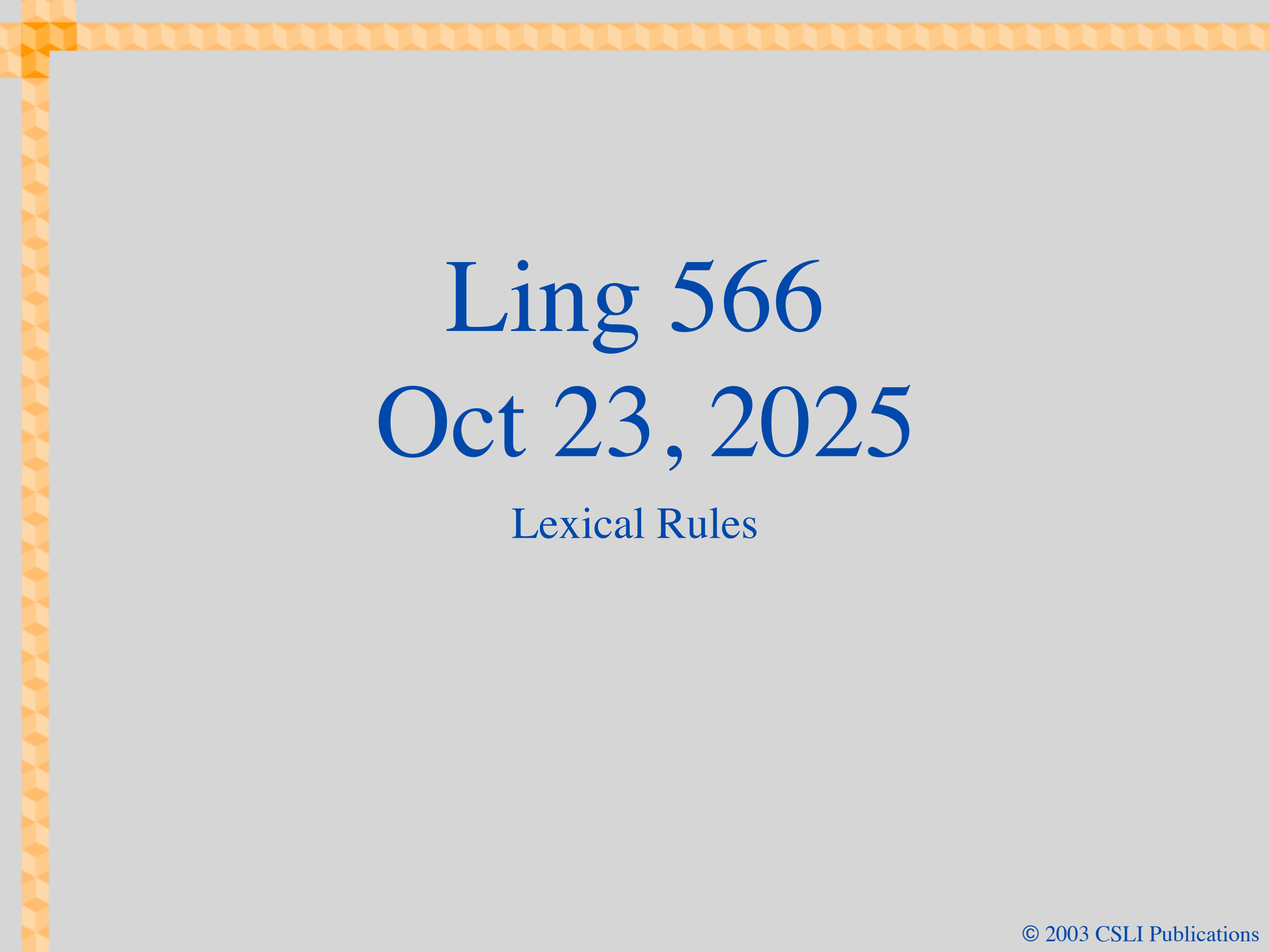


A decorative border in the top-left corner of the slide, composed of a grid of small orange squares and rectangles, creating a geometric pattern.

Ling 566

Oct 23, 2025

Lexical Rules

Overview

- How lexical rules fit in
- Three types of lexical rules, constraints
- Example: Plural noun lexical rule
- Advice on writing lexical rules
- Constant lexemes
- ARG-ST & ARP
- The feature FORM

Lexical Types & Lexical Rules

- Lexemes capture the similarities among *run*, *runs*, *running*, and *ran*
- The lexical type hierarchy captures the similarities among *run*, *sleep*, and *laugh*, among those and other verbs like *devour* and *hand*, and among those and other words like *book*.
- Lexical rules capture the similarities among *runs*, *sleeps*, *devours*, *hands*, ...



Is it clear what type of regularities are captured by lexical types and lexical rules? (take 3)



Not clear why we need either

0

Not clear what the difference is

0

Yes ...?

0

Yes

0

Parsimony & Plausibility

- Lexical rules capture **productive** generalizations.
- There may be some ‘precompiling’ going on as well.

Three Kinds of Lexical Rules

- Inflectional: *lexeme* to *word*

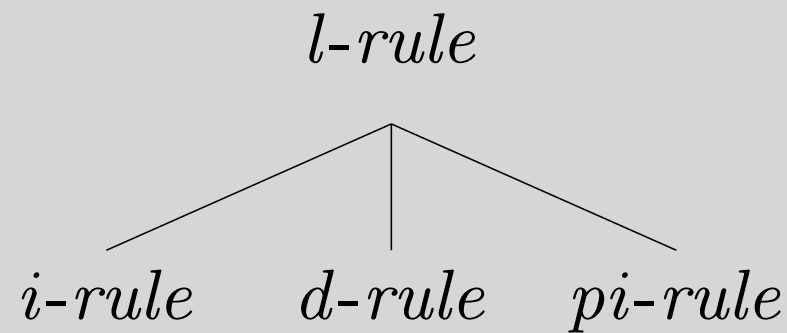
Examples?

- Derivational: *lexeme* to *lexeme*

Examples?

- Post-Inflectional: *word* to *word*
(Chapters 11, 13, 14)

Three Subtypes of *l-rule*



$$l\text{-rule} : \left[\begin{array}{l} \text{INPUT} \quad l\text{-sequence} \left\langle X, [\text{SEM} \quad / \boxed{2}] \right\rangle \\ \text{OUTPUT} \quad l\text{-sequence} \left\langle Y, [\text{SEM} \quad / \boxed{2}] \right\rangle \end{array} \right]$$

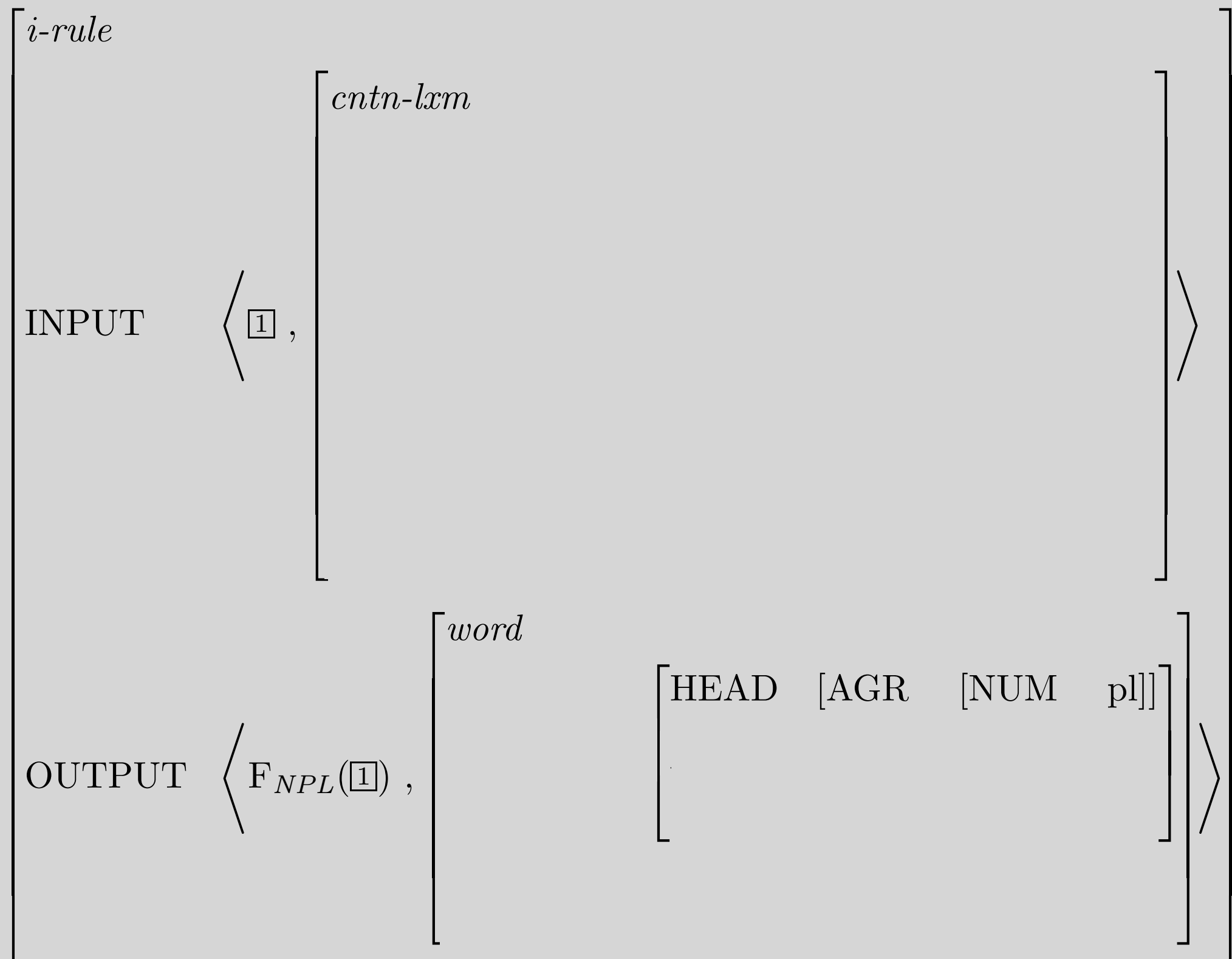
$$i\text{-rule} : \left[\begin{array}{l} \text{INPUT} \quad \left\langle X, \left[\begin{array}{l} \text{lexeme} \\ \text{SYN} \quad \boxed{3} \\ \text{ARG-ST} \quad \boxed{A} \end{array} \right] \right\rangle \\ \text{OUTPUT} \quad \left\langle Y, \left[\begin{array}{l} \text{word} \\ \text{SYN} \quad \boxed{3} \\ \text{ARG-ST} \quad \boxed{A} \end{array} \right] \right\rangle \end{array} \right]$$

$$d\text{-rule} : \left[\begin{array}{l} \text{INPUT} \quad \left\langle X, \left[\begin{array}{l} \text{lexeme} \\ \text{SYN} \quad / \boxed{3} \end{array} \right] \right\rangle \\ \text{OUTPUT} \quad \left\langle Y, \left[\begin{array}{l} \text{lexeme} \\ \text{SYN} \quad / \boxed{3} \end{array} \right] \right\rangle \end{array} \right]$$

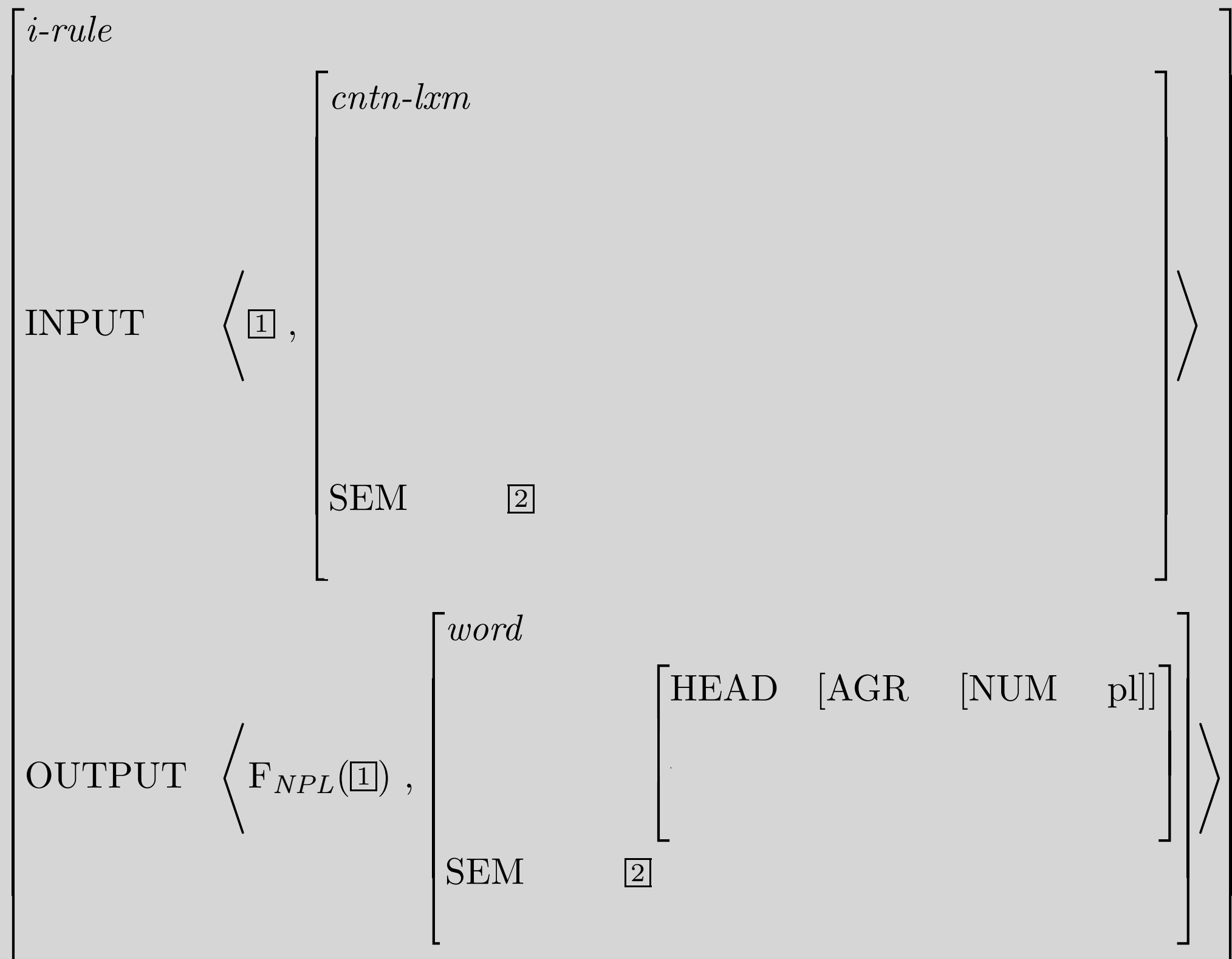
Plural Noun LR

$$\left[\begin{array}{l} i\text{-rule} \\ \text{INPUT} \quad \langle \boxed{1}, \text{cntn-lxm} \rangle \\ \text{OUTPUT} \quad \left\langle F_{NPL}(\boxed{1}), \left[\text{SYN} \left[\text{HEAD} \left[\text{AGR} \left[\text{NUM} \text{pl} \right] \right] \right] \right] \right\rangle \right. \end{array} \right]$$

