Argument structure and theta roles

Introduction to Syntax, EGG Summer School 2017

András Bárány
ab155@soas.ac.uk

26 July 2017

Overview

Where we left off...

Arguments and theta roles

Some consequences of theta theory

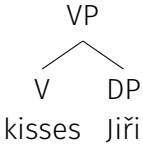
Conclusions

Where we left off...

Merge builds structure

We saw yesterday that Merge builds syntactic structure

(1)



But Merge as we know it is too general: it overgenerates

(2) a. *Mary snores Jiři.

b. *Mary said.

c. Mary kisses Jiři. (cf. Koeneman & Zeijlstra 2017: 55)

? What causes this?

Constraining Merge

We want Merge to be able to combine Vs and DPs or NPs, so how do we restrict it?

- Clearly, there is something about the verbs involved...
- *kiss* is a ...?
- *snore* is a ...?
- *say* is a ...?

Constraining Merge

We want Merge to be able to combine Vs and DPs or NPs, so how do we restrict it?

- Clearly, there is something about the verbs involved...
  - *kiss* is a ...?
  - *snore* is a ...?
  - *say* is a ...?
- These verbs have certain **selectional requirements**
- They need a fixed number of **arguments** (with specific features)
- **Theta (θ) theory** is one way of explaining this

today's slides are based on Koeneman & Zeijlstra (2017: §3), Adger (2003: §3)

Verbs and their arguments

snore is an **intransitive verb**

- It takes one (and just one) argument

kiss is a **(mono-)transitive verb**

- It takes two arguments

give is a **ditransitive verb**

- It takes three arguments (two objects)

? What kinds of arguments do these verbs take?

Syntax distinguishes types of verbs by *how many arguments* and *what kinds of arguments* they take. In other words, verbs **select for** certain arguments.

Arguments and theta roles

Arguments and adverbials

How do we model these restrictions? First, what is an argument?

(3) a. Mary gave Jiři a kiss.

b. *Mary gave Jiři a kiss Milena.

c. Mary gave Jiři a kiss yesterday.

(4) a. Mary said she liked Jiři.

b. Yesterday Mary said she liked Jiři.

c. *Yesterday Mary said ∅.

Arguments and adverbials

How do we model these restrictions? First, what is an argument?

(3) a. Mary gave Jiři a kiss.

b. *Mary gave Jiři a kiss Milena.

c. Mary gave Jiři a kiss yesterday.

(4) a. Mary said she liked Jiři.

b. Yesterday Mary said she liked Jiři.

c. *Yesterday Mary said ∅.

- We cannot add another DP to (3a).
- We *can* add a phrase like *yesterday* (3a).
- We cannot leave out the object in (4).

Arguments and adverbials II

give and *say* have different requirements

- *give* takes two DPs as its objects
- *say* takes a CP (a complementiser phrase) as its object
- adverbials like *yesterday* can be added or removed freely
- adverbials are *not* selected for, but arguments are

? What about *Mary gave*?

Theta roles

Based on the number of its arguments, a verb assigns theta roles to them

- *give* expresses a relation between
  1. someone who gives,
  2. something being given,
  3. someone receiving something
- *kiss* expresses a relation between
  1. someone who kisses,
  2. someone (or something!) being kissed

To understand these verbs, we need these roles to be assigned and expressed

- Every argument must carry one theta role.
- Every theta role must be assigned to one argument.

▸ This is the theta-criterion

The theta criterion

The theta criterion explains the ungrammaticality of too many/too few arguments

? What about the following examples, however?

(5) a. Anna is eating.

b. Anna is eating a sandwich.

(6) a. Jiři gave a book.

b. Jiři gave Anna a book.

(7) a. *Milena snored a sandwich.

b. Milena snored yesterday.

The theta criterion

The theta criterion explains the ungrammaticality of too many/too few arguments

? What about the following examples, however?

(5) a. Anna is eating.

b. Anna is eating a sandwich.

(6) a. Jiři gave a book.

b. Jiři gave Anna a book.

(7) a. *Milena snored a sandwich.

b. Milena snored yesterday.

- Some differences boil down to lexical semantics: **Anna is saying.*

Types of theta roles

So what is actually assigned? Theta roles come in different flavours...

Types of theta roles

So what is actually assigned? Theta roles come in different flavours...

