

Morphology II: Modularity

Early vs Late Insertion

Philipp Weisser

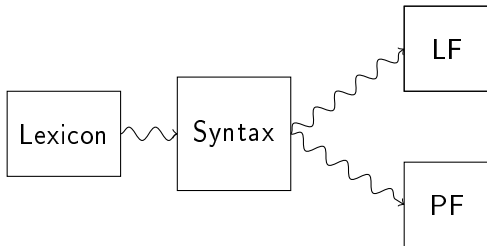
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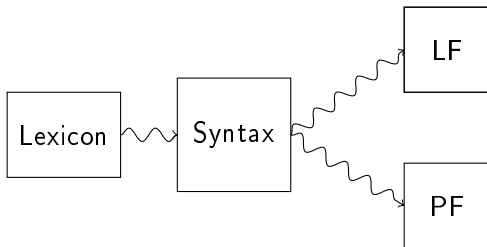
Phonology-Free Syntax

- We have seen that views differ as to whether morphology and syntax comprise a single module or whether they are two different modules with different rules and applying on different features.
 - ↪ In Lexicalist theories, syntax and morphology are distinct modules. Complex words are formed inside the lexicon.
 - ↪ In theories such as DM or Nanosyntax, the lexicon is not a combinatorial module but a list of morphemes each of which is specified for their insertion context.

(1) Traditional model of grammar:

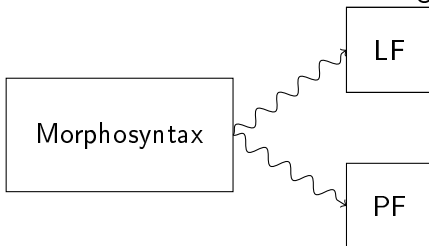


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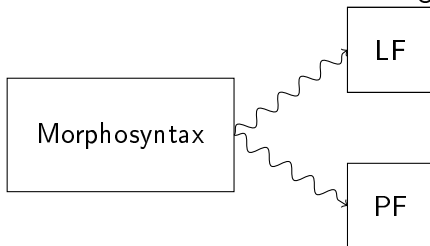


- Words are *formed* in the Lexicon, then *inserted* into a syntactic derivation and *checked* against their syntactic context.

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- The relation of the listlike DM-lexicon to the derivation will be explored in this set of slides.

- We have seen that, when adopting a unified module for both the formation of words and phrases, we need to make a number of additional assumptions:
 - We need to provide for some additional operations in the syntax such as head-movement and lowering.

- We have seen that, when adopting a unified module for both the formation of words and phrases, we need to make a number of additional assumptions:
 - We need to provide for some additional operations in the syntax such as head-movement and lowering.
 - We need specific assumptions to accommodate *Lexical Integrity*, i.e. the fact that parts of words are not accessible to operations such as movement, adjunction, etc.
 - ↪ These additional assumptions are typically formulated with respect to the categorizing heads n,v,a.
 - ↪ These heads instantiate *barriers* for movement, adjunction, etc.

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- Syntax is supposed to be phonology-free whereas morphology is not.

Principle of Phonology-Free Syntax

In the grammar of a natural language, rules of syntax make no reference to phonology.

Zwicky & Pullum 1986; Miller, Zwicky & Pullum 1992;

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- The PPFS prohibits...
 - ... that a language only moves vowel-initial NPs to subject position.
 - ... that a language agrees only with bisyllabic arguments.
 - ... that a language extracts from complement clauses only if the complementizer has no coda.

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- There are, however, cases where it is not per se clear whether the PPFS is violated or not:
 - Standard Grammars of French state that monosyllabic adjectives precede their head noun whereas multisyllabic ones follow their head noun:
 - (3) a. bon vin
good wine
 - b. vin ordinaire
wine ordinary

Miller et al 1992

- (4) a. bon vin
good wine
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wine ordinary

Miller et al 1992

- Miller et al (1992) argue on the basis of corpus data that this alternation is merely an asymmetry in usage rather than a syntactic rule:
- "...although speakers or writers may often choose a given order on the basis of the fact that it sounds better than the alternative such choices do not imply the existence of a grammatical constraint."*

Another potential violation of the PPFS is Heavy-NP-Shift:

- (5) a. John sent the money to his mother.
b. *John sent to his mother the money.
c. John sent to his mother [the money that you had
wanted him to give to us]. McCawley 1988

- Prima facie, it seems that rightward extraposition of an NP is only possible if the DP is phonologically sufficiently heavy.
- Whether this is a violation of the PPFS is still an open question. But, for now, many assume that a similar solution as for the French adjectives.

