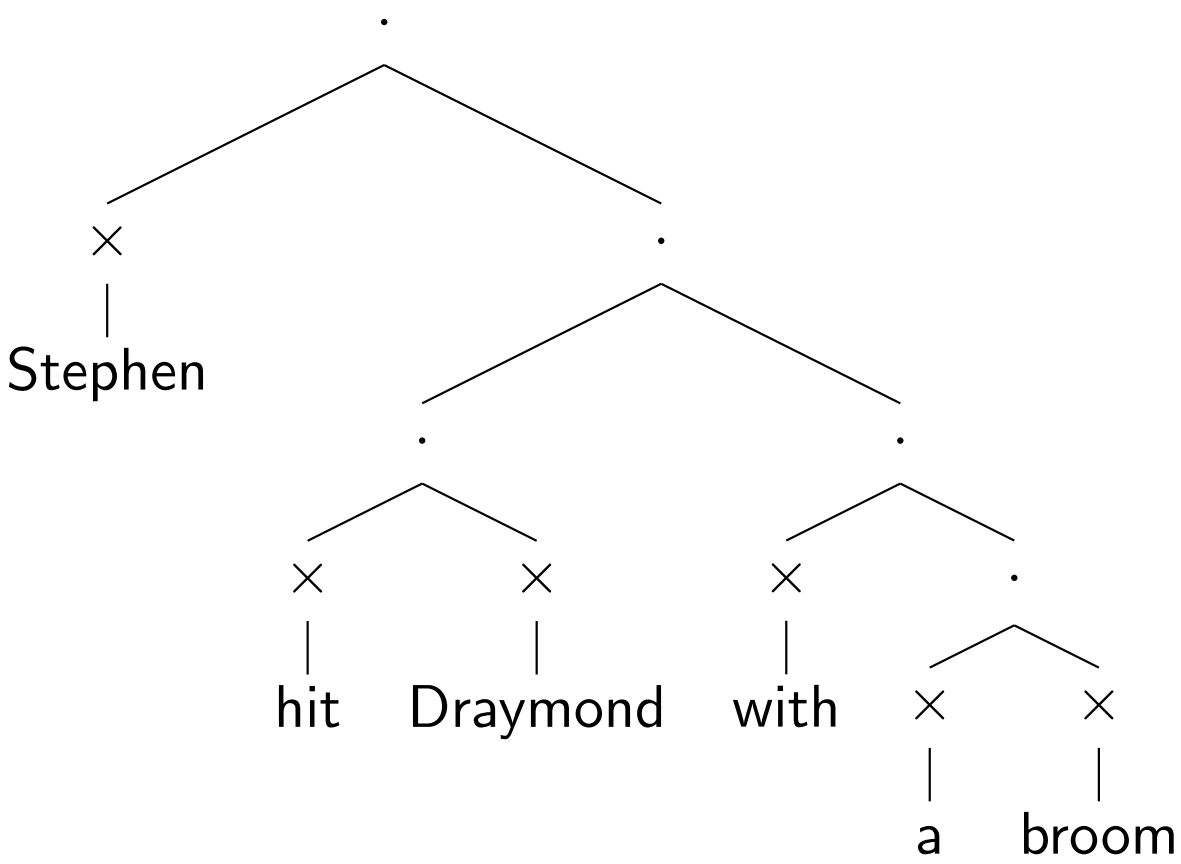
Syntax 2.1: Constituency and phrasal categorization

May 6, 2020

Recall from Monday

[Stephen [[hit Draymond] [with [a broom]]]].

