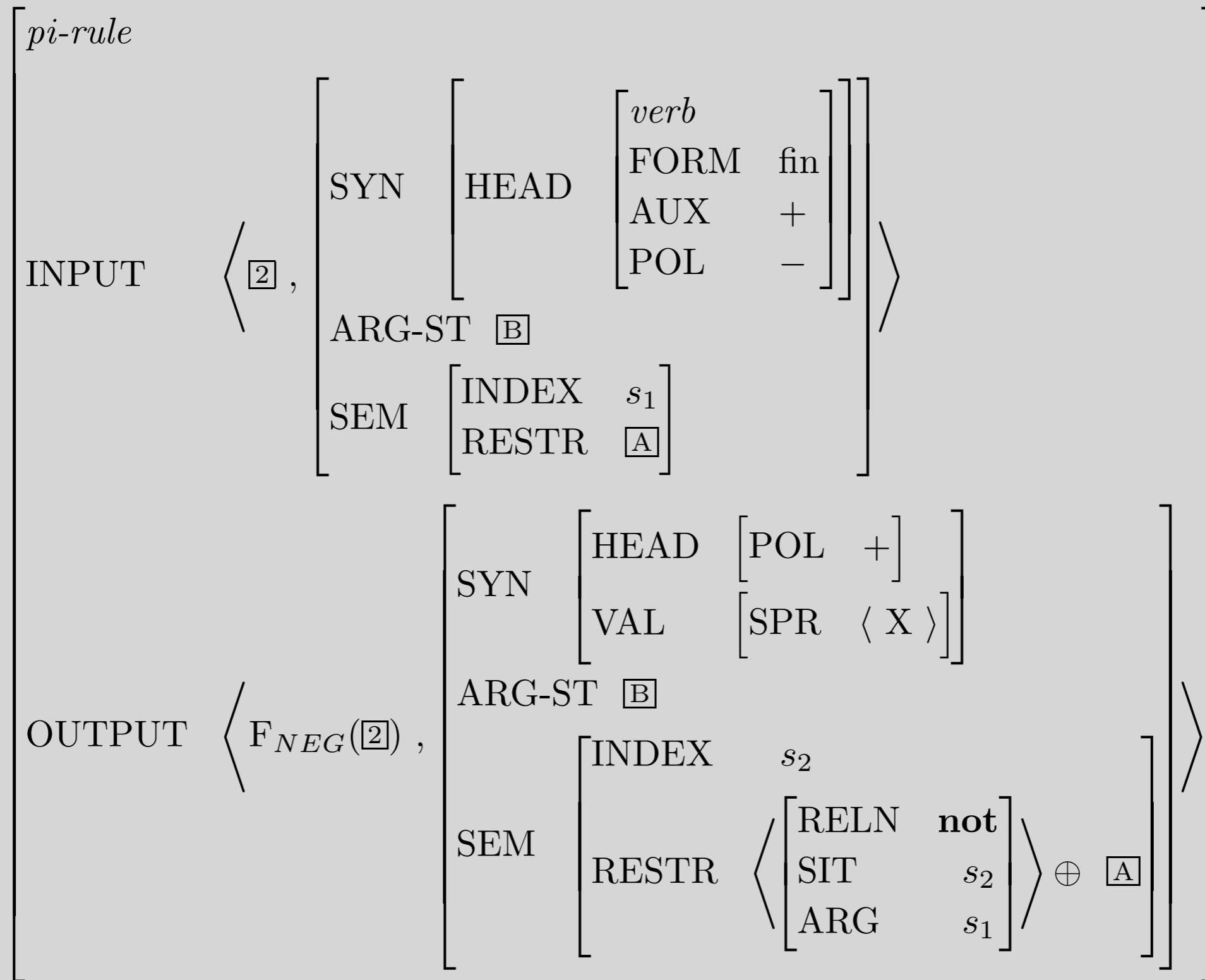
Inversion: A Sample Tree



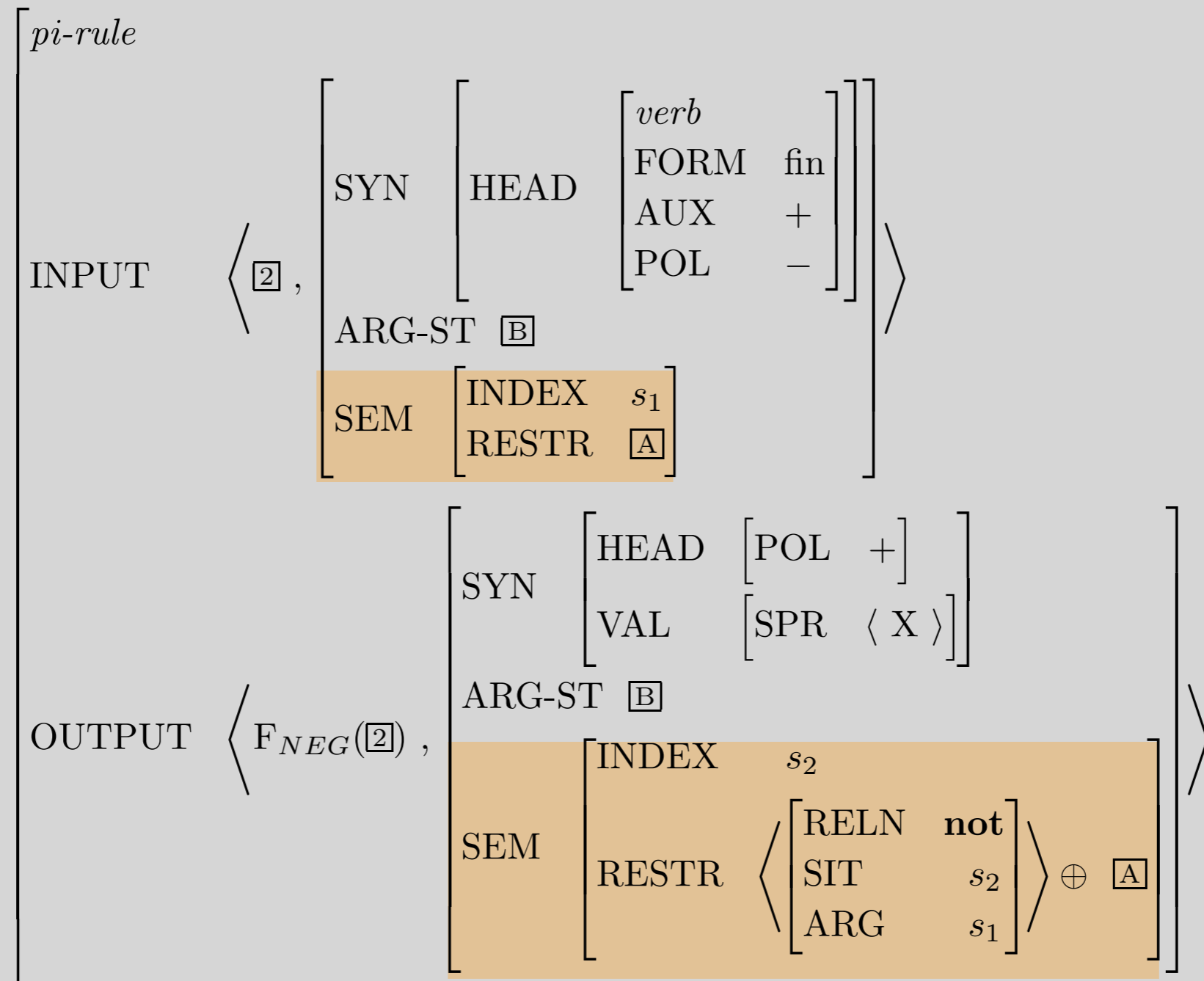
Contraction