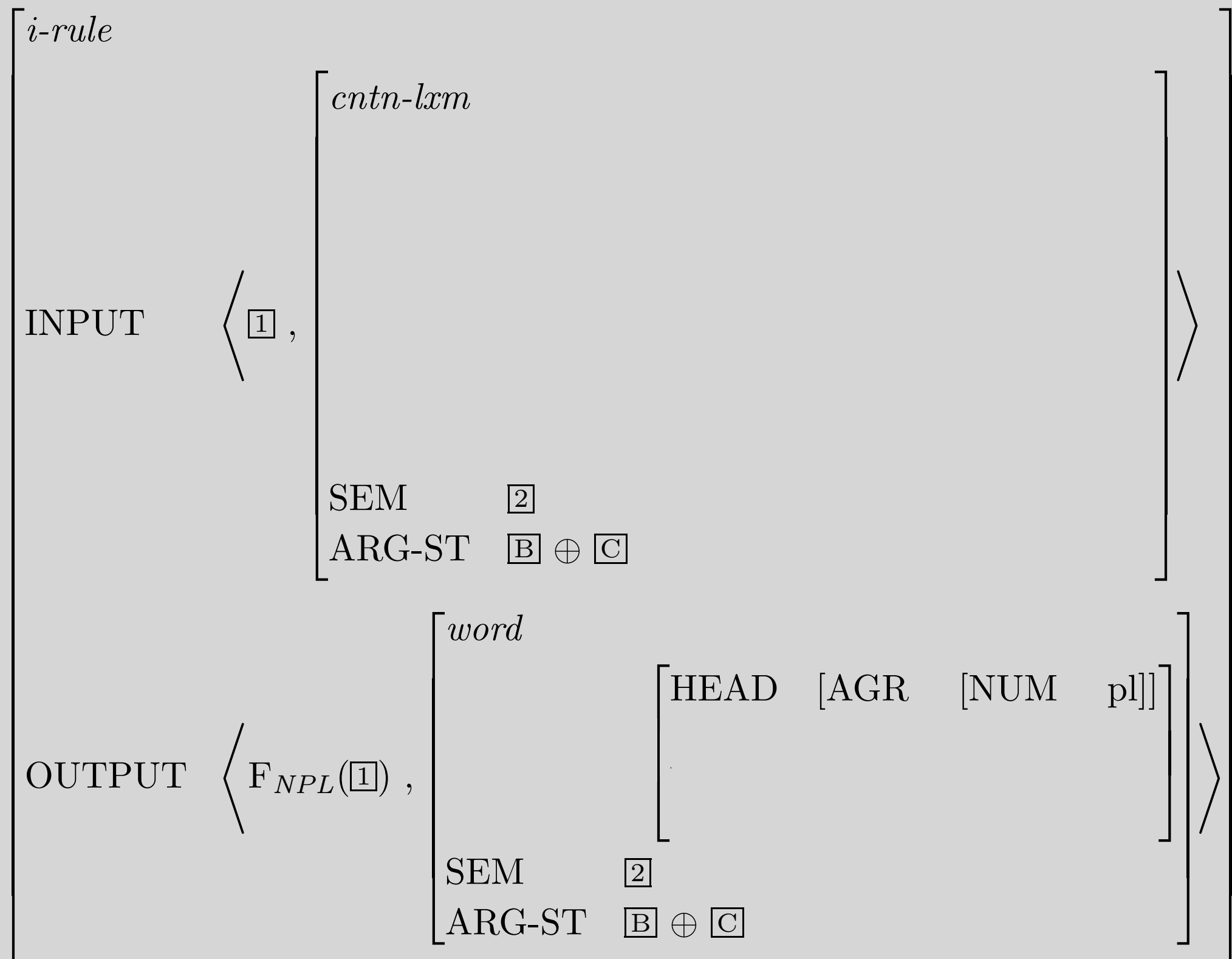
Plural Noun LR with Inherited Constraints



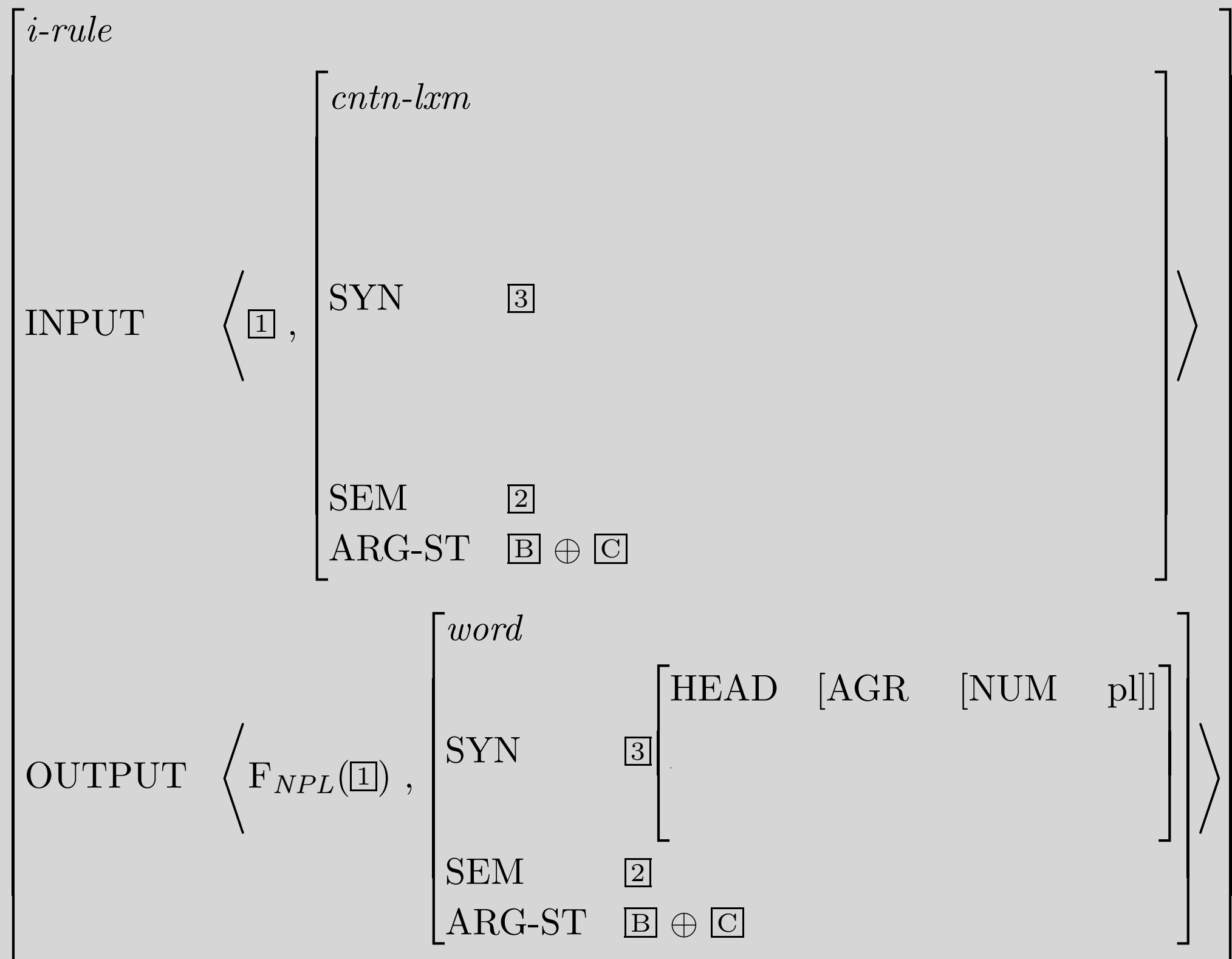
Plural Noun LR with Inherited Constraints



