Syntax: Recursion and constituency

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Phrase-structure rules

Let's have a recap of our final set of rules:

- S → {NP,CP} VP
- NP → (D) (AP*) N (CP) (PP*)
- VP → V (NP) {(NP),(CP)} (PP*)
- PP → P (NP)
- CP → C S
- AP → (Deg) A
- VP → Aux VP

and a *meta-rule for conjunction*:

- X → A and X

Practice

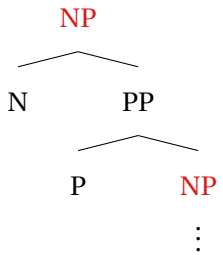
- Using the phrase structure rules above, give a tree for each of the following sentences that shows how those rules put together the words they contain. If more than one tree is possible, include all of them and note whether each one leads to a meaningful reading.

a. Every heavy can and small box slid down the chute.
b. A woman from Duluth stepped on the elf and laughed.
c. The caterpillar took the hookah-tip from its mouth.
d. The very silly hatter opened his eyes after the big bang.
e. The ancient ruins of the temple were discovered by archeologists.
f. Ralph believes that Orcutt is spying in a famous philosophical [$_N$ thought experiment].
g. Bargale spotted many holes in the cheese and Argle rejected them.
h. Heidi and I discussed whether we should meet our grandmothers.

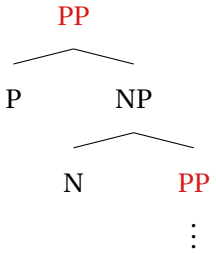
Recursion

Given our rules, it is possible to have trees where a certain phrase occurs inside a bigger phrase of the same category. These trees exhibit **recursion**.

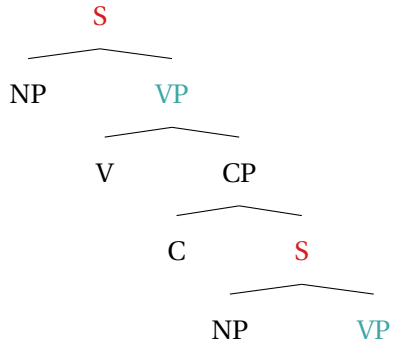
(1) a. NPs can have PPs inside them;
b. PPs can have NPs inside them;
c. So, an NP can be inside another NP.



(2) a. PPs can have NPs inside them;
b. NPs can have PPs inside them;
c. So, a PP can be inside another PP.



(3) a. Ss have VPs inside them;
b. VPs can have CPs inside them;
c. CPs have Ss inside them;
d. Again, Ss have VPs inside them;
e. So, an S can be inside another S, and a VP, can be inside another VP etc.



Practice

- Can you give an example of a sentence with PP recursion?
- Can you give an example of a sentence with CP recursion?
- Can you give an example of recursion of S without having recursion of VP?

Remember: To identify recursion, you can point at a phrase in a tree that contains another phrase of the same category.