- AGENT: an entity (willfully) doing something
- PATIENT/THEME: an (animate) entity undergoing something
- RECIPIENT/GOAL: an (animate) entity receiving something

(8) The detective interrogates the suspect / the ball.

(9) Mary loves the children / classical music.

(10) a. Milena gave Jiři the book.

b. Milena gave the book to the library.

Types of theta roles

So what is actually assigned? Theta roles come in different flavours...

- AGENT: an entity (willfully) doing something
- PATIENT/THEME: an (animate) entity undergoing something
- RECIPIENT/GOAL: an (animate) entity receiving something

(8) The detective interrogates the suspect / the ball.

(9) Mary loves the children / classical music.

(10) a. Milena gave Jiři the book.

b. Milena gave the book to the library.

Types of theta roles

So what is actually assigned? Theta roles come in different flavours...

- AGENT: an entity (willfully) doing something
- PATIENT/THEME: an (animate) entity undergoing something
- RECIPIENT/GOAL: an (animate) entity receiving something

(8) The detective interrogates the suspect / the ball.

(9) Mary loves the children / classical music.

(10) a. Milena gave Jiři the book.

b. Milena gave the book to the library.

Other types of verbs

Verbs do not just differ in the number of theta roles they assign

- subjects are often AGENTS
- (direct) objects are often PATIENTS/THEMES

⚠ but this is not always the case!

(11) a. Jiři fell.

b. The glass broke.

c. The cat died.

d. Milena is baking.

e. The government armed the people.

? How can we test for this?

Regularities in theta roles

When a verb takes a single argument, i.e. it is intransitive, it can take ...

- an AGENT
- or a PATIENT/THEME

When a verb takes two arguments, i.e. it is (mono)transitive, it can take ...

- an AGENT subject and a PATIENT/THEME object
- an AGENT subject and a RECIPIENT object
- a RECIPIENT subject and a THEME object
- an EXPERIENCER subject and a THEME object

But certain mappings of theta roles onto arguments are ruled out!

- no verb assigns PATIENT to the subject and AGENT to the object

The theta hierarchy

This motivates a first distinction on the theta hierarchy

(12) AGENT > PATIENT/THEME

Koeneman & Zeijlstra (2017) argue for extending the hierarchy using (13)

(13) a. *Jiři* *gave* *Anna* *a book.*
AGENT RECIPIENT THEME

b. **Jiři* *gave* *a book* *Anna.*
AGENT THEME RECIPIENT

The theta hierarchy

This motivates a first distinction on the theta hierarchy

(12) AGENT > RECIPIENT > PATIENT/THEME

Koeneman & Zeijlstra (2017) argue for extending the hierarchy using (13)

(13) a. *Jiři* *gave* *Anna* *a book.*
AGENT RECIPIENT THEME

b. **Jiři* *gave* *a book* *Anna.*
AGENT THEME RECIPIENT

The theta hierarchy

This motivates a first distinction on the theta hierarchy

(12) AGENT > RECIPIENT > PATIENT/THEME > GOAL

Koeneman & Zeijlstra (2017) argue for extending the hierarchy using (13)

(13) a. *Jiři* *gave* *Anna* *a book.*
AGENT RECIPIENT THEME

b. **Jiři* *gave* *a book* *Anna.*
AGENT THEME RECIPIENT

The theta hierarchy

This motivates a first distinction on the **theta hierarchy**

(12) AGENT > RECIPIENT > PATIENT/THEME > GOAL

Koeneman & Zeijlstra (2017) argue for extending the hierarchy using (13)

(13) a. *Jiři* *gave* *Anna* *a book*.
AGENT RECIPIENT THEME

b. **Jiři* *gave* *a book* *Anna*.
AGENT THEME RECIPIENT

(13) suggests that there are verbs which take a RECIPIENT and a THEME argument

? Can you think of such verbs?

Interim summary

Verbs select for

- a certain number of arguments
- and certain types of arguments: theta roles
- theta roles are mapped onto arguments in certain ways
- subjects are often AGENTS, objects are often PATIENTS, etc.
- looking at these mappings motivates the theta hierarchy
- (there is some other evidence for it, too)

Some consequences of theta theory

The number of arguments and grammatical functions

Any verb, independently of the number of its arguments, seems to have a subject

- If a verb takes a single argument, it is always a subject.