- The Principle of Phonology-Free Syntax is more or less universally adopted regardless of the respective frameworks (see Bruenings' *Consolidated Morphology* for a recent counterexample).
- But it does not straightforwardly carry over to morphology since there are arguably a number of cases where certain processes are sensitive to phonological features:

➤ Phonologically-conditioned allomorphy:

- In Udihe, perfective aspect is marked by laryngealization unless the stem-final vowel is high. Then we add the suffix /ge/ (Bye 2008)

- (6)
- a. etete (work) → etete̚ (work.perf)
 - b. zawa (grab) → zawa̚ (grab.perf)
 - c. olokto (cook) → olokto̚ (cook.perf)
 - d. dogdi (hear) → dogdi-ge (hear.perf)
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- ↪ The language does not allow laryngealized high vowels and therefore marks perfectivity in a different way.
- ↪ But nonetheless, the two affixes cannot straightforwardly be reduced to the same underlying source. The phonology drives the alternation but the alternation itself is still morphological.

- In Shipibo, the repetitive affix is /*riba*/ after stems with odd numbers of syllables and /*ribi*/ in stems with even numbers of syllables (González 2005).

- (7)
- a. pi-ma-riba-ki
eat-CAUS-REPET-PAST
'He made him eat it again'
- b. pi-ribi-ki
eat-REPET-PAST
'He ate it again'

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- Due to the stress assignment rules of this language, /riba/ will occur in stressed syllables and /ribi/ in unstressed ones.
- But it is not the case that every /a/ is reduced to /i/ in unstressed syllables. This is still a genuine morphological process.

➤ Realization of Clitics:

In many languages, certain elements such as pronouns show up in different - but phonologically unrelated - shapes depending on their prosodic environment.

- In Irish, a VSO language, subject pronouns have a different form depending on whether they immediately follow the verb or not.

- (8) Chuaigh se-isean agus e-isean 'na bhaile.
go.PAST 3SG.SUBJ-CONTR and 3SG.OBJ-CONTR home
'He and he went home.' McCloskey 1986

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(9) a. Is Éireannach é.
 COP Irishman 3PL.OBJ.
 'He is an Irishman.'
 Ó Siadhail 1989

b. Tá sé ina Éireannach.
 COP 3PL.SUBJ in.3SG Irishman.
 'He has become an Irishman'
 Ó Siadhail 1989

- Such alternations have been argued to be due to prosodic phrasing (see Ackema & Neeleman 2003, 2004).
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- According to their account, the alternations are sensitive to whether they occur in the same prosodic domain as the verb.
- ➡ If this is the right analysis, it is another example of phonology (or in this case, prosody) interfering with morphology.

- Placement of Clitics: In some languages, the placement of clitics is determined on prosodic grounds. Especially, with so-called Wackernagel-clitics which occur in the second position after some prosodically defined domain.

- Bulgarian determiners:

- (10) a. glava-**ta**
head-DEF
'the head'
- b. nova-**ta** kniga
new-DEF book
'the new book'
- c. dosta glupava-**ta** zabeležka
quite stupid-DEF remark
'the quite stupid remark' Franks (2001)
- d. prohladna-**ta** i sveža večer
cool-DEF and fresh evening
'the cool and fresh evening'
(Gribanova & Harizanov 2012)

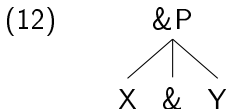
- It has been claimed that the definite article suffixes to the first prosodic word of the respective NP/DP (see e.g. Gribanova & Harizanov 2012).
- A syntactic approach cannot derive...
 - ... which category moves in front of the determiner.
 - ... how part of the coordination can precede the determiner.
- The preceding category seems to be a prosodic constituent rather than a syntactic one. Therefore this is very likely a case where the placement of a clitic is determined by prosody.

A maybe even more intriguing case comes from the famous Latin conjunction /que/ which suffixes to the first prosodic word of the second conjunct.

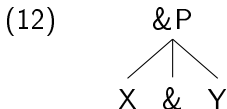
- (11)
- a. puer-i puella-e=que
boy-PL girl-PL=&
'Boys and girls'
 - b. [bon-i puer-i] [pulchra-e=que puella-e]
good-PL boy-PL beautiful-PL=& girl-PL
'good boys and beautiful girls'
 - c. in rē-bus=que
in thing-ABL.PL=&
'and in things'

Embick & Noyer 2001

- Syntactically and semantically, it does not make much sense to merge the conjunction in any other place than in between the two conjuncts:

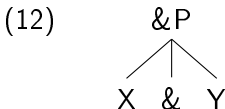


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- The fact that the conjunction occurs inside one of the conjuncts cannot plausibly be derived in terms of syntactic constituency or movement.
- And since the constituent preceding the conjunction in the second conjunct again is some kind of phonological/prosodic constituent rather than a syntactic one, suggests that this also is a case of prosodically determined placement of a clitic-like element.