- 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

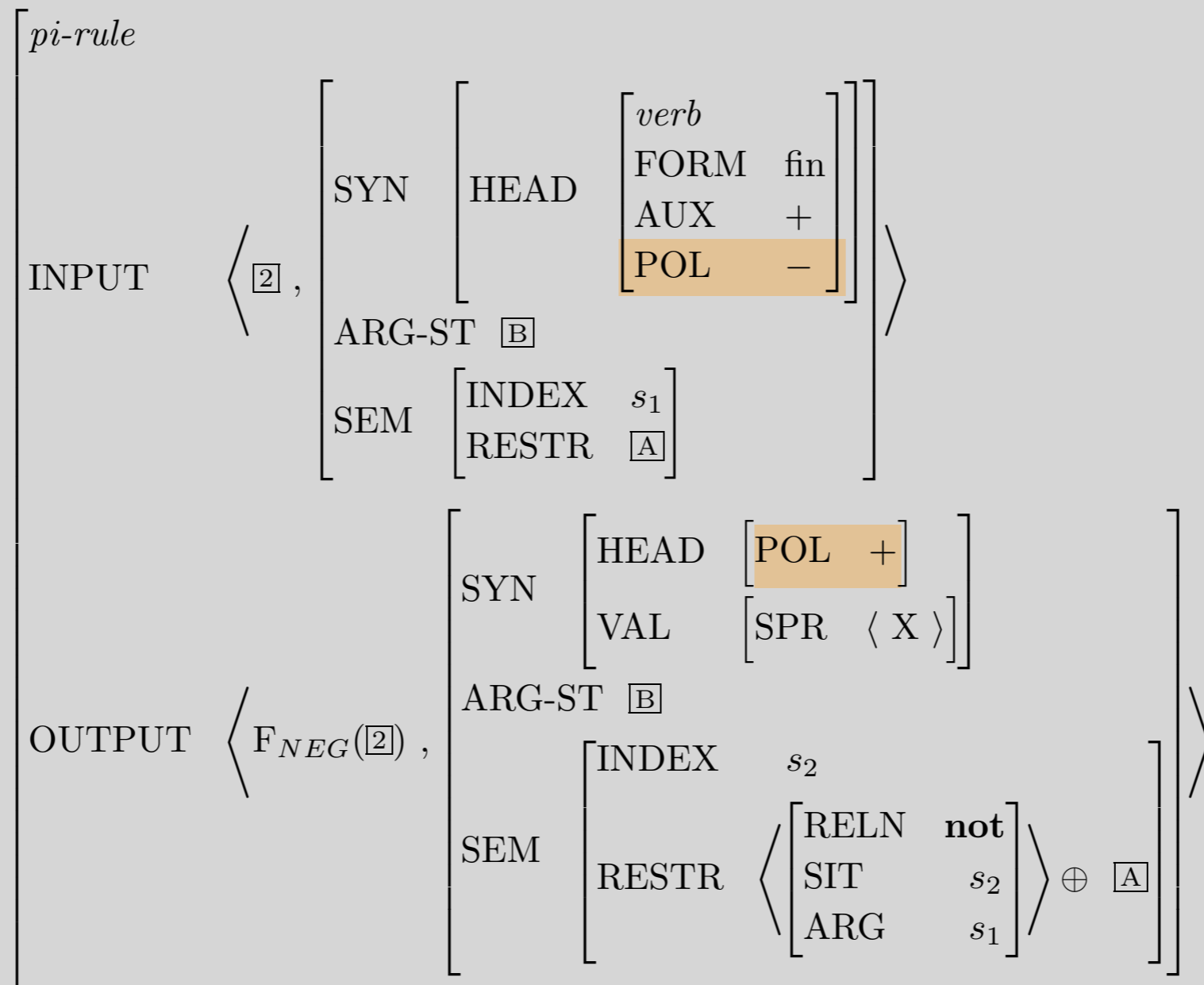


Most of the work is in the semantics



Why?