(14) a. Mary kisses John.

b. *Kisses John.

c. John is kissed.

It is then tempting to make a stronger generalisation about subjects...

(15) Every sentence has a subject. (Koeneman & Zeijlstra 2017: 68)

? What about *Swim!* or *It is raining*?

Accusative, ergative, unaccusative, and unergative verbs

Some more evidence for a theta hierarchy comes from different types of verbs

- ergative verbs can be transitive and intransitive (see (16))
- accusative verbs can also be transitive or intransitive (see (17))

The two types differ in the theta role they assign when intransitive:

(16) a. The butter is melting.

(17) a. Mary is eating.

Accusative, ergative, unaccusative, and unergative verbs

Some more evidence for a theta hierarchy comes from different types of verbs

- ergative verbs can be transitive and intransitive (see (16))
- accusative verbs can also be transitive or intransitive (see (17))

The two types differ in the theta role they assign when intransitive:

(16) a. The butter is melting.

b. Mary is melting the butter.

(17) a. Mary is eating.

Accusative, ergative, unaccusative, and unergative verbs

Some more evidence for a theta hierarchy comes from different types of verbs

- ergative verbs can be transitive and intransitive (see (16))
- accusative verbs can also be transitive or intransitive (see (17))

The two types differ in the theta role they assign when intransitive:

(16) a. The butter is melting. PATIENT

b. Mary is melting the butter. AGENT, PATIENT

(17) a. Mary is eating.

Accusative, ergative, unaccusative, and unergative verbs

Some more evidence for a theta hierarchy comes from different types of verbs

- ergative verbs can be transitive and intransitive (see (16))
- accusative verbs can also be transitive or intransitive (see (17))

The two types differ in the theta role they assign when intransitive:

(16) a. The butter is melting.

b. Mary is melting the butter.

(17) a. Mary is eating.

b. Mary is eating a sandwich.

Accusative, ergative, unaccusative, and unergative verbs

Some more evidence for a theta hierarchy comes from different types of verbs

- ergative verbs can be transitive and intransitive (see (16))
- accusative verbs can also be transitive or intransitive (see (17))

The two types differ in the theta role they assign when intransitive:

(16) a. The butter is melting.

b. Mary is melting the butter.

(17) a. Mary is eating. AGENT

b. Mary is eating a sandwich. AGENT, PATIENT

Accusative, ergative, unaccusative, and unergative verbs

Some more evidence for a theta hierarchy comes from different types of verbs

- ergative verbs can be transitive and intransitive (see (16))
- accusative verbs can also be transitive or intransitive (see (17))

The two types differ in the theta role they assign when intransitive:

(16) a. The butter is melting. PATIENT

b. Mary is melting the butter. AGENT, PATIENT

(17) a. Mary is eating. AGENT

b. Mary is eating a sandwich. AGENT, PATIENT

Theta roles as diagnostics for structure

We have seen that verbs have particular requirements on what they combine with

- This helps us diagnose differences between structures which look identical

(18) a. John hopes [to win the race].

b. John seems [to win the race].

- Both (18a,b) consist of a **main clause** and an **embedded clause**
- Both sentences have *John* as their subjects

? Are they identical structurally and semantically?

Theta roles as diagnostics for structure II

(19) a. John hopes [to win the race].

b. John seems [to win the race].

? How many and which theta roles do *hope* and *win* assign?

Theta roles as diagnostics for structure II

(19) a. John hopes [to win the race].

b. John seems [to win the race].

? How many and which theta roles do *hope* and *win* assign?

- *hope*: AGENT, THEME
- *win*: AGENT, THEME

Theta roles as diagnostics for structure II

(19) a. John hopes [to win the race].

b. John seems [to win the race].

? How many and which theta roles do *hope* and *win* assign?

- *hope*: AGENT, THEME
- *win*: AGENT, THEME

? How many and which theta roles do *seem* and *win* assign?

Theta roles as diagnostics for structure II

(19) a. John hopes [to win the race].

b. John seems [to win the race].

? How many and which theta roles do *hope* and *win* assign?

- *hope*: AGENT, THEME
- *win*: AGENT, THEME

? How many and which theta roles do *seem* and *win* assign?

