



Ling 566

Nov 14, 2024

Auxiliaries

Overview

- What are auxiliaries?
- General properties of auxiliaries
- Lexical type/lexical entries for auxiliaries
- Reading questions
- Next time: NICE properties (lexical rules)

What Auxiliaries Are

- Sometimes called “helping verbs,” (English) auxiliaries are little words that come before the main verb of a sentence, including forms of *be*, *have*, *do*, *can*, *could*, *may*, *might*, *must*, *shall*, *should*, *will*, and *would*
- Cross-linguistically, they tend to be involved in the expression of time, necessity, possibility, permission, and obligation, as well as such things as negation, affirmation, and questioning

Some Basic Facts about Eng. Auxiliaries

- They are optional
Pat tapdanced. Pat can tapdance. Pat is tapdancing.
- They precede any non-auxiliary verbs
**Pat tapdance can. *Pat tapdancing is.*
- They determine the form of the following verb
**Pat can tapdancing. *Pat is tapdance.*
- When they co-occur, their order is fixed
*Pat must be tapdancing. *Pat is musting tapdance.*
- Auxiliaries of any given type cannot iterate
**Pat could should tapdance.*

A Little History

- Chomsky's first book, *Syntactic Structures* (1957), contained a detailed analysis of the English system of auxiliary verbs
- It showed how formal analysis could reveal subtle generalizations
- The power of Chomsky's analysis of auxiliaries was one of the early selling points for transformational grammar
 - Especially, his unified treatment of auxiliary *do*
- So it's a challenge to any theory of grammar to deal with the same phenomena

Two Approaches to Analyzing Auxiliaries

- Treat auxiliaries as a special category, and formulate specialized transformations sensitive to their presence
- Assimilate their properties to existing types as much as possible, and elaborate the lexicon to handle what is special about them
- We adopt the latter, treating auxiliaries as a subtype of *srv-lxm*

Consequences of making *auxv-lxm* a Subtype of *srv-lxm*

- Auxiliaries should express one-place predicates
- Auxiliaries should allow non-referential subjects (dummy *there*, *it*, and idiom chunks)
- Passivization of the main verb (the auxiliary's complement) should preserve truth conditions
- Are these borne out?

Why call auxiliaries verbs?

- *be*, *have*, and *do* exhibit verbal inflections (tense, agreement)
- *be*, *have*, and *do* can all appear as main verbs (that is, as the only verb in a sentence)
 - Their inflections are the same in main and auxiliary uses
 - *be* exhibits auxiliary behavior, even in its main verb uses
- Modals (*can*, *might*, *will*, etc.) don't inflect, but they occur in environments requiring a finite verb with no (other) finite verb around.

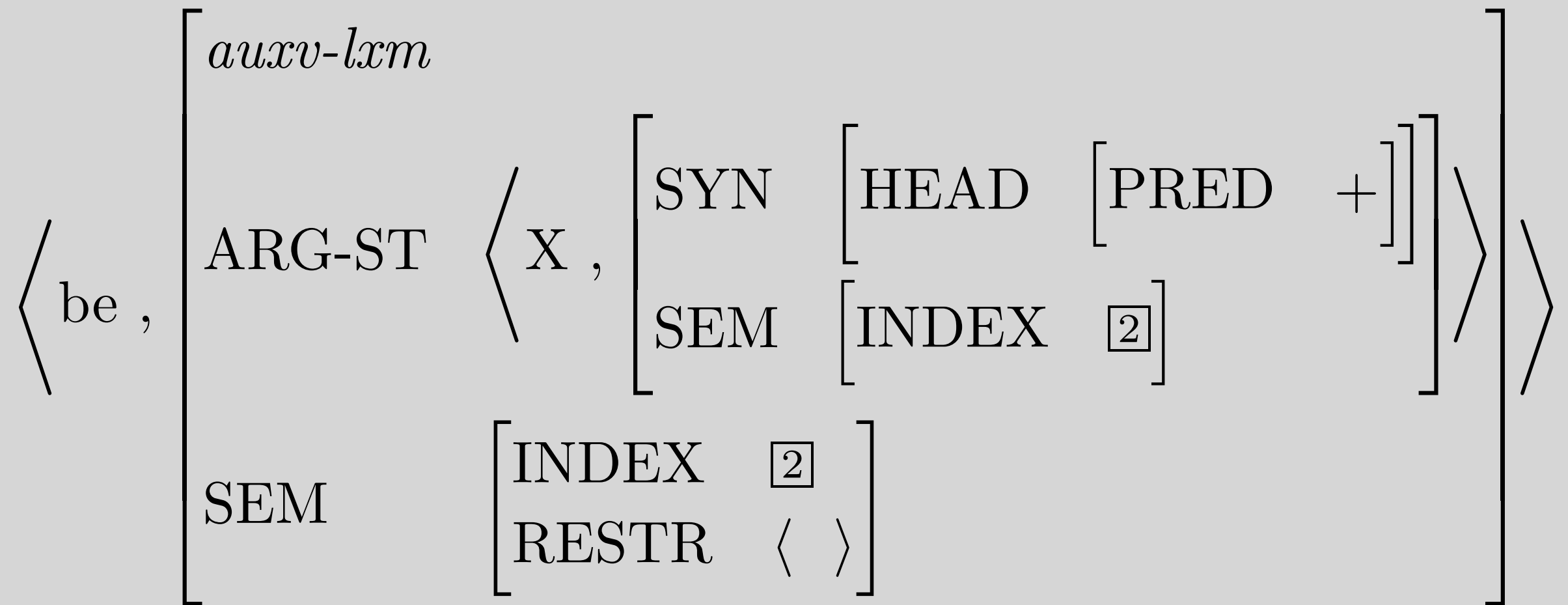
What's special about auxiliaries?