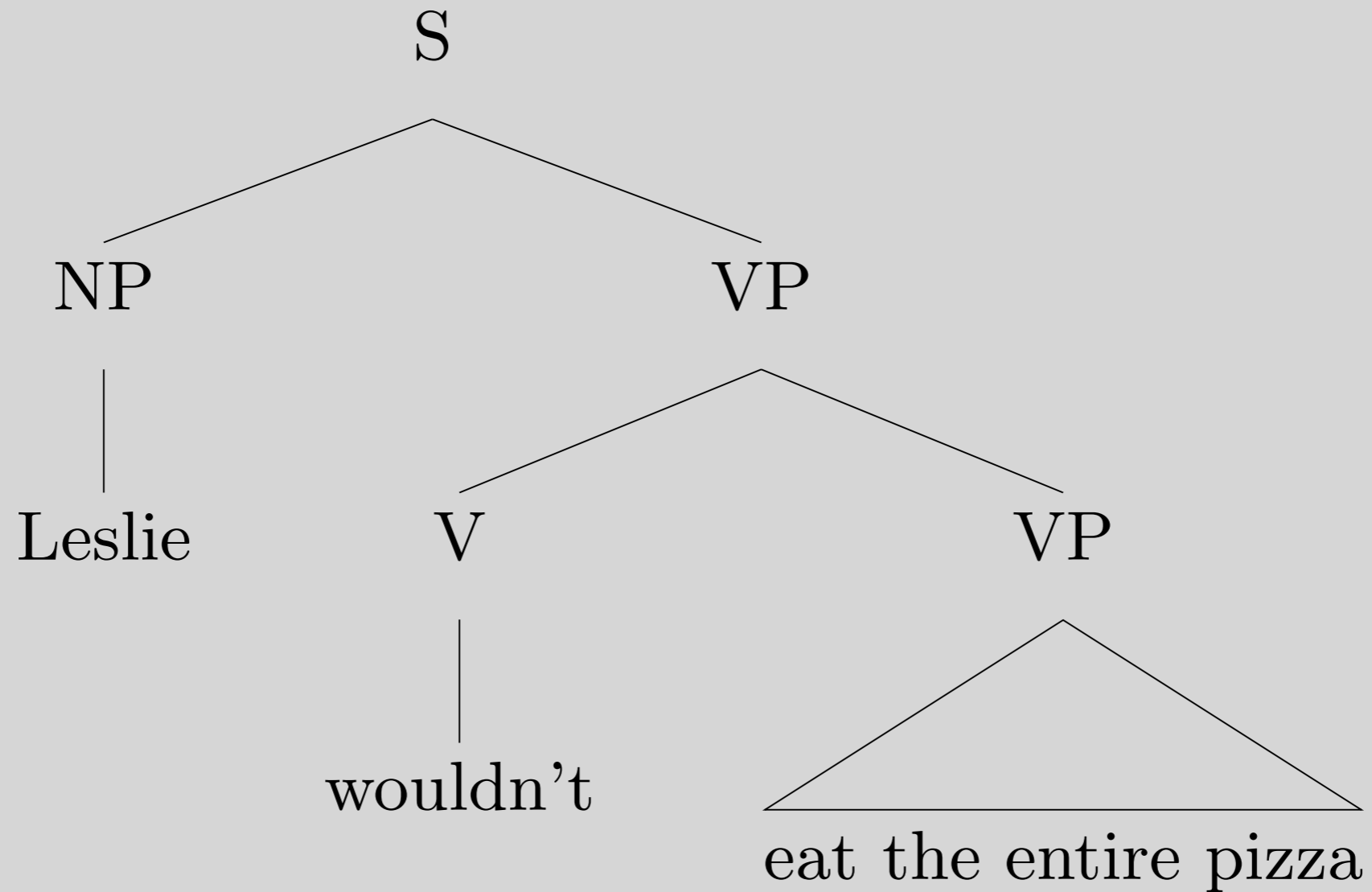
What does POL do?



**We can't stop*

**They won't TOO mind*

Contraction: Sample Tree



