Ling 566
Nov 30, 2023

Catch-up/review

Overview

- Leftover RQs

- Midterm Q3

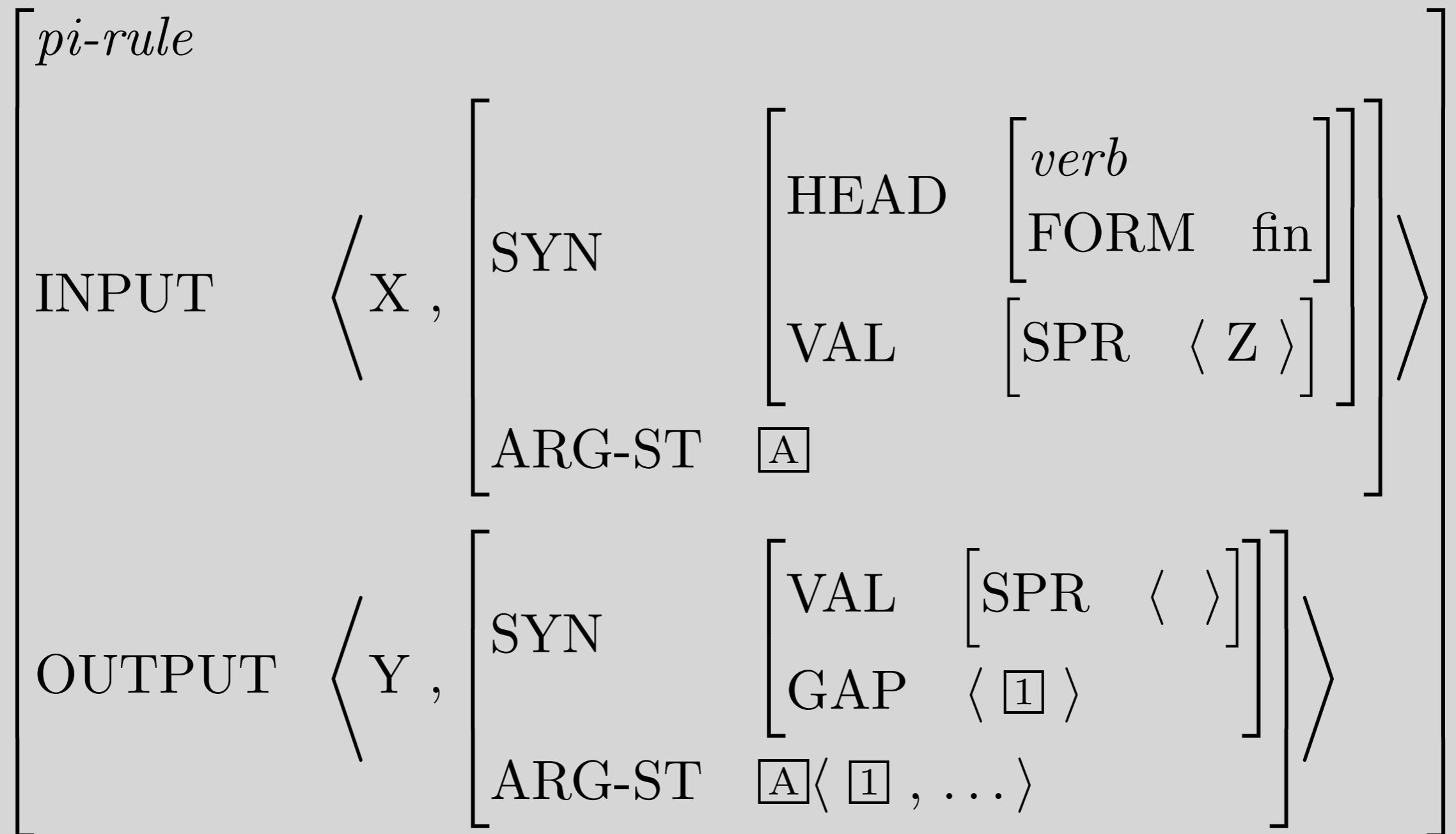- Big picture

- Untangle this…

- Course evals

RQs: Relative clauses

- How do we use these new tools to form NP's modified by relative clauses? What's an example?

RQs: Subject extraction

- The Subject Extraction Lexical Rule appears to be an effective approach, but I'm still curious how the ARP would be revised if we were to use the ARP to address subject gaps. Would it be really complicated? Also, is there a theoretical motivation for opting for a lexical rule instead of revising the ARP?

The Subject Extraction Lexical Rule

$$
\begin{bmatrix}
pi\text{-}rule \\[4pt]
\text{INPUT} \quad \left\langle \text{X} , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} verb \\ \text{FORM} \quad \text{fin} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SPR} \quad \langle \text{Z} \rangle \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \boxed{A} \end{bmatrix} \right\rangle \\[10pt]
\text{OUTPUT} \quad \left\langle \text{Y} , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SPR} \quad \langle \ \rangle \end{bmatrix} \\ \text{GAP} & \langle \boxed{1} \rangle \end{bmatrix} \\ \text{ARG-ST} & \boxed{A} \langle \boxed{1} , \dots \rangle \end{bmatrix} \right\rangle
\end{bmatrix}
$$

- NB: This says nothing about the phonology, because the default for *pi-rule*s is to leave the phonology unchanged.

