

Introduction to Minimalist Syntax

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Basic information

Block I: The Basics - Dr. Johannes Mursell

- 1 Introduction and the model of grammar
- 2 Features
- 3 Constituency and the verbal domain

Block II: The tools - Dr. Anke Himmelreich

- 1 Inflection and agreement
- 2 TP, subject positions and one type of movement
- 3 Anaphora and binding

Block III: The sentence - Daniel Aremu, M.A.

- 1 Questions vs. declaratives
- 2 Another type of movement
- 3 Cross-clausal dependencies

Block IV: Information structure – Prof. Katharina Hartmann

- 1 Topic vs. focus
- 2 Cross-linguistic differences
- 3 The fine structure of focus-sentences

Basic information

- ▶ the background for the book is David Adger's book *Core Syntax* from OUP
- ▶ the book can be found online here: [Adger, D. \(2002\). *Core Syntax*. Oxford: OUP.](#)
- ▶ the class schedule as well as the slides can be found here: [Course Website](#)

External view: Linguistics as Science

- ▶ two types of knowledge
 - 1 partial, forgettable, explicit and learned knowledge
 - 2 full, permanent, implicit and not consciously learned knowledge
- ▶ example for 1 – Math
 - ▶ you learned how to do multiplication
 - ▶ you probably forgot the value of π
 - ▶ no one knows ‘all of math’
- ▶ linguistic knowledge belongs to the second kind of knowledge, also called tacit knowledge

Linguistic knowledge as tacit knowledge

- (1) a. Peter promised Mary to eat the cake.
 b. Peter told Mary to eat the cake.
- ▶ every (proficient) English speaker *knows* that the interpretations of the embedded clauses in (1) is different
 - ▶ How do they know that?
 - ▶ Or: How do you make tacit implicit knowledge explicit?

Linguistic knowledge as tacit knowledge

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 - ▶ How do they know that?
 - ▶ Or: How do you make tacit implicit knowledge explicit?
- linguistic knowledge can only be investigated indirectly

The scientific method

(2) **Scientific Method**

1. Observing linguistic data, discovering regularities
 2. Forming a hypothesis about what could underlie the regularities
 3. Deriving testable prediction(s) from the hypothesis
 4. Testing the predictions with more data
 5. Re-evaluating the hypothesis, return to step 1
- ▶ these underlying regularities or principles will most likely be complex and abstract
 - ▶ principles that can explain more phenomena are 'better' than principles that only explain one
 - ▶ a theory that makes fewer assumptions to explain a specific set of data is better than a theory requiring more assumptions for the same data (*Ockham's Razor*)

Linguistic theories

- ▶ from a more linguistic-y point of view, Chomsky (1965) proposes three levels of adequacy that can be used to evaluate a specific linguistic theory
 - ▶ **Observational Adequacy:** the theory covers all the data points
 - ▶ **Descriptive Adequacy:** the theory specifies rules that can derive only the well-formed data
 - ▶ **Explanatory Adequacy:** the theory describes the underlying factors which can then be generalized to other cases and language acquisition

Linguistic theories

- ▶ Observationally adequate: the first sentence in (3) is a possible sentence of English, the second one is not

- (3) a. Frank ate some pizza.
 b. *Ate some pizza.

- ▶ Descriptively adequate: the second sentence of (3) can never be a possible sentence of English because English sentences need subjects
- ▶ Explanatorily adequate: What is responsible in the child's brain that it learns this restriction?

Interim summary

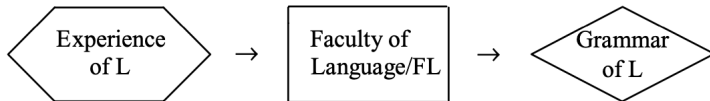
- ▶ these general considerations give us two guidelines for our linguistic theory
 - ▶ it should only include what is absolutely necessary – as **minimal** as possible
 - ▶ it should provide an explanation of the facts, not just descriptions – as **complex** as necessary

Internal view: Language and the mind

- ▶ communication is not unique to humans
- ▶ it can be observed in many animals
- ▶ however, language is a (probably) uniquely human capacity
 - ▶ it is **generative** – language can generate an infinite number of utterances from a finite set of elements
 - ▶ it is **recursive** – structures can be embedded in structures of the same kind

The language faculty

- ▶ easiest way to account for this: humans are born with the capacity for language
- ▶ this capacity is often called the faculty of language (FL)
- ▶ more specifically, FL allows every child to acquire any language as first language



The language faculty

- ▶ the actual content of FL/UG has been subject to a lot of discussion in the literature
- ▶ earlier proposals assumed a very rich FL – containing the principles and parameters that can determine any language
- ▶ newer proposal restrict its content, assuming simply an abstract linguistic computational system
- ▶ because this system needs to contain the fundamental building blocks of grammar, it is often equated with universal grammar UG

Properties of the grammar

- ▶ the grammar of all natural languages is based on FL
- ▶ consequently, we would expect that all these grammars share certain properties
- ▶ two of the most important shared properties
 - ▶ recursiveness
 - ▶ generativity

Languages are recursive

- ▶ being recursive means being composed of rules that make reference to themselves
 - ▶ this is widely known from mathematics
- (4) Fibonacci Numbers: $F_n = F_{(n-1)} + F_{(n-2)}$: 0 1 1 2 3 5 8 ...
- ▶ in Linguistics, that means that every language has the ability to embed structures into larger structures of the same kind
- (5) Peter said that Mary said that Frank said that ...