- Phonologically conditioned affix order
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- ↪ In Doyayo, affix order is typically subject to semantic scope principles except for the plurality marker /m/, which always occurs immediately after the stem

- (13)
- a. haa (sour)
 - b. haa-m (several are sour)
 - c. haa-m-z (several turned sour rapidly)
 - d. *haa-z-m Paster (2006)

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- ↪ (13-d) would be expected from a semantic point of view but seems not to occur, potentially due to phonological reasons.

- Famously, these claims have been disputed by Paster (2006) who did quite a number of case studies arguing that the cases in question have been misanalyzed.
 - ↪ In the case from Doyayo, Paster very nicely shows that this case arises from general phonological principles of the language and not from special requirements on affix order.
 - ↪ In Doyayo, every sequence of /z+m/ is reordered to /m+z/ even if the /z/ is part of the stem.

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 - ↪ In Doyayo, every sequence of /z+m/ is reordered to /m+z/ even if the /z/ is part of the stem.
- But if such cases are in fact attested, they are another case of phonology interfering with morphology.

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- We have seen that morphology cannot plausibly assumed to be phonology-free.
 - Allomorphy
 - Position of Clitics
 - The realization of clitics
 - Phonologically conditioned affix order

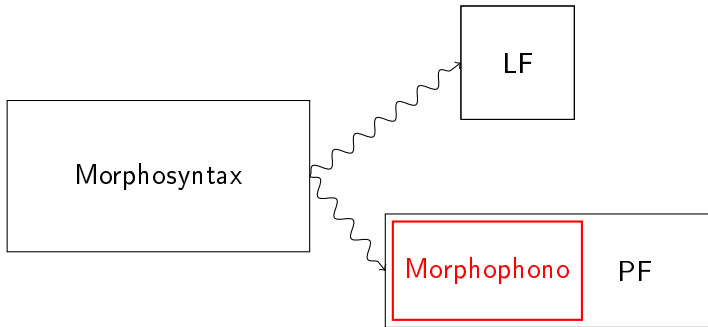
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- We have seen that morphology cannot plausibly assumed to be phonology-free.
 - Allomorphy
 - Position of Clitics
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- Doesn't that mean that frameworks like Distributed Morphology cannot deal with this apparent mismatch?

The 'Distributed' in DM

- The answer lies in the *Distributed* part of Distributed Morphology.

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- The underlying assumption is that some processes of word formation are part of the syntactic component whereas others are part of PF
 - ↪ Since these processes are not all uniformly phonological ones, they are sometimes referred to as *postsyntactic* processes.
 - ↪ These postsyntactic processes apply on the way between syntax and phonology and crucially do not feed LF. Thus, they can never have an effect on the semantic computation.

(14) Model of grammar according to DM (still simplified):



- Question: What are these morphophonological processes that apply on PF?

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- Answer: At least the ones that violated the Principle of Phonology-Free Syntax:
 - The process that gives us allomorphy
 - Whatever derives us the prosodically conditioned pronoun alternations
 - The operation that is responsible for the prosodically conditioned placement of clitics
 - Possibly some operations to alter affix orders...

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- Especially the process that derives us allomorphy turns out to be a very crucial in the general DM architecture.
- If the phonological content of a given node is determined after syntax, then we must conclude that the actual syntactic nodes in the derivation do not contain actual phonological features in the first place.
- The syntactic derivation thus proceeds purely on the basis of formal, morphosyntactic features.

- This assumption is captured in the second important slogan of Distributed Morphology:

Late Insertion

Syntactic Categories are purely abstract. The phonological expression of syntactic terminals is provided in the mapping to Phonological Form.

Harley & Noyer 1997

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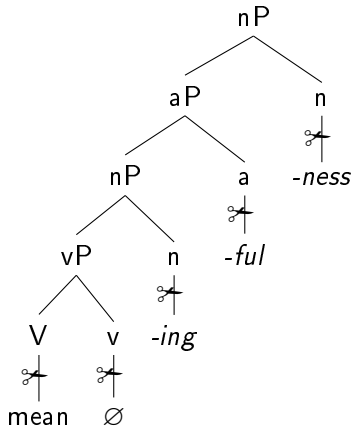
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- This assumption has the Principle of Phonology-Free Syntax fall out of the architecture of grammar.

(15)



- The phonological content is not part of the syntactic derivation. The syntax does not know how *v*, *n*, *a* and *V* are eventually realized.

- Only after the syntactic derivation is complete, a process called *Vocabulary Insertion* fills the terminal nodes of the tree with phonological material.

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- This is accomplished by realization rules (referred to as *Vocabulary Items*) which pair morphosyntactic meaning with phonological content.