- Unlike other subject-raising verbs we have looked at, their complements aren't introduced by *to*
- The modals and *do* have defective paradigms
- There are restrictions on the ordering and iterability of auxiliaries
- They have a set of special characteristics known as the NICE properties.

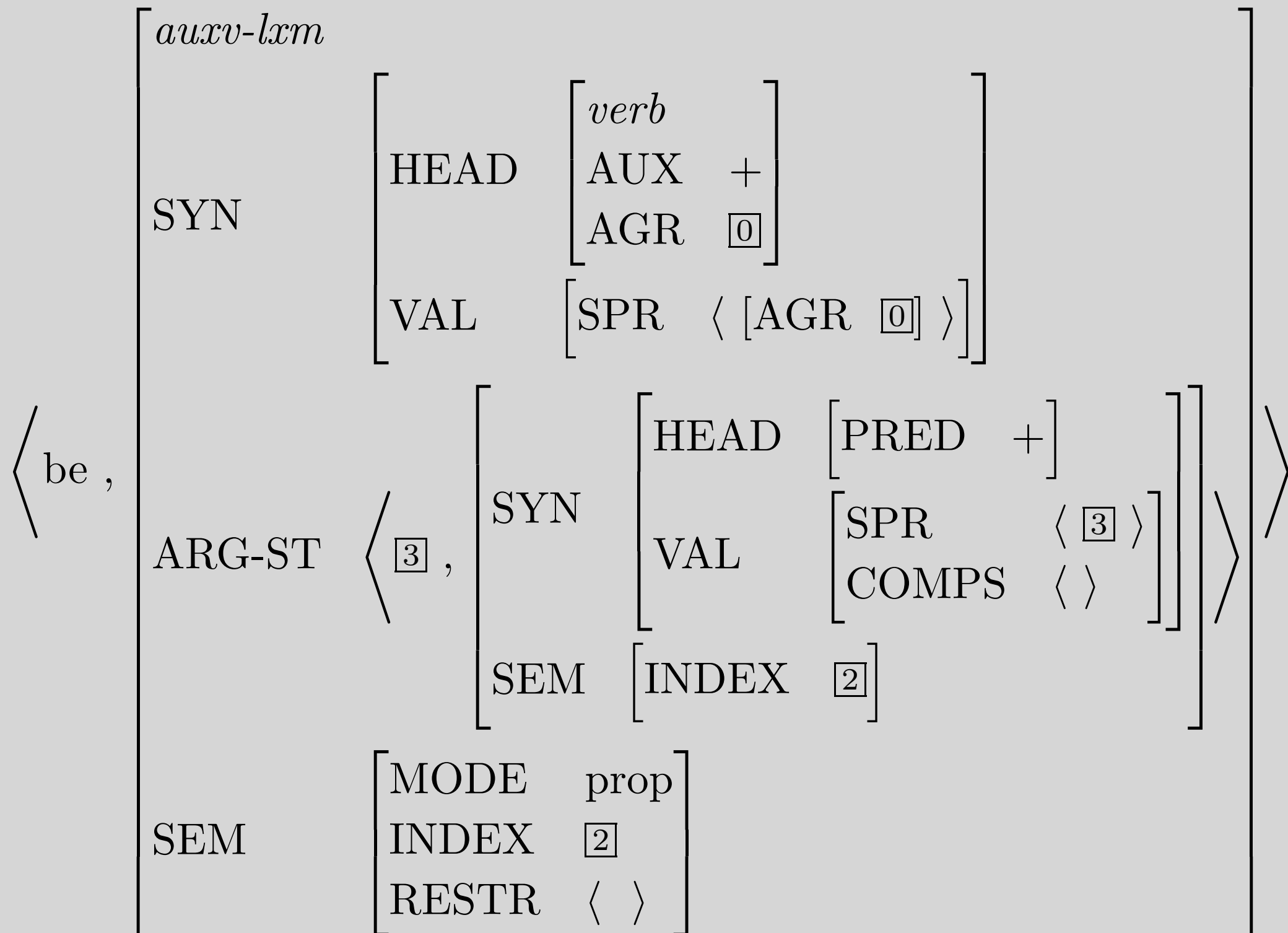
Some Type Constraints

TYPE	FEATURES/CONSTRAINTS	IST
<i>verb-lxm</i>	$\left[\begin{array}{l} \text{SYN} \quad \left[\text{HEAD} \quad \left[\begin{array}{l} \textit{verb} \\ \text{AUX} \quad / - \end{array} \right] \right] \\ \text{ARG-ST} \quad \langle [\text{HEAD} \textit{nominal}] , \dots \rangle \\ \text{SEM} \quad \left[\text{MODE} \quad \textit{prop} \right] \end{array} \right]$	<i>infl-lxm</i>
<i>srv-lxm</i>	$\left[\text{ARG-ST} \quad \left\langle \boxed{1} , \left[\begin{array}{l} \text{SPR} \quad \langle \boxed{1} \rangle \\ \text{COMPS} \quad \langle \rangle \end{array} \right] \right\rangle \right]$	<i>verb-lxm</i>
<i>ic-srv-lxm</i>	$\left[\begin{array}{l} \text{ARG-ST} \quad \left\langle \text{X} , \left[\begin{array}{l} \text{VP} \\ \text{INF} \quad + \\ \text{INDEX} \quad s \end{array} \right] \right\rangle \\ \text{SEM} \quad \left[\text{RESTR} \quad \left\langle [\text{ARG} \quad s] \right\rangle \right] \end{array} \right]$	<i>srv-lxm</i>
<i>auxv-lxm</i>	$\left[\text{SYN} \quad \left[\text{HEAD} \quad \left[\text{AUX} \quad + \right] \right] \right]$	<i>srv-lxm</i>