5

RQs: Word order

- How do we ensure the filler is in the right place? Not licensing sentences like "Did what you hand to the baby?"

RQs: Punctuation & parsing

- For some long distance dependencies, commas seem to play an important role in identification. For example: "The new song, no one liked" is an S where "The new song no one liked" is an NP. Could this be an argument for including punctuation in the syntax when analyzing gaps? Is it used as an additional check when software parses ambiguous sentences?
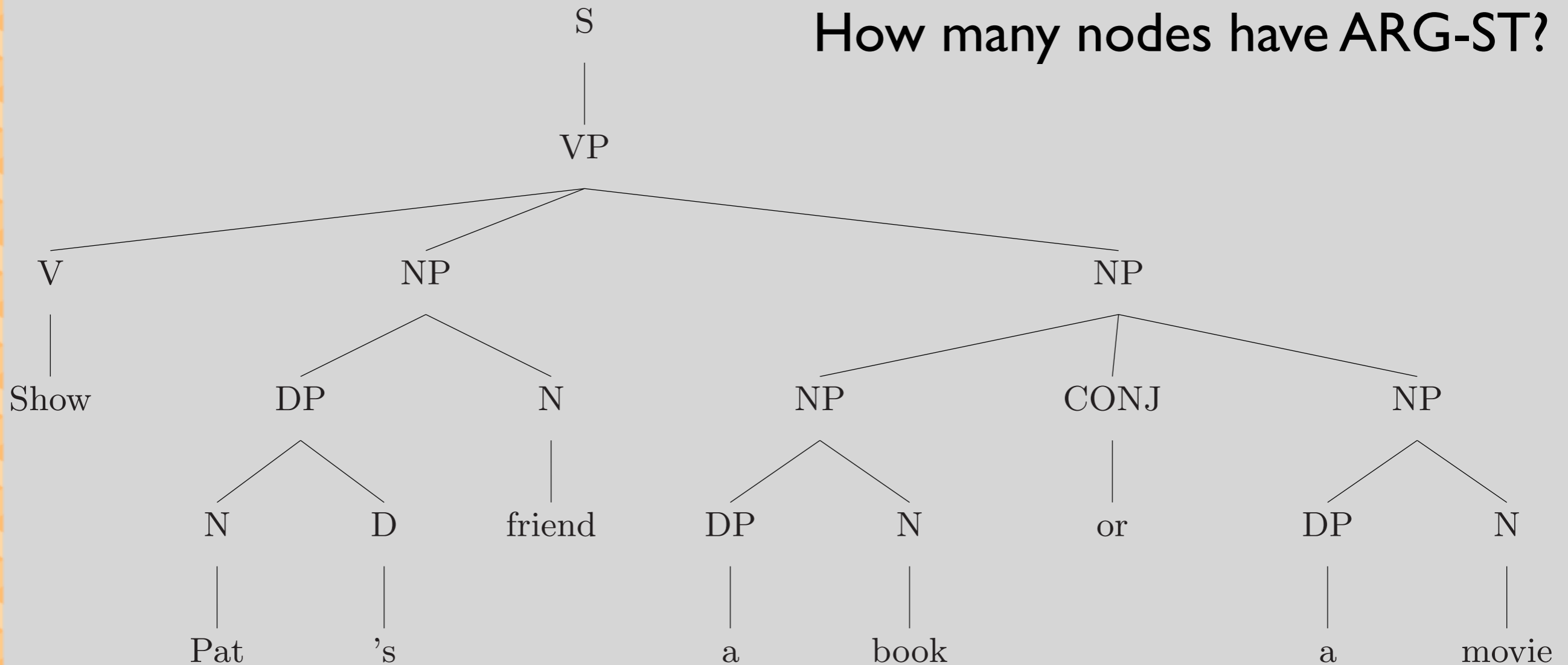
RQs: Dependency grammar

