



Chapter 13, Sections 13.1-13.2

Auxiliary Verbs

What Auxiliaries Are

- Also called “helping verbs,” 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*
- Many language have a small set of grammatically distinctive words or affixes used in the expression of time, necessity, possibility, permission, and obligation, as well as such things as negation, affirmation, and questioning

Some Basic Facts about Auxiliaries

- They are optional
Pat yodeled. Pat can yodel. Pat has yodeled.
- They precede any non-auxiliary verbs
**Pat yodel can. *Pat yodeled has.*
- They determine the form of the following verb
**Pat can yodeled. *Pat has yodel.*
- When they co-occur, their order is fixed
*Pat must have yodeled. *Pat has must(ed) yodel.*
- Same-type auxiliaries can't iterate (in std. English)
**Pat could should yodel. *Pat has had yodeled.*

A Little History

- Chomsky's first book, *Syntactic Structures* (1957), analyzed English auxiliary verbs in detail
- 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*
 - The relevant facts, and an analysis, will be covered next time.
- 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 rules 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, following work from Ross, McCawley, and others in the 1960s and 1970s
- We treat 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) when the following VP allows such subjects
- Passivization of the main verb (the auxiliary's complement) should preserve truth conditions
 - Are these predictions 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.

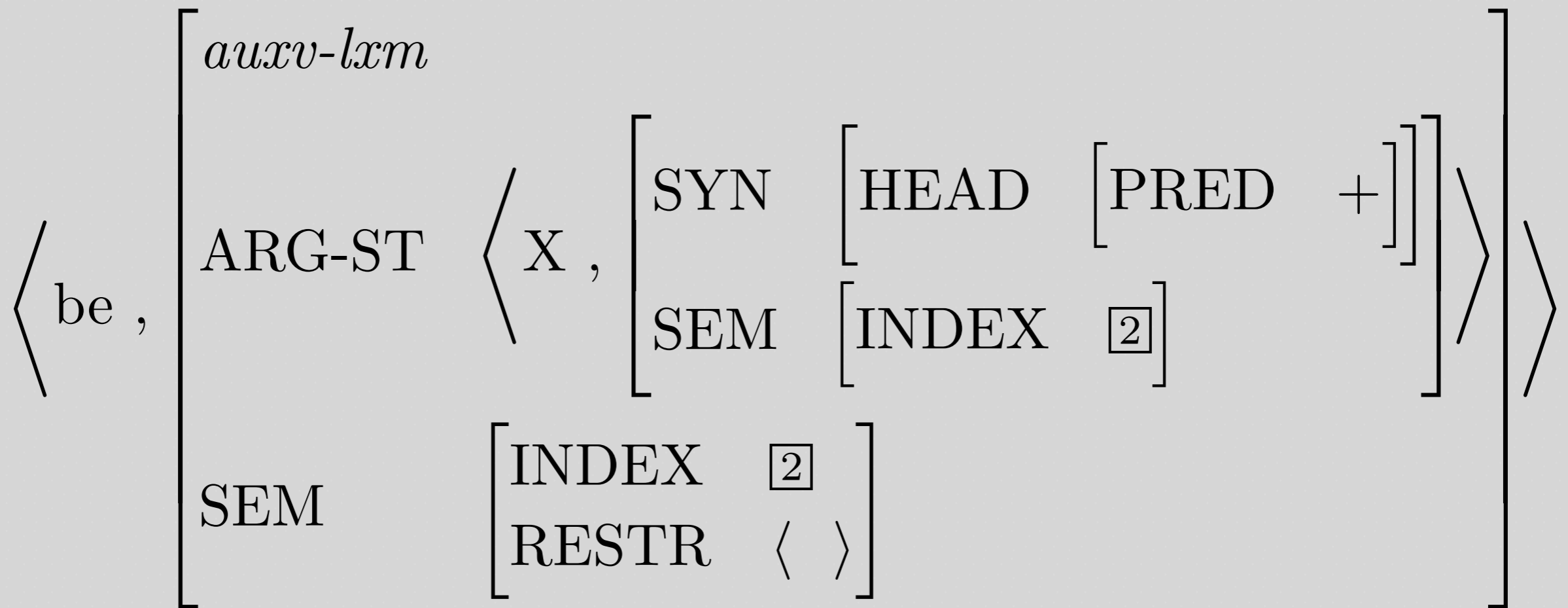
What's special about auxiliaries?

- 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: the NICE properties, which we'll discuss next time

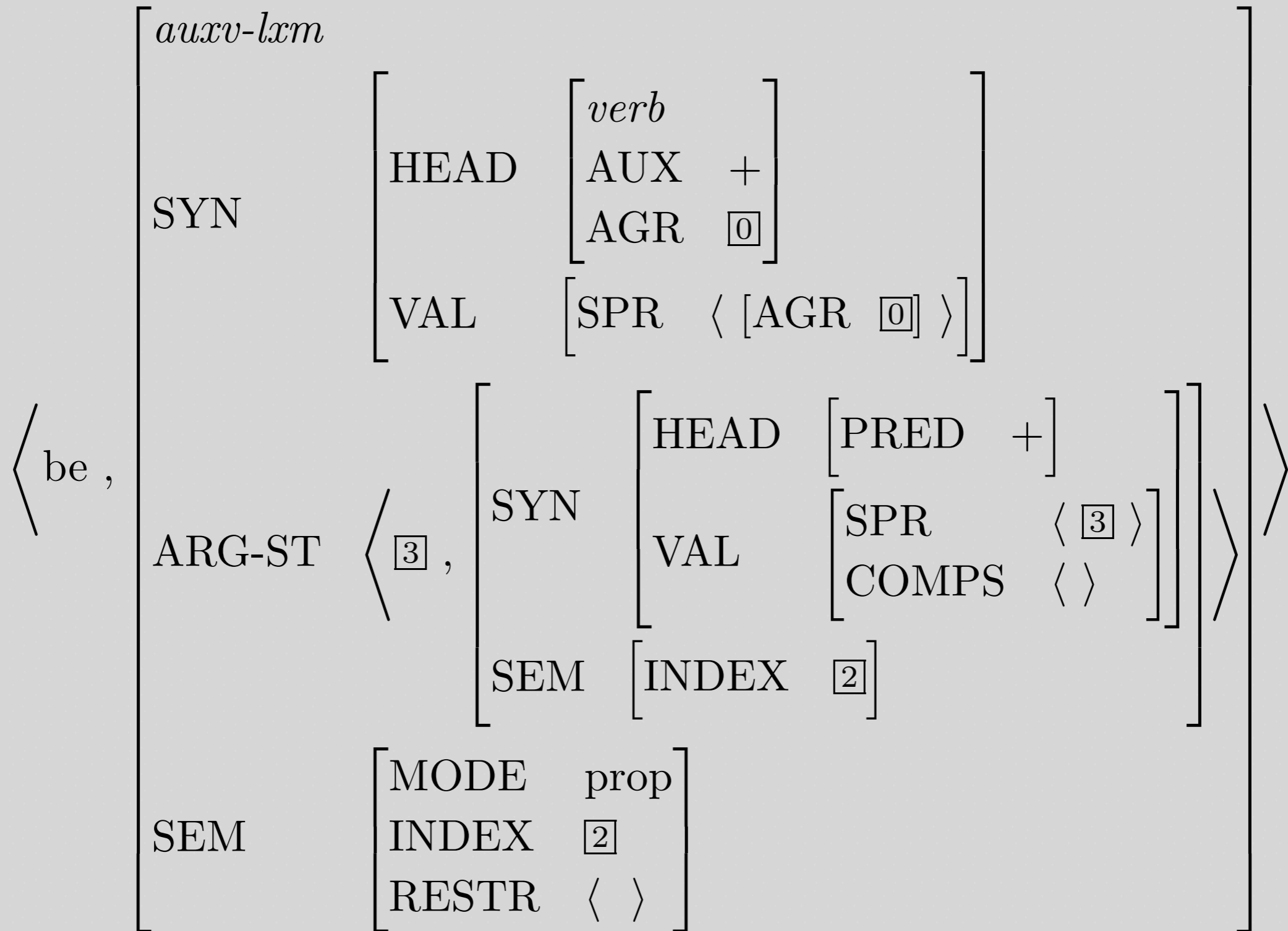
Some Type Constraints

TYPE	FEATURES/CONSTRAINTS	IST
<i>verb-lxm</i>	$\left[\begin{array}{l} \text{SYN} \quad \left[\text{HEAD} \quad \left[\begin{array}{l} \textit{verb} \\ \text{AUX} \quad / \quad - \end{array} \right] \right] \\ \text{ARG-ST} \quad \langle [\text{HEAD} \textit{nominal}] , \dots \rangle \\ \text{SEM} \quad \left[\text{MODE} \quad \textit{prop} \right] \end{array} \right]$	<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>

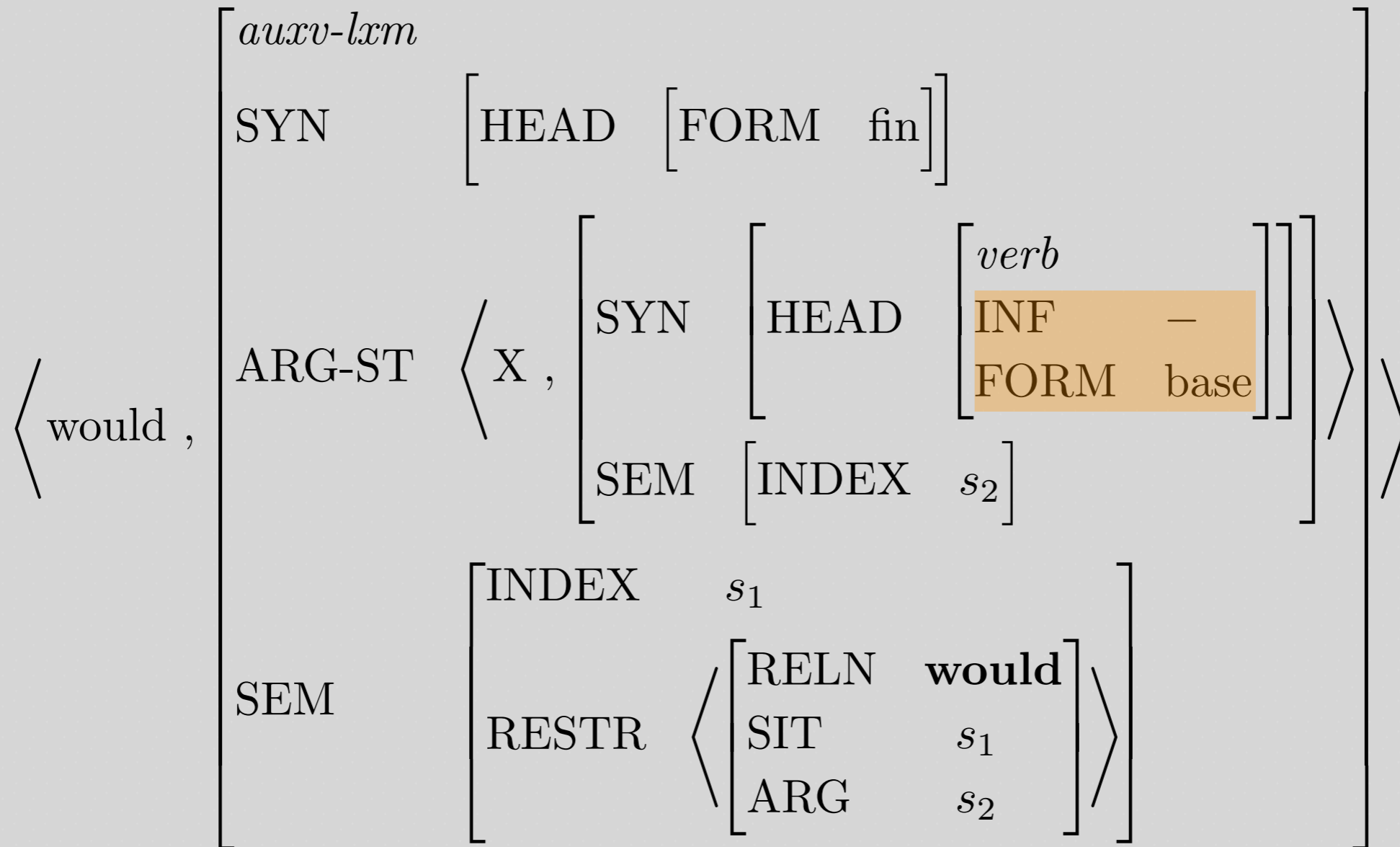
A Lexical Entry for *be*



The Entry for *be*, with Inherited Information



Lexical Entry for a Modal



- Note the restriction on the form of the complement VP
- And lexical restriction to [FORM fin]

Accounting for the Basic Facts Cited Earlier

- **Optionality of auxiliaries:**
As raising verbs, their subjects are also their complements' subjects, so their subjects and complements must be compatible.
- **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.
- Book: “Stative verbs (like *own*) don’t have present participles. Auxiliary *have* is stative. Hence, **Pat is having yodeled.*” [??]

