Constituency and Merge

Introduction to Syntax, EGG Summer School 2017

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25 July 2017

Overview

Constituency

Merge

Testing predictions

Conclusions

Constituency

What are the units of syntax?

Yesterday, we saw that syntax combines categories rather than words

- rules are sensitive to N, V, rather than *house* or *sing*
- a subject or an object in a sentence can be more than just a single word
- in (1), we can substitute *Czech towns* by *Italian villages*
- but we can not create (2) from the same words

(1) Czech towns are beautiful.

(2) *Czech are towns beautiful.

- *Czech towns* is a constituent, a unit of a sentence
- it consists of an adjective and a noun, and behaves like a noun

Constituency

How can we tell whether *Czech towns* behaves like a noun?

- we can replace it with nouns and noun phrases
- we can add another adjective, as with other nouns
  - *old Czech towns*
- we can put it in a different number
  - *old Czech town*
- we can add prepositional phrases to it
  - *old Czech town in Moravia*
- it also does not behave like an adjective
  - **so old Czech towns*, **too old Czech towns*

Constituency II

So *Czech towns* consists of an adjective and a noun but behaves like a noun

(3) $[_N\ [_A$ Czech] $[_N$ towns]]

- something about [A N] makes the result something of category N, too

This is obviously not the only possible combination of categories

? Can you think of other types?

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(4) a. $[_{A}\ [_{Adv}$ very] $[_{A}$ tasty]]

b. $[_{V}\ [_{Adv}$ often] $[_{V}$ sings]]

Headedness

When we combine to constituents, the result has properties of one of them

- [A N] was like [N]
- [Adv A] was like [A]
- [Adv V] was like [V]

More generally, this can be illustrated as follows:

(5) a. $[_{X \text{ or } Y}$ [X] [Y]]

b. Every constituent has a feature that is the same of as the feature of one of the words in it. (Koeneman & Zeijlstra 2017: 34)

Constituents generally have a **head**. The head determines their type of a constituent and thus its syntactic behaviour.

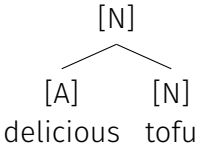
Merge

Building constituents

We know our goal now: constituents. But how does syntax build them?

- We need a mechanism that combines objects
- and determines the category of the newly formed object
- One such operation is called **Merge**
  - in (5), we merge *delicious* and *tofu* to form *delicious tofu*
  - more abstractly, we merge an [A] and an [N] to form [N]

(6)



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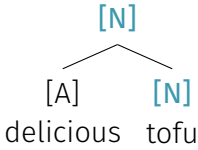

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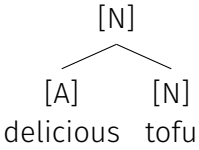

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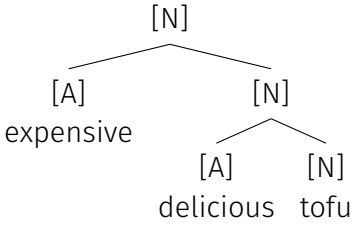

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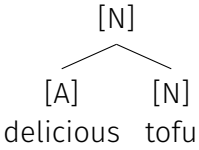

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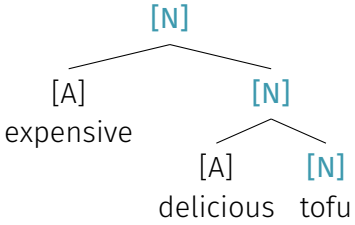

Heads and phrases

When Merge forms constituents, it cares for the category of its input

- A single word can act as a constituent: e.g. *tofu*
  - *tofu* acts as if it is both a **head** and a **phrase**
- Can we distinguish the layers of [N] in (8)?

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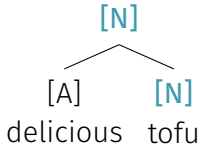

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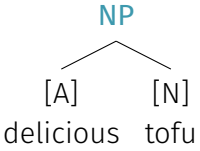

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Categories head their phrases: N heads an NP, V heads a VP, etc.