- How much overlap is there between how the grammar handles long distance dependencies and Universal Dependencies' framework?
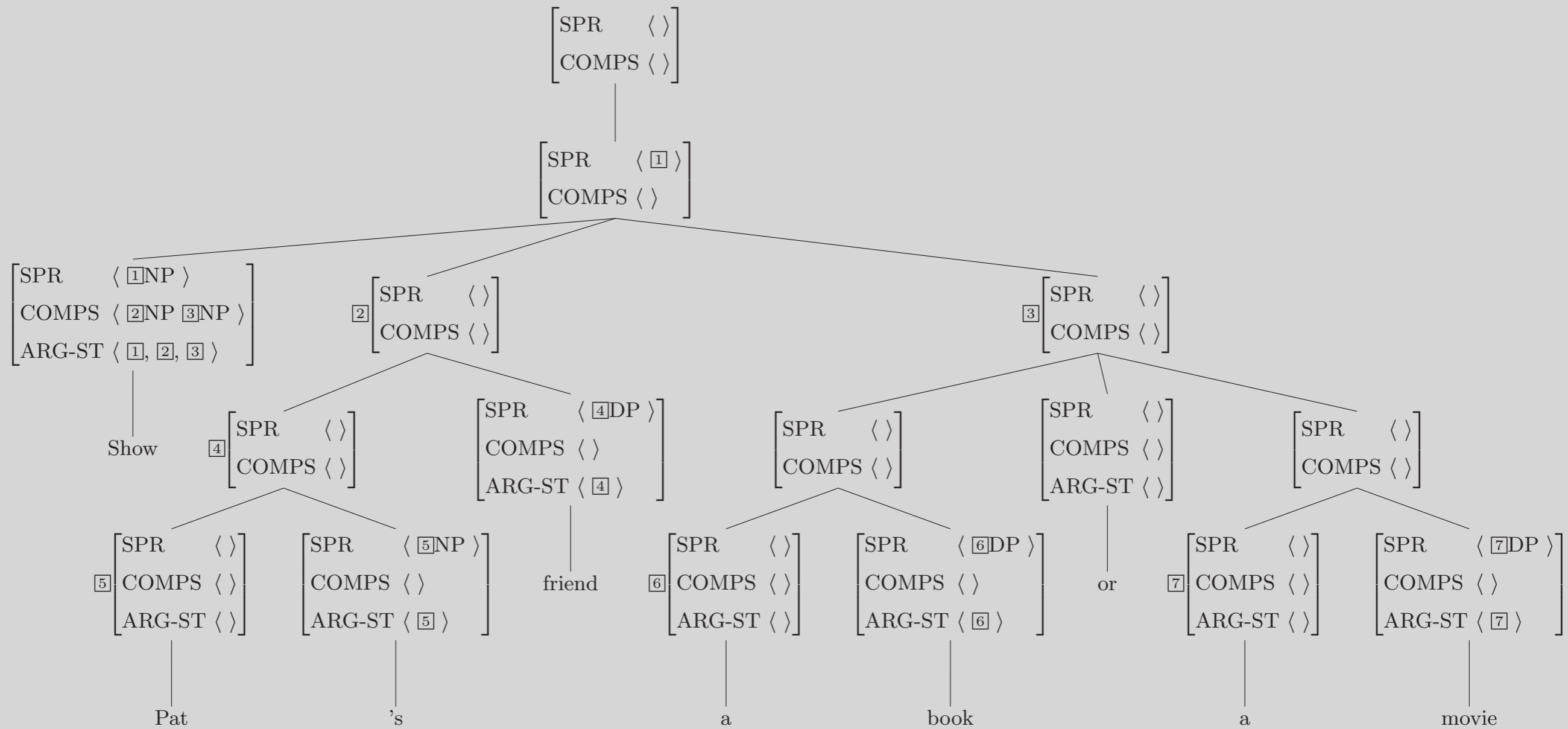
Midterm Q3 tree

Which rule licenses each node?
How many nodes have ARG-ST?

```
                              S
                              |
                             VP
            ┌─────────────────┼──────────────────────────────┐
            V                 NP                              NP
            |          ┌───────┴───────┐            ┌──────────┼──────────┐
          Show         DP              N            NP        CONJ        NP
                   ┌────┴────┐         |         ┌───┴───┐     |      ┌────┴────┐
                   N         D       friend      DP      N     or     DP        N
                   |         |                   |       |            |         |
                  Pat        's                  a      book          a       movie
```

NO EXTRA FEATURES

$$\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\boxed{1}\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\boxed{1}\text{NP}\,\rangle \\ \text{COMPS} & \langle\,\boxed{2}\text{NP}\ \boxed{3}\text{NP}\,\rangle \\ \text{ARG-ST} & \langle\,\boxed{1},\,\boxed{2},\,\boxed{3}\,\rangle \end{bmatrix}$$

Show

$$\boxed{2}\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\boxed{3}\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\boxed{4}\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\boxed{4}\text{DP}\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\boxed{4}\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix}$$

$$\boxed{5}\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\boxed{5}\text{NP}\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\boxed{5}\,\rangle \end{bmatrix}$$

friend

$$\boxed{6}\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\boxed{6}\text{DP}\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\boxed{6}\,\rangle \end{bmatrix}$$

or

$$\boxed{7}\begin{bmatrix} \text{SPR} & \langle\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\rangle \end{bmatrix}$$

$$\begin{bmatrix} \text{SPR} & \langle\,\boxed{7}\text{DP}\,\rangle \\ \text{COMPS} & \langle\,\rangle \\ \text{ARG-ST} & \langle\,\boxed{7}\,\rangle \end{bmatrix}$$

Pat   's   a   book   a   movie

9 step chain:
show.VIEWER to friend.INST

1. Lex entry for *show*

2. ARP (+SHAC)

3. HCR

4. SIP

5. Lex entry for *friend*

But not:
SCP

Parts of our model

- Type hierarchy (lexical types, other types)

- Phrase structure rules

- Lexical rules

- Lexical entries

- Grammatical principles

- Initial symbol

Pause for reflection

- What have you learned about the nature of human language?

- What have you learned about how linguists think about language?

- How does this model/type of model differ from CFG (with atomic categories)?

- In what applications might (atomic category) CFG be sufficient?

- What applications might benefit from something linguistically more motivated?

In three words or less, what did you find most surprising in this class?

Total Results: 0

Syntax (so far) helps me:

understand other classes

understand what I'm getting the computer to do

understand how to evaluate NLP systems

not very much/not at all

by being interesting

Total Results: 0

In the future, I think syntax will help me:

understand other classes

understand what I'm getting the computer to do

understand how to evaluate NLP systems

not very much/not at all

by being interesting

Total Results: 0

Complicated example #1

- What phenomena are illustrated by this sentence?

- What rules or interesting lexical types are involved in our analysis of it?

