Syntax 1.1: Intuition building / overview

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Why care?

- Changes in syntax can affect meaning (semantics)
  - They robbed you. v. You robbed them.

- Changes in syntax can affect prosody (phonology)
  - I like John. DESCENDING
    John, I like. CONTRASTIVE TOPIC

Why care?

- Word order is not a language universal; it varies crosslinguistically
  - I see him. ENGLISH — SVO
  - Watashi-wa kare-o mita
    me-SUBJECT him-OBJECT saw JAPANESE — SOV
  - Chonaic mé é.
    saw me.SUBJ him.OBJ IRISH — VSO

Sentences

Sentences are a fundamental unit of language, and how to construct / generate them is a key part of linguistic knowledge.

- ✓Draymond set a great pick.
- ✓The Cavaliers, the Warriors beat.
- ✓They shoot a lot.

- *Draymond a great pick set.
- *Cavaliers, the Warriors beat the.
- *They shoots a lot.

Syntax

A language's **syntax** is the component of the grammar responsible for arranging words into sentences.

Three main questions — we will focus on second (and consequently the first):

(i) How do we account for the attested word orders within a language and across languages?
Draymond set a great pick. v. *Draymond a great pick set.

(ii) What is the structure of a sentence?
The Warriors [beat [the Cavaliers]]. v.
*The Warriors [beat the Cavaliers].

(iii) What are the dependencies within a sentence?
They shoot a lot. v. ***They shoots** a lot.

Behind door (ii)

Why focus on structure?

(i) Word order — VARIES BY LANGUAGE

(ii) Hierarchical structure — COMMON TO (ALMOST) ALL LANGUAGES

(iii) Dependencies — VARIES BY LANGUAGE

If we can model hierarchical structure appropriately, we will get basic facts about word order for free.

Modeling hierarchical structure — intuition

Consider the sentence: Stephen hit Draymond with a broom.

Intuitions

(i) *Stephen, Draymond* are more similar to each other in isolation than they are to *hit* or *with*

LEXICAL CATEGORIZATION

(ii) $\{a, broom\}$ together have more of an affinity to each other than the words $\{Draymond, broom\}$

CONSTITUENCY

moreover, $\{with, a, broom\}$ have more of an affinity than$\{hit, Draymond, with, a, broom\}$

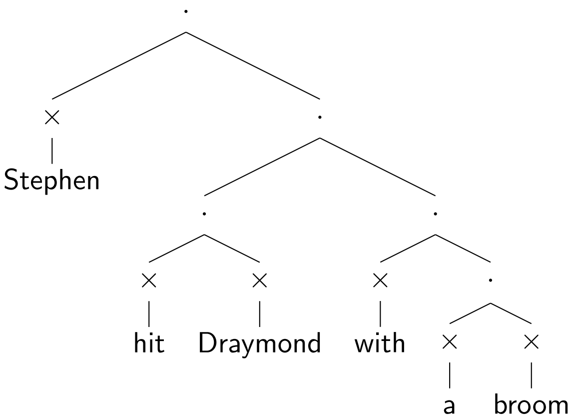
HIERARCHICAL CONSTITUENCY

(iii) The set of words *with a broom* behaves similarly to *on the head*, *in the back* and not *the basketball* or *ate cornbread*.

PHRASAL CATEGORIZATION

Modeling hierarchical structure — a picture

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



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

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

The previous slide is a hypothesis

The tree representation on the previous slide is a summary of the hypotheses we are making about a language.

(i) $\times$ corresponds to hypotheses on word-level categories

(ii) Bracketing, or lines and levels in tree, correspond to hypotheses on (hierarchical) constituency

(iii) $\cdot$ corresponds to hypotheses on phrase-level categories

Embarking on this syntactic journey...

For any (basic) sentence, we will do the following:

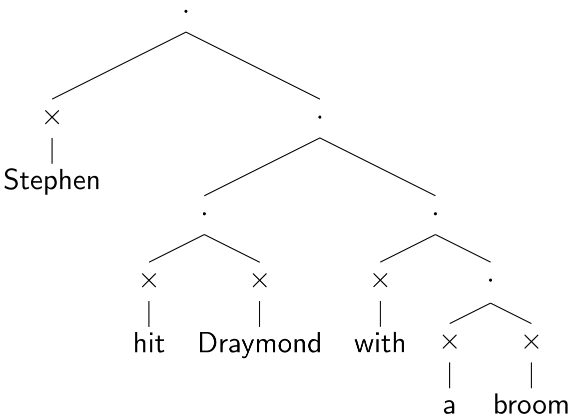
(i) Assign labels for each $\times$
(ii) Assign labels for each $\cdot$
(iii) Have rules to combine categorized words and categorized phrases successively to form a sentence