Languages are generative

- ▶ languages are stored in the brain
- ▶ problem: the storage space in the brain is finite
- ▶ at the same time, we can produce an infinite number of new structures / sentences

Languages are generative

- ▶ a solution to the problem: not everything is stored in the brain
- ▶ rather, it is assumed that smaller elements, e.g. words (or even just features), are stored
- ▶ larger structures are generated by the grammar
- ▶ thus, we can generate an infinite number of structures from a finite number of atoms
- ▶ again, this property of being generative is a property of every natural language

The inverted Y-model

- ▶ thus, we have the following components
 - ▶ storage in the brain = **Lexicon**
 - ▶ generative capacity = **Syntax** (or MERGE)
- ▶ but this is not enough, the structure generated in the syntax needs to be
 - ▶ interpreted
 - ▶ pronounced

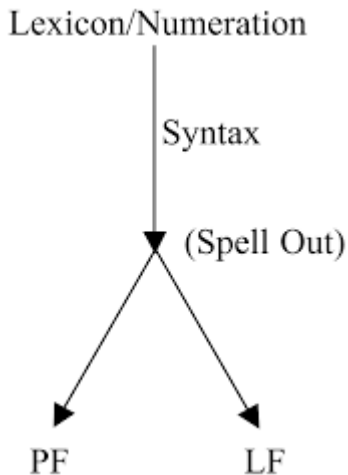
The inverted Y-model

- ▶ pronunciation and interpretation are related to the interface of language with other components of the mind
 - ▶ interpretation is related to the **C(onceptual)-I(ntentional) interface**
 - ▶ pronunciation is related to the **S(ensory)-M(otor) interface**
 - ▶ there is ample evidence that what we interpret is not always the same as what we pronounce
- (6) Every student talked to a teacher.
'For every student, there is a (random) teacher that they talked to.' ($\forall > \exists$)
'There is one specific teacher to whom every student talked.' ($\exists > \forall$)

The inverted Y-model

- ▶ (6) shows that what we pronounce is in a way independent of what we interpret
- ▶ of course, both are related to what was generated in the syntax
- ▶ but at some point, the two seem to 'split off' from one another
- ▶ this point is called **Spell-Out** and afterwards, we talk about
 - ▶ the level of **Logical Form (LF)** related to interpretation
 - ▶ the level of **Phonological Form (PF)** related to pronunciation

The inverted Y-model



The inverted Y-model

- ▶ we saw that operations like Q(uantifier) R(aising) only affect the LF branch
- ▶ this means they have an effect on the interpretation but not the pronunciation
- ▶ other operations might only affect the PF branch, for example head movement (more on that later)
- ▶ these operations have an effect on the pronunciation but not the interpretation
- ▶ if an operation has an effect on the PF and the LF branch at the same time, it probably has taken place before spell-out, i.e. in the syntax

Minimalism vs. GB

- ▶ it is difficult to evaluate what constitutes a good scientific theory (not just in linguistics)
- ▶ one kind of 'good' theory is based on as few assumptions as possible – it is as minimal as possible
- ▶ in addition, there should always be independent evidence for the assumptions
- ▶ i.e. just making an assumption so that one particular phenomenon can be explained should be avoided

Minimalism vs. GB

- ▶ another important difference between GB and Minimalism is the nature of the assumed system
- ▶ GB is a representational system
 - ▶ all structures correspond to the full X' schema
 - ▶ if a phrase does not have a specifier or complement, it still projects the whole X-X'-XP structure
 - ▶ at the end of the derivation, ungrammatical structures are filtered out by Filters
- ▶ Minimalism is a derivational system
 - ▶ the structure corresponds exactly to the derivation, there are no superfluous projections
 - ▶ ungrammaticality is caused by violations of proper derivations
 - ▶ there are no conceptions of Deep Structure or Surface structure

Minimalism vs. GB

- ▶ in Minimalism, everything happens for a reason, and this reason is usually features, their behaviors and interactions
- ▶ features drive the three core operations of Minimalism:
 - ▶ MERGE – the combination of two elements into a bigger one
 - ▶ MOVE – the displacement of an element from one position into another one
 - ▶ AGREE – the creation between two similar features over a longer distance

Minimalism vs. GB

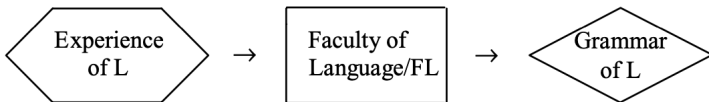
- ▶ two additional rules constrain the derivation in a minimalist system
 - ▶ the Extension Condition (7) states that operations can only target the highest projection node of a certain structure, i.e. the root
- (7) Merge of X and Y leaves the two SOs [Syntactic Objects, JM] unchanged.

Minimalism vs. GB

- ▶ the Inclusiveness Condition in (8) states that it is impossible to add new features to the derivation, everything has to be present from the beginning (in the items selected from the lexicon)
- (8) [A]ny structure formed by the computation [. . .] is constituted of elements already present in the lexical items selected for N [Numeration, JM]; no new objects are added in the course of computation apart from rearrangements of lexical properties (in particular, no indices, bar levels in the sense of X-bar theory [. . .]).

Summary

- ▶ all humans share the language faculty
- ▶ it allows the acquisition of any language as native language

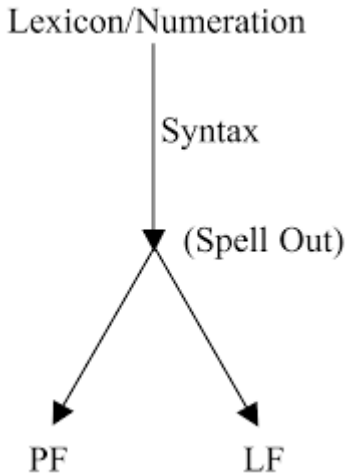


- ▶ as the FL is genetically determined, all languages should have similar properties (on an abstract level)
- ▶ among others
 - ▶ recursiveness
 - ▶ generativity

Summary

- ▶ the generative part is the syntax, i.e. the core component of our grammar
- ▶ interpretation and pronunciation are related to syntax but also partly independent
- ▶ after spell-out, we have a split into a PF-branch and an LF-branch
- ▶ operation can happen either in syntax or on these branches

Summary



Introduction to Minimalist Syntax II

Features

Features › words

- ▶ that the syntax cannot just depend on words is shown in (1) and (2)
- ▶ completely different words give rise to the same pattern
- ▶ this is independent of their actual surface form

- | | | | | | |
|-----|----|-------------------|-----|----|----------------------|
| (1) | a. | The pig grunts. | (2) | a. | The child wails. |
| | b. | The pigs grunt. | | b. | The children wail. |
| | c. | *The pig grunt. | | c. | *The child wail. |
| | d. | *The pigs grunts. | | d. | *The children wails. |

Features › words

- ▶ **agreement**, the change of the verb depending on the noun, does not depend on the morphological form of the noun
- ▶ this becomes even clearer when looking at other languages: many have agreement, but the way it is expressed differs vastly: suffixation like English, prefixation, some use both, some use suppletion (like English *be*)
- ▶ we need something more abstract than word form, and this more abstract thing is called **(morphosyntactic) feature**

Features › words

- ▶ these features then are what syntax deals with and manipulates
 - ▶ we saw evidence for a number feature [singular,plural]
 - ▶ depending on the feature, we see a difference on the verb
 - ▶ two things are important:
 - ▶ [plural] on the noun can have very different effects: *man-men, child-children, cat-cats, sheep-sheep*, so that the word-form doesn't tell us much about the actual feature
 - ▶ singular/plural affects the meaning of nouns, so the feature [number] is **interpretable**; not so much on verbs however, so [number] is **uninterpretable** on verbs
- we need to distinguish the **value** of a feature from its **interpretability**

Features > words

- ▶ many other features besides [number] are important in the world's languages
- ▶ (3) from Arabian, show the impact of [gender] as well

- (3)
- a. *Al-'awlaaduu qadim-uu*
the-boy.[MASC.PL] came-[MASC.PL]
'The boys came.'
- b. *al-bint-aani qadim-ataa*
the-girl-[FEM.DUAL] came-[FEM.DUAL]
'the two girls came.'
- c. **Al-'awlaaduu qadim-ataa*
The-boy.[MASC.PL] came-[FEM.DUAL]
'The boys came.'
- d. **al-bint-aani qadim-uu*
the-girl-[FEM.DUAL] came-[MASC.PL]
'The two girls came.'

How to represent features

- ▶ there are different ways to conceptualize features
 - ▶ we should go for the smallest possible set of features and underlying assumptions that we need (Minimalism)
 - ▶ easiest approach: features are just a property of words similar to [animate] being a property of humans
- (4)
- a. [singular]: man, cat, sheep, etc.
 - b. [plural]: men, cats, sheep, etc.

How to represent features

- ▶ this predicts words that carry [singular,plural], ie. words that carry a feature bundle
- ▶ this seems to be **dual**, which transparently consists of [singular] and [plural] in some languages, for example Hopi, at least morphologically

- (5)
- Pam taaqa wari*
that man ran.[SG]
'That man ran.'
 - Puma ta?taq-t yu?ti*
those man-[PL] ran.[PL]
'Those men ran.'
 - Puma ta?taq-t wari*
those man-[PL] ran-[SG]
'Those two men ran.'

How to represent features

- ▶ we could also assume a binary specification, i.e. $[\pm\text{singular}]$ and $[\pm\text{plural}]$
 - ▶ man [+singular,-plural] vs. men [-singular,+plural]
- ▶ but this overgenerates
 - ▶ [+singular,+plural] could be argued to represent dual
 - ▶ but what is [-singular,-plural]?

How to represent features

- ▶ a third way would be to assume other values than \pm , assuming that features look like [feature:value]
- ▶ for example [number:singular] and [number:plural]
 - ▶ it is not really clear how to constrain this system, i.e. do we for example want to add [number:dual]
 - ▶ this would mean dropping the assumption that dual consists of singular and plural
- ▶ the choice of feature representation is an empirical one between these options
 - ▶ primitive [value1], [value2], [value3]
 - ▶ binary [\pm value1], [\pm value2]
 - ▶ [feature:value]
- ▶ we will stick with the first approach but later see that we might need the third approach as well, at least sometimes

Gender features

- ▶ gender in English is a semantic feature, there is no syntactic process dependent on it
- ▶ however, gender plays a syntactic role in many languages, for example in French

- (6) a. *le homme est beau*
the.MASC man is beautiful.MASC
'the man is beautiful'
- b. *la femme est belle*
the.FEM woman is beautiful.FEM
'the woman is beautiful'

Gender features

- ▶ for some languages, grammatical gender and natural gender are referred to in the same terms (masculine, feminine)
 - ▶ but gender is just an arbitrary classification of nouns, often based on some shared meaning somewhere in the history of the languages
 - ▶ Dyirbal has four noun classes/genders
- (7)
- a. 1 - animate objects, men
 - b. 2 - women, water, fire, violence
 - c. 3 - edible fruit and vegetables
 - d. 4 - miscellaneous (includes things not classifiable in the first three)

Gender features

- ▶ not all noun classes are gender classes
- ▶ Dagbani has noun classes, but the membership only determines plural formation (declension)
- ▶ these are then rather inflectional classes, they are purely morphological

- (8) a. *paya* vs. *payi-ba*
woman.SG woman-PL
'woman vs. women'
- b. *dima* vs. *dim-di*
enmity.SG enmity-PL
'enmity vs enmities'

Gender features

- ▶ Likpakpaanl has noun classes
- ▶ and these classes trigger agreement on other nominal elements
- ▶ the classes have a syntactic effect, so they are more than declension classes

(9) *Kì-tìŋ kì-mìnà lé Nààbò bàn gàà, ...*
12-land 12-DIST.PROX FOC N. want seize
'It is this land, Naabo wants to seize, ...'

Phi-features

- ▶ number and gender are 2/3 of the components of phi (ϕ)-features
- ▶ the third component is person, which also plays a role in English

	present	past
1 Sg	am	was
2 Sg	are	were
3 Sg	is	was
1 Pl	are	were
2 Pl	are	were
3 Pl	are	were

Phi-features

- ▶ we could assume that *person* is represented by the primitives [1], [2], and [3]
- ▶ but this overgenerates, i.e. [1,2], [2,3], [1,3] and [1,2,3] but these are (nearly) all absent
- ▶ we can make it simpler though, and assume that [3] is not part of the person features
- ▶ third person is simply a default, the absence of person marking (and coincidentally, default agreement is usually third person)
- ▶ this could give us the following table with pronouns from Dagbani

ma [singular,1]	ti [plural,1]
a [singular,2]	ya [plural,2]
o [singular]	ba [plural]

Phi-features

- ▶ this is as complicated as it gets for number and person (excepts for the few languages that have a paucal)
- ▶ ϕ -features on nominal elements are interpretable and are motivated by semantic and morphological facts

Category features

- ▶ another important type of feature are category features
- ▶ these correspond to the major word classes N, V, A and P
- ▶ there seems to be some kind of semantic basis for the categorization, but it breaks down easily
- ▶ there are also morphological ways to separate the classes
 - ▶ words ending in *-tion, -al, -ment, ...* are usually nouns
 - ▶ words ending in *-ise, -ate, -en, ...* are usually verbs
- ▶ these generalizations capture enough words that it makes sense to distinguish word classes
- ▶ additionally, other morphological processes are restricted to certain classes of words

Category features

- ▶ there are also some syntactic tests, i.e. certain word classes being allowed/restricted in certain environments
- ▶ thus, we assume the major category features in (10)

- (10)
- a. noun [N]
 - b. verb [V]
 - c. adjective [A]
 - d. preposition [P]

Case

- ▶ pronouns in English (and other nominal elements in other languages) don't just depend on ϕ -features for their form but also on case

- (11) a. We all thought him/*he to be happy.
b. We all thought *him/he was unhappy.

- (12) a. *Puer hominem vidit.*
boy.[NOM] man.[ACC] saw
'The boy saw the man.'
b. *Puerum homo vidit.*
boy.[ACC] man.[NOM] saw
'The man saw the boy.'

Case

- ▶ case appears to mark the function of a constituent in the sentence
- ▶ this is not true, however

- (13) a. *Ihm ist kalt.*
he.DAT is cold
'He is cold' (lit.: 'Him is cold.') (German)
- b. *Ég mun sakna hans*
I will miss him.[GEN]
'I will miss him.' (Icelandic)

- ▶ thus, we assume that case is uninterpretable and does not mark function but is dependent on syntactic structure

Case

- ▶ an example for this comes from Russian, where negation can influence the case of the object

- (14) a. *Ivan čital ètu knigu.*
Ivan read.[PST] this.[ACC] book.[ACC]
'Ivan read this book.'
- b. *Ivan ne čital ètoj knigi.*
Ivan not read.[PST] this.[GEN] book.[GEN]
'Ivan didn't read this book.'

- ▶ cases relevant for English are nominative, genitive and accusative/dative
- ▶ but note that there are languages with more than 10 cases which in some instances can be combined to up to 250+ combinations (Tsez)

Case

- ▶ many languages mark case on nominal elements in general
- ▶ others only show remnants of case distinctions, usually in the pronoun system
- ▶ this holds for English (above), but also for (some) Mbia languages

Verbal features

- ▶ we saw that the verb inflects for the features of the subject in English (and many other languages)
- ▶ consequently, (certain) ϕ -features are expressed on the verb, however, on the verb they are uninterpretable
- ▶ a feature that is interpretable on the verb is related to tense

- (15)
- Peter walk-ed.
 - Milena will make carbonara.
 - Richard is going to chop some wood.

Verbal features

- ▶ as the last slide showed there is really only one tense in English that is marked on the verb, namely [past]
- ▶ future is expressed by a periphrastic verb form and present can be seen as a default
- ▶ this is not true in all languages, some have a synthetic future tense

(16) *Mox fratrem vide-bo.*
soon brother.ACC see-FUT.1SG
'I will see my brother soon.'

(Latin)

Verbal features

- ▶ besides tense and agreement features, verbs in English can appear in other morphological forms
- ▶ participles in English can be used to mark Aspect
 - ▶ *be* + present participle in *-ing* marks progressive aspect
 - ▶ *have* + past participle in *-ed/-en/etc.* to mark perfective aspect
- ▶ we can mark participles with the feature [part] with the past participle also carrying the feature [past]
- ▶ in participle constructions in English, verbs like *have* and *be* are called auxiliary verbs and inflect
- ▶ another verbal feature we are going to assume is [inf] to characterize infinitives

Verbal features

- Mabia languages mark it differently: tense with preverbal particles and aspect directly on the verb

- (17) a. *Adam kɔr ukɔla.*
Adam slaughter fowl
'Adam slaughtered fowl.'
- b. *Adam fé kɔr ukɔla fénná.*
Adam HEST.PST slaughter fowl yesterday
'Adam slaughtered fowl yesterday.' (Likpakpaani)
- (18) a. *Napari dá búá.*
Napari buy.PFV goat
'Napari bought a goat.'
- b. *Bíhí máá lá-r-í bémáŋá*
children DEF laugh-IPFV-CJ themselves
'The children are laughing at themselves.'
(Dagbani)

Interim summary

Kind of feature	features	comments
tense	[pst]	some languages also need [fut]
number	[sing],[pl]	dual as bundle [sg,pl]
person	[1],[2]	[1,2] for inclusive <i>we</i> , 3 as default
gender	[masc],[fem]	more for other languages
case	[nom],[acc],[gen]	more for other languages
category	[N],[V],[A],[P]	maybe reducible to just [N],[V]
others	[part],[inf]	appear on verbs

Interim summary

- ▶ lexical items are made up of additional features, namely semantic and phonological ones
- ▶ syntactic features may also be accessed by the morphophonology and thus change the ‘shape’ of items
- ▶ we also need to distinguish interpretable from uninterpretable features, ie. those that have an impact on meaning and those that haven’t

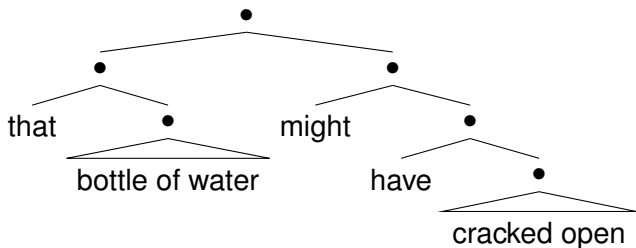
Introduction to Minimalist Syntax III

VP

Constituents

- ▶ we know that sentences consist of smaller constituents

(1)



- ▶ in general, structures like (1) are created by the operation **MERGE**

Merge from a technical point

- ▶ Merge joins two syntactic objects to create a larger one
- ▶ each element comes with a **Label**, usually their category feature
- ▶ in (2), those labels are X, Y and the new object gets the label Z
- ▶ the branches make up a tree in which Z **immediately contains** the original objects

(2)

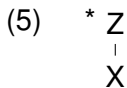
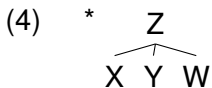


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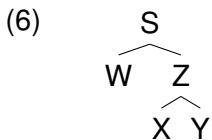
[_Z X Y]

Merge from a technical point

- ▶ Merge is always **binary**, it takes two objects to form a new one, so that the structures are always **binary branching**



- ▶ Merge is recursive, meaning we can apply it to structures already created by Merge



Determining the head

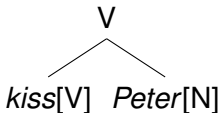
- ▶ usually, when merging X and Y, the label of the new structure will either be X or Y
- ▶ the label is determined by the **head** of the structure
- ▶ syntactically, heads determine the distribution
- ▶ since all the bold phrases in (7) behave similar to [N] **pigs**, **pigs** is the head and the whole constituent is of category [N]

- (7)
- Pigs** love truffles.
 - Those pigs** love truffles.
 - The old pigs** love truffles.
 - Some happy pigs which can fly** love truffles.
 - Some disgruntled old pigs in those ditches** love truffles.

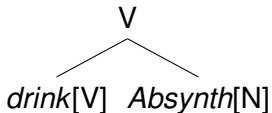
Determining the head

- ▶ to capture the idea that the distribution of the constituent is determined by its head, we assume that the features of the head **project**, they are copied from the daughter to the mother node

(8)



(9)



Selection

- ▶ there are other ways to determine the head of a structure
- ▶ predicates need to combine with a certain number of arguments
- ▶ we can distinguish them by the number of their arguments
 - ▶ **0-place predicates:** *to rain, to snow*
 - ▶ **1-place predicates:** *to run, to joke*
 - ▶ **2-place predicates:** *to kick, to swallow*
 - ▶ **3-place predicates:** *to give, to send*

Selection

- ▶ the predicates impose certain thematic restrictions on the arguments they combine with
- ▶ 1-place predicates usually combine with an **Agent** (**Causer, Actor**) of an action (10-a) or a **Theme** (10-b)
- ▶ 2-place predicates usually take an Agent and a theme (10-c)

- (10)
- Alison ran.
 - Alison collapsed.
 - Jenny swallowed the fly.

- ▶ importantly, thematic (θ)-roles are assigned to the arguments by the verb

Selection

- ▶ even though thematic roles are inherently semantic, they play an important role in syntax
- ▶ if a verb has a θ -role to assign but there is no element in the clause to receive it, the sentence is ungrammatical

(11) *Anson put a book

- ▶ also, it is impossible for the same argument to be assigned to thematic roles, ie. (12) cannot mean that Dante is the accuser and the accused at the same time
- ▶ this leads to the generalisation in (13)

(12) *Dante accused

(13) **The Unique Θ Generalization**

Each θ -role is assigned to exactly one constituent in the sentence.

C-Selection

- ▶ it is not enough to talk about the meaning of things selected by the verb (this is often called **S(emantic)-Selection**)
- ▶ we also need to associate certain syntactic properties (the categories of the arguments) with certain thematic roles
- ▶ the categorical properties of the arguments are encoded by **categorial selectional features (c-selectional features)**
- ▶ in (14), *kiss* has a [V] feature because it is a verb and it selects a constituent with the feature [N]

(14) kiss Mary; kiss pigs; *kiss eat; *kiss by

C-Selection

- ▶ we made a distinction between interpretable (important to semantics) and uninterpretable (not important to semantics) features
- ▶ we will assume that c-selectional features are also uninterpretable features, since they do not impact the semantics
- ▶ c-selectional features are the driving force of merge and also enable us to determine the head before merge even takes place

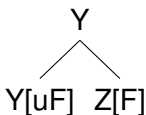
Merge again (technical)

- ▶ we model c-selectional features as uninterpretable features that we need to get rid of before spell-out (uninterpretable features at LF cause a crash)
- ▶ one way of getting rid of uninterpretable features is **checking**: if the uninterpretable feature finds a similar feature which is interpretable, it can be checked (meaning it can be deleted)
- ▶ so if an uninterpretable feature [uF] finds an interpretable feature [F], [uF] can be **deleted**

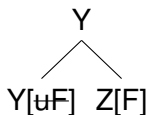
Merge again (technical)

- ▶ note that this introduces an asymmetry into Merge
- ▶ one element gets rid of a [uF] feature, the other doesn't
- ▶ we assume that the element that gets rid of a [uF] feature is the head

(15)



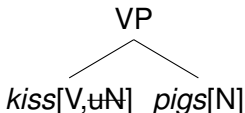
(16)



Merge again (less technical)

- ▶ we can apply this easily to English
- ▶ we assume that *kiss* carries two features, [V] because it's a verb and [μ N] because it needs to Merge with a noun and assign a theta role to it

(17)



Merge again (less technical)

- ▶ if *kiss* doesn't merge with a noun, the [uN] feature cannot be checked and deleted, violating the checking requirement
- ▶ the same happens when we try to merge *kiss* with something other than a noun: because [uN] needs [N] to be checked, if we merge it with [A] or [V], [uN] cannot be checked
- ▶ every [uF] is associated with a θ -role, so this is basically a theoretical implementation of the Unique Θ Generalization

Putting everything together

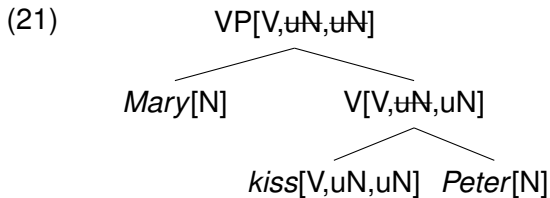
(18) **Definition of Merge**

- a. Merge applies to **two** syntactic objects to form a new syntactic object.
- b. Merge only applies to the root nodes of syntactic objects.
- c. Merge allows checking of an uninterpretable c-selectional feature on a head since it creates a sisterhood relation.

(19) **Definition of head** The head is the syntactic object which selects in any Merge operation. The features of the head of the Merge operation project.

Putting everything together

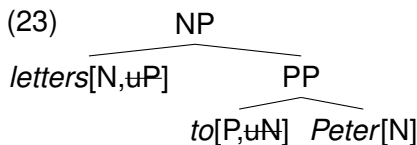
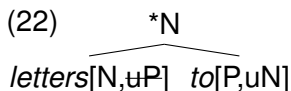
(20) *kiss*[V][uN][uN]; *Peter*[N]; *Mary*[N]



- ▶ two things to point out about (21)
 - ▶ VP is just an abbreviation for V which has checked all its c-selectional features, the 'P' does not mean anything by itself
 - ▶ the V that is composed of *kiss* and *Peter* corresponds to V', i.e. a **projection** of V that has checked some but not all c-selectional features

Trapping c-selectional features

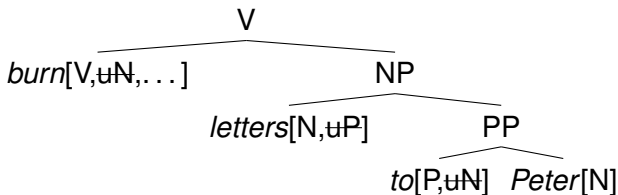
- ▶ Merge always applies at the root node: we cannot have constituents which contain an element with unchecked c-selectional features other than the head of the constituent
- ▶ this is because those features would be ‘trapped’, could never be checked and cause ungrammaticality



Complements

- ▶ merging a phrasal element with a projecting head creates a **head-complement structure**
- ▶ if the head has more than one c-selectional feature, it is the first application of Merge, sometimes called **First Merge**

(24)

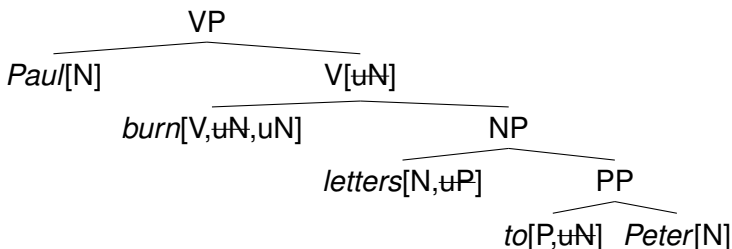


- ▶ *letters to Peter* is the complement of *burn*
- ▶ *to Peter* is the complement of *letters*
- ▶ *Peter* is the complement of *to*
- ▶ in English, complements are linearized to the right of their selecting head, but this varies cross-linguistically

Specifiers

- ▶ certain heads have two c-selectional features, so that Merge needs to apply twice
- ▶ **second merge** creates **specifiers**

(25)



Adjuncts

- ▶ not all the constituents in a sentence need to be arguments
- ▶ **adjuncts** serve as modifiers, they are not obligatorily required by the verb

- (26)
- Anson demonised David **every day**.
 - Anson demonised David **at the club**.
 - Anson demonised David **almost constantly**.
 - Anson **very happily** demonised David.

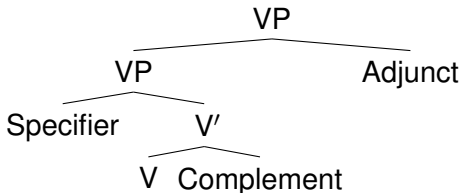
- ▶ adjuncts can be of very different categories, APs, AdvPs, PPs, etc.
- ▶ it's far from settled how adjuncts are integrated into the structure

Adjuncts

- ▶ adjuncts are not incorporated by merge
 - ▶ a maximal projection cannot select an adjunct since it doesn't have any c-selectional features left
 - ▶ also, adjuncts are optional
 - ▶ the adjunct cannot select the phrase since then the adjunct would project
- ▶ thus, another operation, **Adjoin**, is assumed to place adjuncts in the structure
- ▶ two types of adjunction: XP to YP, X to Y (head adjunction)

Interim summary – VP structure

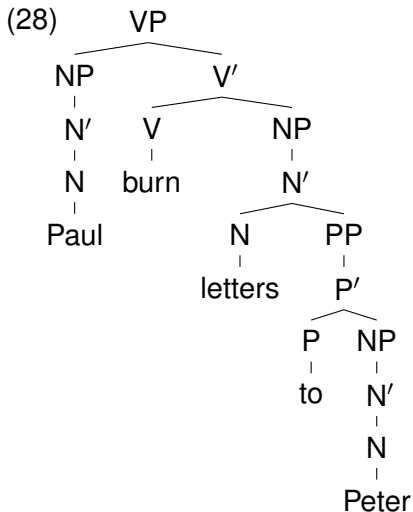
(27)



- ▶ preliminary: vP for the subject is missing
- ▶ we haven't addressed how to make sure that the ordering is right

Comparison to X'

- ▶ due to being strictly binary branching, we only have intermediate projections when specifiers are present
- ▶ X' is a representational system, so $[_{XP} YP [_{X'} X ZP]]$ is always projected
- ▶ in Minimalism generally, syntax is understood as a derivational system



C-command

- ▶ just to mention it, c-command can be used to test for structure and is based on the hierarchical relations that are established between elements due to merge
- ▶ Adger defines c-command as in (29) and it provides an easy explanation for binding and NPI licensing (30)

- (29) A node A c-commands a node B iff
- either B is A's sister or
 - A's sister contains B.

- (30) a. *The man I saw shaved myself.
b. *The picture of no one hung upon any wall.

Ditransitives

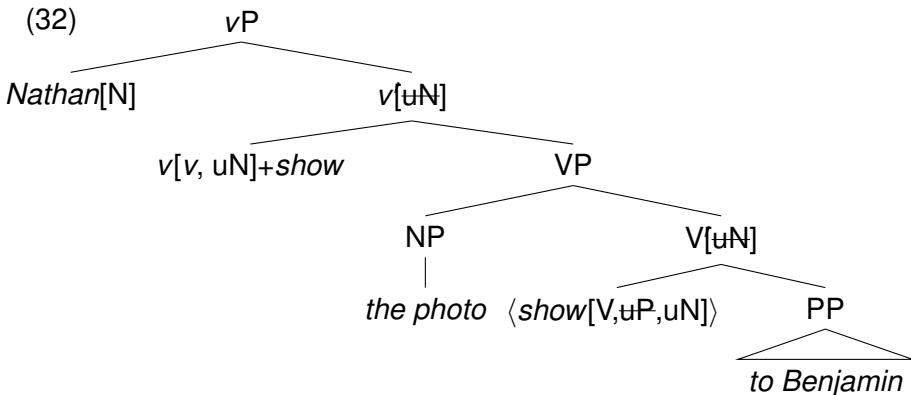
- ▶ ditransitive present an apparent problem for the assumption of binary merge

- (31) a. Benjamin gave the cloak to Nathan.
 b. Nathan received the cloak from Benjamin.

- ▶ we only have two positions available in the VP, the complement and the specifier, but (31) has three arguments
- ▶ ternary branching cannot be the solution due to the nature of merge

Ditransitives

- ▶ to create more positions, we assume another projection on top VP, the vP



Ditransitives

- ▶ both the objects occupy the VP, the complement and the specifier, respectively
- ▶ the subject is then merged as the specifier of the higher projection, vP
- ▶ evidence for this assumption comes from constituency tests, showing that the two objects form a constituent to the exclusion of the subject

(33) Same gave [the cloak to Lee] and [the magic chalice to Matthew].

Ditransitives

- ▶ the meaning contribution of the head of vP, v, is related to causation
- ▶ this is not really visible in English
- ▶ other languages show this relation more clearly in **causative constructions**
- ▶ in French, (34), the verb appears to move overtly

- (34) a. *George mange.*
 George eat.[PRES,3SG]
 ‘George eats.’
- b. *Pascal fait manger George manger*
 Pascal make.[PRES,3SG] eat.INF George
 ‘Pascal makes George eat.’

Linking

- ▶ coming back to thematic roles, the assumption of a vP only in ditransitives leaves us with a problem
 - ▶ in ditransitives, the subject, the AGENT, is introduced as the specifier of *v* and the THEME as specifier of V
 - ▶ in transitives, AGENT goes to the specifier of V and THEME to the complement of V
 - ▶ this means there is no uniform way in which particular θ -roles are represented in syntax

Linking

- ▶ these problems are known as **The Linking Problem** and the answer is the **Uniformity of θ -Assignment Hypothesis**

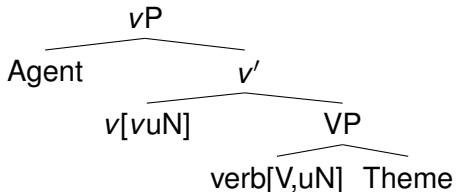
(35) **UTAH**

Identical thematic relationships between predicates and their arguments are represented syntactically by identical structural relationships at Merge.

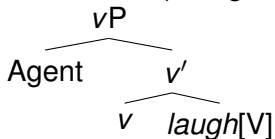
- ▶ in other words: same theta-roles always go into the same position
- ▶ this also means transitives contain v (36)

Linking

(36) Transitives



(37) Intransitives (unergatives but not unaccusatives)



Summary

- ▶ first merge creates complements
- ▶ second merge creates specifiers
- ▶ adjunction needs to be treated differently
- ▶ ditransitives are based on a v -V structure
- ▶ the linking problem is addressed with the UTAH
- ▶ following the UTAH, transitives also contain v and spec- v P
- ▶ for intransitives, a distinction is assumed between unergatives (AGENT) and unaccusatives (THEME)

Outlook

- ▶ we now have finished the thematic domain, the area of the clause related to theta-role assignment
- ▶ above the theta-domain are many functional projections that play important roles in syntax
- ▶ this will be the topic of the class next week