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?

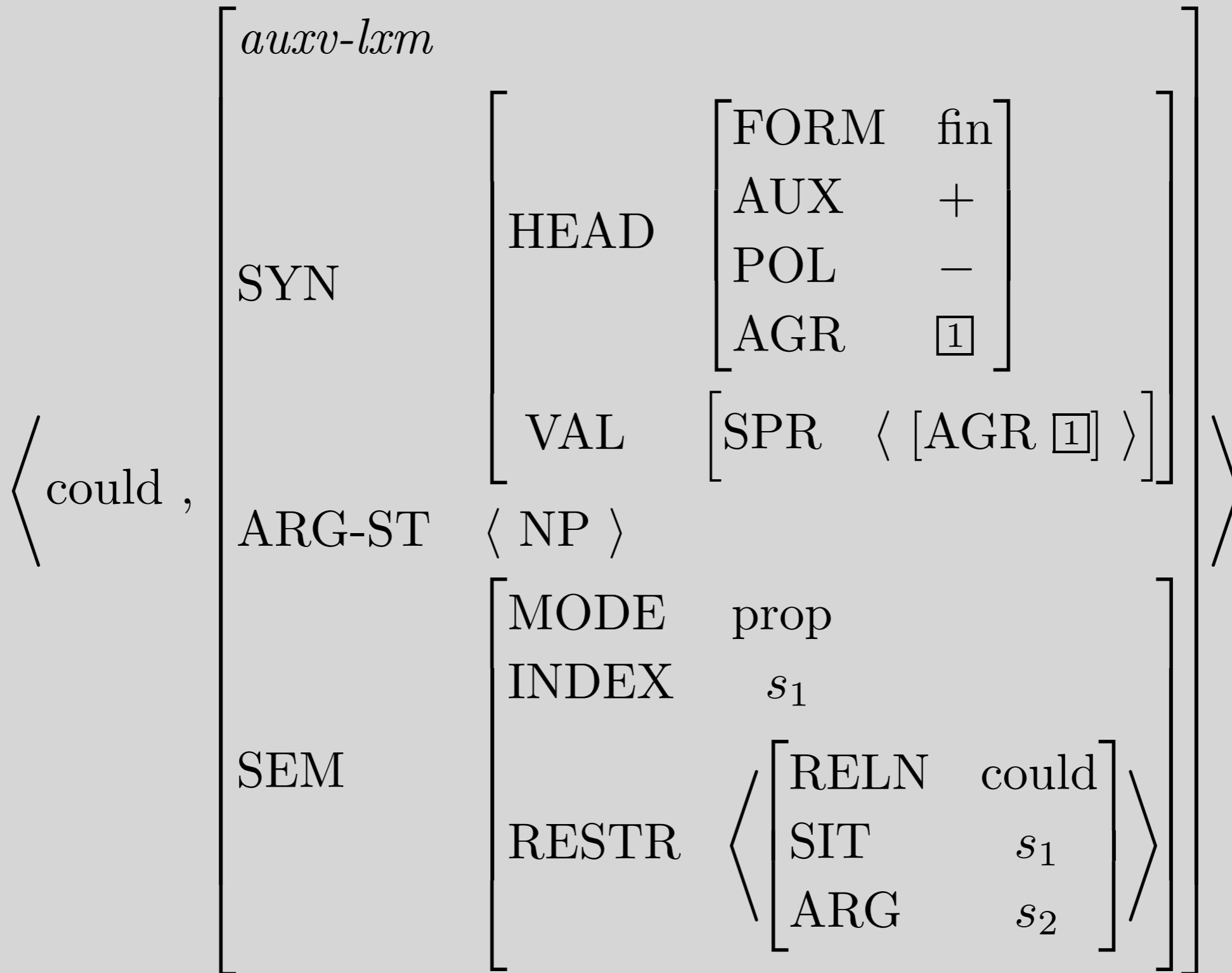
Whenever Pat watches TV, Chris watches TV
Whenever Pat watches TV, Chris does