- *seem*: THEME
- *win*: AGENT, THEME

Raising vs. control

The two examples in (19a,b) illustrate the difference between control and raising

- In control, a special type of pronoun, PRO gets the embedded AGENT role
- Both the main verb and the embedded verb assign AGENT theta roles

(20) John$_i$ hopes [PRO$_i$ to win the race].

Raising vs. control

The two examples in (19a,b) illustrate the difference between control and raising

- In control, a special type of pronoun, PRO gets the embedded AGENT role
- Both the main verb and the embedded verb assign AGENT theta roles

(20) John$_i$ hopes [PRO$_i$ to win the race].

Raising vs. control

The two examples in (19a,b) illustrate the difference between control and raising

- In control, a special type of pronoun, PRO gets the embedded AGENT role
- Both the main verb and the embedded verb assign AGENT theta roles

(20) John$_i$ hopes [PRO$_i$ to win the race].

- In raising, the main clause subject is not assigned a theta role by *seem*

(21) John$_i$ seems [$_i$ to win the race].

Raising vs. control

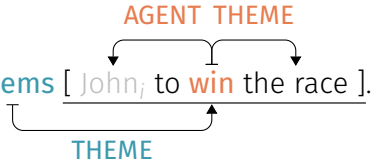
The two examples in (19a,b) illustrate the difference between control and raising

- In control, a special type of pronoun, PRO gets the embedded AGENT role
- Both the main verb and the embedded verb assign AGENT theta roles

(20) John$_i$ hopes [PRO$_i$ to win the race].

- In raising, the main clause subject is not assigned a theta role by *seem*

(21) John$_i$ seems [John$_i$ to win the race].



Raising vs. control

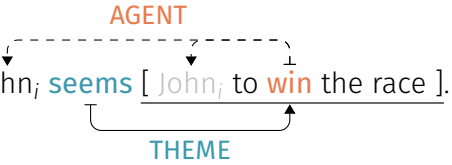
The two examples in (19a,b) illustrate the difference between control and raising

- In control, a special type of pronoun, PRO gets the embedded AGENT role
- Both the main verb and the embedded verb assign AGENT theta roles

(20) John$_i$ hopes [PRO$_i$ to win the race].

- In raising, the main clause subject is not assigned a theta role by *seem*

(21) John$_i$ seems [John$_i$ to win the race].



Raising vs. control II

Can we confirm that *seems* does not assign a theta role to its subject?

Raising vs. control II

Can we confirm that *seems* does not assign a theta role to its subject?

(22) a. It seems that John is winning the race.

b. *It hopes that John is winning the race.

The theta criterion assigns different structures to raising and control

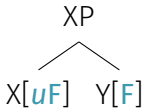
- ? Is this the only possibility?
- ? What kind of element is PRO? How is it restricted?

Merge, arguments and adjuncts

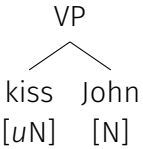
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

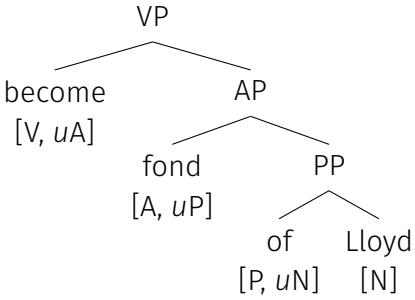
(23)



(24)



(25)

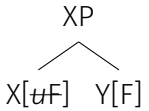


Merge, arguments and adjuncts

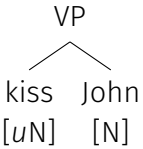
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

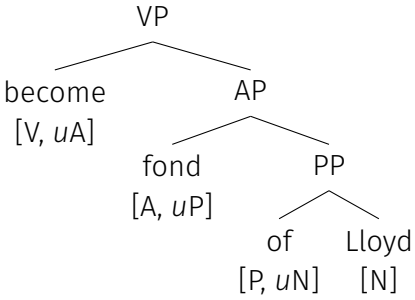
(23)



(24)



(25)

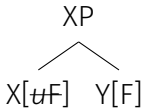


Merge, arguments and adjuncts

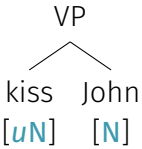
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