- What tree structure does our grammar assign?

It was explained to me that Kim left.
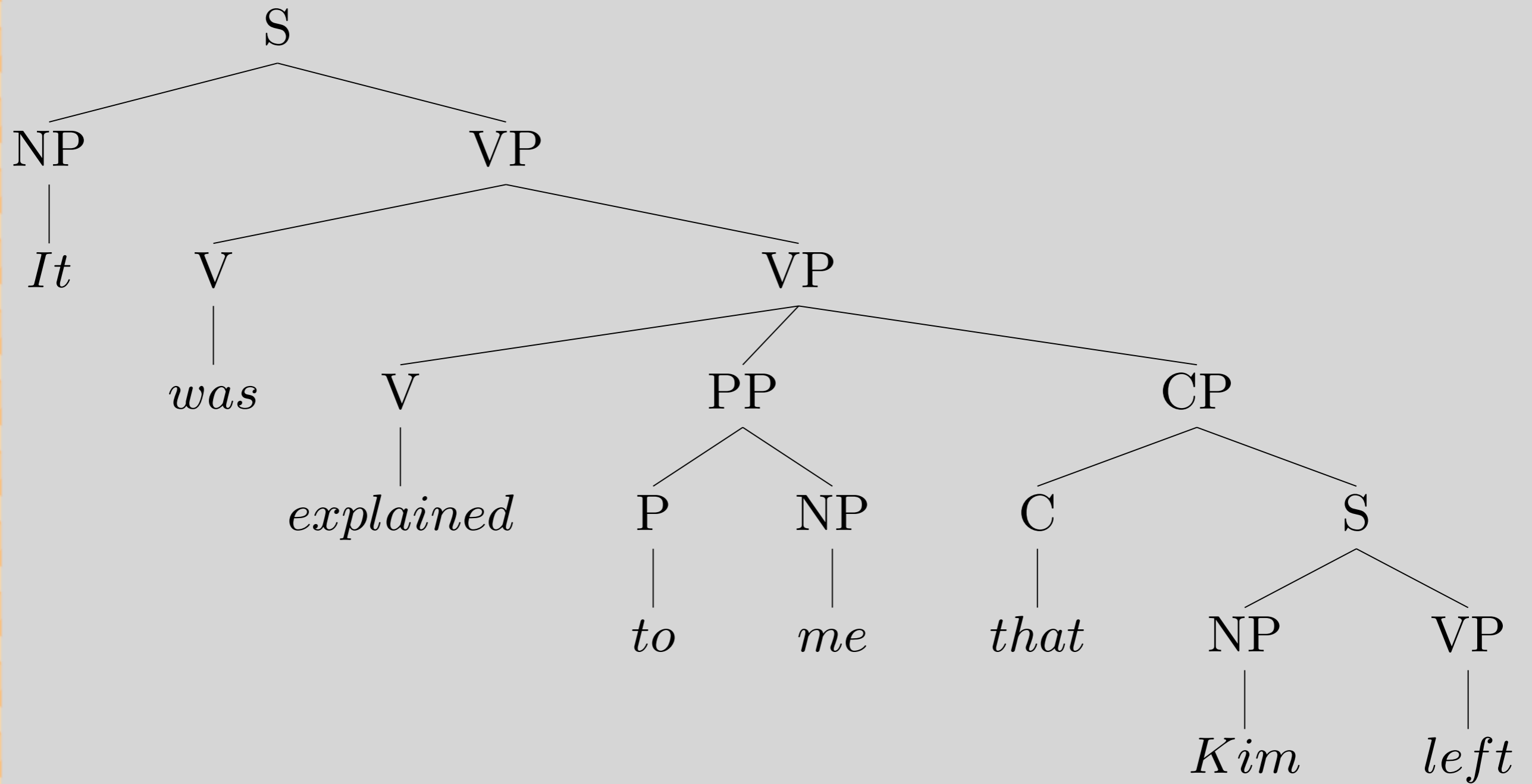
Complicated example #2