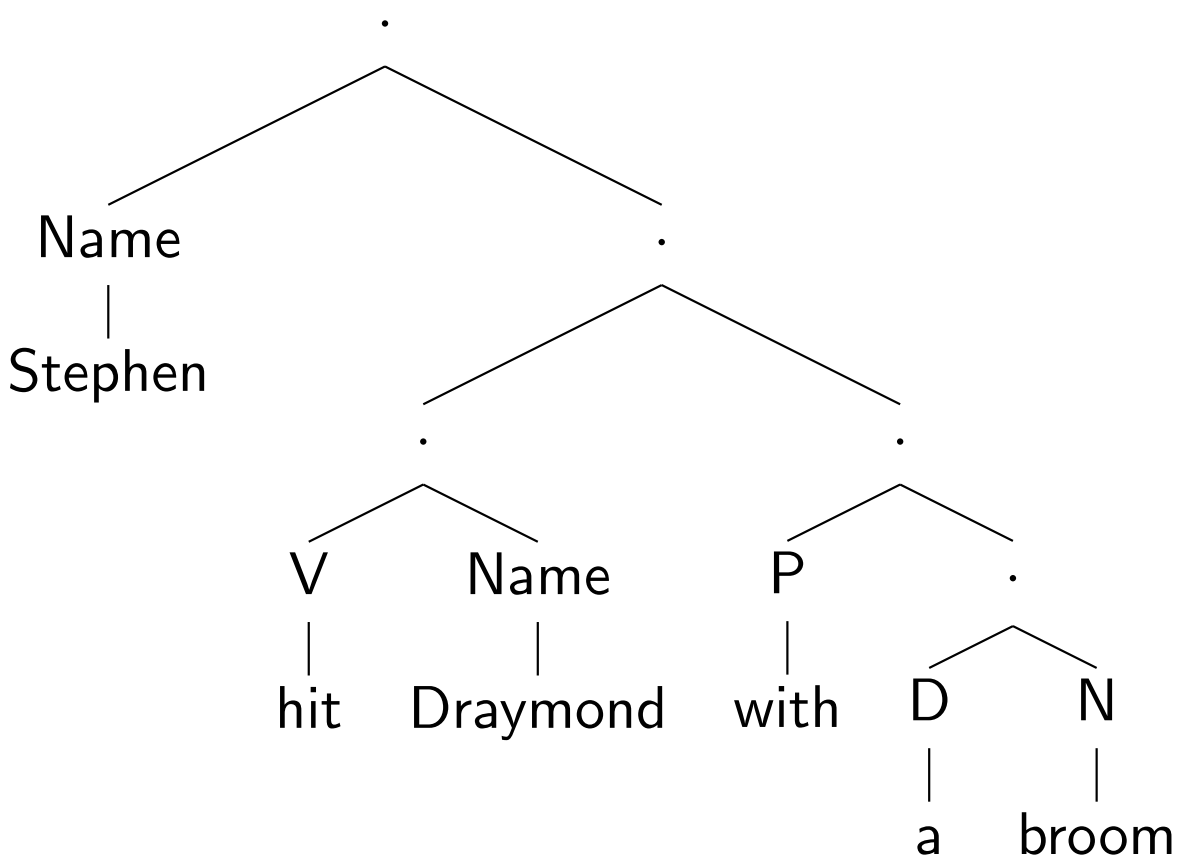


$\times \rightsquigarrow$ lexical categories (i) $\quad \cdot \rightsquigarrow$ phrasal categories (iii)

(sub)groupings $\rightsquigarrow$ hierarchical constituency (ii)

One down, two to go...

[Stephen$_{Name}$ [[hit$_V$ Draymond$_{Name}$] [with$_P$ [a$_D$ broom$_N$]]]].



(sub)groupings $\rightsquigarrow$ hierarchical constituency (ii)

$\cdot \rightsquigarrow$ phrasal categories (iii)

To do list

Have:
. labels for the terminals in tree

Want:
. groupings of words
. labels of groupings of words (non-terminal nodes in tree / labeling brackets)

Need:
. Distributions (.... yes, again.)

Questionizing our wants

Our wants framed as questions:

(i) How do we determine the (sub)bracketing of a sentence?

(HIERARCHICAL) CONSTITUENCY

Intuition: certain groups of words have tighter structure than others.

(ii) How do we label bracketed groups of words?

PHRASAL CATEGORIZATION

Intuition: for different groups of words, there is different behavior.

Answering both of these questions will give us **categorical constituency** (intuition: labelled trees).

Preview: we can answer these questions simultaneously by considering the distribution.

Quick note on terminology

Any subset of words in a sentence which can be bracketed together will be called a **constituent** or **phrase**

In contemporary theory, there are many more constituents than there are phrases, but for us they will be the same.