The Ellipsis Lexical Rule

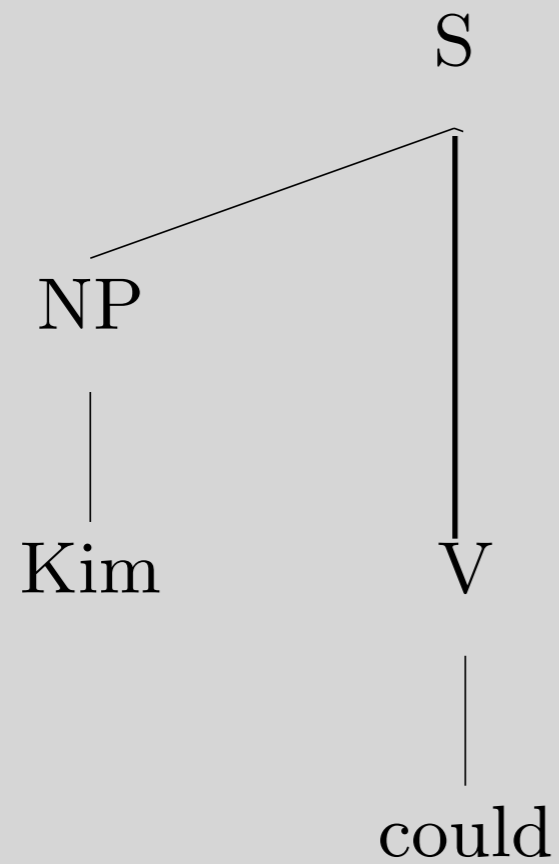
$$\left[\begin{array}{l}
 \text{INPUT} \\
 \text{OUTPUT}
 \end{array} \right. \begin{array}{l}
 \left\langle \boxed{1}, \left[\begin{array}{l}
 \text{auxv-}lxm \\
 \text{ARG-ST} \langle \boxed{2} \rangle \oplus \boxed{A}
 \end{array} \right] \right\rangle \\
 \left\langle \boxed{1}, \left[\begin{array}{l}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