I expect it to continue to surprise Kim that Sandy laughed.
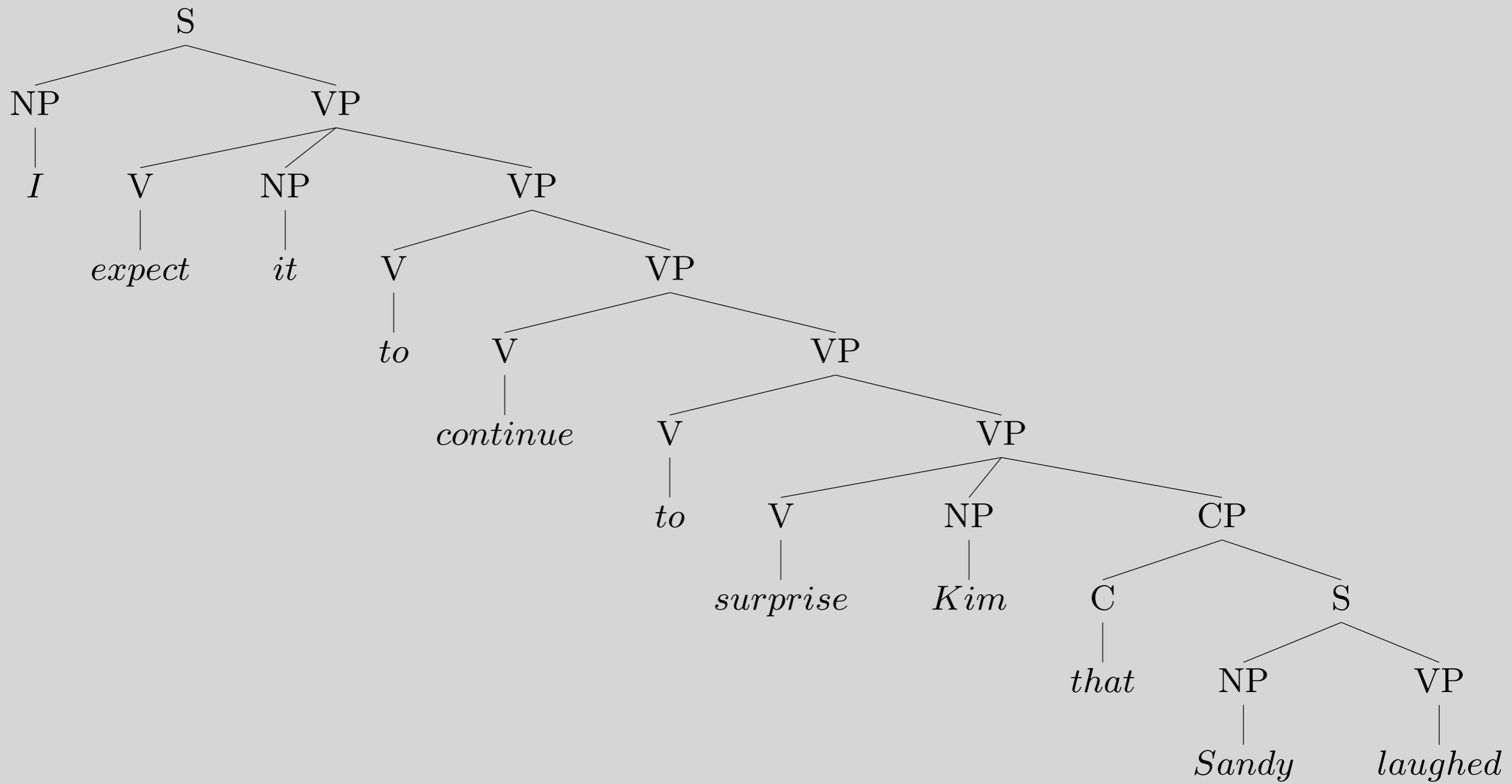
Why not these?

*I expect it to continue to surprise Kim Sandy laughed.

*I expect there to continue to surprise Kim that Sandy laughed.

*I expect that Sandy laughed to Kim be surprised.

Complicated example #4

This book, Sandy said that Kim wrote and Pat read.
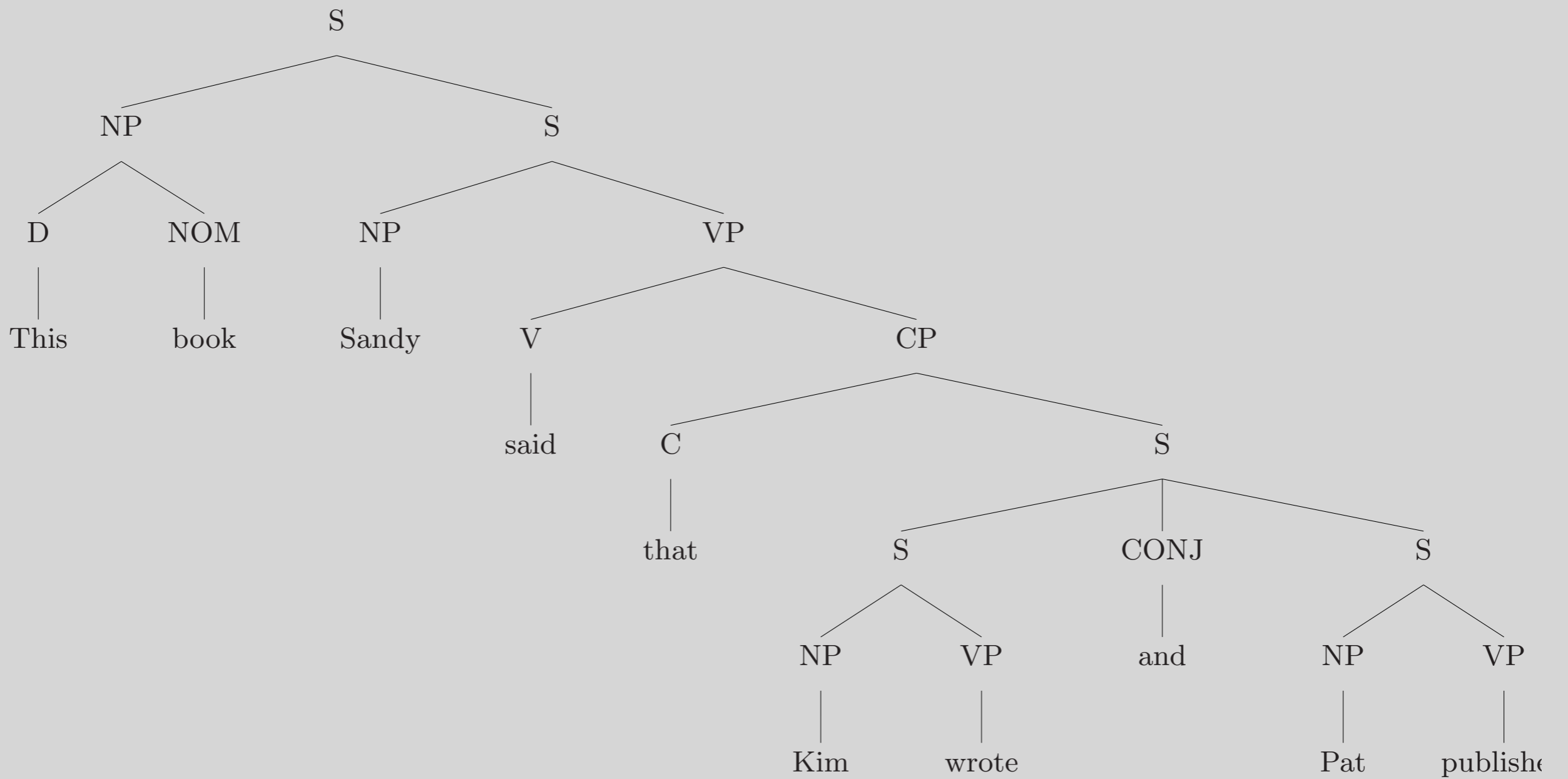
Complicated example #5