Further, we will justify each one of those steps empirically by using (a) test(s) / diagnostic(s)

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

Modeling structure is information reduction

Consider the tree from slide above:

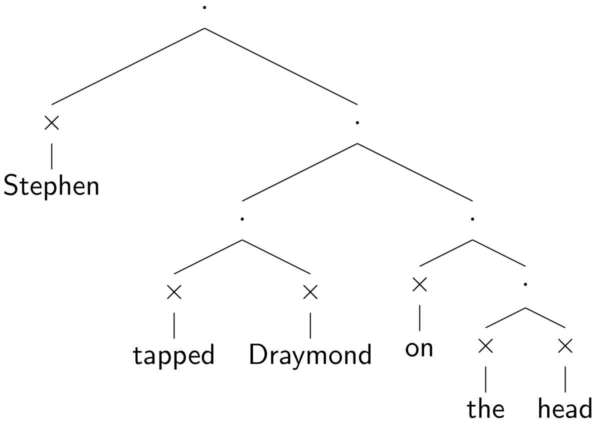


Modeling structure is information reduction

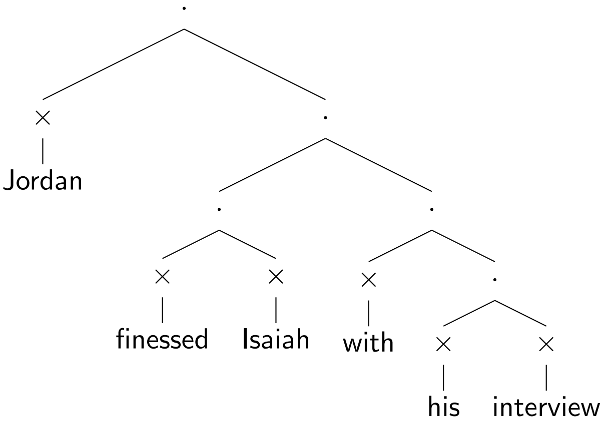
Modeling structure in even the basic way we will be concerned with amounts to a large reduction in information we need to account for the data we see.

Note that if we know the labels in the tree, we can swap out any other word / phrase with the same label — i.e. this tree can model not just this sentence.

So, it can also model:

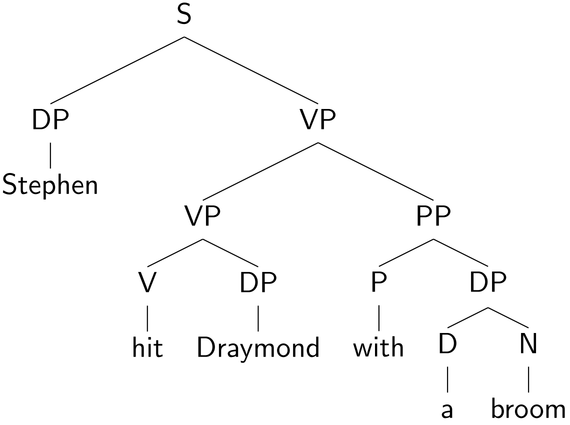


And this:



Semi-spoiler

Etc.... so, say we determine the tree looks like this

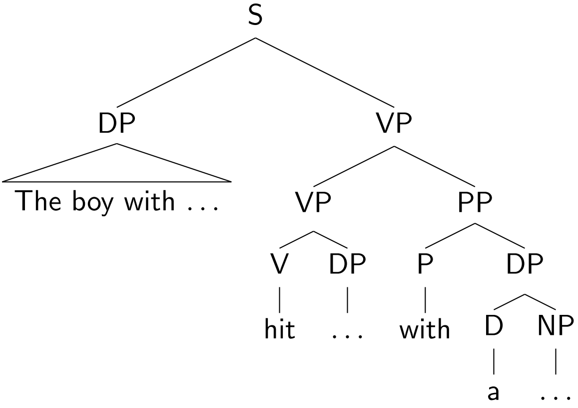


Then,

#good sentences we can generate = #nouns × #verbs × #prepositions× #determiners × #noun (# indicates 'the number of')

Semi-spoiler

Say, we replace DP's with other DP's (triangle indicates structure within phrase)



Then, $\#$good sentences we can generate $= \infty$

Think: *The boy with long hair who danced all night with ... in ... at ...* is a DP — only constraint on length is based on our cognitive abilities

Upshot: we will have a handful of category labels (finite) and a handful of rules (finite); with these labels and rules we can generate an infinite amount of structures. This is a reduction in the information needed to express the data.