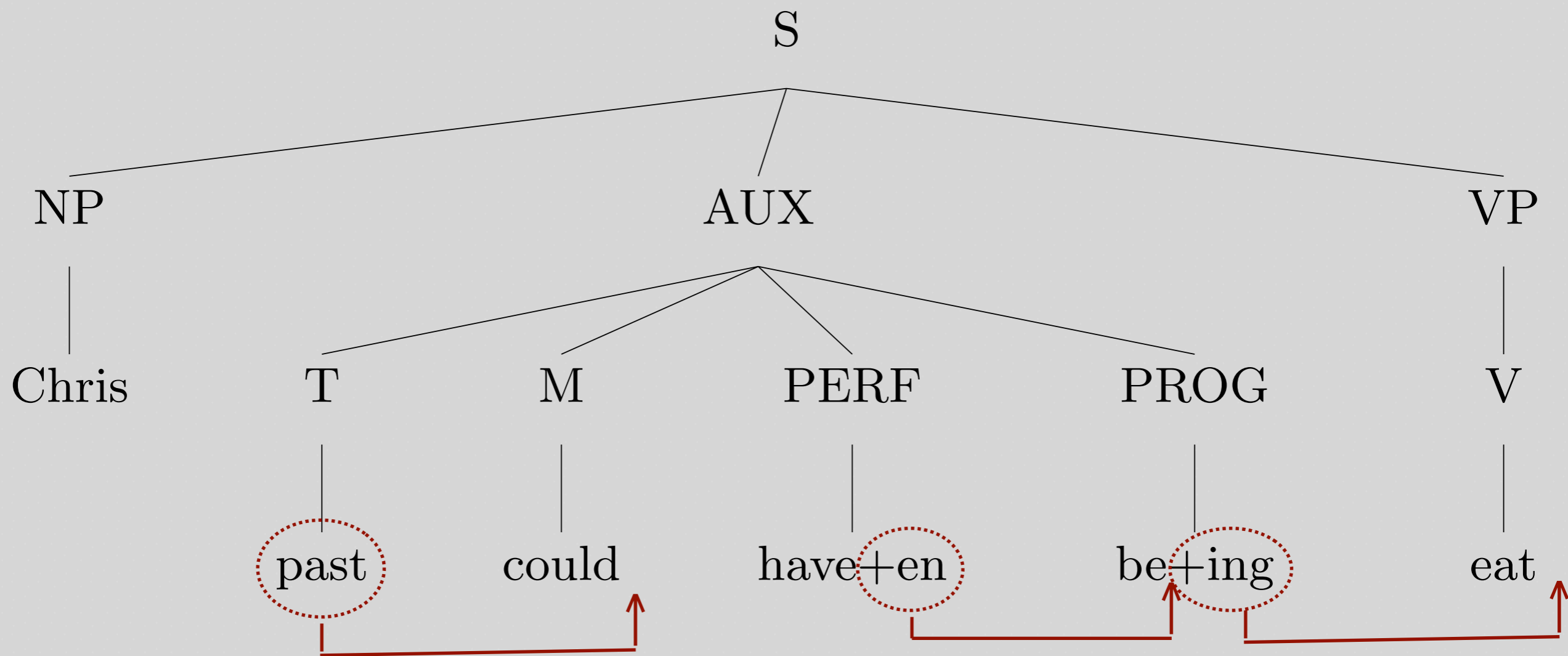
- **Iterability**

- “Auxiliary *be* is also stative, so **Pat is being yodeling.*” [?]
- Modals must be finite, and their complements must be base, so **Pat can should yodel.*
- **Pat has had yodeled* can be ruled out in various ways, e.g. stipulating that auxiliary *have* has no past participle.