That Sandy could laugh (so hard), Kim did not realize.

*That Sandy could laugh (so hard), Kim realized not.

*Sandy could laugh (so hard), Kim did not realize.

*That Sandy could laugh (so hard), Kim did not realize it.
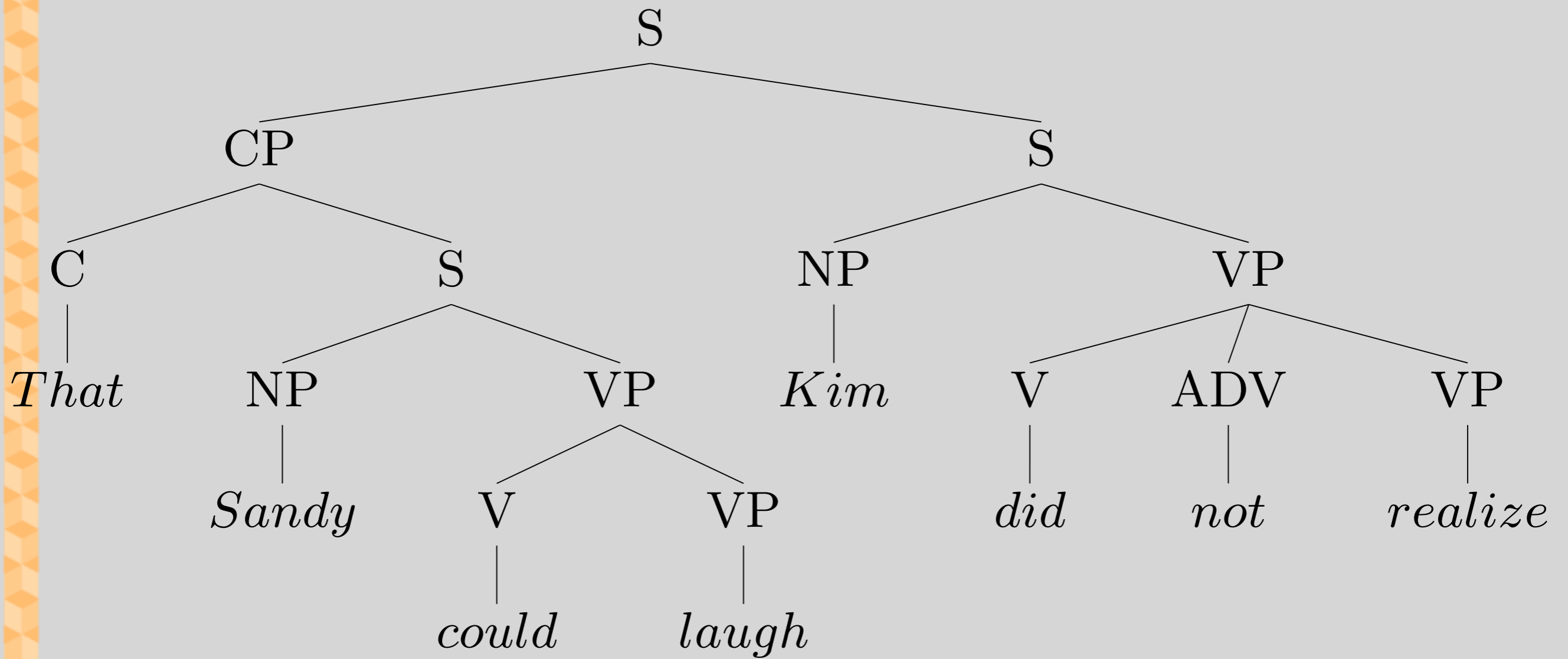
Complicated example #6

Kim continues to be likely to be easy to talk to.