- we call the top node in a phrase a maximal projection: NP in (9)
- layers between the head and the maximal projection are intermediate
- objects on the same level are called sisters

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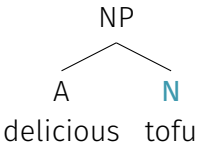

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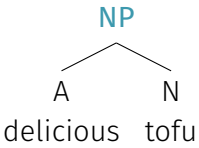

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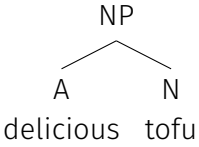

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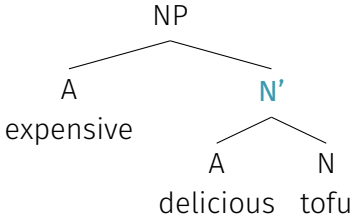

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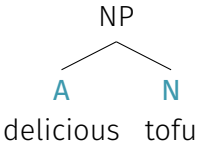

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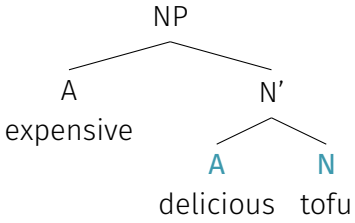
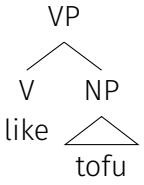


Putting phrases together

So what about single words like *tofu*?

- we still think of them as phrases (NPs)
- they behave just like bigger phrases (as we have seen)
- if a phrase consists of a single node, it is often indicated with a triangle

(11)



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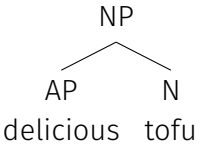

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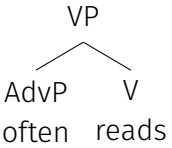

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- In (14), we know that the head is a V: but what is its sister?

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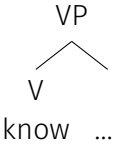

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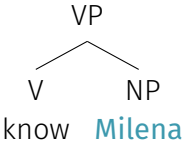

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- In (14), we know that the head is a V: but what is its sister?
- *Milena* is a valid candidate
- *that clever girl with the hat* is also a valid candidate

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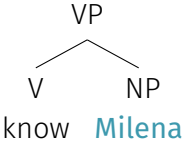

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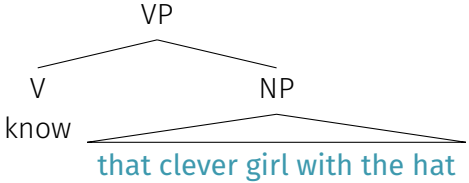


- any NP is a grammatical complement of *know*

Merge, heads, and phrases

We can look at similar patterns with other categories as well:

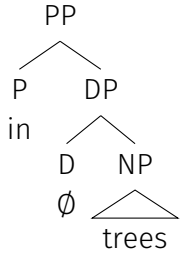
(16) a. in trees

b. in the trees

c. in the most beautiful trees

(Koeneman & Zeijlstra 2017: 41)

(17)



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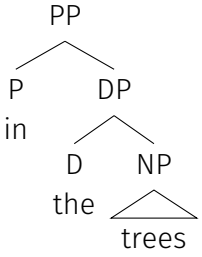

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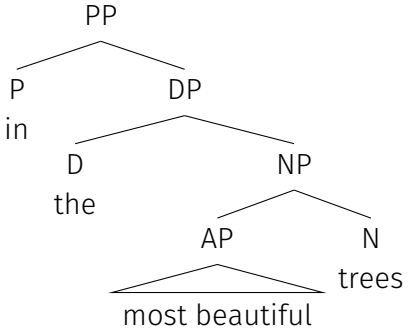


Generalising Merge

We have seen that we can state properties of Merge

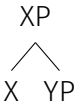
- independently of the categories involved
- by referring to structural notions such as *head* and *phrase*

Koeneman & Zeijlstra (2017: 40) therefore suggest the following generalisation:

> *A constituent that merges with a syntactic head X is always a maximal phrase*: $[X\ YP]_{XP}$

Or, in tree-form:

(20)



Testing predictions

Why Merge?

We now have a very general way of combining syntactic objects to form new ones

But why Merge? Are there other ways of forming structures?

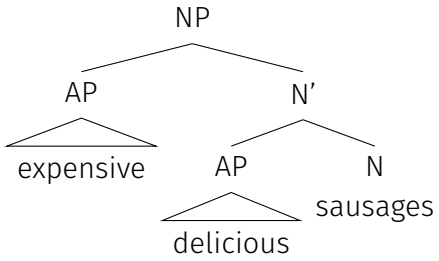
- What about flat structures, adding strings together?