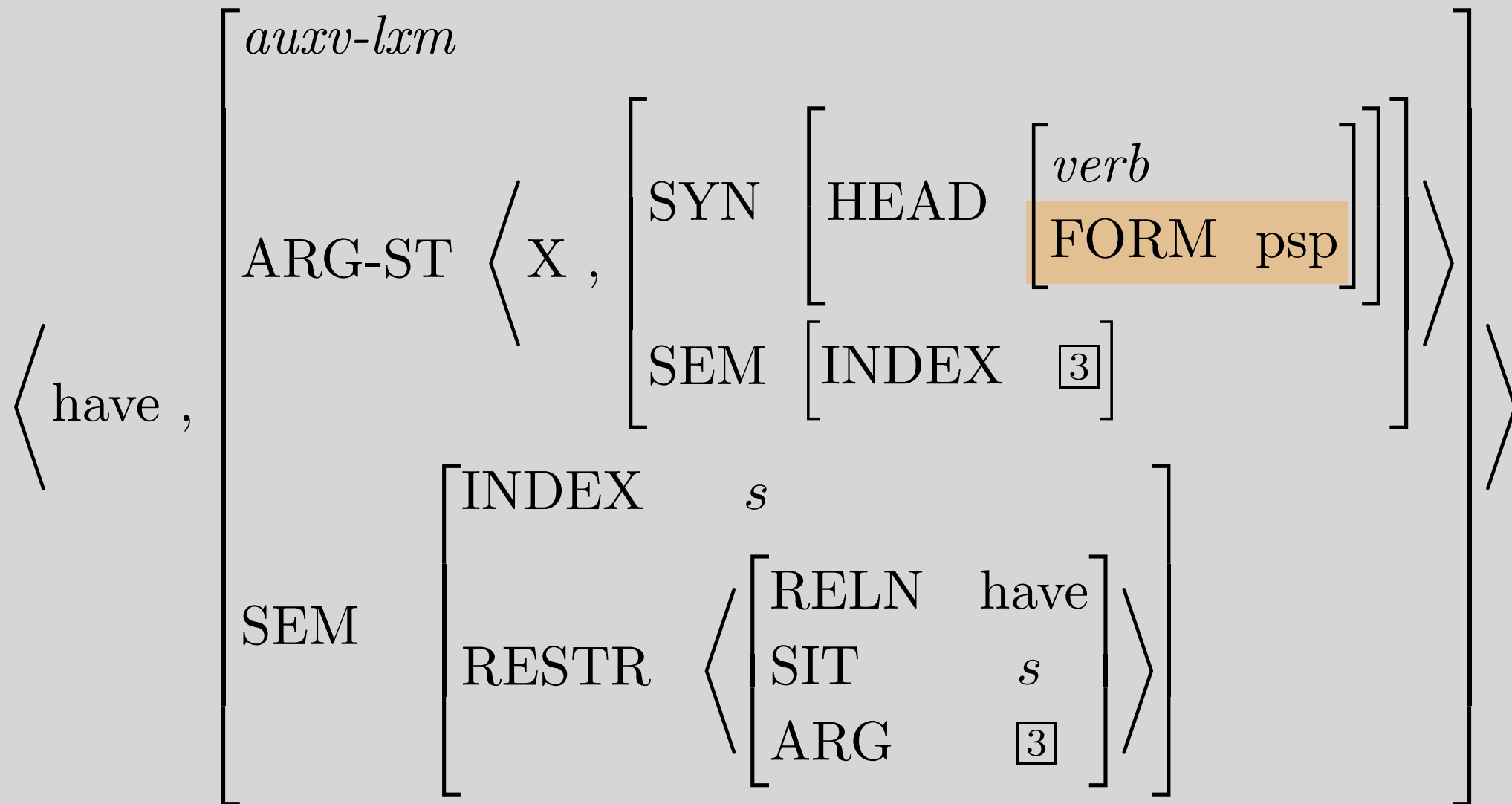
A Lexical Entry for *be*



The Entry for *be*, with Inherited Information

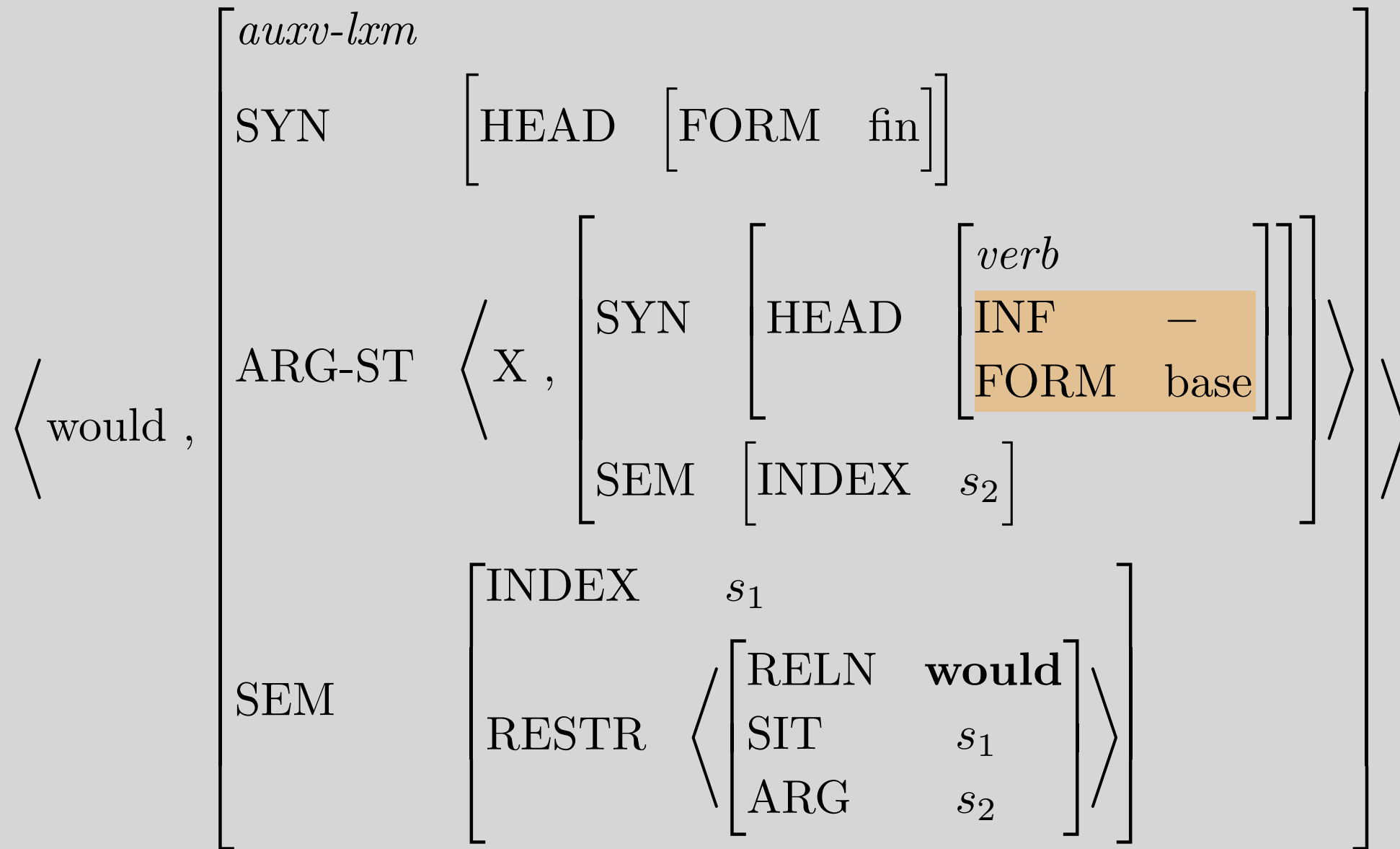


Entry for *have*



- Note the FORM restriction on the complement VP
- What accounts for the analogous FORM restriction on verbs following *be*?