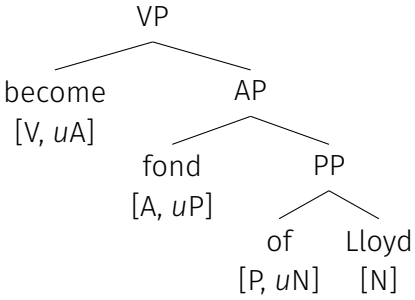
(23)



(24)



(25)

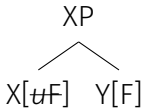


Merge, arguments and adjuncts

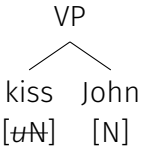
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

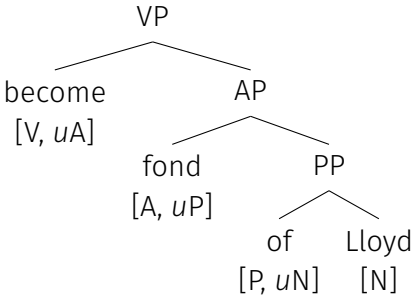
(23)



(24)



(25)

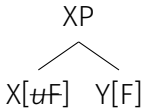


Merge, arguments and adjuncts

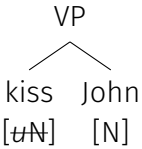
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

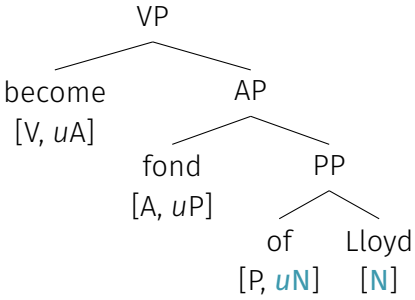
(23)



(24)



(25)

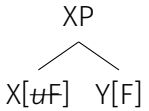


Merge, arguments and adjuncts

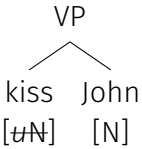
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

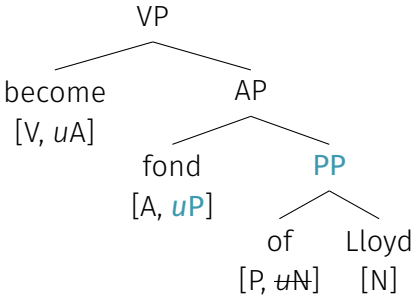
(23)



(24)



(25)

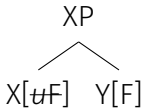


Merge, arguments and adjuncts

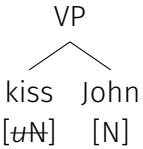
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

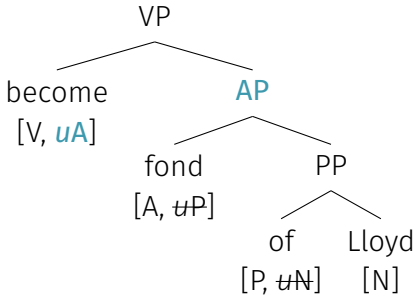
(23)



(24)



(25)

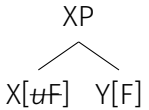


Merge, arguments and adjuncts

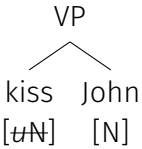
We can combine what we've said so far with what we learned about Merge.

- A lexical item's argument structure can be represented by features
- Such features are called c-selectional or subcategorisation features
  - below, they are shown as *u*X where *u* means uninterpretable
- These features are checked off when they are matched

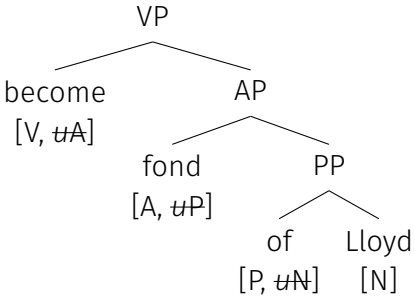
(23)



(24)



(25)



Conclusions

Conclusions

- Lexical items have selectional requirements
- On verbs, these include specific theta roles
- Verbs can also select for semantic features like animacy
  - s-selection
- Verbs, and other items also select for certain categories
  - c-selection
- c-selection restricts Merge and builds grammatical structures

Tomorrow we will look at case theory: what is case and what role does it play in syntax?

References I

Adger, David. 2003. *Core syntax*. Oxford: Oxford University Press.

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