- We can **test** what consequences different ways of combining structures have

Constituency, again

Consider two ways of representing *expensive delicious sausages*

(21) Merge



(22) Strings
[expensive_{A} + delicious_{A} + sausages_{N}]$_{N}$

Constituency tests: substitution

One way of comparing the hierarchical structures built by Merge and the flat structures built by concatenating words is using substitution tests

- We can substitute elements of one category for each other

(23) A: *Do you like sausages, sir?*
B: *Oh yes, especially expensive delicious ones!*

(24) A: *Do you like delicious sausages, sir?*
B: *Oh yes, especially expensive ones!*

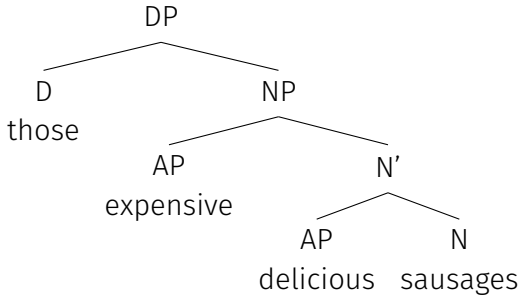
(25) A: *Do you like expensive delicious sausages, sir?*
B: *Oh yes, especially Italian ones!*

? What's replacing what here?

Constituency tests: substitution II

In a hierarchical structure, any N node can be replaced by *one(s)*:

(26)



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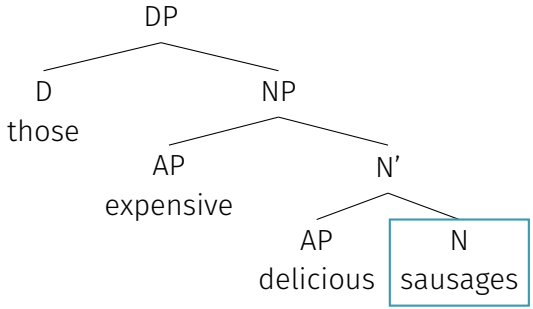

➠ *those expensive delicious ones*

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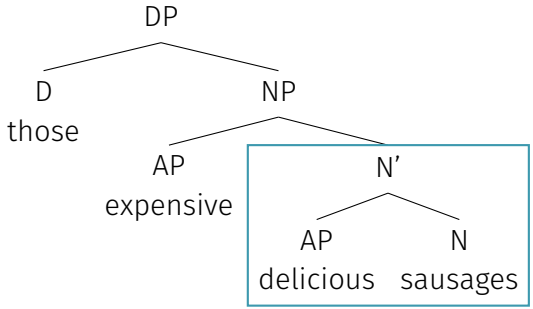

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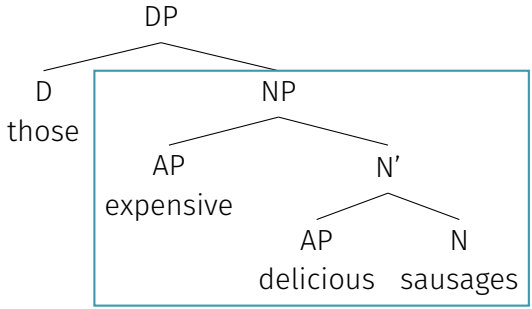

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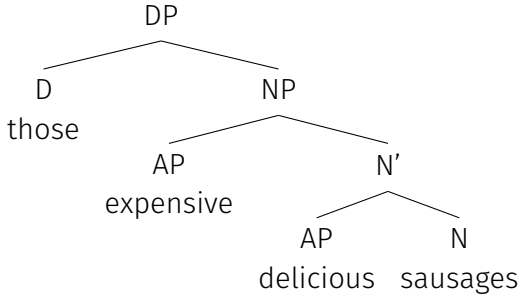

- not impossible to model this based on strings, but not as simple
- **?** what kinds of rules do we need to get the same result?

Constituency tests: movement

Moving an object to another position in the clause also tests constituency

(27) a. I really like expensive delicious sausages.

b. Expensive delicious sausages, I really like.

... it does not quite give the same result, however.

(28) a. *Delicious sausages, I really like expensive.

b. *Sausages, I really like expensive delicious.

? What could be the problem here?

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? How does the string approach fare here?

Conclusions

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- These constituents are headed
- The head determines the category of the whole constituent (a phrase)

▸ Merge combines heads and phrases

⚠ So far, so good, but!

? What rules out *very sausage* or *know delicious*?

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Tomorrow we will look at θ-theory and selection: how can we make sure that heads combine with the right number and the right type of phrases?

References I

Koeneman, Olaf & Hedde **Zeijlstra**. 2017. *Introducing syntax*. Cambridge: Cambridge University Press.