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

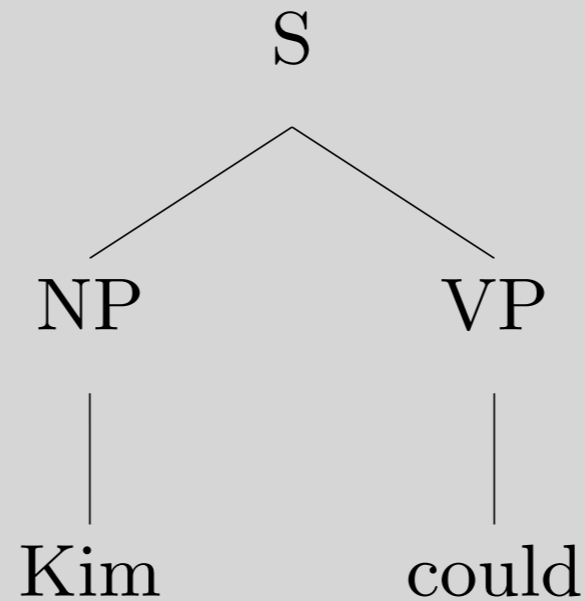
Ellipsis: A Sample Output



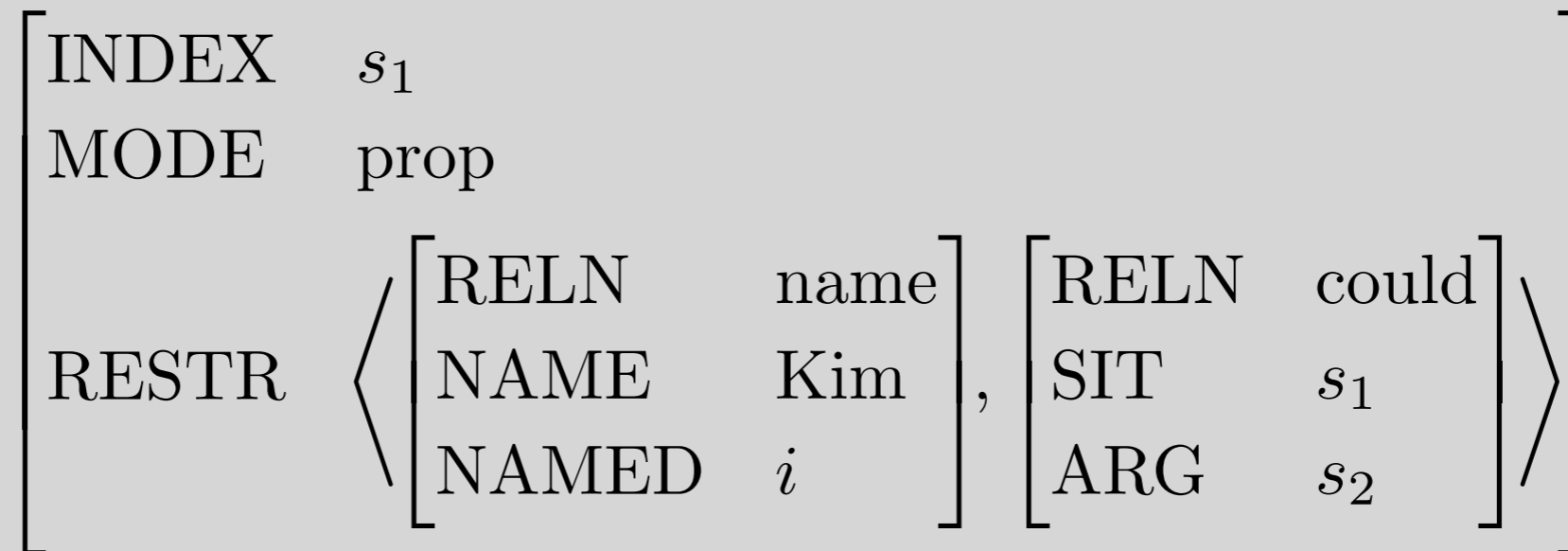
Ellipsis: A Sample Tree



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*
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Reading Questions

- Why is it that the NICE property lexical rules (except ellipsis) are *pi-rules*, instead of *d-rules*? I think I missed the reasoning for this.
- I want to be more clear on how *pi-rules* and *d-rules* are different. It sounds like *pi-rules* create new words and re-arrange argument structures, but *d-rules* seems to be able to do the same things (like with the passive rule, the word *by* was introduced on the arg-st list).

Reading Questions

- I guess I'm still a little bit bothered by the existence of *pi-rules*, since we are essentially creating a different version of a word. Intuitively there doesn't feel like there's actually a difference between say the version of a verb that accepts a polarized adverb and the one that doesn't. I guess it just sort of feels like a trick to get around problems. Is there something that really grounds this kind of approach?

Reading Questions

- Exactly what is the definition of what a pi-rule actually is? I see back in ch 11 that they map words to words rather lexemes to words (i-rules) or lexemes to lexemes (d-rules), and p 353 shows how the head and input/output vales are identified. But on p 406 there's "the defeasible constraint on all l-rules identifying the SEM value of INPUT and OUTPUT". How does this work?