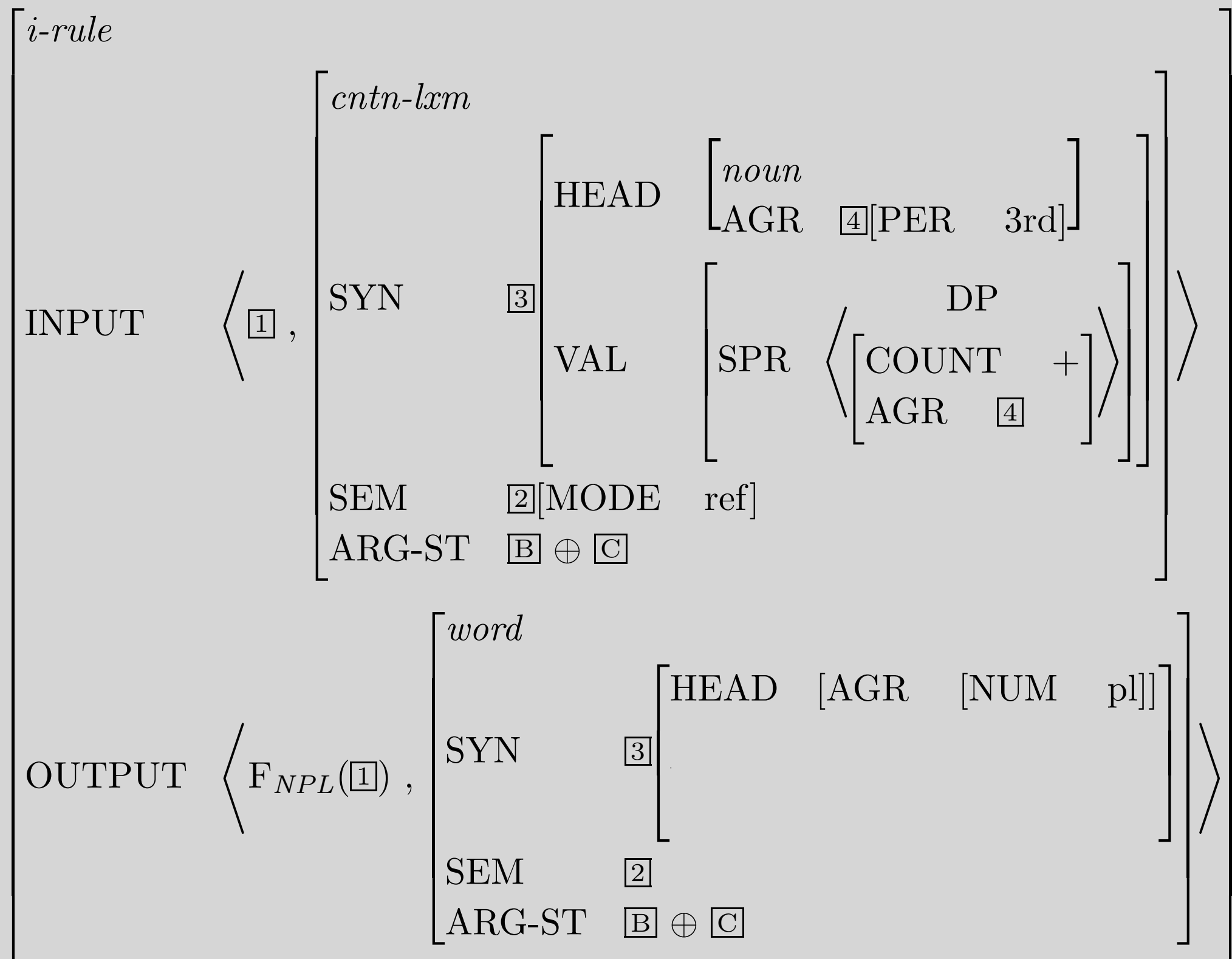
Plural Noun LR with Inherited Constraints



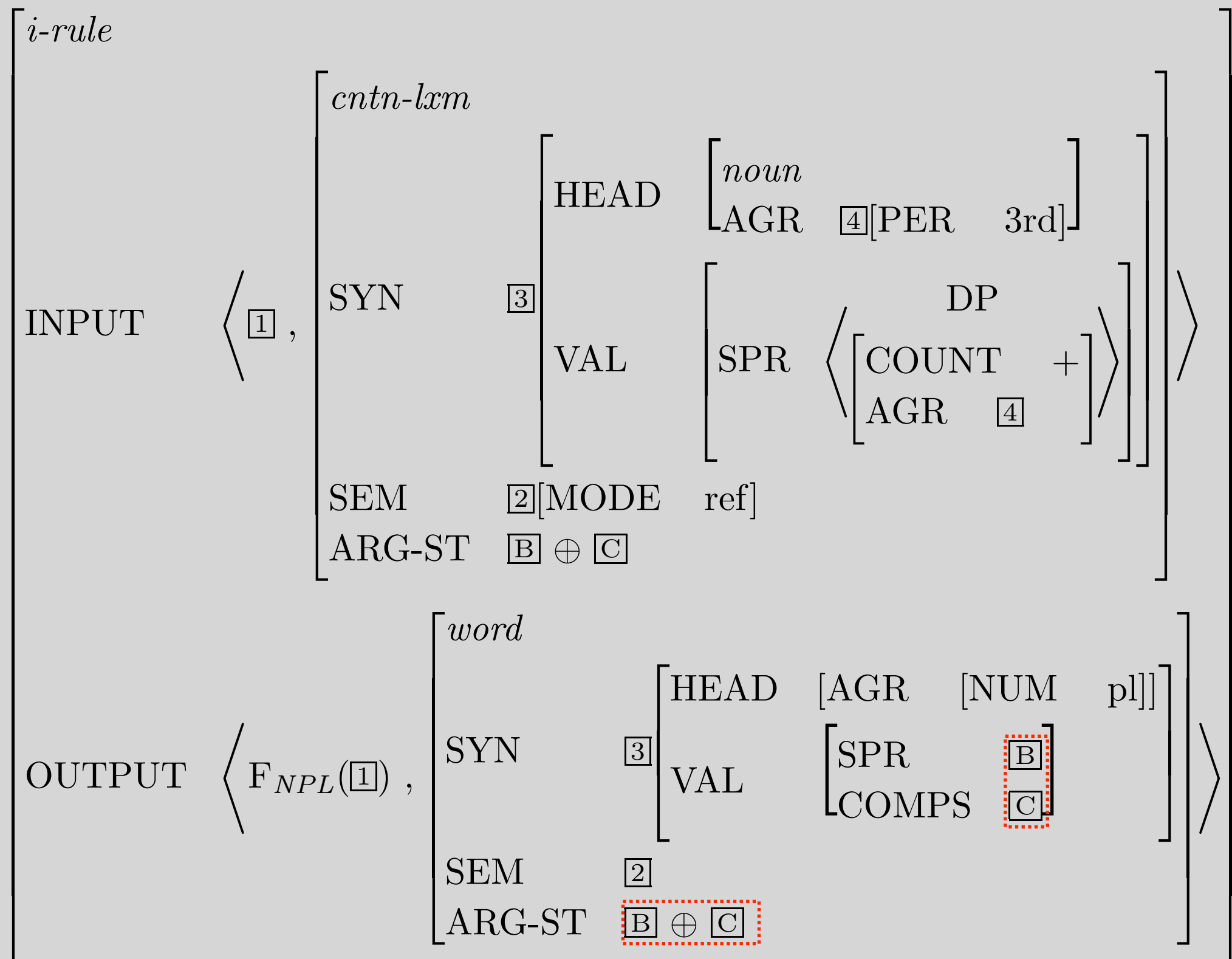
Plural Noun LR with Inherited Constraints



Plural Noun LR with Inherited Constraints



Plural Noun LR with Inherited Constraints



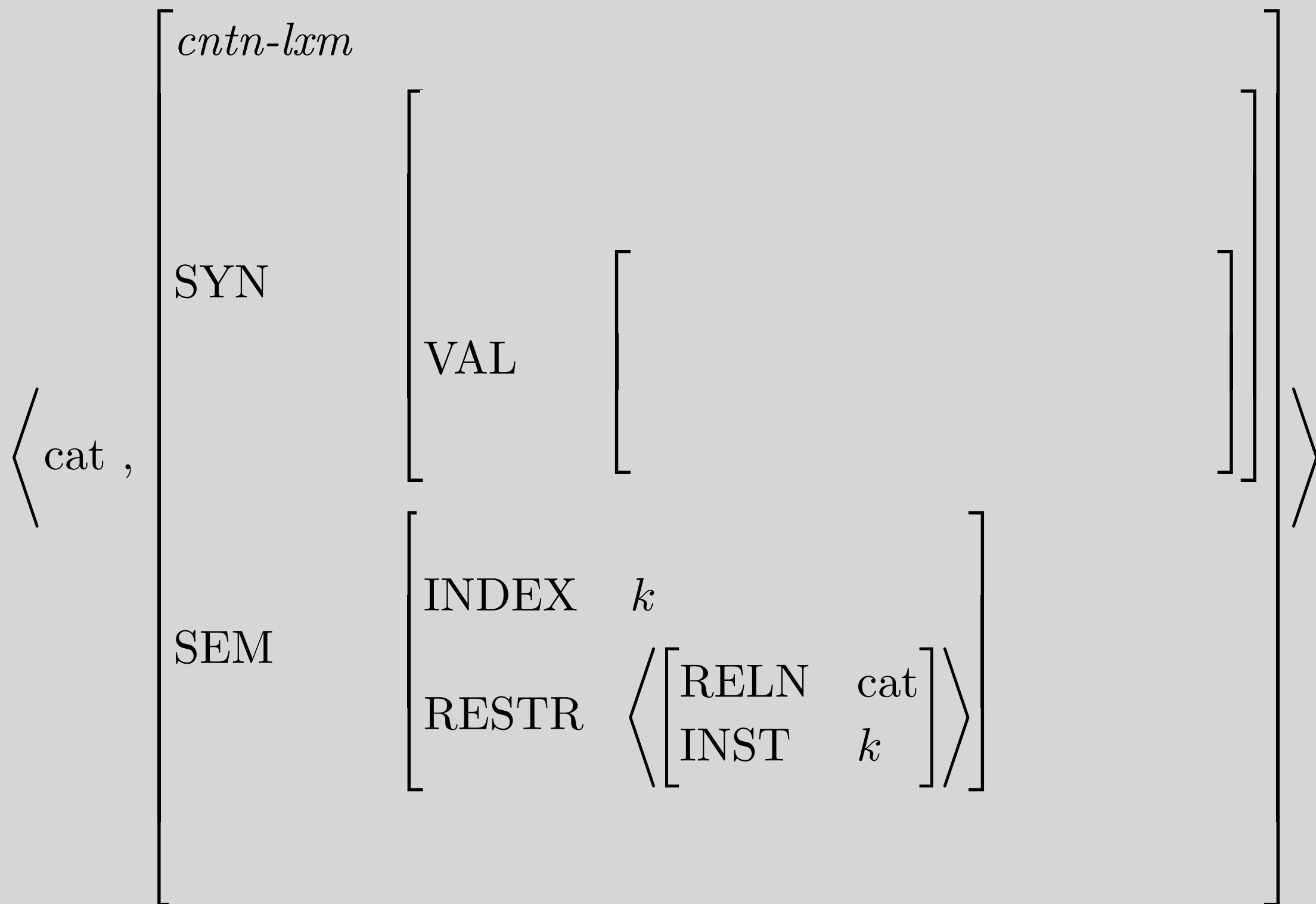
Practicalities - Applying Lexical Rules

- INPUT is a family of lexical sequences.
- OUTPUT is another family of lexical sequences.
 - ...usually a smaller family
 - ...usually a disjoint one
- The only differences between the families are those stipulated in the rule (or the rule's type).
- Similarities are handled by the constraints on *l-rule* and its subtypes.
- If we've written the LR's correctly, nothing is left unconstrained.