- (16)
- a. $v \leftrightarrow / \emptyset /$
 - b. $n \leftrightarrow /ing/$
 - c. $a \leftrightarrow /ful/$
 - d. $n \leftrightarrow /ness/$
 - e. $\sqrt{mean} \leftrightarrow /mean/$

- In order to derive allomorphy patterns, these Vocabulary Items can be enhanced with contextual features that specify further when a given Vocabulary Item can be inserted.

↪ These contextual features can be morphosyntactic or phonological:

(17) Phonologically conditioned allomorphy in Udihe:

- [PERF] ↔ [+laryng] / [-high]_{Vowel}
- [PERF] ↔ /ge/ / [+high]_{Vowel}

↪ In (17), the phonological features after the slash specify the insertion context for the distinct Vocabulary Items expressing perfectivity in Udihe.

- We will talk about the specifics of Vocabulary Insertion and allomorphy at a later point in this seminar.
- But for now, it is important to note that the lexicon in DM is nothing but an unordered list of Vocabulary Items of the sort in (16) or (17).
 - ↪ There are no processes or operations in the lexicon
 - ↪ The syntax is the only combinatorial module in DM.

- Using contextual features, we can also account for the alternation of pronouns in Irish which is conditioned by whether the subject pronoun is in the same prosodic domain as the verb.

(18) Vocabulary Items for Irish 3SG pronouns:

- a. [3SG] \leftrightarrow /sé/ / [ϕ V _]
b. [3SG] \leftrightarrow /é/ / \neg [ϕ V _]

↪ (18-a) is inserted when the [3SG]-pronoun is in the same prosodic domain as the verb and (18-b) is inserted when it is not.

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- ↪ (18-a) is inserted when the [3SG]-pronoun is in the same prosodic domain as the verb and (18-b) is inserted when it is not.
- ↪ The negative specification in (18-b) is only for expository purposes. We will develop a nicer solution when talking about syncretism, underspecification, etc.

- Similarly other processes like the ones that derive the placement of the second-position clitics in Bulgarian and Latin are assumed to apply on the postsyntactic level.
 - ↪ Thus there can be reordering operations that apply after the syntax is complete.

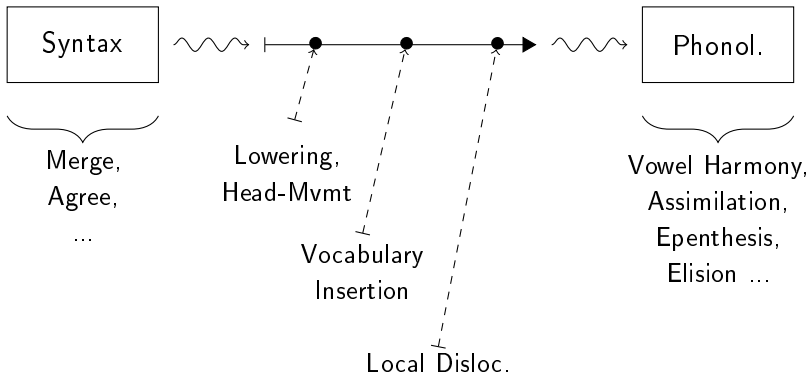
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- And since these reordering operations do care about the actual phonological properties of a given terminal node, they must also apply after the *Vocabulary Insertion*.
 - ↪ The reordering process in question is referred to as Local Dislocation in DM.
 - ↪ We will look at these processes in more detail in a later session.

- In the preceding section, we saw that DM requires additional word-formation operation such as Head-Movement and Lowering.

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- These operations are often also conceived of as applying postsyntactically.
 - ↔ This is possible since they typically do not have any effects on the semantics.
- And lowering also violates typical syntactic principles which require syntactic movement to be upward.

(19) A closer look at a DM-style PF-Derivation:



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- The phonological features only come in at the point of Vocabulary Insertion.
 - All the processes preceding Vocabulary Insertion (Merge, Move, Agree, Head-Mvmt, Lowering) are predicted to be insensitive to phonological features.
 - All the processes following VI (e.g. Local Dislocation) can be sensitive to phonological features.

Conclusion:

- Syntax is generally assumed to be phonology-free.
- Arguably, there are a number of phenomena indicating that morphology is not:
 - Phonologically conditioned allomorphy
 - The positioning of clitics
 - The realization of clitics
 - Phonologically conditioned affix order

- Distributed Morphology derives this finding by adopting a more elaborate architecture inside the postsyntactic component
- Some operations are postponed to apply on PF
 - ↪ Vocabulary Insertion can be sensitive to phonological features whereas certain other operations (syntactic ones like Merge) cannot.
 - ↪ In recent years a number of word-formation operations such as lowering or head-movement have been postponed to PF as well