LING 5702 Lecture Notes 23, Step Through
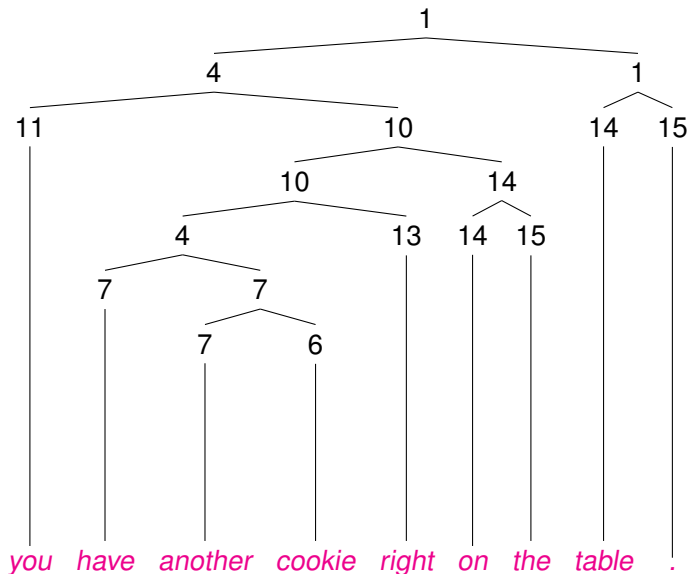
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April 18, 2025
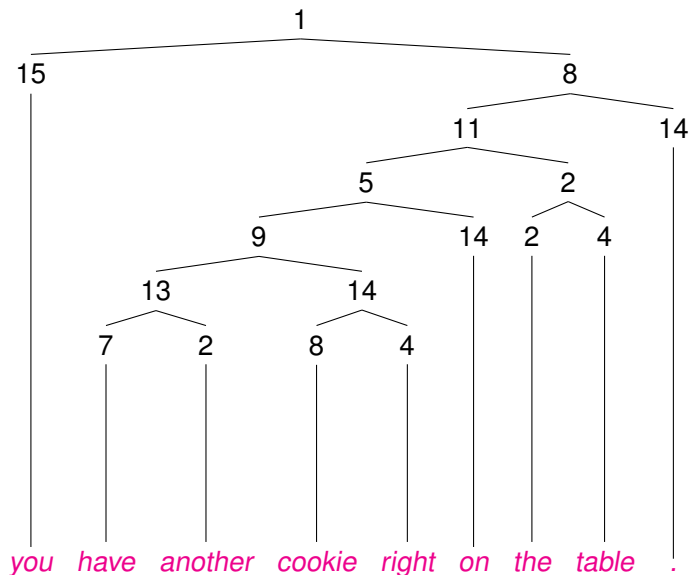
Structures hypothesized during training

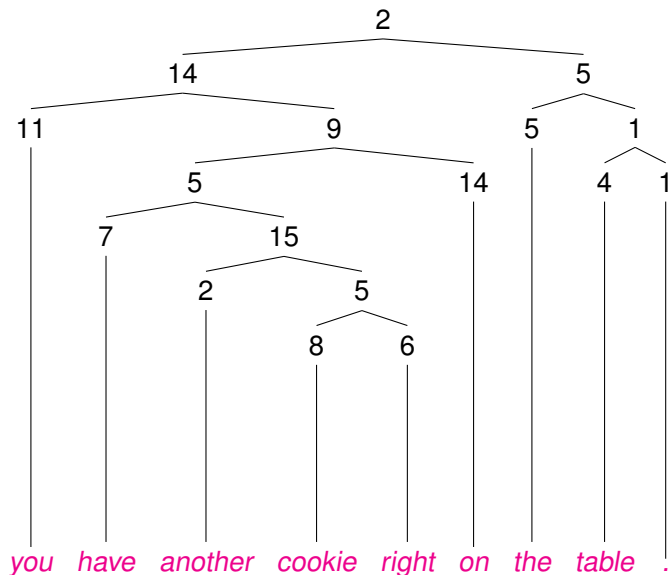Iteration 5 (first iteration after re-initialization trials) — not much familiar:

Structures hypothesized during training

Iteration 6:


```
                              1
          ┌───────────────────┴────────────────┐
         15                                     8
                                          ┌──────┴──────┐
                                         11            14
                                   ┌──────┴──────┐
                                   5             2
                             ┌─────┴─────┐    ┌──┴──┐
                             9          14    2     4
                       ┌─────┴─────┐
                      13          14
                    ┌──┴──┐     ┌──┴──┐
                    7     2     8     4

  you   have   another   cookie   right   on   the   table   .
```
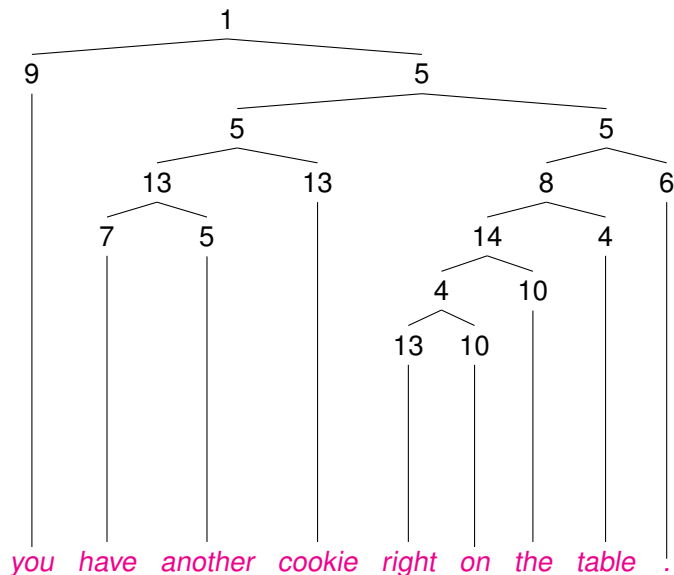
Structures hypothesized during training
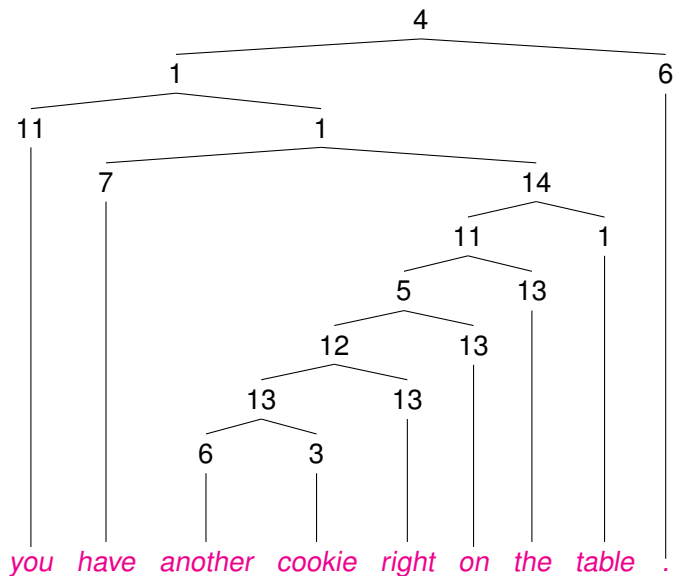
Iteration 7:

Structures hypothesized during training
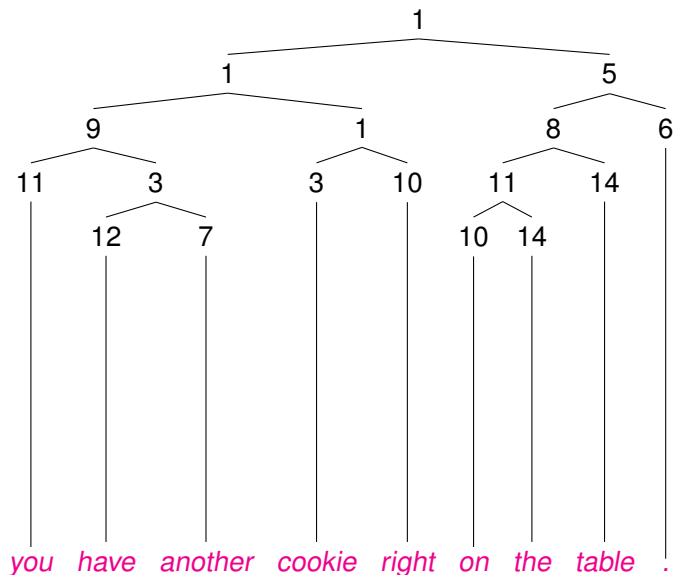
Iteration 8:

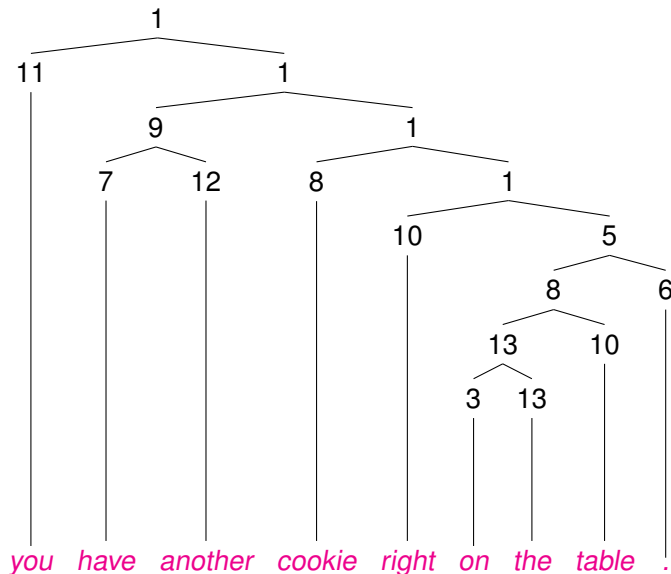# Structures hypothesized during training

Iteration 9:

Structures hypothesized during training

Iteration 10 — the model discovers *on* and *the* co-occur a lot, clumps them:

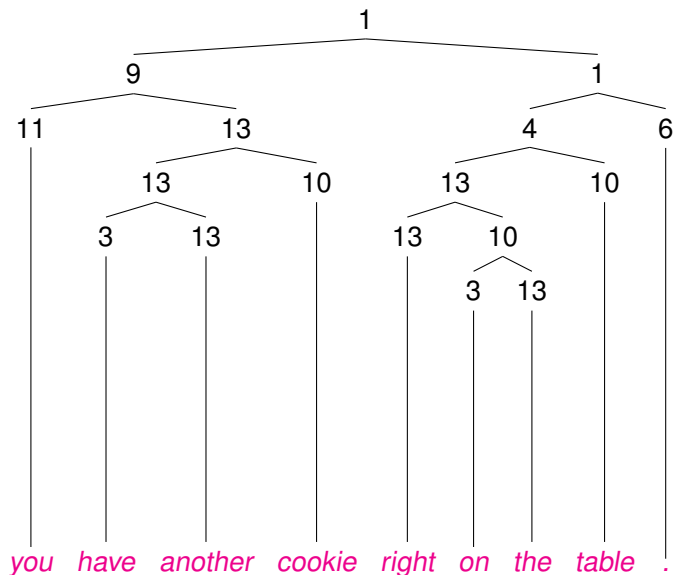# Structures hypothesized during training
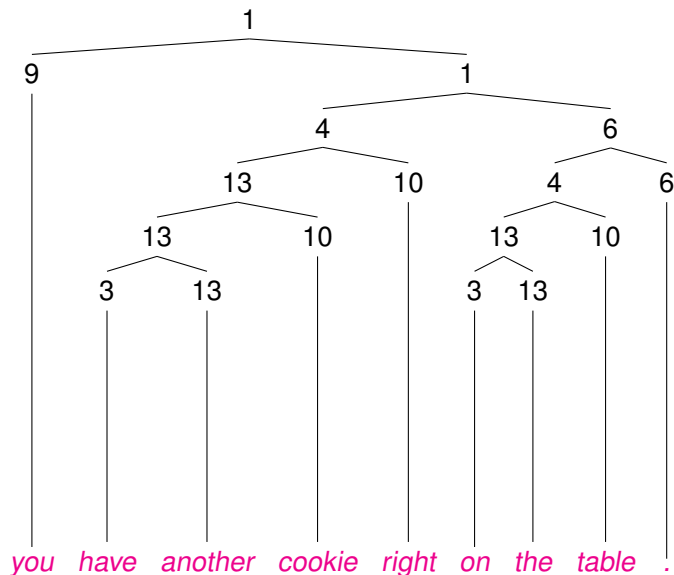
Iteration 25 (now showing every 25th iteration):

Structures hypothesized during training
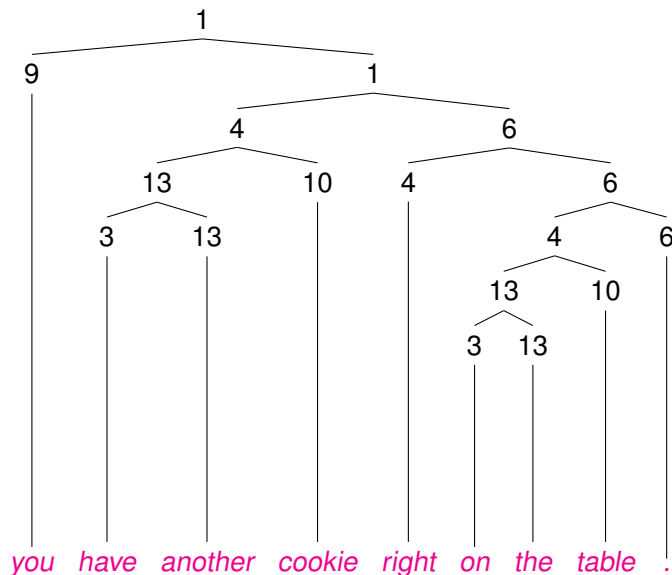
Iteration 50:

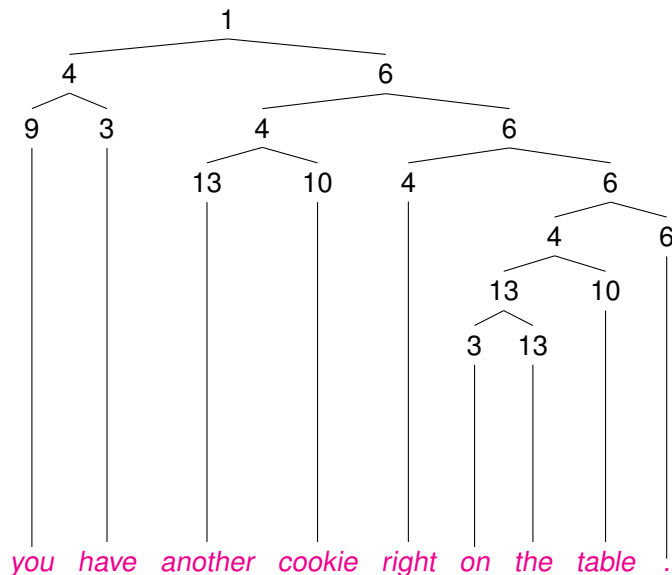# Structures hypothesized during training

Iteration 75:

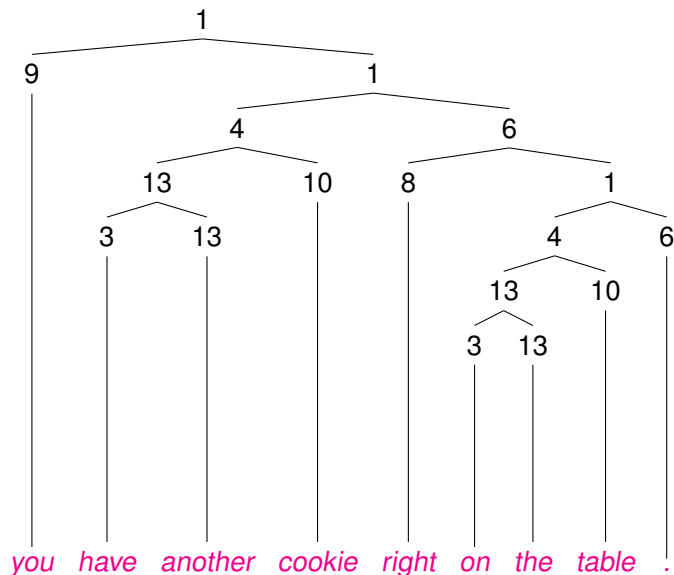# Structures hypothesized during training

Iteration 100:

Structures hypothesized during training
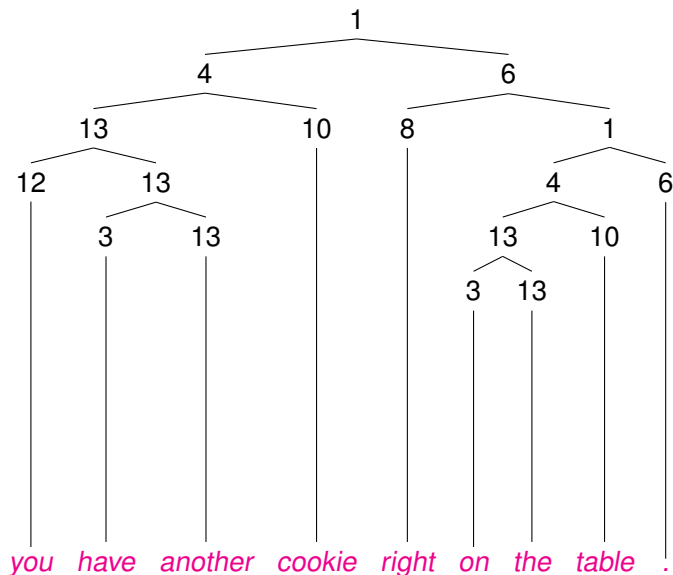
Iteration 125:

Structures hypothesized during training
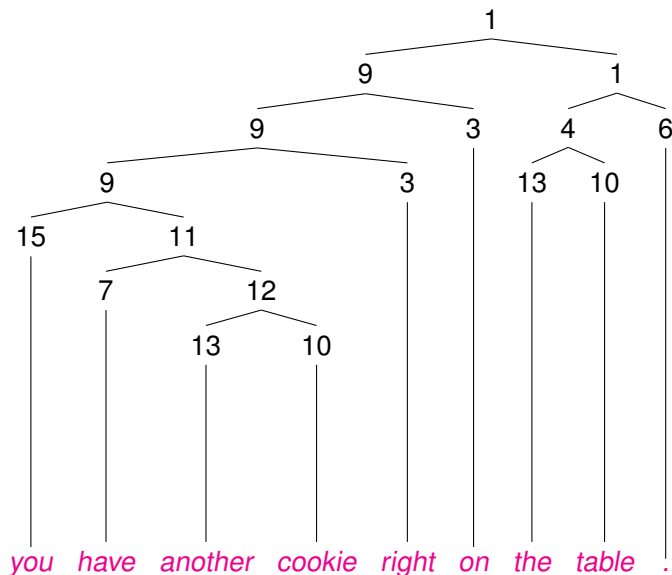
Iteration 150:

Structures hypothesized during training

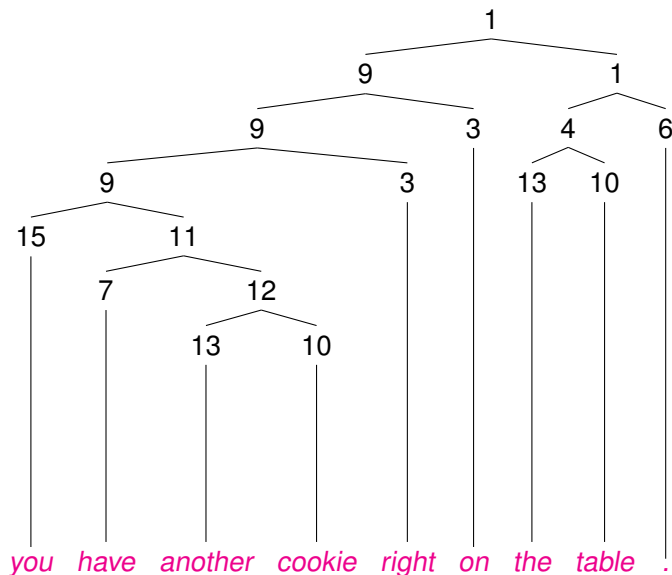Iteration 200 (now showing every 50th iteration):

Structures hypothesized during training

Iteration 250 – determiners (*the/another*), nouns (*table/cookie*) clumped:
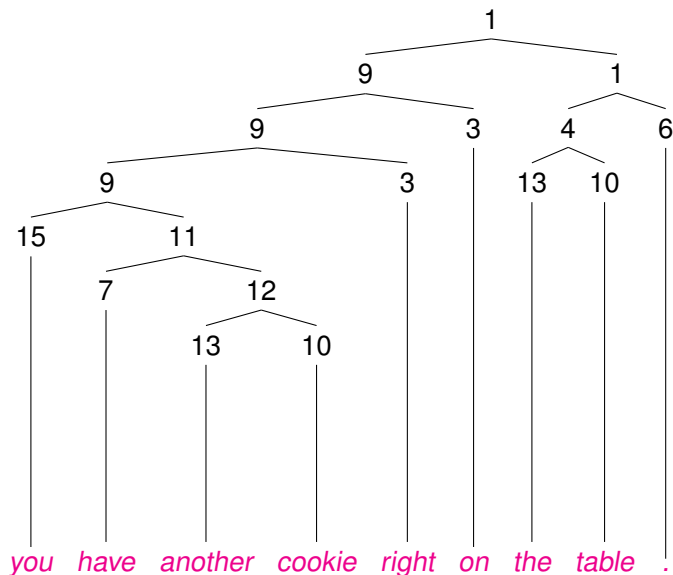
Structures hypothesized during training