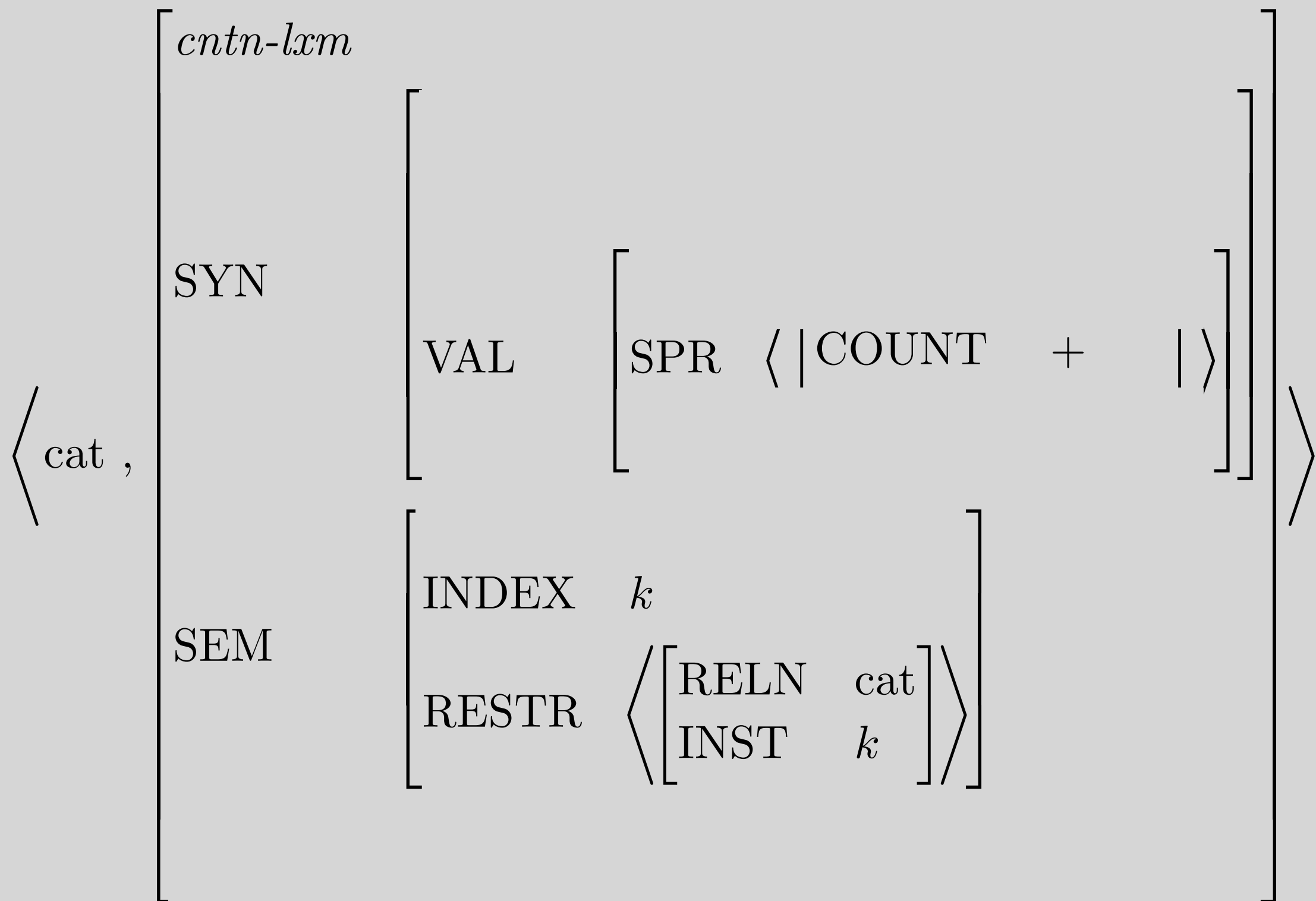
Example: Lexical Entry for *cat*

$$\left\langle \text{cat} , \left[\begin{array}{l} \text{cntn-lxm} \\ \text{SEM} \end{array} \left[\begin{array}{l} \text{INDEX} \quad k \\ \text{RESTR} \quad \left\langle \left[\begin{array}{l} \text{RELN} \quad \text{cat} \\ \text{INST} \quad k \end{array} \right] \right\rangle \end{array} \right] \right] \right\rangle$$