Substitution

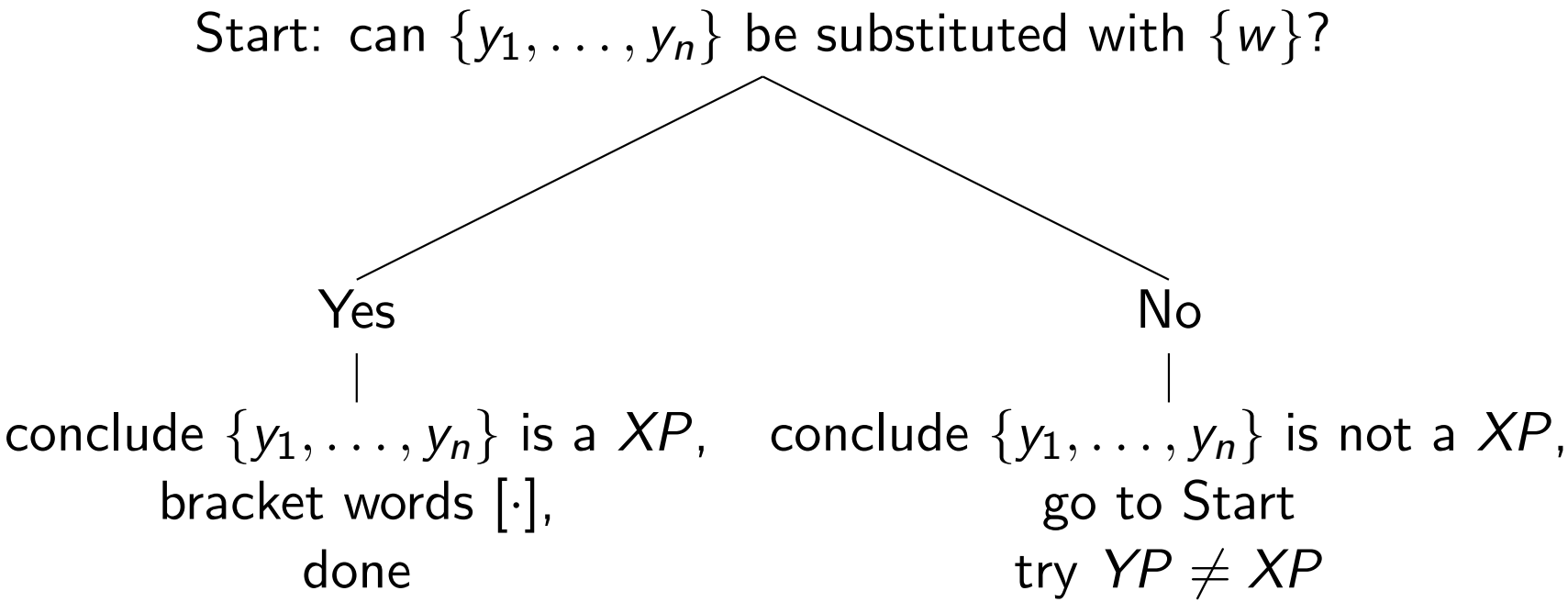
To find out which groups of words are phrases, we will substitute **single words** for **groups of words**. You do this in the context of the sentence they come from.

Key assumption: certain single words *can* function as phrases; in addition, these phrases are the same category as the word.

Logic: since certain single words can function as phrases, we can figure out whether a particular group of words is a phrase if we can substitute the single word phrase for that grouping; if we can make this substitution, the group of words is a phrase, and moreover it is a phrase of the same category as the single word phrase which was able to be substituted.

Logic and procedure tree

Take a group of words $\{y_1, \ldots, y_n\}$ and a single word phrase $\{w\}$ of category X; so, we have w is a XP (XP stands for phrase of category X)



If XP doesn't work, try single word phrase for YP, ZP, etc. — i.e. if NP doesn't work, the group of words is not a NP, so try AP, PP, etc.

Substitutions to use

The following words can be single word phrases of the given category

- any semantically plausible noun — NOUN PHRASE
- *it, they, those...* — DETERMINER PHRASE
- *certainly, completely* or any semantically plausible adverb — ADVERB PHRASE
- *there* — PREPOSITIONAL PHRASE
- any semantically plausible verb — VERB PHRASE
- any semantically plausible adjective — ADJECTIVE PHRASE

A few notes

Note the following:

(i) The resulting sentence may not mean the same thing; it just has to be grammatical

(ii) The category of the group of words will always be determined by one of the words themselves (we call this word the **head**)

(iii) Names behave like NPs and DPs, but we will call them DPs.
. *The Demarcus I know . . .* NP BEHAVIOR
. *Demarcus got injured* $\rightsquigarrow$ *The big guy got injured* DP BEHAVIOR
Why? ... (semantics)

(iv) If you consider a noncontiguous group of words (which, hint, aren't possible phrases in English, so don't worry about this), you would show that the substitution doesn't work on either side of the intervening word(s).

Practice (... are we talking about practice?)

Consider the sentence from before: *Stephen hit Draymond with a broom*.