**Kim continue to be likely to be easy to talk to.*

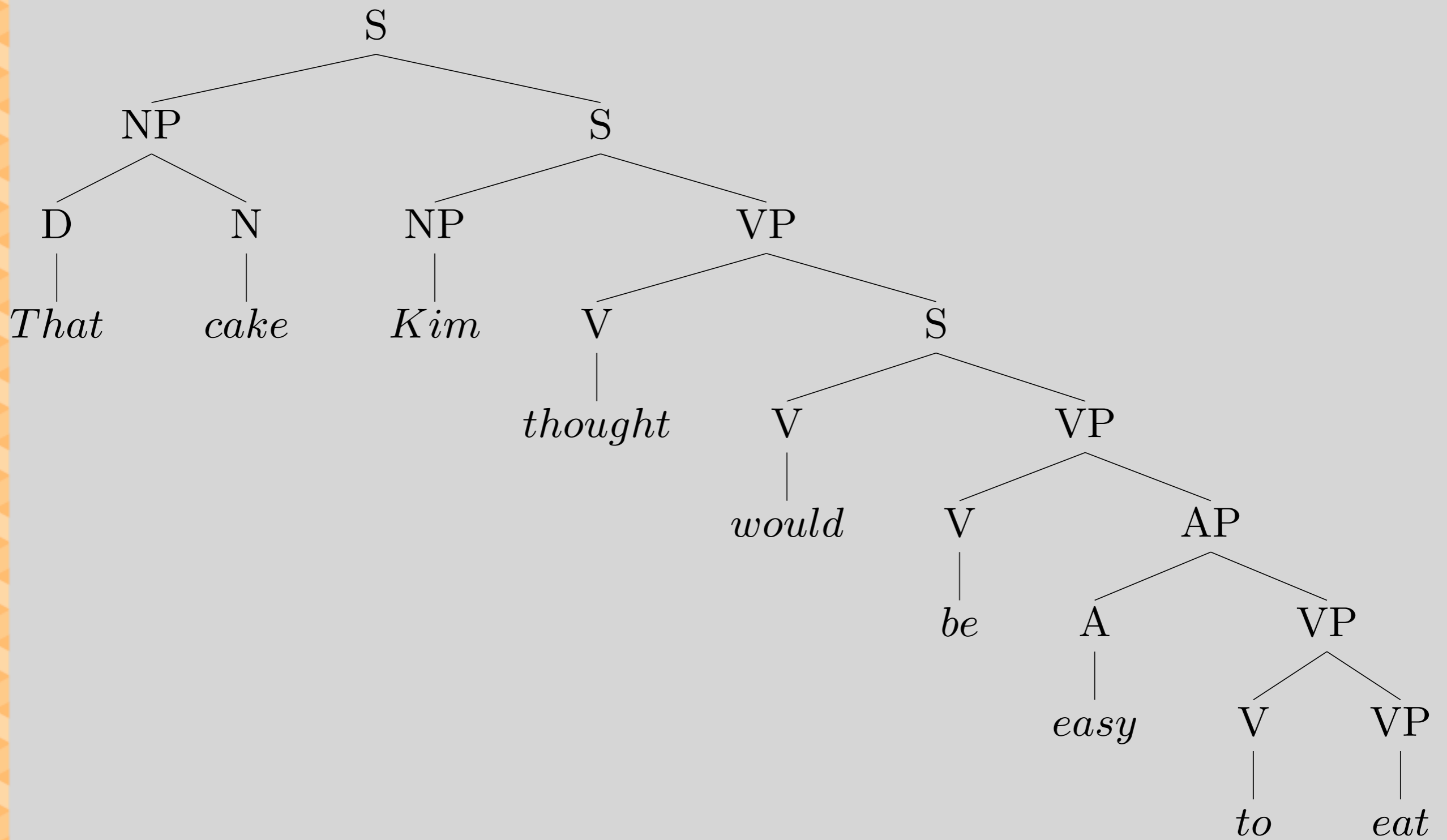**Kim continues to be likely to is easy to talk to.*