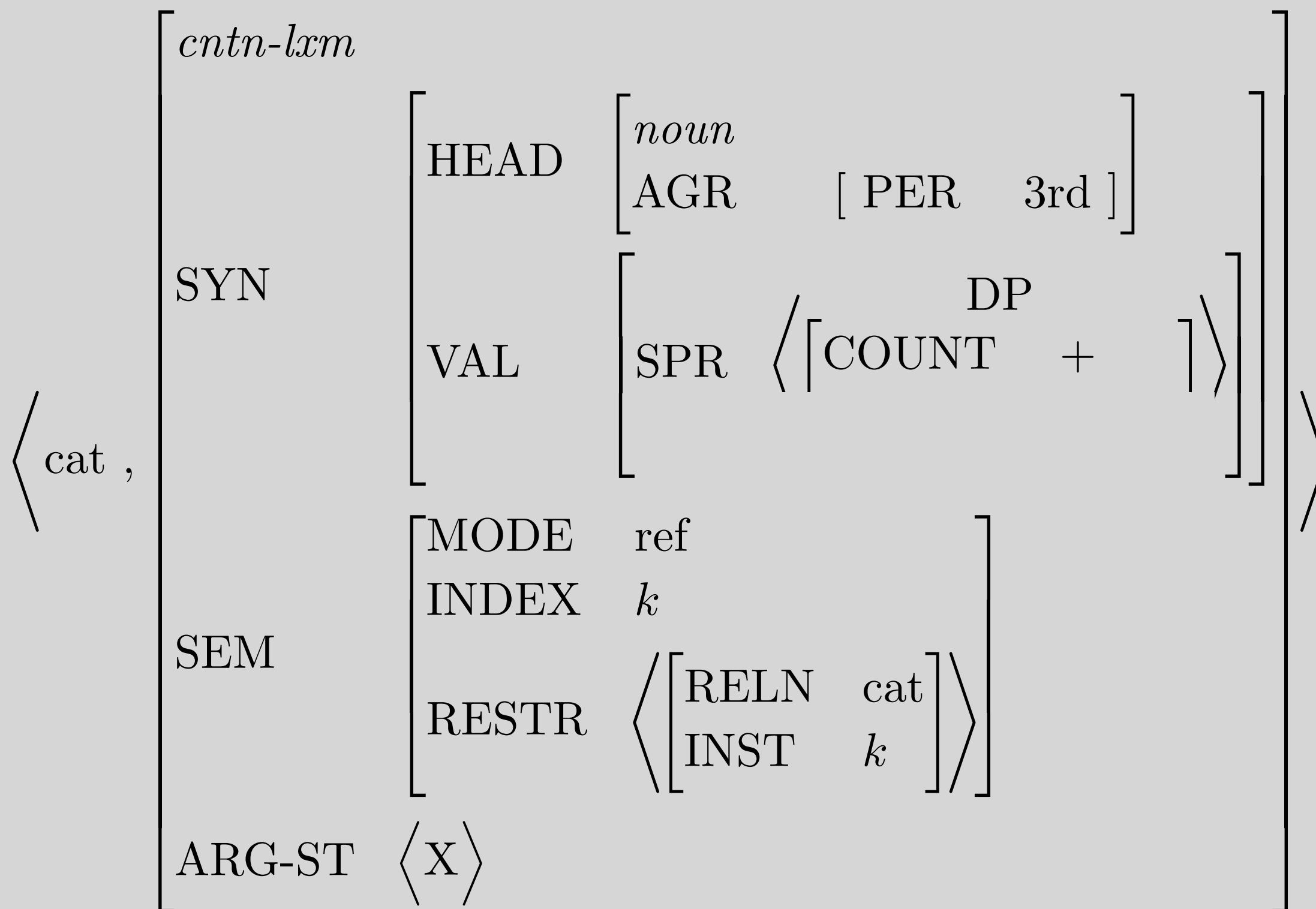
Example: *cat*, with inheritance



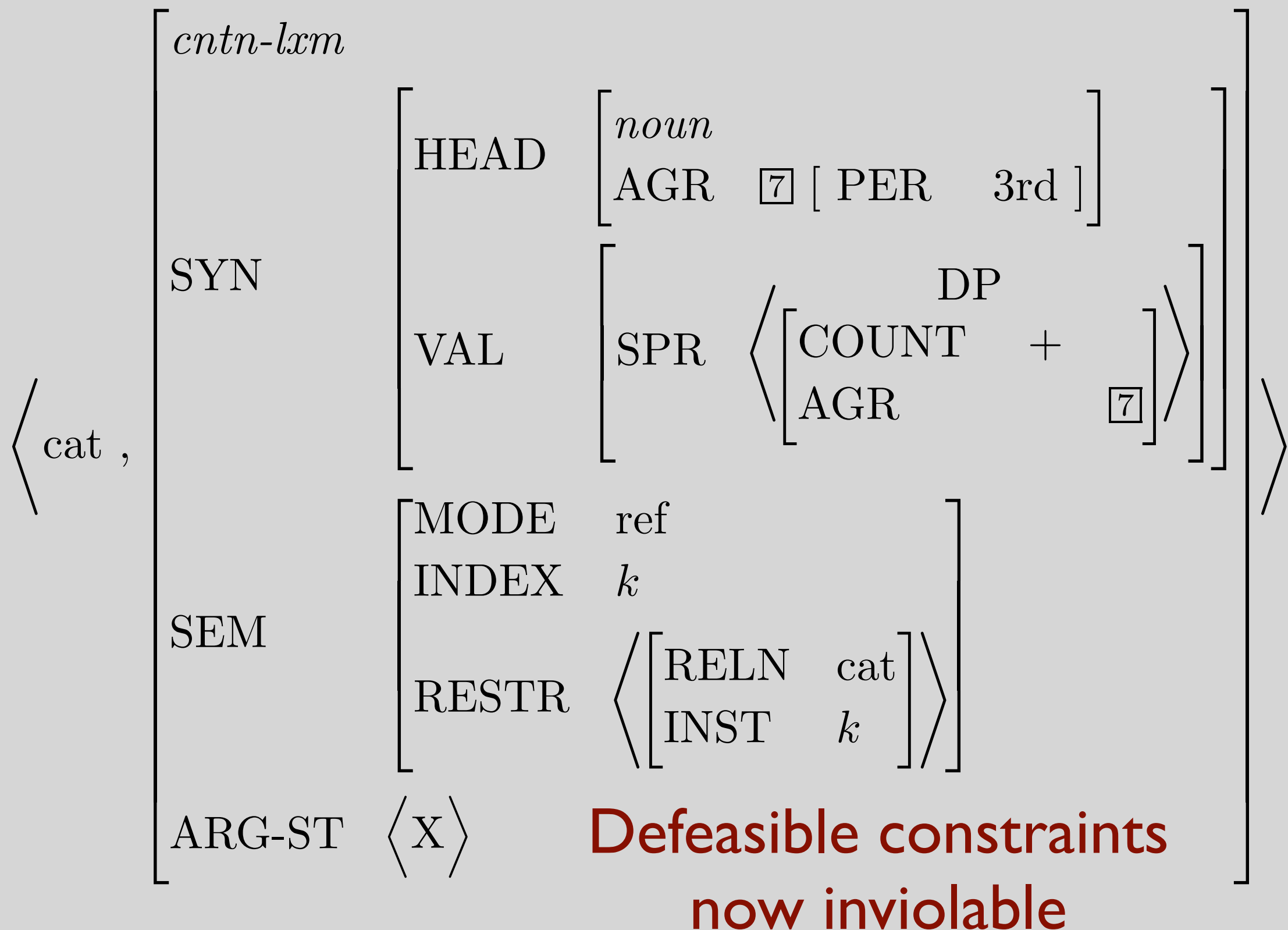
Example: *cat*, with inheritance



Example: *cat*, with inheritance



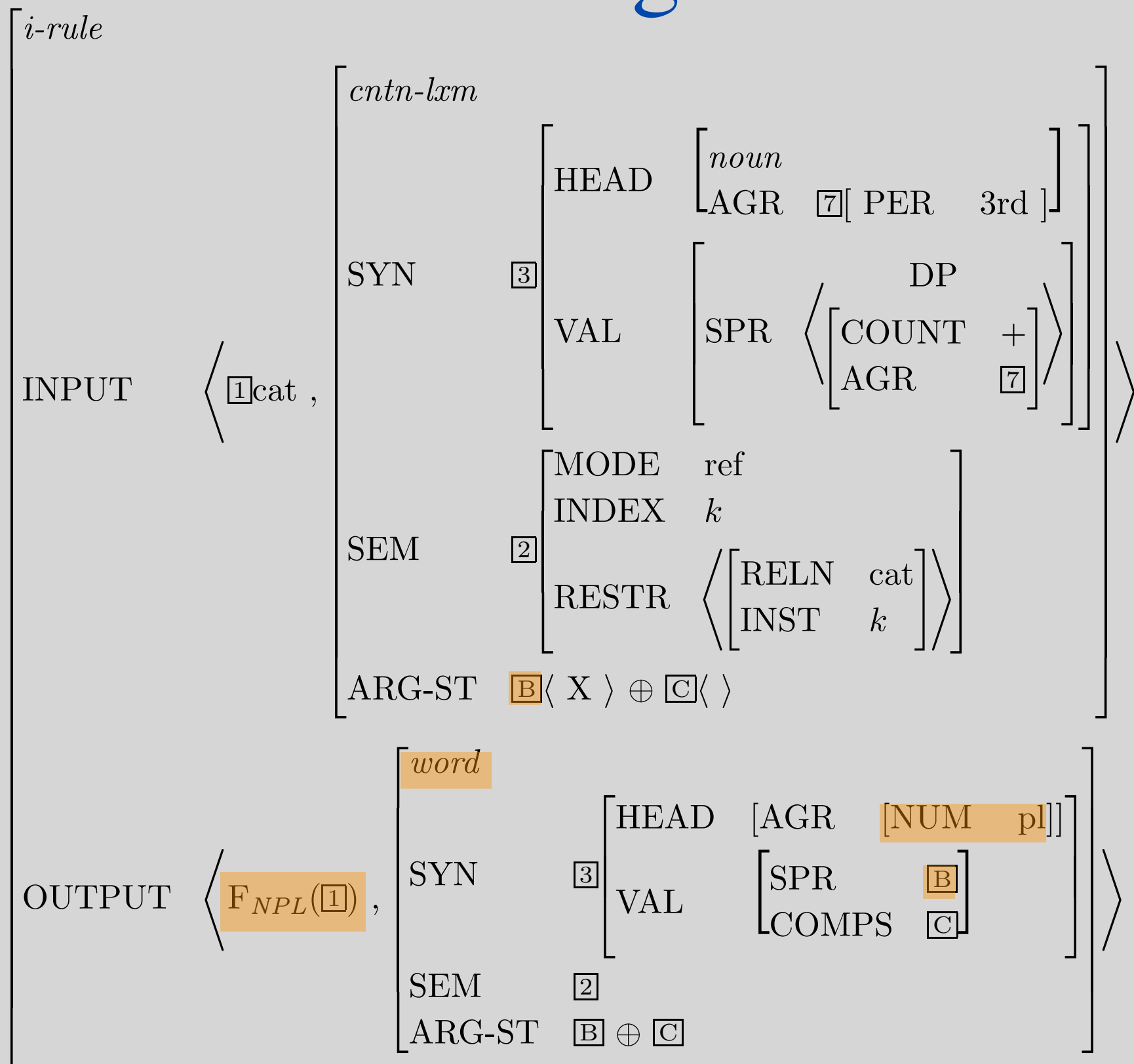
Example: *cat*, with inheritance



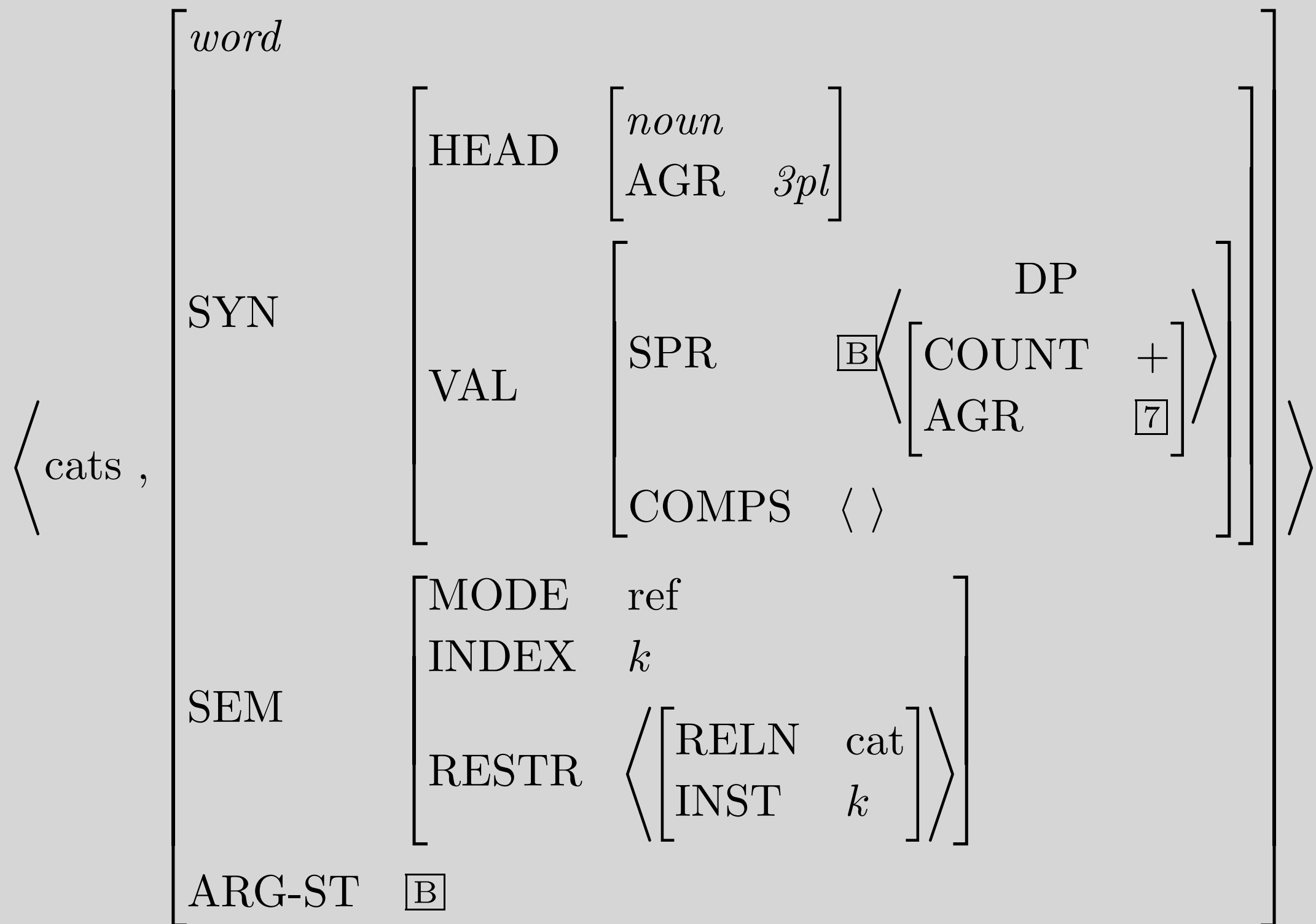
Plural Noun LR

$$\left[\begin{array}{l} i\text{-rule} \\ \text{INPUT} \quad \langle \boxed{1}, \text{cntn-lxm} \rangle \\ \text{OUTPUT} \quad \left\langle F_{NPL}(\boxed{1}), \left[\begin{array}{l} \text{word} \\ \text{SYN} \left[\text{HEAD} \left[\text{AGR} \left[\text{NUM} \text{pl} \right] \right] \right] \right] \right] \right\rangle \end{array} \right]$$

Licensing *cats*



cats: The (family of) Lexical Sequence_(s)



Practicalities -- Writing Lexical Rules

- Determine the type of the LR.
- Determine the class of possible inputs.
- Determine what should change.
 - If INPUT and OUTPUT values are identified (by default or otherwise) and only OUTPUT value is mentioned, then...
information is added.
(Lexical sequences incompatible with that value are not possible inputs)
 - If INPUT and OUTPUT values are identified by default, but different values are given on the INPUT and OUTPUT of the rule, then...
information is changed.
 - If INPUT and OUTPUT values are identified by an inviolable constraint, but different values are given on the INPUT and OUTPUT of the rule, then...
there is no well-formed output

Constant lexemes

- What kinds of words are constant lexemes in our grammar?
- Why do we need a rule for these words?
- What would be an alternative analysis?

Constant Lexeme LR

$$\left[\begin{array}{l} i\text{-rule} \\ \text{INPUT} \quad \langle \boxed{1}, \text{const-lxm} \rangle \\ \text{OUTPUT} \quad \left[\text{FIRST} \quad \boxed{1} \right] \end{array} \right]$$

- What keeps this from applying to, say, verb lexemes?
- Why is this an *i-rule*?

Constant Lexeme LR

$$\left[\begin{array}{l} i\text{-rule} \\ \text{INPUT} \quad \langle \boxed{1}, \text{const-lxm} \rangle \\ \text{OUTPUT} \quad \langle \boxed{1}, [] \rangle \end{array} \right]$$

- What keeps this from applying to, say, verb lexemes?
- Why is this an *i-rule*?



Is it clear what type of regularities are captured by lexical types and lexical rules? (take 4)



Not clear why we need either

0

Not clear what the difference is

0

Yes ...?

0

Yes

0

ARG-ST & ARP

- Given the ARP, what do we need to specify about the valence properties of words?
- Why isn't the ARP a constraint on the type *lexeme*?

The Feature FORM