We'll consider the sequences

. $\{Stephen, hit, Draymond\}$
. $\{hit, Draymond, with, a, broom\}$
. $\{a, broom\}$

In question: *Stephen hit Draymond* NOT A PHRASE

$$\left\{ \begin{array}{l} \text{Replacement DP: *Steve} \\ \text{Replacement VP: *Dribble} \end{array} \right\} \text{with a broom.}$$

(how to interpret notation: read the first as **Steve with a broom.*)

In question: *hit Draymond with a broom* VERB PHRASE

$$\text{Stephen} \left\{ \begin{array}{l} \text{Replacement NP: *Basketball} \\ \text{Replacement VP: walks} \\ \text{Replacement DP: *it} \\ \text{Replacement PP: *there} \end{array} \right\}$$

In question: *a broom* DETERMINER PHRASE

$$\text{Stephen hit Draymond with} \left\{ \begin{array}{l} \text{Replacement NP: *jersey} \\ \text{Replacement DP: it} \end{array} \right\}$$

Hierarchical structure emerges from bracketing

Note that we *so far* concluded both *hit Draymond with a broom* and *a broom* were constituents, so we bracketed them.

Stephen [hit Draymond with [a broom]]

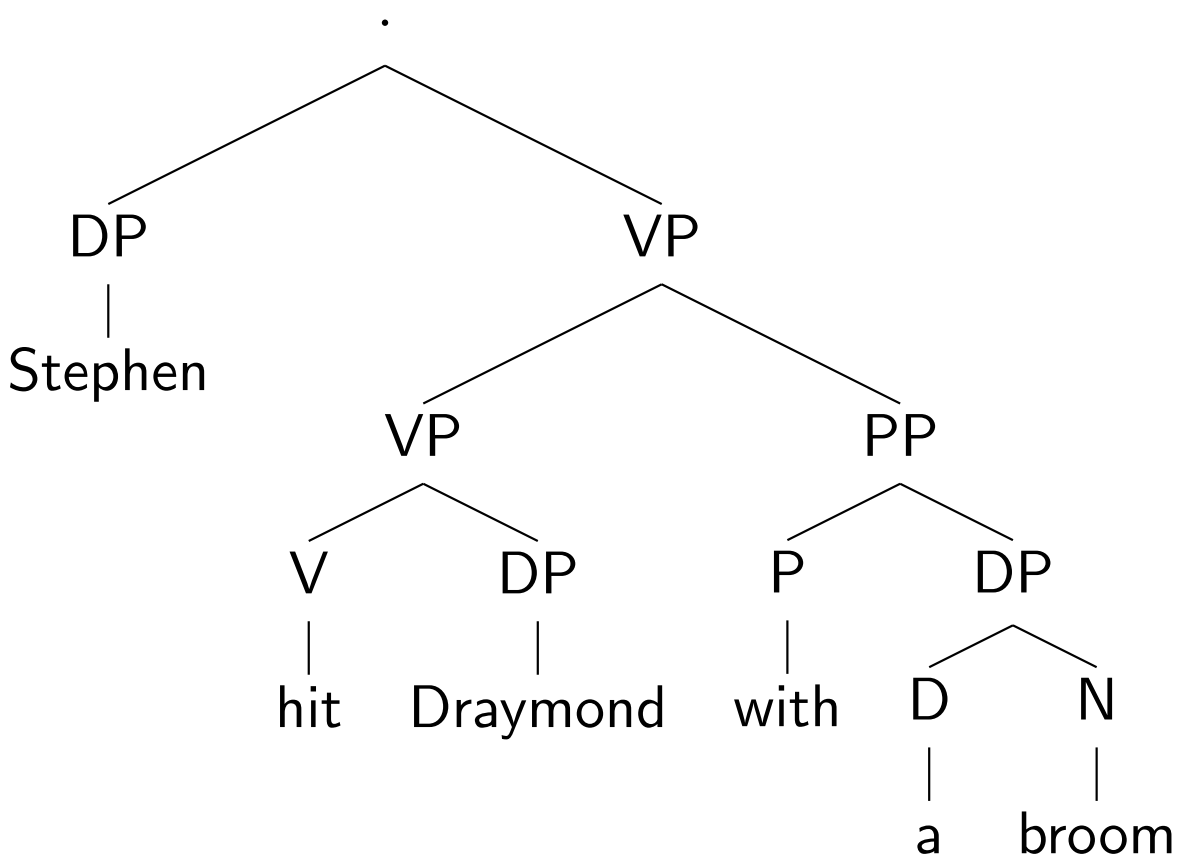
We have brackets within brackets $\rightsquigarrow$ hierarchical structure.

More on this next video.

Summarizing our work

Doing the rest would give us

$$\Big[\ \text{Stephen}_{DP}\ \Big[\ \big[\text{hit}_{V}\ \text{Draymond}_{DP}\big]_{VP}\ \big[\text{with}_{P}\ [\text{a}_{D}\ \text{broom}_{N}]_{DP}\ \big]_{PP}\ \Big]_{VP}\ \Big].$$



End of this video's material. Rest is for your curiosity.