Lexical Entry for a Modal



- Note the restriction on the form of the complement VP
- What inflectional lexical rules apply to this lexeme?

Accounting for the Basic Facts Cited Earlier

- **Optionality of auxiliaries:**
As raising verbs, their subjects and complements go together.
- **Auxiliaries precede non-auxiliary verbs:**
Auxiliaries are heads, and complements follow heads in English.
- **Auxiliaries determine the form of the following verb:**
This is built into their lexical entries.
- **When auxiliaries co-occur, their order is fixed:**
Different explanations for different combinations; see next slide.
- **Non-iterability of auxiliaries:**
Ditto.

Accounting for Restrictions on Order and Iterability

- **Order**

- Modals are finite, and all auxiliaries take non-finite complements. Hence, modals must come first.
- Stative verbs (like *own*) don't have present participles, and auxiliary *have* is stative. Hence, **Pat is having tapdanced*.

- **Iterability**

- Auxiliary *be* is also stative, so **Pat is being tapdancing*.
- Modals must be finite, and their complements must be base, so **Pat can should tapdance*.
- **Pat has had tapdanced* can be ruled out in various ways, e.g. stipulating that auxiliary *have* has no past participle.

Using semantics to explain lack of iterability:



Seems iffy; would rather call it syntax

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Seems squishy; but so is that data

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Seems about right

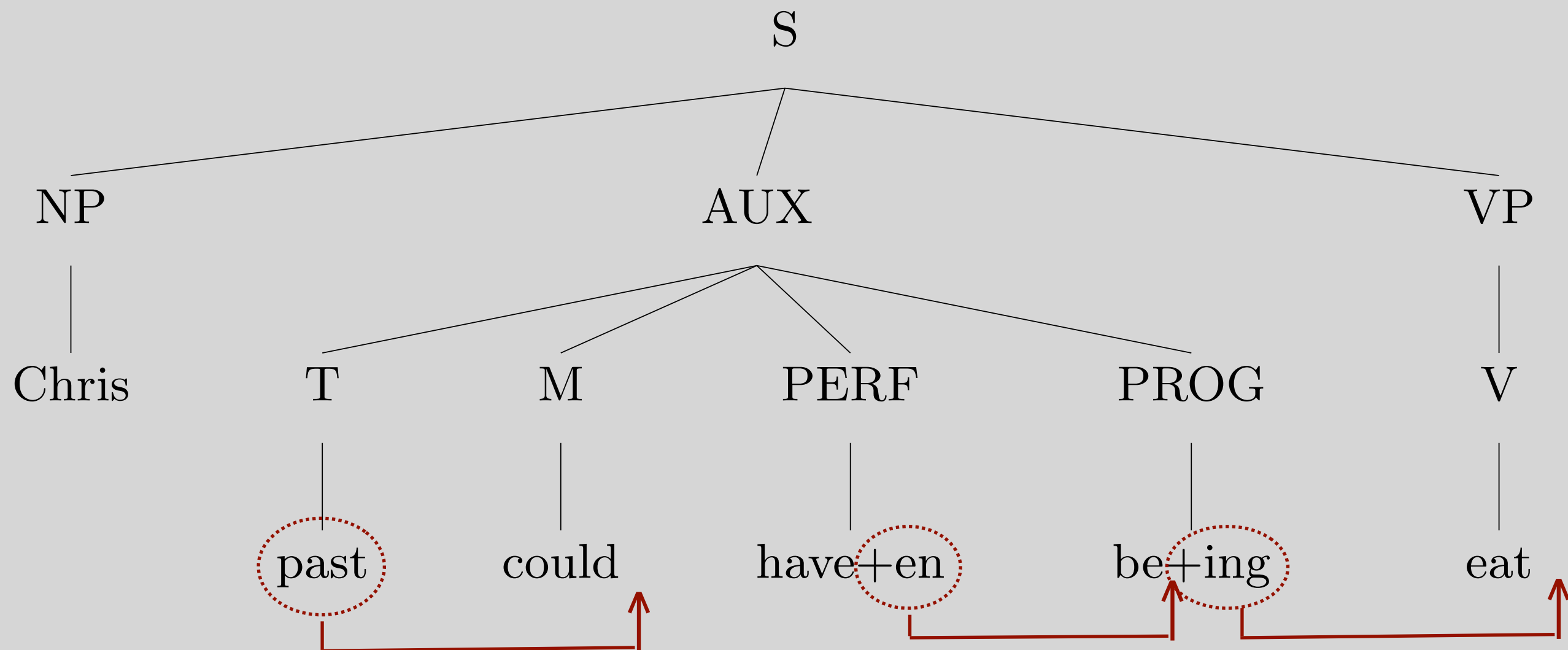
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None of the above