- Different inflected forms of verbs show up in different syntactic environments. Examples?
- These different forms are syntactically distinguished by the feature FORM, as assigned by lexical rules.
- FORM is also useful in our analyses of coordination and PP selection.

How do we rule these out?

- *Kim eat pizza.
- *Kim seems to eats pizza.
- *Dana helped Leslie [pack and moved].
- *Kim relies for Sandy.
- *Dana walked and Kim.

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- The feature FORM
- Reading Questions

Reading Questions

- lexeme
- lexical entry
- lexical rule
- lexical rule instantiation
- lexical sequence
- word structure

RQs: Relationship of lexical rules to grammar

- I think I've heard you mention that the lexical hierarchy and rules are actually not a part of our grammar. (Is that right?) If so, how do they contribute to determining grammaticality? Is it just that they "generate" lexical entries? Is their sole purpose to save us from writing tons of redundant lexical entries, but as far as "our grammar" is concerned it makes no difference if we have an inefficient "hand written" lexicon, vs. a lexicon generated by lexical rules and lexemes?

RQs: Agent nominalization LR

- What's up with the OUTPUT ARG-ST?

(76) Agent Nominalization Lexical Rule

$$\left[\begin{array}{l} d\text{-rule} \\ \text{INPUT} \left\langle \boxed{2}, \left[\begin{array}{l} stv\text{-}lxm \\ \text{SEM} \quad \left[\text{INDEX} \quad s \right] \\ \text{ARG-ST} \quad \langle X_i, NP_j \rangle \end{array} \right] \right\rangle \\ \text{OUTPUT} \left\langle F_{-er}(\boxed{2}), \left[\begin{array}{l} cntn\text{-}lxm \\ \text{SEM} \quad \left[\text{INDEX} \quad i \right] \\ \text{ARG-ST} \quad \left\langle Y \left(, \left[\text{FORM} \quad \text{of} \right] \right)^{PP_j} \right\rangle \right] \right\rangle \end{array} \right]$$

RQs: Janky coordination rule

- With our new coordination rule, I understand that it makes verb coordination work, but it seems to introduce FORM features for other pos that exist for the sole purpose of satisfying our new coordination rule. Are there other frameworks which accurately express coordination without introducing FORM for nouns, adjectives, etc.?

RQs: Cross-linguistic reasoning

- Page 264: Why do we want to minimize the differences between the grammars of English and French? Would it make more sense in other languages to have participle rules be derivational or inflectional? If other languages are inflectional, why do we care about the similarities in English and French specifically?