Reading Questions

- "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?" What does 'push down' mean in this context?

Reading Questions

- In this part, two more features with $\{+, -\}$ value, i.e. POL and INV, are added to the grammar. I found it a little bit hard to remember under which case + should be used, and under which - should be used for the $\{+, -\}$ features, not only limited to the two mentioned above. Any suggestions for that?

Reading Questions

- What is the relationship between "infinitive" and "finite"?
- As modals do not show inflectional forms, aren't they better placed as a subtype of constant lexemes? Is there a particular need to treat modals, perfectives and progressives together?

Reading Questions

- What does constituent negation mean? How can I differentiate sentential negation from constituent negation?

Reading Questions

- In the ADVpol Addition Rule why do the VAL values change from input to output? For instance Example (51) on page 406 has a SPR (Z) that just seems to appear out of nowhere. Wouldn't the input and output to this rule have the same specifier? Also I'm confused what MOD [B] is doing in the fully-fledged version of this rule in (52) on page 407

The ADV_{pol} -Addition Lexical Rule

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

Reading Questions

- 13.5.1 claimed that too must appear immediately following a finite auxiliary verb, but I found the sentence (46).b to be grammatical.

(46). b. ?*Pat too will leave.

Or: "Pat, too, will leave."?

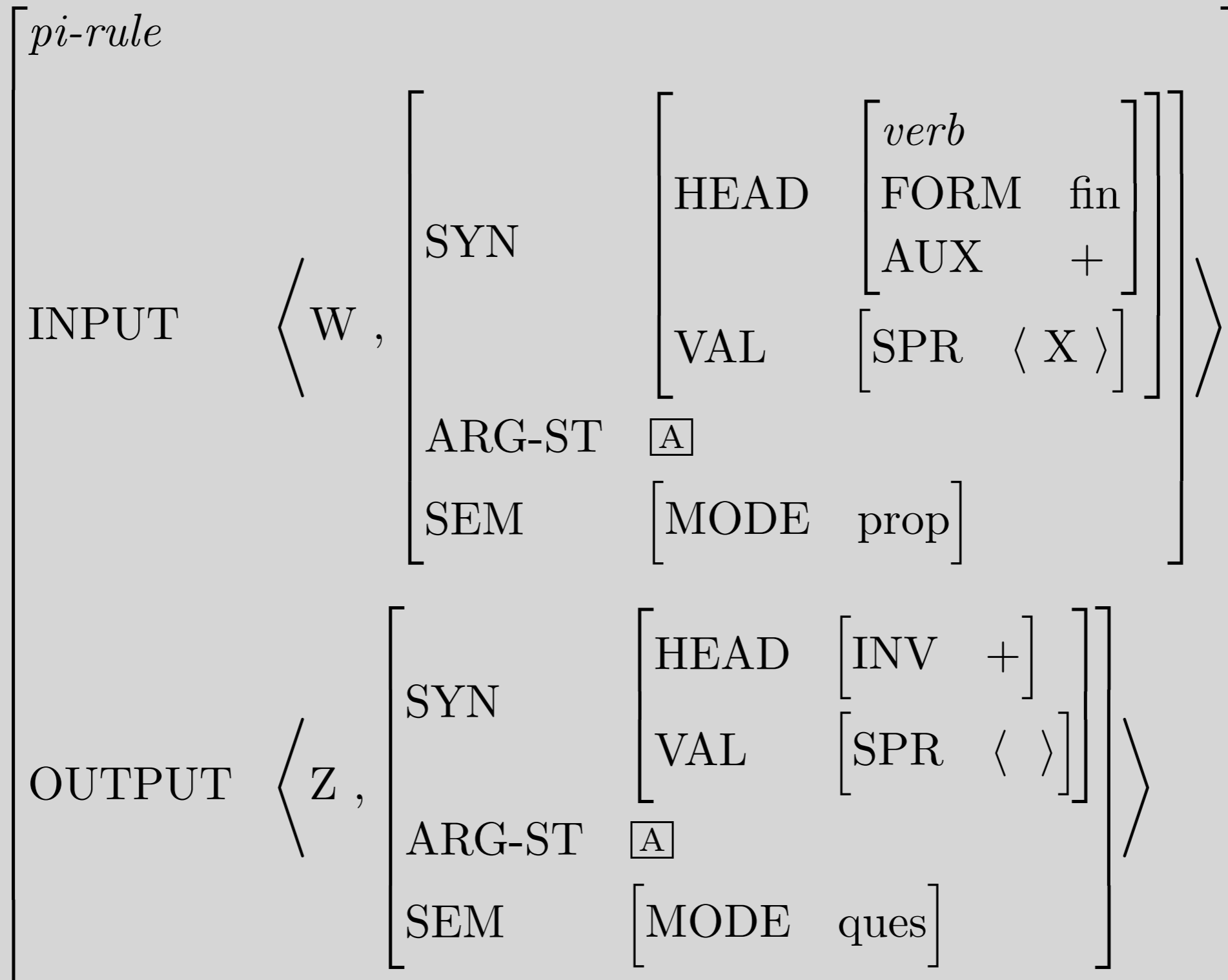
Reading Questions

- Is there nothing more essential about the roles specifiers and complements play than their order in the surface string with respect to the verb? It seems odd to me that just moving the NP specifier of a verb to its right (in inversion) makes it a complement. It seems like the relationship between the NP and the verb stays the same when we do that. Do the categories SPR and COMPS not capture anything deeper than surface order?

Reading Questions

- I am not sure I understand the equivalence between (58) the "simplified" inversion lexical rule and (59) the "more fully-specified" inversion lexical rule. In (59) there is an [INV +] requirement on the INPUT, whereas this requirement is absent in (58). Doesn't this fact allow [INV -] words go through the lexical rule in (58), but not (59)?

The Inversion Lexical Rule



Reading Questions

- On page 411, it is mentioned that we are simplifying our analysis of interrogatives by assuming that "inverted sentences are always associated with interrogative semantics." It is not clear to me how we would analyze subject/aux inversion and related semantics without making this assumption; I suppose we could look for question marks, although that seems like cheating?
- What about questions marked only by intonation?

Reading Questions