Sketch of Chomsky's Old Analysis

$S \rightarrow NP \text{ AUX } VP$

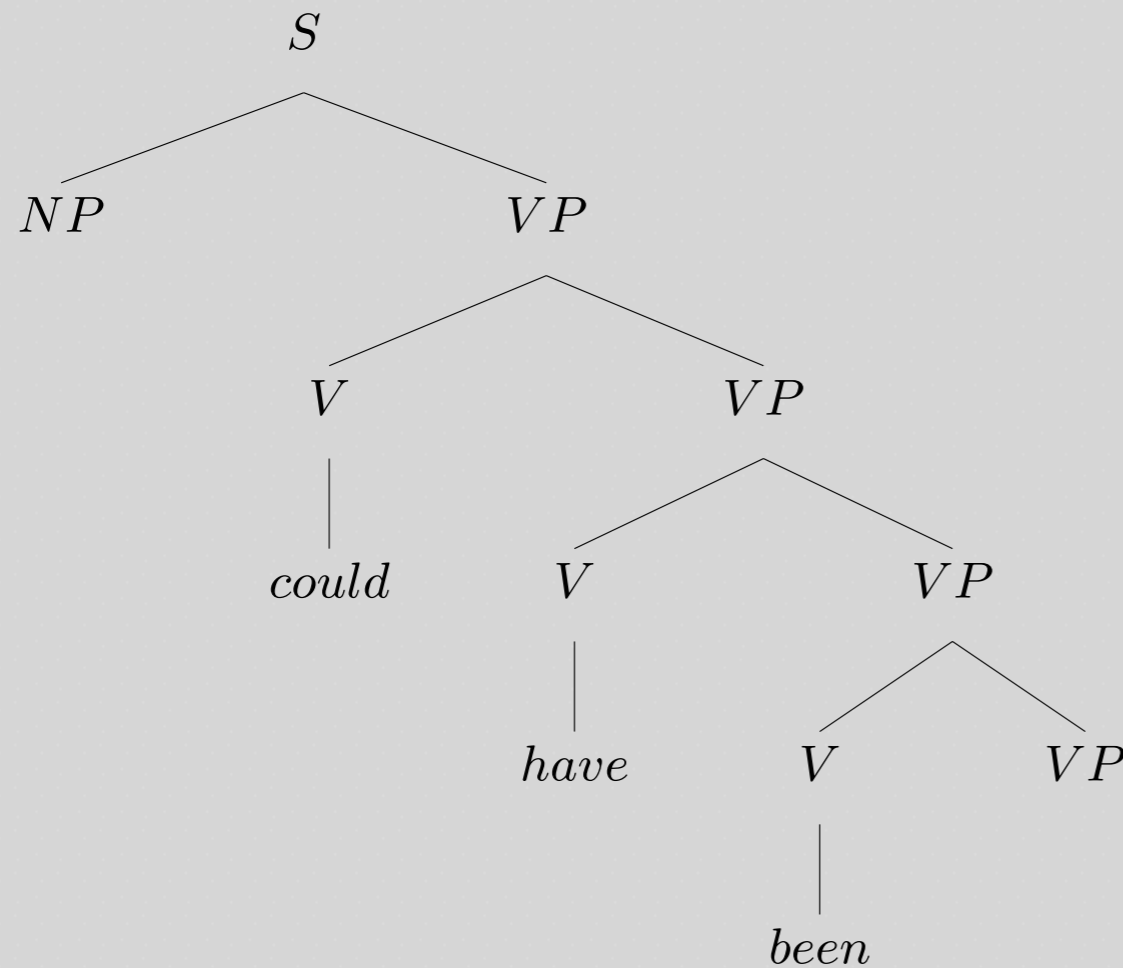
$AUX \rightarrow T(M)(PERF)(PROG)$



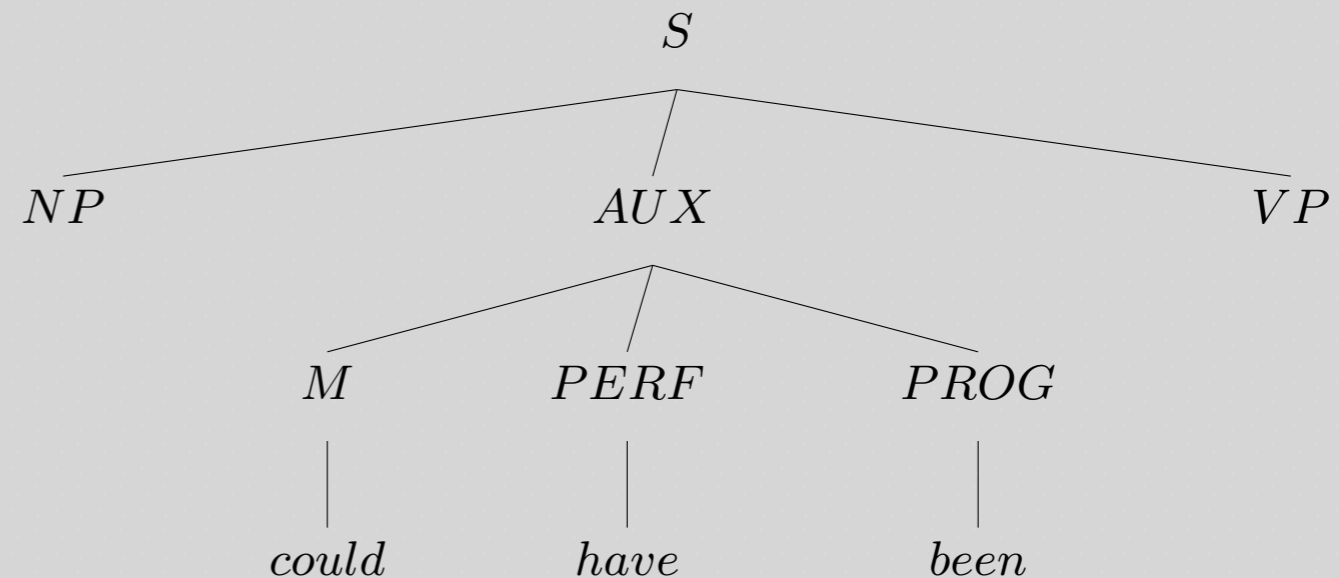
How this Analysis Handles the Basic Facts

- **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 only a constituent in the first case
- Argument for our analysis over the old transformational one?
[More on ellipsis next time]