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Sketch of Chomsky's Old Analysis

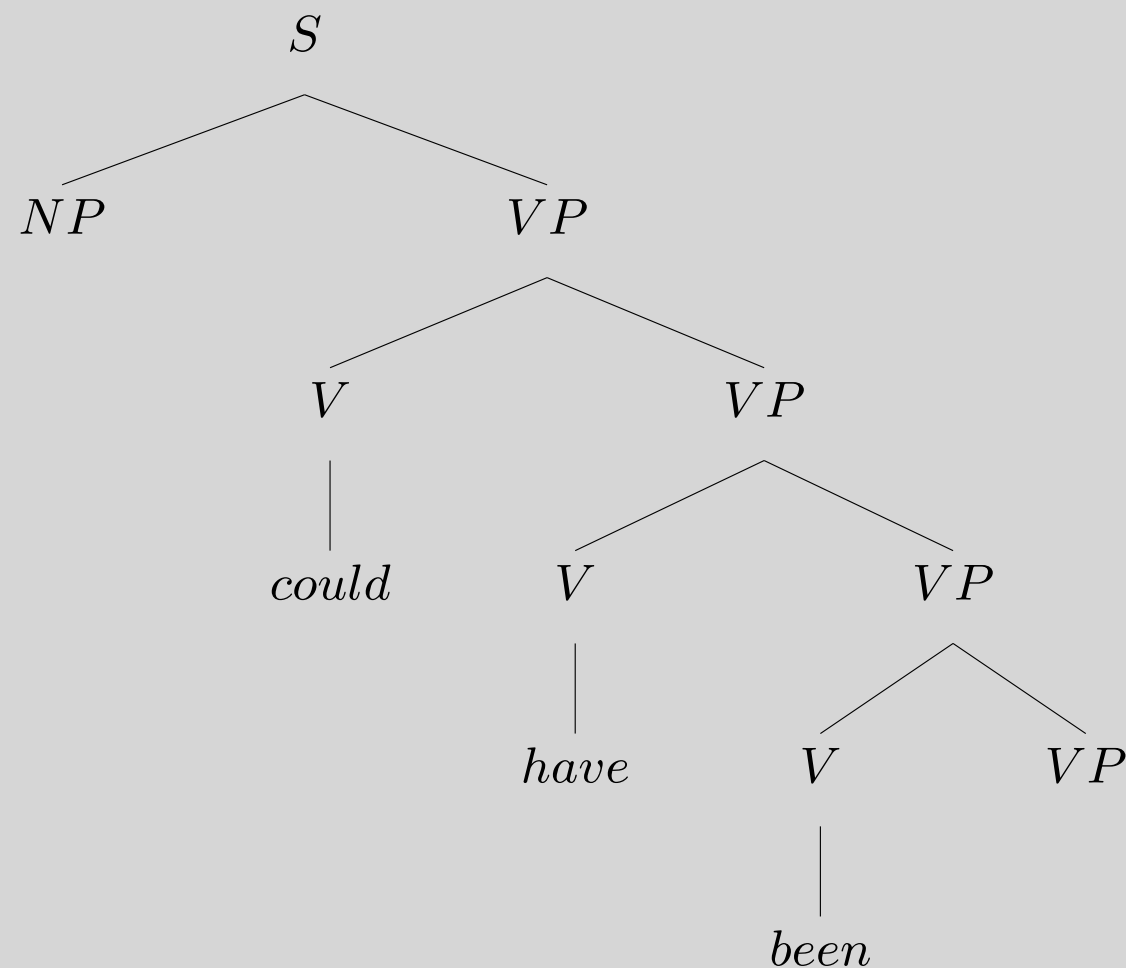
$S \rightarrow NP \text{ AUX VP}$
 $AUX \rightarrow T(M)(PERF)(PROG)$