Iteration 250 – learner can re-use Det+Noun rule more than Prep+Det:
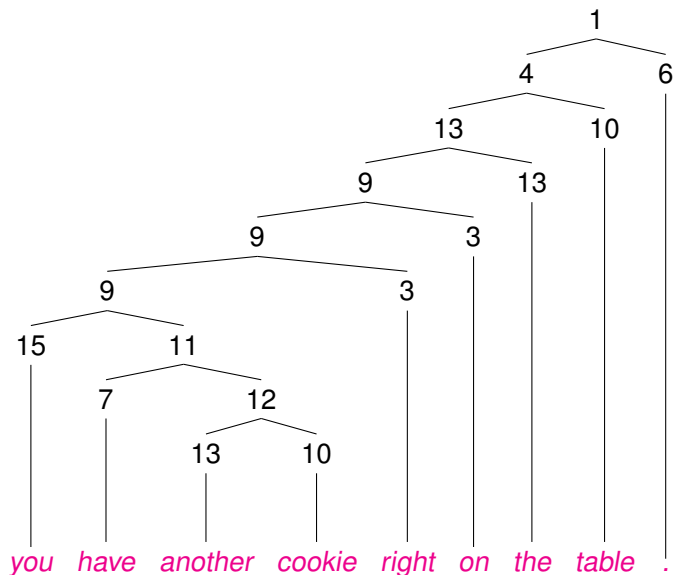
Structures hypothesized during training

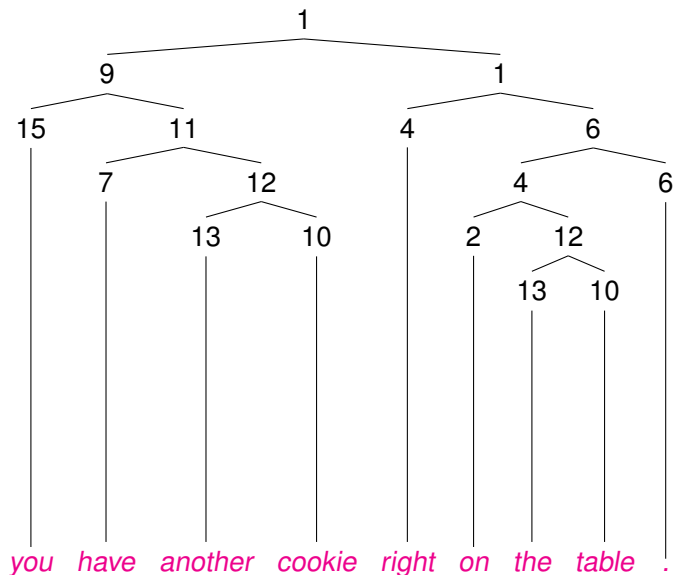Iteration 250 – also, verb *have* clumped with noun phrase *another cookie*:

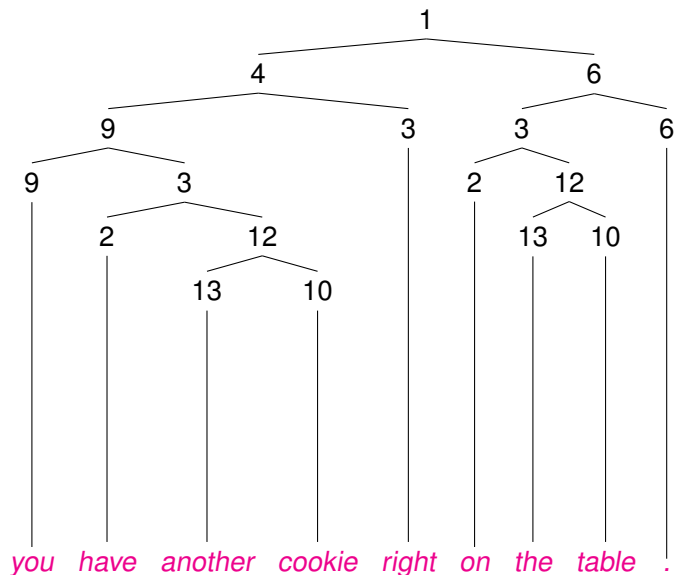# Structures hypothesized during training

Iteration 300:

Structures hypothesized during training

Iteration 350 – preposition *on* and noun phrase *the table* now clumped:
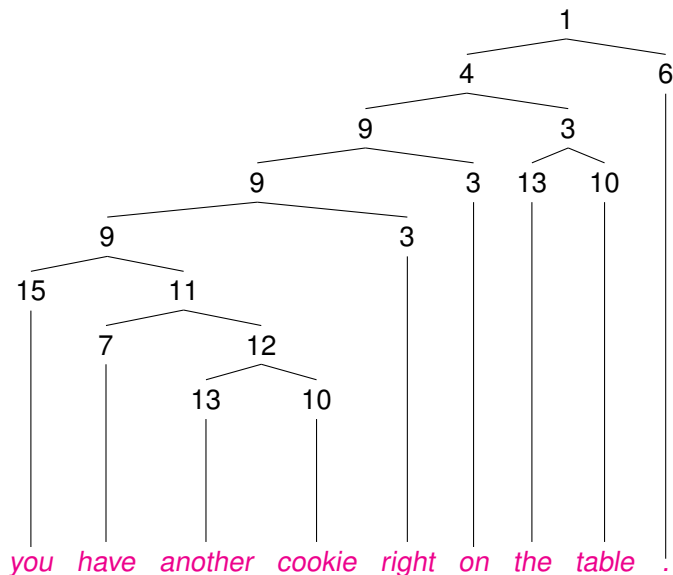
Structures hypothesized during training
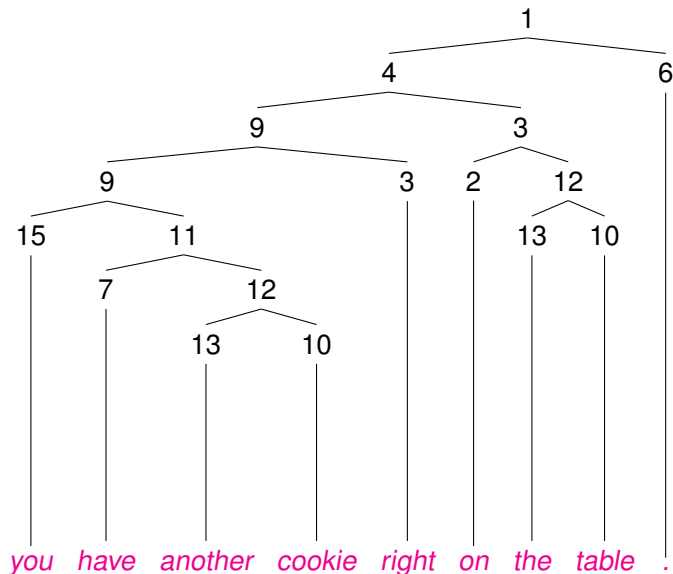
Iteration 400:

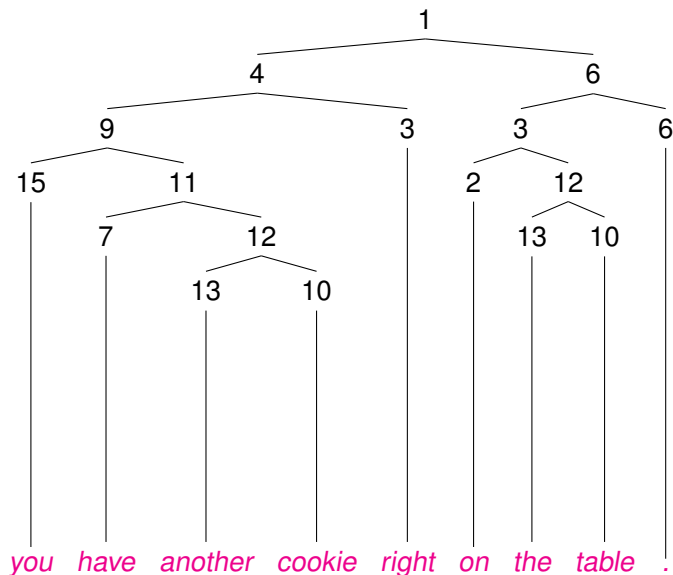# Structures hypothesized during training

Iteration 450:

Structures hypothesized during training

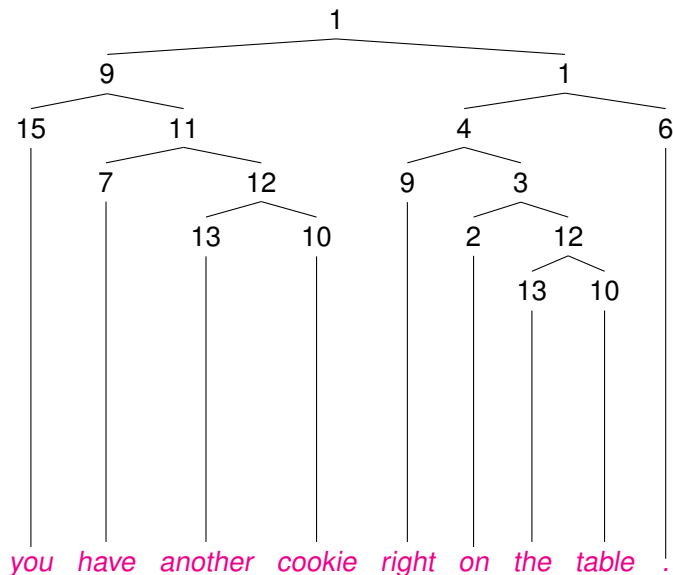Iteration 500 — category labels for Prep/Det/Noun/NP/PP mostly stable:

Structures hypothesized during training

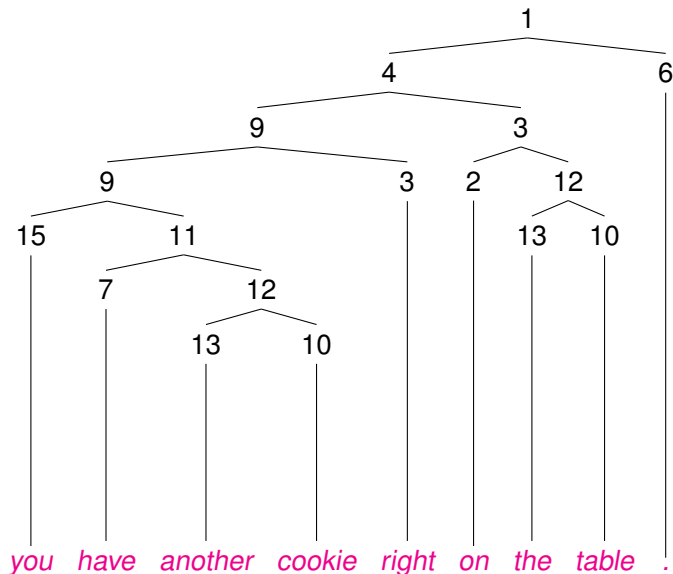Iteration 550:

Structures hypothesized during training

Iteration 600 — adverb *right* clumped with prepositional phrase *on the table*:
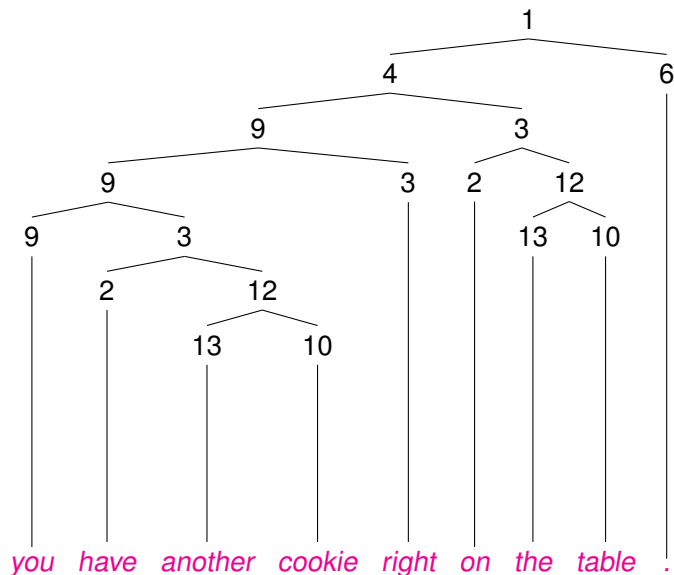
Structures hypothesized during training

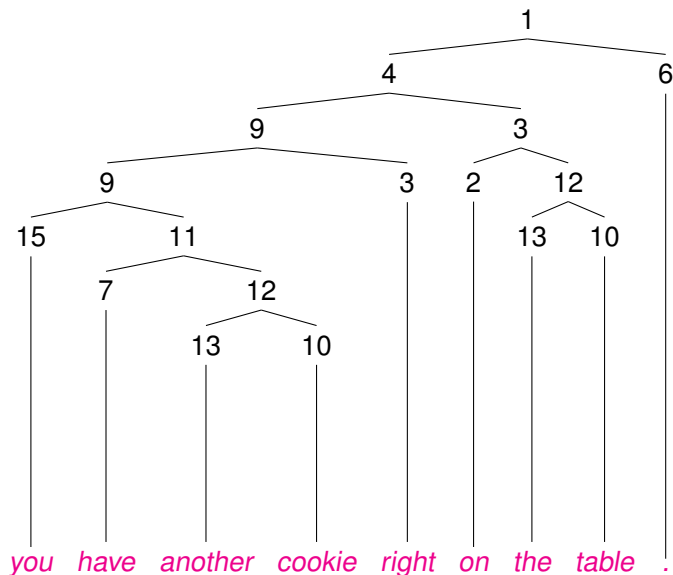Iteration 650 — adverb *right* now clumped with sentence *you ... cookie*:

Structures hypothesized during training

Iteration 700 — re-type noun phrase *you* and verb phrase *have . . . cookie*:

Note: no best structure below.

Structures hypothesized during training

Iteration 750 – change back noun phrase and verb phrase:

Structures hypothesized during training

Final constituent types consistent with linguistic theory: