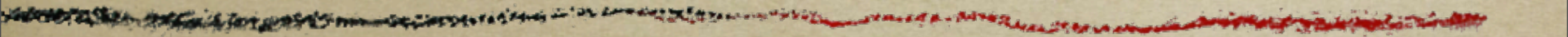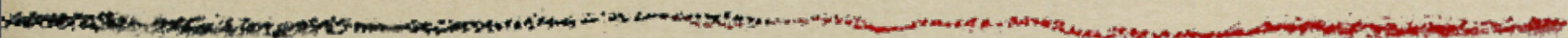# Constituency

The basic units of sentence structure

Meaning of a sentence is more than the sum of its words.

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a. The puppy hit the rock

Meaning of a sentence is more than the sum of its words.

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(cf. 2 + 3 = 3 + 2)

Meaning of a sentence is more than the sum of its words.

a. The puppy hit the rock

b. The rock hit the puppy.

c. The + puppy + hit + the +rock ≠ the + rock + hit + the + puppy.
(cf. 2 + 3 = 3 + 2)

*This fact is captured by the notion that sentences have **internal structure***

Another argument for structure:
Yes/No questions

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- Yes/no questions can be answered by "yes" or "no" or "maybe"

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- Bear with me, I'm going to run this using the scientific method, and I have a particular set of hypotheses to run through!

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- Remember: The S.M. requires that we always go with the *simplest* hypothesis consistent with the data we have. (Occam's razor)

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- Remember: The S.M. requires that we always go with the *simplest* hypothesis consistent with the data we have. (Occam's razor)

- Let's start with the assumption that there is no structure, and sentences are just a linear string of words. Now consider the following pair of sentences.

Structure

Structure

- Consider the following sentences:
  a. Dave can't eat chocolate covered almonds.
  b. Can't Dave eat chocolate covered almonds?

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- *Hypothesis # 1*
  To form a yes/no question move the 2nd word to the front of the sentence.

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- Problem:
  a. The TA can't eat chocolate covered almonds.
  b. *TA the can't eat chocolate covered almonds?

Structure

- *Hypothesis # 1*
  To form a yes/no question move the 2nd word to the front of the sentence

- Problem:
  a. The TA can't eat chocolate covered almonds.
  b. *TA the can't eat chocolate covered almonds?

- *Hypothesis #2*
  To form a yes/no question move the verb to the front of the sentence

Structure

Structure

- *Hypothesis # 2*
  To form a yes/no question move the verb to the front of the sentence.

Structure

- *Hypothesis # 2*
  To form a yes/no question move the verb to the front of the sentence.

- Problem:
  a. The TA ate chocolate covered almonds.
  b. *Ate the TA chocolate covered almonds.

Structure

- *Hypothesis # 2*
  To form a yes/no question move the verb to the front of the sentence.

- Problem:
  a. The TA ate chocolate covered almonds.
  b. *Ate the TA chocolate covered almonds.

- *Hypothesis #3*
  To form a yes/no question move the auxiliary to the front of the sentence

Structure

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Hypothesis #3
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Structure

- *Hypothesis #3*
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- Problem:
  a. The TA has been eating chocolate covered almonds.
  b. *Been the TA has eating chocolate covered almonds?

Structure

- *Hypothesis #3*
  To form a yes/no question move the auxiliary to the front of the sentence

- Problem:
  a. The TA has been eating chocolate covered almonds.
  b. *Been the TA has eating chocolate covered almonds?

- *Hypothesis #4*
  To form a yes/no question move the first auxiliary to the front of the sentence

Structure

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- *Hypothesis #4*
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- *Hypothesis #4*
  To form a yes/no question move the first auxiliary to the front of the sentence

- Problem:
  a. The TA who is here can eat chocolate covered almonds.
  b. *Is the TA here can eat chocolate covered almonds?
  c. (cf. Can the TA who is here eat chocolate covered almonds?)

Structure

- *Hypothesis #4*
  To form a yes/no question move the first auxiliary to the front of the sentence

- Problem:
  a. The TA who is here can eat chocolate covered almonds.
  b. *Is the TA here can eat chocolate covered almonds?
  c. (cf. Can the TA who is here eat chocolate covered almonds?)

- What's the problem here?
  - The first auxiliary is part of the subject of the sentence: [The TA who is here] can eat chocolate covered almonds

Structure

Structure

Hypothesis 5

- To form a yes/no question move the first auxiliary after the subject to the front of the sentence

Structure

- *Hypothesis 5*
  - To form a yes/no question move the first auxiliary after the subject to the front of the sentence

- We require a notion where there is ***internal structure*** to the sentence: We need a notion of what the subject is: which words are in the subject and which words aren't.

Structure

- *Hypothesis 5*
  - To form a yes/no question move the first auxiliary after the subject to the front of the sentence

- We require a notion where there is ***internal structure*** to the sentence: We need a notion of what the subject is: which words are in the subject and which words aren't.

- There is an alternative hypothesis (move the main clause auxiliary to the front) but this again requires a notion of internal structure: we need to be able to distinguish which words are just in the main clause from those in relative clauses.

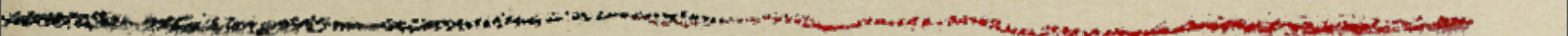Internal structure is represented by the notion of

Constituent

A *Constituent* *is any unit of internal syntactic structure.*
(i.e., a group of words functioning as a unit)

[The TA who is here] can eat chocolate.

Bracketing (as above) is one of two notations
for representing, or marking, constituents.
(The other is tree notation, which we'll formally
cover next week).

Constituents represent semantically related material

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- In the sentence:

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- In the sentence:

  The elephant snorted a bowl of peanuts

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Constituents represent semantically related material

- In the sentence:

  The elephant snorted a bowl of peanuts

  There is the intuition that *the & elephant* are more closely related than *peanuts* and *snorted*.

- This intuition is captured with constituency

Constituent

Constituent

- Constituent is a group of words that *functions as a unit*.

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The elephant   snorted   the bowl of peanuts

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Constituency Tests: Modification

Constituency Tests: Modification

- If one word modifies (limits the meaning of) another, then they are probably part of the same constituent.

I bought a red balloon

'a' and 'red' both modify 'balloon' so they are all part of the same constituent: [a red balloon]

Constituency Tests: Movement

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- If you can move a group of words, they are functioning as a unit—and are a constituent:

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    - Preposing: [Big bowls of beans] are what I like.

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There are other kinds of movement!
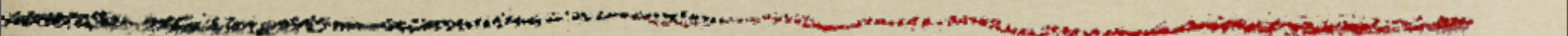
Constituency Tests: Replacement

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  - I've always loved [him]

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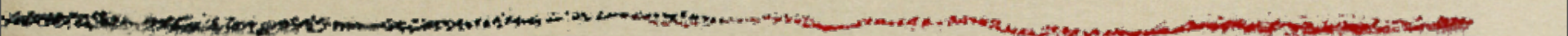   - I've always loved [him]

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  - Susan [bought a truck with mag wheels]

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  - I've always loved [the man in a natty suit]
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  - Susan [bought a truck with mag wheels]
    - Susan [did (so) too)

Constituency Tests: Ellipsis

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- This is a special constituency test for a constituent called a Verb Phrase (VP). If an item is a VP, then it can be deleted under (near) identity with another VP

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- This is a special constituency test for a constituent called a Verb Phrase (VP). If an item is a VP, then it can be deleted under (near) identity with another VP
  - Bill [found a gold nugget in the stream] but I don't think John will [~~find a gold nugget in the stream~~]

Constituency Tests: Stand Alone
(sentence fragment)

Constituency Tests: Stand Alone (sentence fragment)

- Can the group of words serve as a sentence fragment in response to a question?

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Constituency Tests: Stand Alone (sentence fragment)

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  Q: What did Heidi buy at the flea market?
  A: [A bag of moldy vacuum cleaner parts]

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Q: What did Heidi buy at the flea market?
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Q: What did Heidi do at the fleamarket?