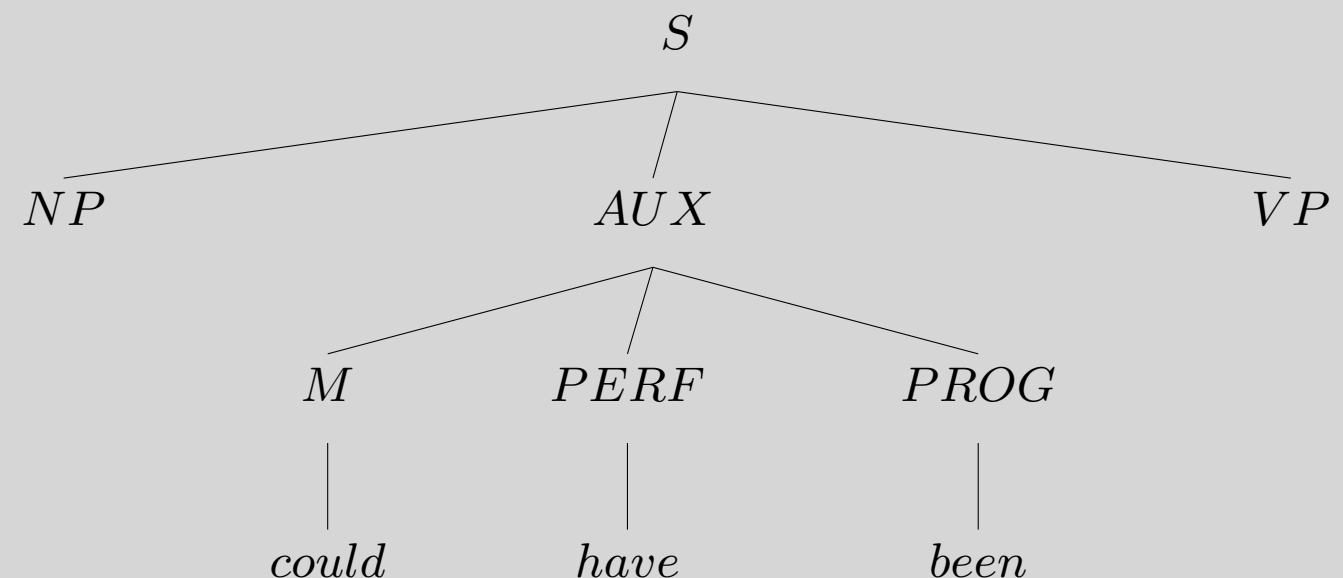
How this Analysis Handles the Basic Facts

- **Optionality of auxiliaries:**
Stipulated in the phrase structure rule (with parentheses)
- **Auxiliaries precede non-auxiliary verbs:**
Built into the phrase structure rule, with AUX before VP
- **Auxiliaries determine the form of the following verb:**
Inflections are inserted with the auxiliaries and moved onto the following verb transformationally.
- **When auxiliaries co-occur, their order is fixed:**
Stipulated in the phrase structure rule for AUX
- **Non-iterability of auxiliaries:**
Ditto.

The two analyses assign very different trees



- *could have been* VP, *have been* VP, and *been* VP are all constituents
- *could have been* is not a constituent



- *could have been* VP, *have been* VP, and *been* VP are not constituents
- *could have been* is a constituent

Ellipsis and Constituency

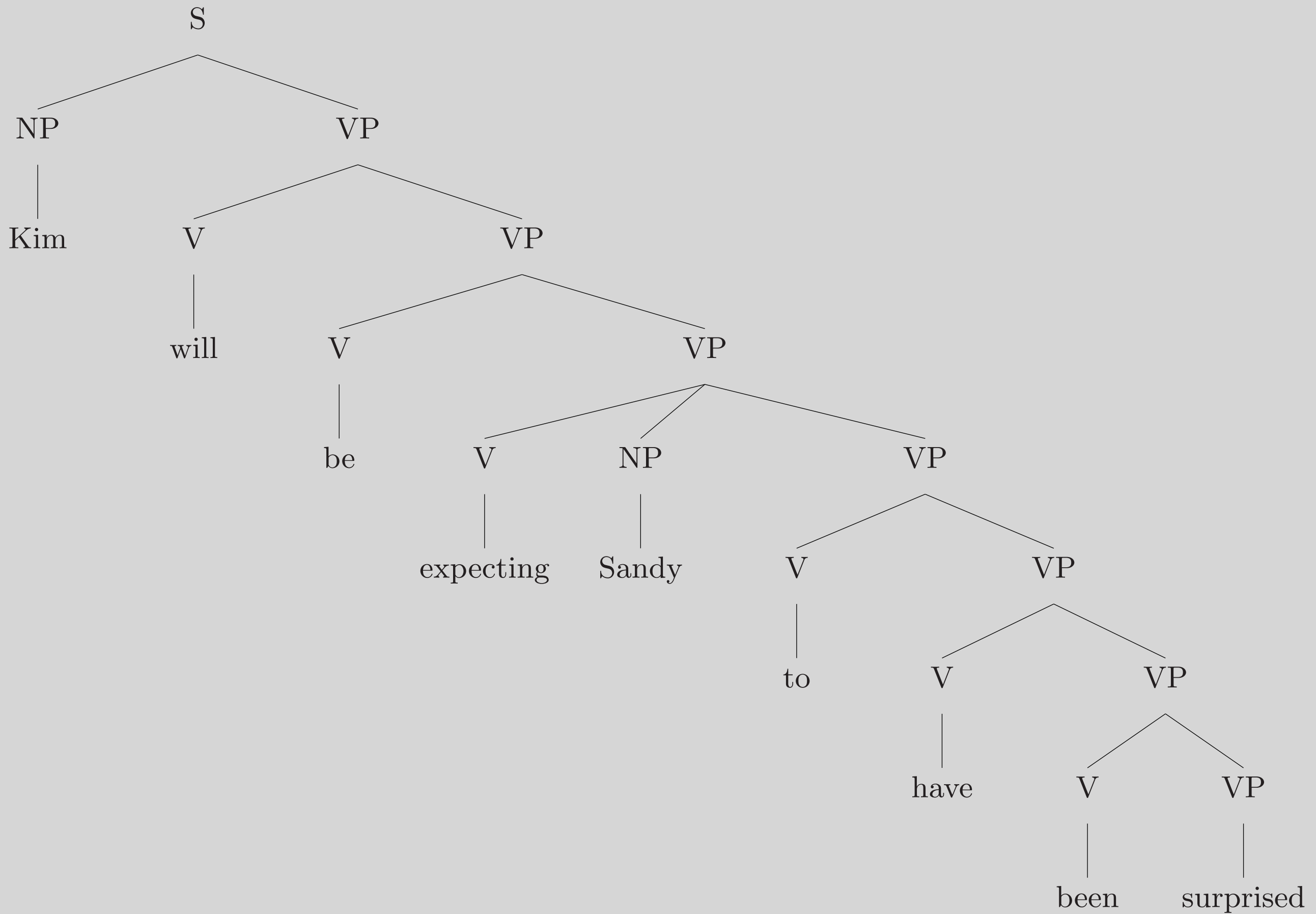
- Consider:
Pat couldn't have been eating garlic, but Chris could have been
Pat couldn't have been eating garlic, but Chris could have
Pat couldn't have been eating garlic, but Chris could
- On the nested analysis, the missing material is a (VP) constituent in each case
- On the flat analysis, the missing material is never a constituent
- This argues for our analysis over the old transformational one.