**Kim continues to Kim be likely to be easy to talk to.*
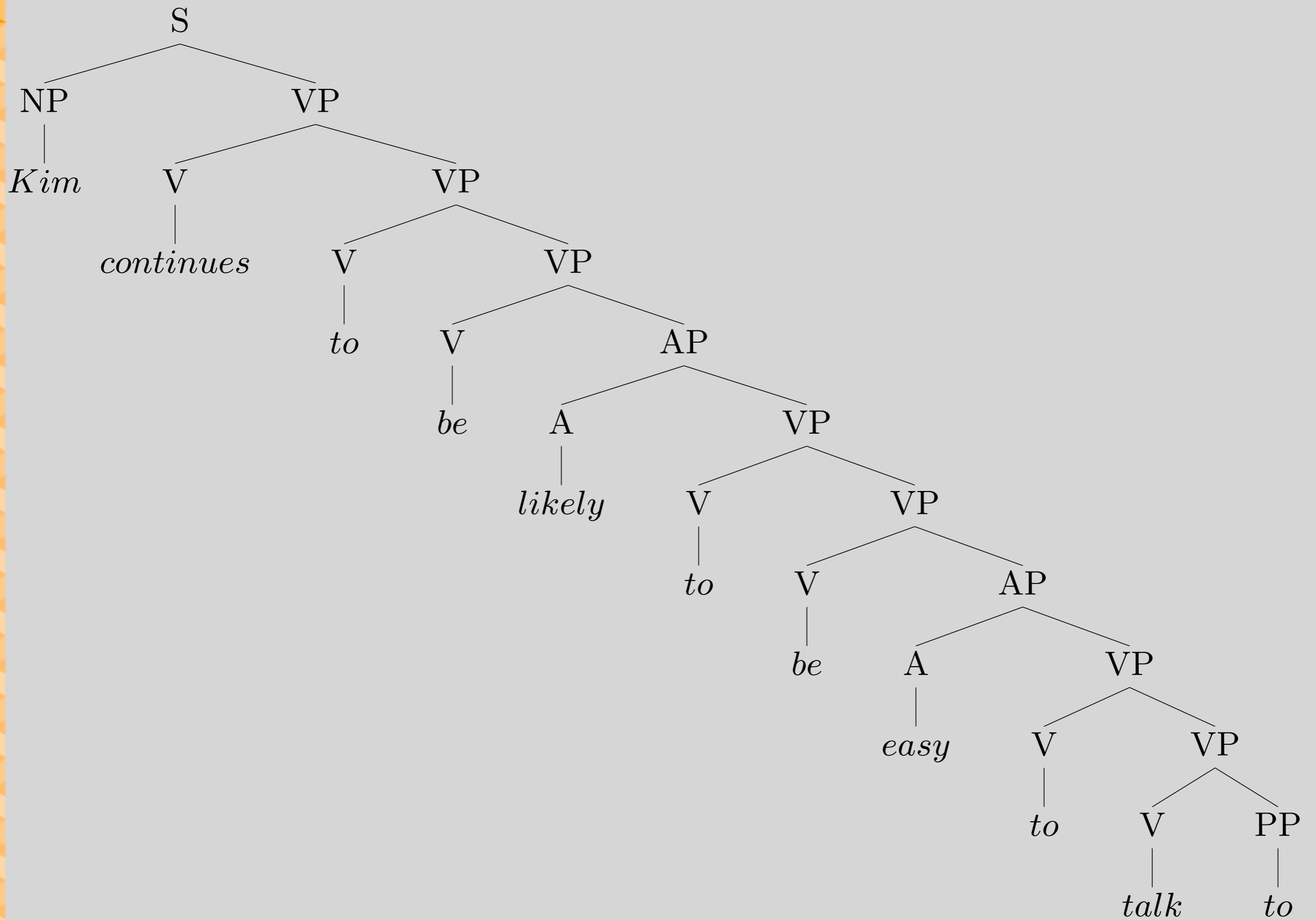
Complicated example #7

That cake, Kim thought would be easy to eat.

*That cake, Kim thought would be easy to eat pie.

*That cake, Kim thought would be easy to eaten.

*Cupcake, Kim thought would be easy to eat.
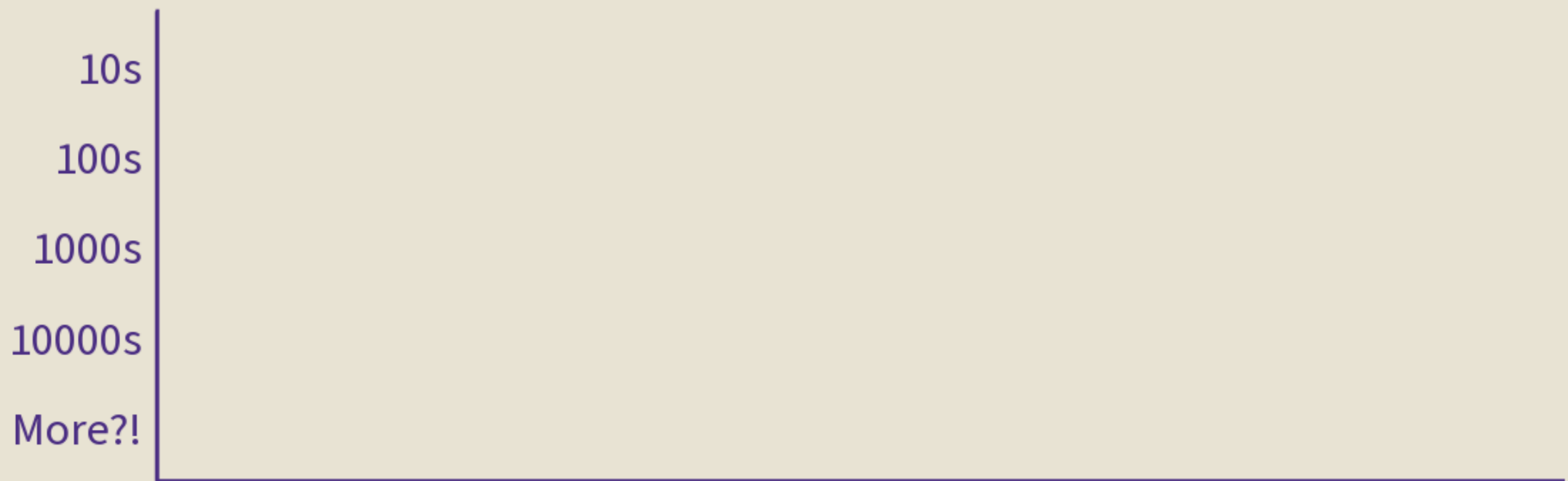
*That cake, Kim thought that would be easy to eat.

How many more analyses of interacting phenomena do you think we'd need to get to broad coverage of English?

10s

100s

1000s

10000s

More?!

Total Results: 0

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