Constituency Tests: Stand Alone (sentence fragment)

- Can the group of words serve as a sentence fragment in response to a question?

    Q: What did Heidi buy at the flea market?
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  Q: What did Heidi buy at the flea market?
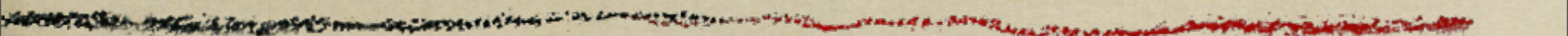 A: [A bag of moldy vacuum cleaner parts]

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Q: Where did Heidi put them?
A: [In the back of her car]

Constituency Tests: Conjunction
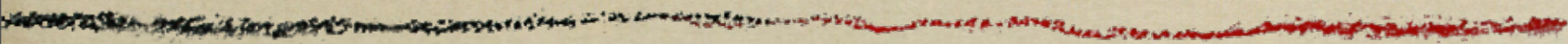
Constituency Tests: Conjunction

- If the group of words can be coordinated (or conjoined) with another string, then it is a constituent of the same type:

  [John] and [the man] went to the store
  *[John] and [very blue] went to the store

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  [John] and [the man] went to the store
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LINGUISTICS GENERAL'S WARNING: There are a *lot* of situations where the conjunction test will give you false results. Use it sparingly and with caution! (See textbook for details.)
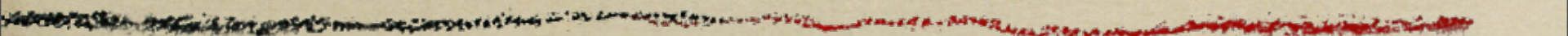
Caution:

Caution:

- The constituency tests are NOT fool proof. You should always apply at least two to any given string of words, just in case you have got false results for some reason.

John [eats at really fancy restaurants]

John [eats at really fancy restaurants]

- Stand Alone?
    - What does John do in his spare time?
    - Eat at really fancy restaurants.

John [eats at really fancy restaurants]

- ## Stand Alone?
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- ## Replace by a Pro-form (pronoun, pro-verb)?
  - John [eats at really fancy restaurants] and Bill [does (so) too]

John [eats at really fancy restaurants]

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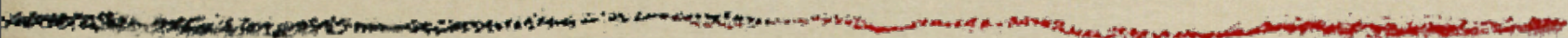   - Eat at really fancy restaurants.

- ## Replace by a Pro-form (pronoun, pro-verb)?
    - John [eats at really fancy restaurants] and Bill [does (so) too]

- ## Move?
    - Eating at really fancy restaurants, that's John's favorite pastime.
    - I told John to eat at really fancy restaurants, and [eat at really fancy restaurants] he will!

John [eats at really] fancy restaurants

John [eats at really] fancy restaurants

- ## Stand Alone?
    - What does John do in his spare time?
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John [eats at really] fancy restaurants

