

Morphology I: Word Formation and Lexical Integrity

Syntax all the way down or not

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Introduction: Lexical Integrity

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- Well...

- Words can (relatively straightforwardly) be defined based on phonological grounds:
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 - Edge-sensitive processes
 - Vowel Harmony
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- Occasionally, there are mismatches even between different phonological diagnostics, but overall the notion of *phonological word* works relatively well.

- Different morphosyntactic and semantic criteria have been proposed to identify words (Haspelmath & Sims 2010):
 - Words are separable, and can undergo movement whereas parts of words are not:
 - (2) *Cake_i he ate cheese t_i.

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↪ While movability of an element X is generally taken as a relatively robust diagnostic for wordhood, it is certainly not a necessary one. We know many cases where elements we do not necessarily see as words cannot move:

(3) *Cake_i he ate delicious t_i.

↪ Also, there are additional confounds with clitics (see below) and even residual cases of split Ns:

(4) ?Kuchen haben wir nur noch Käse-, Erdbeer- und Streusel-
Cake have we only yet cheese, strawberry and crumble

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 - Words can be replaced by pro-forms, parts of words cannot:
- (5)
- a. My aunt has one gold watch and three silver ones.
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- ↪ Not all languages have pro-forms and if they do, they are usually licensed in very specific contexts.

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↪ But there are also clear exceptions:

- (7) a [[red cross] nurse]

↪ Cataphoric reference with incorporated nouns (see below).

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 - Words allow for coordination ellipsis whereas parts of words do not
- (8) a. Large fish and small fish are in the tank.
b. Large \emptyset and small fish are in the tank.
- (9) *Flying \emptyset and small fish are in the tank.

↪ This criterion is most certainly plainly wrong:

- (10) Wir verkauf-en Herren-gürtel und -schuhe.
We sell-1PL men-belts and shoes
'We sell men's belts and men's shoes.'
- (11) Mej peres, pij den kajek-vlak-em už-am
1SG cat, dog and bird-PL-ACC see-1SG
'I see cats, dogs and birds.' Mari, Guseva & Weisser
2018
- (12) I hate both pre- and postsyntactic theories of
morphology.

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- (13) a. What kind of buffalo did you see? *Water
b. What would you like to drink? Water.

- But clearly, again this is neither a necessary nor a sufficient condition since there are additional confounds on what qualifies as a fragment answer?

- (14) a. Whose buffalo did you pat? *My.
b. What did you see? *Buffalo.

- Also, there are again additional, possibly extralinguistic factors that play a role here:

- (15) What kind of cake did you have? Chocolate.

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Some areas are particularly tricky when it comes to defining words:

- ▶ Compounds vs phrases: Sometimes it is not entirely clear whether a constituent is a word or a phrase.
 - ↪ Standard German usually does not allow for bare noun objects but some noun-verb combinations are ok.

(16) Ich will Zeitung les-en
I want newspaper read-INF

(17) Ich war gestern den ganzen Tag rad-fahr-en.
I was yesterday the whole day bike-ride-INF

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- These incorporated objects cannot be modified or referred back to with a pronoun.

(18) *Ich war gestern den ganzen Tag gelbes
I was yesterday the whole day yellow
rad-fahr-en.
bike-ride-INF

- But given the right alternatives, they need not appear next to the verb:

(19) Ich fahr-e meistens Rad
1SG ride-1SG mostly bike

(20) Rad bin ich noch nicht ge-fahr-en heute
bike AUX 1SG yet not PTCP-ride-PTCP today
aber Roller
but scooter.
'I haven't been riding a bike today but a scooter.'

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- Many Finno-Ugric languages so-called nominative possessors. They receive a generic reading, cannot be separated from the head noun, nor can they be referred back to with a pronoun.

(21) Mon kion vuz-em-ez kyl-i
I wolf howl-PTCL-ACC hear-PAST
'I heard a wolf's howl.' Udmurt, Assmann et al 2013

- ↪ The literature goes back and forth about whether these elements are actual possessors or parts of a compound.

↔ Clitics: In many cases, it is not clear whether clitics are independent words or not.

- (22) a. Marija želi da=joj=ga predstavi
Maria wants that=F.DAT.SG=M.ACC.SG introduces
'Maria wants to introduce him to her.'
- b. ?Marija=joj=ga želi da predstavi
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- Serbian
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- Clitics often behave very idiosyncratically with respect to the diagnostics above and can usually only be discussed on a language-to-language basis.
- Sometimes the term *clitic* is used simply to cover elements that are not purely affixal or completely free.

- Building on the diagnostics above, it has been claimed that the following hypothesis holds:

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- ↪ Movement is a syntactic operation and thus moving just a part of a word violates the LIH
 - ↪ Adjunction/Modification is a syntactic operation and thus the LIH prohibits modification of only a part of the verb
- However the validity of the Lexical Integrity Hypothesis is still very much under debate.

Two Models of Word Formation

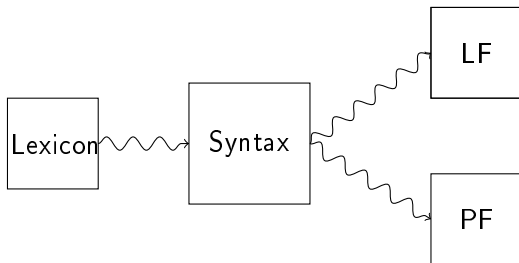
- Depending on one's assumption whether the Lexical Integrity Principle holds, one would choose a different theoretical modelling to do justice to that finding.
 - ↪ Most traditional accounts including Paradigm Function Morphology, Minimalist Morphology, A-Morphous Morphology, etc. adopt the Lexical Integrity Hypothesis.
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 - ↪ Other approaches like Distributed Morphology reject it.
- Accordingly, approaches without the LIH need to say something extra about why parts of words cannot move or be coordinated (if that really holds).
- Approaches with the LIH need to address potential counterexamples.

- And in order to have the LIH follow from the general architecture of grammar, it was assumed that syntax and morphology are two different modules of grammar.

(23) Traditional model of grammar:



LF: Logical Form

PF: Phonological Form

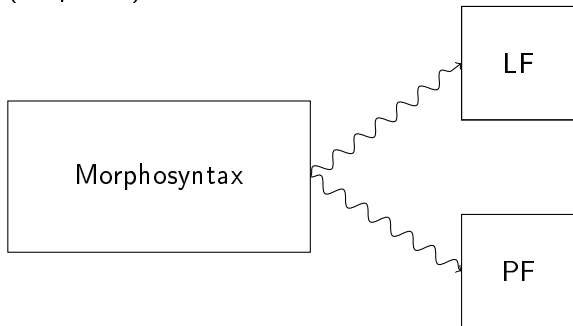
- In this approach, words are formed in the lexicon by a finite set of word formation rules.
- The newly built words carry some of the morphological features on the highest node

- (24)
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 - b. sleeps [V,3SG,PRES]
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- Other features, which are not part of the highest node are not accessible to syntax.
 - ↪ The property that *meaningfulness* is derived from an adjective cannot be accessed by the syntax.
- The whole words are then inserted into syntax whose rules only have a subset of features available.

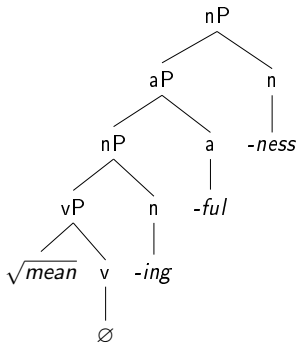
- But more recently, this assumption has been challenged by the framework of *Distributed Morphology* (DM).
- DM assumes that morphology and syntax are one module:

(25) Architecture of Grammar according to DM
(simplified):



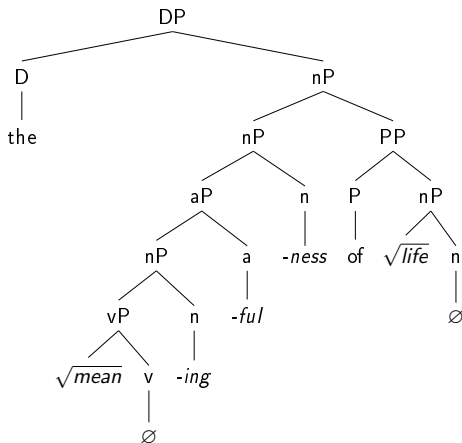
- In this framework, *mean*, *ing*, *ful* and *ness* are actual heads in the syntactic representation.

(26)



- These trees in (26) are built up with the same machinery as regular syntactic trees and are actually part of the same derivation:

(27)



- This idea is captured in the first (and probably most important) slogan of Distributed Morphology:

Syntax all the Way Down

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- There is no combinatorial grammatical module other than syntax

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 - There is no combinatorial grammatical module other than syntax
- ↪ Any differences between word formation and 'phrase formation' are only apparent and derive from independent factors (such as locality conditions, etc.)

- ▶ Let's apply the two models to a concrete example with (sufficiently) complex morphology:

(28) Mâj urgâ-žê-m pagalê-š-êm
1SG sew-NLMZ-ACC respect-PAST-1SG
'I like/respect the tailor' Meadow Mari, Finno-Ugric

- In a traditional lexicon-based theory, each of these words is built independently in the lexicon and then inserted into the syntax.

¹In an incremental theory. See Stump (2001)

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- $[V \text{ pagal}\hat{\alpha}] \oplus [PAST \check{s}] \rightarrow$
 - $[V, PAST \text{ pagal}\hat{\alpha}\check{s}] \oplus [1SG \hat{\alpha}m] \rightarrow$
 - $[V, PAST, 1SG \text{ pagal}\hat{\alpha}\check{s}\hat{\alpha}m]$

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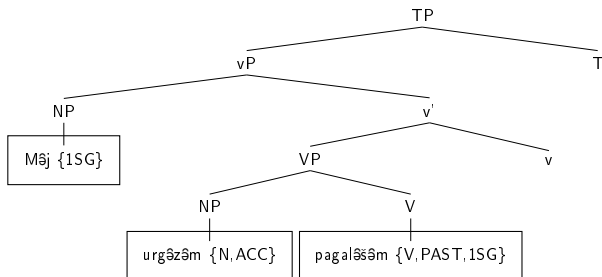
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 c. $[V, PAST, 1SG \text{ pagal}\hat{\alpha}\check{s}\hat{\alpha}m]$
- (30) a. $[V \text{ urg}\hat{\alpha}] \oplus [N \text{ zo}] \rightarrow$
 b. $[N \text{ urg}\hat{\alpha}\text{zo}] \oplus [ACC \text{ m}] \rightarrow$
 c. $[N, ACC \text{ urg}\hat{\alpha}\text{z}\hat{\alpha}m]$

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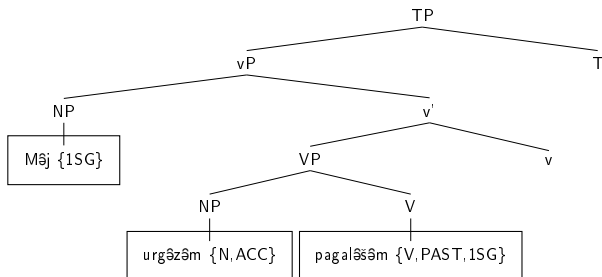
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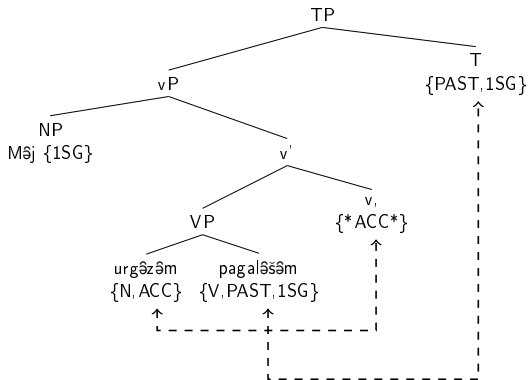
(31)



- In this system, words are the smallest units that the syntax operates with (indicated by the boxes). Information inside the boxes (e.g. that the direct object is a deverbal noun) is not available in syntax!

- To ensure that the lexicon generated the right words with the right feature specification, the features on the syntactic terminals are then *checked* against their syntactic context.

(32)



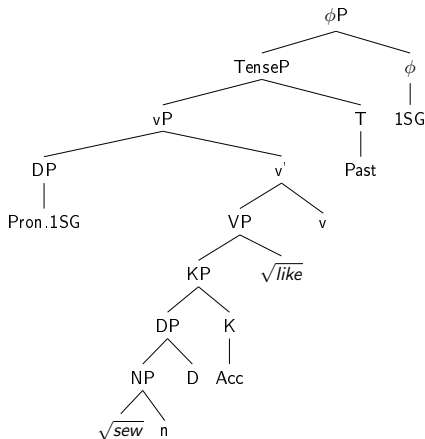
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 - ↪ We don't want a second person subject with a first person agreement on the verb.
- As we will see later, checking of features applies either under agreement or sisterhood (thus implying movement).

- Following the slogan *Syntax all the way down*, each morpheme in the linear string corresponds to a syntactic head in the assumed tree.

(33)



- These abstract heads are eventually realized by the phonological information associated in the list of Vocabulary Items:

- (34)
- a. [1SG] ↔ /m/
 - b. [Past] ↔ /š/
 - c. [n] ↔ /zo/
 - d. [v] ↔ /∅/
 - e. [D] ↔ /∅/
 - f. [Acc] ↔ /m/
 - g. $\sqrt{\text{like}}$ ↔ /pagalə/
 - h. $\sqrt{\text{sew}}$ ↔ /urgə/

- And once the hierarchical structure is translated into a linear one, we end up with the right string of phonological material

(35) Mâj γ urgâ γ zâ γ \emptyset γ m γ pagalâ γ \emptyset γ š γ êm

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 - ↪ First, a bland string of morphemes is not enough: Clearly more needs to be said how this sequence of morphemes is then translated into morphological and/or phonological domains.

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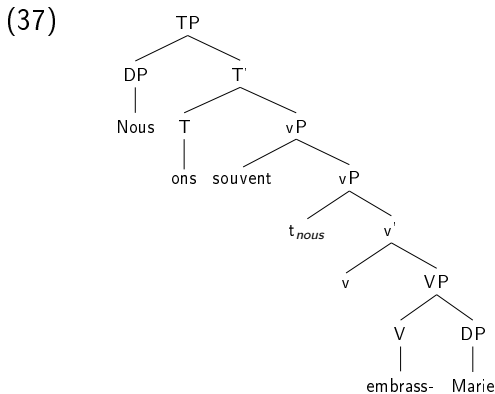
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- Neat, all the morphemes simply fall into place. Why do we need an additional module of grammar if things just work out like that?
 - ↪ First, a bland string of morphemes is not enough: Clearly more needs to be said how this sequence of morphemes is then translated into morphological and/or phonological domains.
 - ↪ Second, in other languages, getting the morphemes into the right place turns out to be much more complicated. Thus, even in a system like DM we need some kind of word-formation operations.

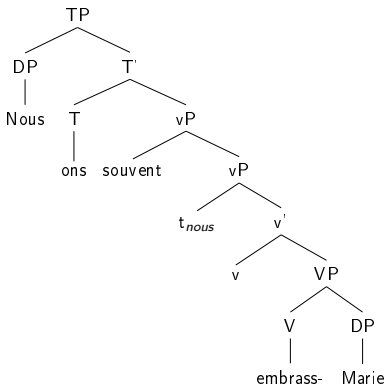
- Consider the example to the one in Mari in a head-initial language like French:

(36) Nous embrass-ons souvent Marie
 We kiss.1PL.PRES often Mary
 'We often kiss Mary.'

Pollock (1989)

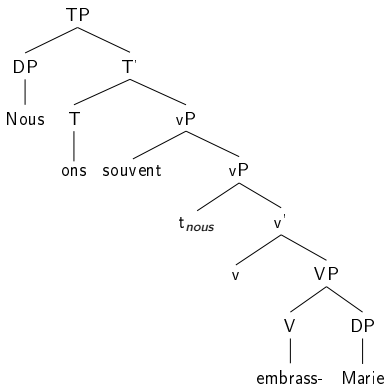


(38)



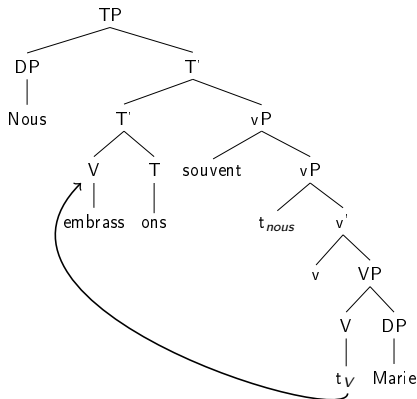
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(38)



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- Answer: We need to adopt a word-formation process usually referred to as *head-movement*. It allows heads to successively move up the tree picking up inflectional affixes on the way.

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- Answer: We need to adopt a word-formation process usually referred to as *head-movement*. It allows heads to successively move up the tree picking up inflectional affixes on the way.

- Head-movement is a word-formation process that solves the ordering problems due to:
 - ↪ The assumption of a universal underlying syntax.
 - ↪ The assumption of a macro-module that comprises syntax and morphology.

Side Remark:

- A lexicalist account in terms of checking also requires instances of head-movement to accomodate examples from French or German V2.
- In these cases, a checking account would simply say that some features (such as tense) can only be checked under sisterhood, thereby requiring the verb to move to T.

Side Remark:

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- In these cases, a checking account would simply say that some features (such as tense) can only be checked under sisterhood, thereby requiring the verb to move to T.
- In these theories, head-movement is not a word-formation process. It is a purely syntactic process to get the constituency and the word order right.
 - ↪ And, as has been argued by Gribanova & Harizanov (2018), Bruening (2018), or Arregi & Pietraško (2018) have argued, head-movement for word order reasons has fundamentally different properties from head-movement for morphological reasons.

And for Distributed Morphology things get worse:

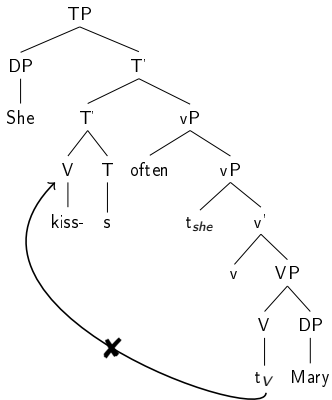
- Compare the identical example in English:

- (40) a. She often kisses Mary.
b. *She kisses often Mary.

- (41) a. *Nous souvent embrass-ons Marie.
We often kiss-1PL.PRES Mary
b. Nous embrass-ons souvent Marie.
We kiss-1PL.PRES often Mary

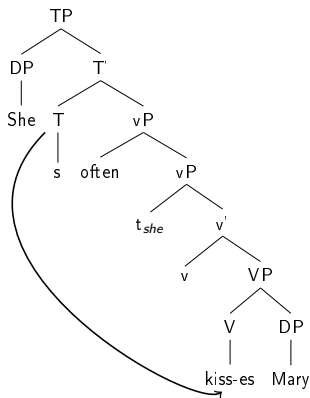
- In English, we can't assume head-movement because then we would predict the wrong order of the verb and the adverb.

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The “solution” is to assume another process called *lowering* which dislocates the relevant features into the other direction.

(43)



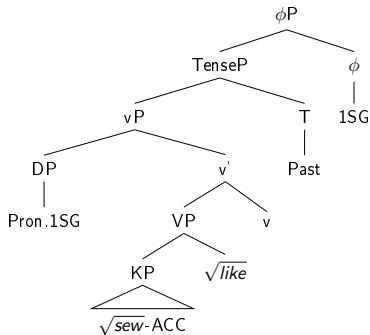
↪ Lowering is merely the updated version of what Chomsky in earlier work calls *Affix Hopping*.

- Adopting a uniform module for building phrases and words alike comes at a price, i.e. the additional assumption of several word-formation operations in the syntax:
 - ↪ Head-movement
 - ↪ Lowering
- Thus, it seems possible to adopt a uniform module but only if we adopt additional machinery.
- We will see more differences and arguments for both approaches in the course of this seminar.

Side Remark:

- We do now have various technical concepts available for word formation in Distributed Morphology. However, in some cases, we just cannot tell which one applies:

(44)



- Does the verb head-move to T? Or does T lower to the verb? Or is it just regular cliticization after all? We cannot tell.
- In head-final languages, it is very hard to tell actually where the verb is located.
- Various diagnostics (scope, licensing of NPIs, etc.) have been proposed but so far, but whether they actually crosslinguistically applicable and/or robust, is an open question.
- But the fact that a number of different technical options gives us the identical outcome is at least worrisome.

Conclusion

- It is often not trivial to identify word boundaries on morphosyntactic grounds.
- For this reason, approaches differ as to whether *Word* is seen as an actually helpful and crosslinguistically applicable notion of grammar.

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- For this reason, approaches differ as to whether *Word* is seen as an actually helpful and crosslinguistically applicable notion of grammar.
- Some theories of morphology (PFM, A-morphous Morphology, etc.) adopt the Lexical Integrity Hypothesis whereas others (DM) explicitly reject it.
- Whether the LIH is adopted often leads to a choice of whether a morphology is viewed as a separate module or not.

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 - ↪ The features on single words must be checked throughout the syntactic derivation to make sure that words occur in the right context.
 - ↪ Head-movement sometimes applies to get a given word into the right position but it is never part of the word-formation process proper.

- In DM, the lexicon is not a generative component but merely a list of Vocabulary Items.
- Word formation is part of the syntax and no checking is required license a given morpheme.
- Crucially, additional machinery is sometimes needed in the syntax or postsyntax to facilitate word formation. Head-movement and lowering (upward and downward head dislocation) are necessary to get the relevant morphemes together (and in order).