- With respect to inversion, do speakers who use *might could* also produce inverted sentences like *Might Pat could tap-dance?* or do the two modals function as a unit, therefore producing *Might could Pat tap-dance?* Or neither? The second one sounds better to me, but the non-inverted sentence isn't in my grammar in the first place so I'm curious!

Reading Questions

- How would we account for grammatical *aren't I* but ungrammatical *I aren't* in our grammar? Is it possible to make the contraction lexical rule sensitive to inversion in a way that only affects *am*?

Reading Questions

- For sentence (i), the parse tree has two binary branchings, whereas for sentence (ii), we have a tree with a ternary branching.
 - (i) Kim is happy.
 - (ii) Is Kim happy?
- Is it because that the grammar does not allow combining two non-adjacent expressions into a constituent? Does this constraint hold well in other languages? Namely, are there cases (in the English language or others) where forming a constituent which is not continuous desirable?

Reading Questions

- Why do we need to account for contraction? The contracted form has the same syntax/distribution; it's just the pronunciation that's different.
- When we apply the morphology function F_NEG to the output of the Contraction Lexical Rule, is this handling the cases where the auxiliary can't be contracted with *not* by producing two words (the auxiliary and *not*)?

Reading Questions

- Is there a reason/intuition for why some auxiliary verbs can be contracted with *not* and some can't? I.e., why do we contract *are not* into *aren't* but not *am not* into *amn't*? (This is a morphology issue, but it seems like there should be a reason for these idiosyncrasies)

Reading Questions

- We have other kinds of contractions in English: between two verbs (*might have* -> *might've*) or between a pronoun subject and a verb (*they are* -> *they're*). Are these kinds of contractions modeled by the grammar? Would they use a similar rule to the Contraction Lexical Rule?

Reading Questions

- The book states that ellipsis is only possible with auxiliary verbs. If someone asks, *Who here knows the answer?* and my response is *I do!*, that's ellipsis, with an auxiliary verb. But what if I answer with just *Me!...* is that still ellipsis, or is that a different phenomenon?

Reading Questions

- The ellipsis rule says the new auxiliary verb carries the original sentence's first argument, its subject. But in a sentence like, *I can swim, he can't*. The two subjects are different, am I understanding the rule correctly still?
- How is ellipsis applied in the case of dialogue systems? Do machines store the complement to an auxiliary any time one is said in order to refer back to it appropriately later?

Reading Questions

- Why would omitting the last infinitival element to in a. produce a fine-sounding sentence but doing so in b. produce a weird/wrong sentence? Is it because seem requires a complement but try does not?

(74) a. We asked them to open the window, and they tried to.

b. We hoped that the wine would improve with age, but it didn't seem to.