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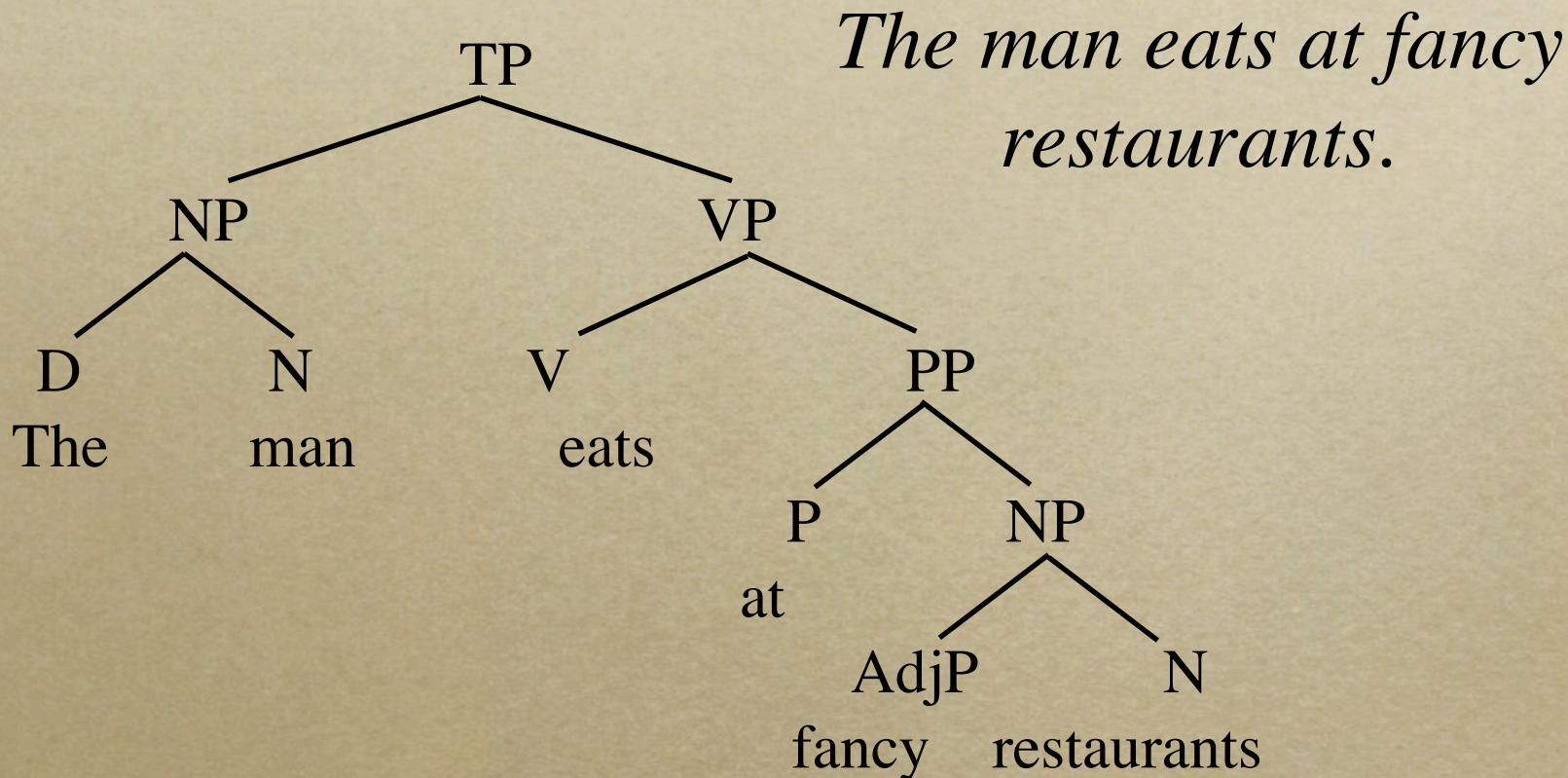 - What does John do in his spare time?
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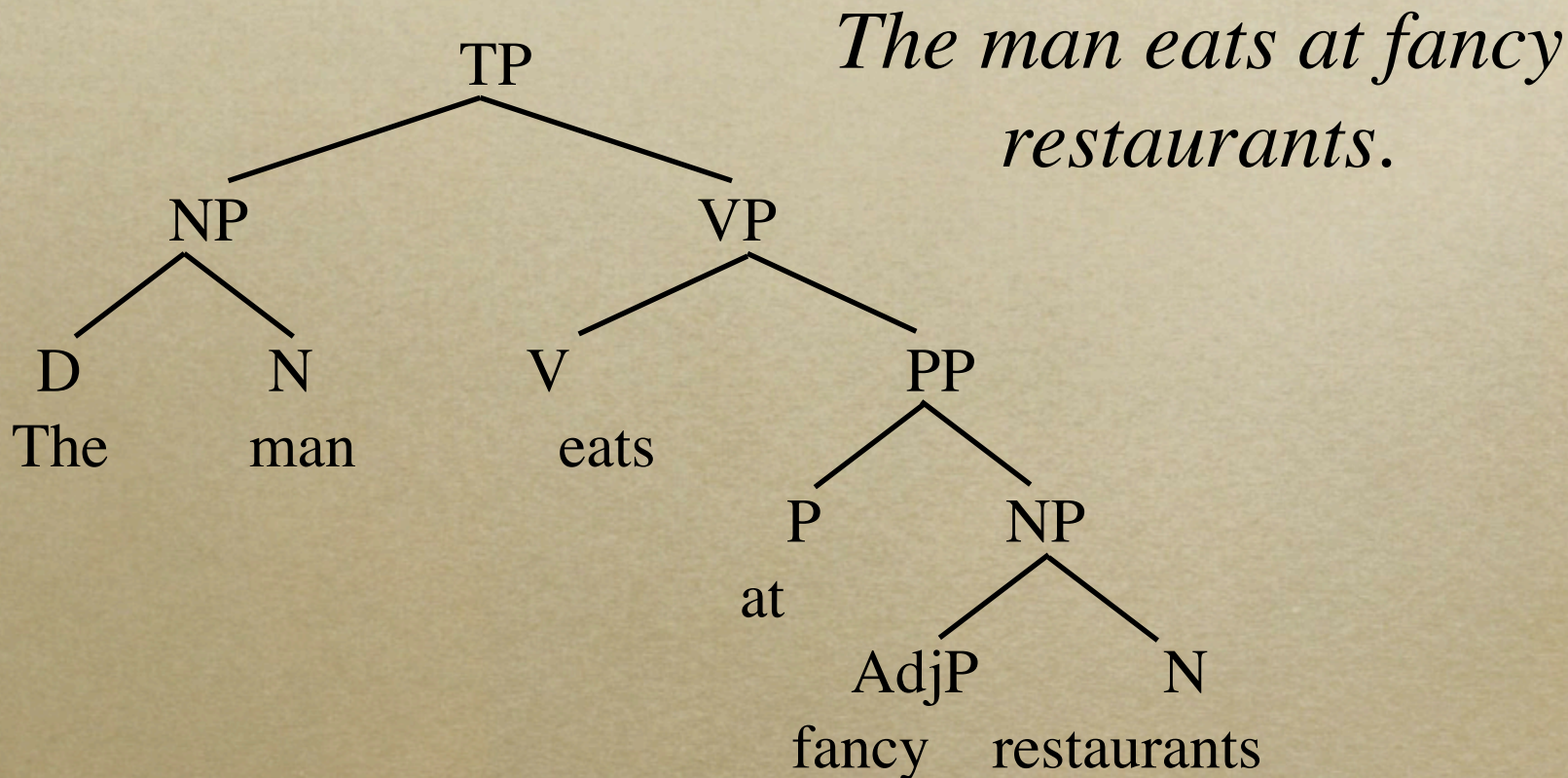
- ## Move?
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  - *Eating at really is what John does fancy restaurants.
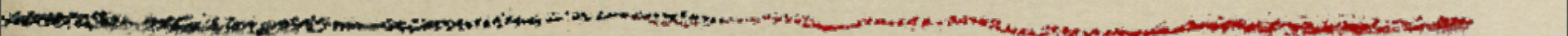
Constituents are hierarchically organized

The man eats at fancy restaurants.

Constituents are hierarchically organized

The man eats at fancy restaurants.

TP

NP   VP

D   N   V   PP

The   man   eats

P   NP

at

AdjP   N

fancy   restaurants

$[_{TP} [_{NP}[_{D}The] [_{N}man]] [_{VP} [_{V}eats] [_{PP} [_{P}at] [_{NP} [_{Adj}fancy] [_{N}restaurants]]]]]$
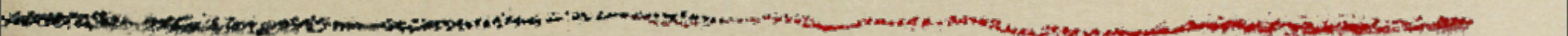
Summary: Constituency

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- Constituent: A group of words that functions as a unit.

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- Captures judgments about the relatedness of words, and about the hierarchical structure of sentences

Summary: Constituency

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  - Modification
  - Movement
  - Replacement (single word & *pro*-form)
  - Ellipsis (for VPs)
  - Stand Alone (Sentence Fragment)
  - Co-ordination/Conjunction

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- Tests are NOT infallible. Use more than 1!