Our Analysis of Auxiliaries So Far

- Auxiliaries are subject-raising verbs
- Most basic distributional facts about them can be handled through selectional restrictions between auxiliaries and their complements (that is, as ARG-ST constraints)
- Auxiliaries are identified via a HEAD feature AUX, which we have not yet put to use

Tree practice

- Kim will be expecting Sandy to have been surprised





Title logo

How do you feel atop HPSG mountain?



Beautiful view, so glad to be up here

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Satisfying hike, but hiking around up here is hard too

0

Can only see the trees in front of my face

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Too tired to know

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Other

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RQs: Lexical types

- Would it make sense to have a separate modal lexeme type (as a subtype of auxiliaries)? If not, why?

RQs: Continue with *-ing*

- Do the sentences, "Continue to win!" and "Continue winning!" use different lexical entries for "Continue"? And if so, is the difference more than just the [INF +] constraint on the complement VP coming from ic-srv-lxm?

RQs: Modals as raising verbs

- In exercise A, from syntactic tests, we know that modal verbs are raising verbs. But on the other hand, modal verbs also show a connection to their subjects when expressing obligation/permission. Does this mean we should assign two separate lexemes to modal verbs? Or we can just say obligation/permission is purely pragmatic and therefore cannot be captured under SYN or SEM.

RQs: Sequence of tense

- In p. 399, I find that we try to prevent past-tense modal forms. But I think could is still a past-tense form of can? I could be wrong at this since I am not native speaker of English. But if so, how to handle this?
- On page 394, how does this prevent a construction like "can have been"? Also, are can/could and will/would different forms of the same verb, or do we treat them as separate lexemes? (My head is spinning from all the verbs).

RQs: Alternative hypotheses

- In section 13.2.3, the text discusses two possible explanations for why perfective 'have' cannot iterate (*has had travelled) through morphological blocking or semantic redundancy. What kind of evidence would help determine which analysis is more accurate?

RQs: Function words

- I'm struggling to accept auxiliaries as verbs. New nouns, adjectives and non-auxiliary verbs in English are regularly invented by speakers (e.g., rizz, goated, yeet), but new auxiliary verbs, determiners, prepositions, etc. are not. Also, intuitively speaking, non-auxiliary verbs seem like they have some kind of concrete action or state that they refer to, like walking or buying or knowing. Auxiliary verbs aren't associated with an action and seem more similar to tense to me.

RQs: Language change

- Since verbs like “do” and “be” contribute no semantics, is there any historical explanation for why languages like English make these auxiliary verbs a necessary part of sentences and rules that govern their grammatical use in sentences?
- The use of do in sentences with no other auxiliary has always been a bit confusing to me. Why is do introduced as a support verb specifically in English, not other verbs, any cultural/evolutionary reasons? I’m curious whether do-support reflects a gap/weakness in the syntactic structure that other auxiliaries might fill in languages without do-support.