

A Postsyntactic Morpheme Cookbook

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Perspectives on the Morpheme
University of Coimbra
October 29-30 2010

Working Definition of *Morphome*

Systematic morphological syncretism which

does not define a (syntactically) natural class

Major Claim of this Talk (I)

The standard machinery of Distributed Morphology

allows a straightforward implementation of morphemes

as “parasitic” (morphomic) features

Major Claim of this Talk (II)

The derivational nature of DM

allows to eliminate most instances of morphomic features

without any loss of generality

Structure of the Talk

- ① Morphemes in the DM Literature (as Parasitic Features)
 - Central Assumptions
 - Purely Parasitic Features
 - Semi-Parasitic Features
- ② Habitats of Parasitic Features
 - Hidden Parasitic Features in DM
 - Parasitic Features in other Frameworks
- ③ Morphemes in the Morpheme Literature
 - Some Classical Morphemes
 - Deriving Restrictions on Morphemes
- ④ Morphemes by Carving

Morphemes in the DM Literature (as Parasitic Features)

Null Hypothesis on Postsyntactic Morphemes

A morpheme is a purely morphological feature

(a distinctive feature which can be interpreted by Morphology

but not by any other grammar module)

(cf. Svenonius 2006 on uninterpretable features more generally)

Parasitic Features $=_{\text{def}}$

Features which are inserted by postsyntactic operations

but predictable from strictly syntactic features

(and structural syntactic context)

Major Claim (Short Version)

Morphomic Features \subset Parasitic Features

DM Machinery I will Use (Harley & Noyer 1999)

- Redundancy Rules
(insert morphomic features)
- Head Insertion Rules
(insert heads which host morphomic features)
- Impoverishment Rules
(delete morphomic features in specific contexts)

DM Machinery Needed I will **not** Use (Halle & Embick 2005)

- Readjustment Rules
(arbitrary morphophonological rules)

- Differential insertion modalities
for lexical and functional elements

Subtypes of Parasitic Features

Purely Parasitic Features:

Features which are only inserted by postsyntactic operations, e.g.

- Case Features (Marantz 1991, Bobaljik 2008)
- Binary Number Features (Nevins 2010)

Semi-parasitic Features:

Features which are inserted by postsyntactic operations, but also imported from lexical items or syntax e.g.

- Inflectional Class Features (Halle & Marantz 1994)
- Voice Features (Embick 1997,2000)

Nevins (2010) on Number

- In contrast to [plural], [singular] is never active in syntax
⇒ [plural] is monovalent/privative
- [-plural] is necessary in morphology since vocabulary insertion specifically targets singular contexts
⇒ Features are binarized at spellout

Redundancy Rules (applied disjunctively)

$$\begin{array}{l} [\text{plural}]_{\phi} \rightarrow [+ \text{plural}]_{\phi} \\ [\quad]_{\phi} \rightarrow [- \text{plural}]_{\phi} \end{array}$$

Marantz (1991) on Case

- Case is only inserted after syntax according to syntactic configurations
- Clause-level case is triggered by the configuration government by V+I according to the disjunctively ordered Case Realization Hierarchy:

Lexically governed
case

∩

Dependent
case

∩

Unmarked/Default
case

(ERG for the highest DP
in ERG/ABS languages

(ACC for the lowest DP
in NOM/ACC languages

Head Insertion for Case in Marantz (1991)

- In contrast to number there is no syntactic position corresponding to case
- Therefore insertion of case features must be preceded/accompanied by Head Insertion Rules of the form:

$$\emptyset \rightarrow [\quad]_{\text{Case}} / [\quad]_{\text{N}} \text{ — } \dots$$

An Alternative View: Case as a Syntagmome

- Under the more standard assumption that case is present in syntax it is obviously not morphomic
- Under the obvious assumption that case is semantically an uninterpretable feature, it is a **syntagmome**

Halle & Marantz (1994) on Theme Vowels in Spanish

	Stem		Theme		Number		
a.	padr	-	e	-	s	'fathers'	(masc)
b.	madr	-	e	-	∅	'mother'	(fem)
c.	poet	-	a	-	∅	'poet'	(masc)
d.	pal	-	a	-	∅	'shovel'	(fem)
e.	pal	-	o	-	s	'sticks'	(masc)

Halle & Marantz (1994) on Inflectional Class in Spanish

- Inflectional class features are assigned by redundancy rules parasitically to gender features

[] → [classIII] / [____+fem]

- but may also be introduced by lexical/vocabulary items (in which case the redundancy rule is blocked)

Halle & Marantz (1994) on the Theme Position

Head/Theme Insertion

$\emptyset \rightarrow [\quad]_{Th} / [\quad]_N \text{ — } [\quad]_{Num}$

Halle & Marantz on Theme Vowels in Spanish: VIs

		Theme	
/e/	↔	— 	in environment governed by [Class III]
/a/	↔	—	in environment governed by [Class II]
/o/	↔	—	in environment governed by []

Habitats of Parasitic Features

Hidden Parasitic Features in DM: Decomposition

- Syntactic features are typically decomposed in DM (and many other frameworks) to capture systematic syncretism
- But if these features are never active in Syntax, they should only be present in Morphology
- and provide further instances of parasitic features

Decomposed Case

- Many DM (and other) analyses assume that morphological case is decomposed into more basic features which account for systematic syncretism

	Nom	Acc	Gen	Dat	Loc	Instr	Abl	Erg
oblique	-	-	+	+	+	+	+	-
structural	+	+	+	+	-	-	-	+
superior	+	-	-	+	-	+	+	+
free	+	-	+	+	-	-	+	-

(Halle & Vaux 1997)

- But these features do arguably not play any role in syntax and are only poorly motivated semantically
- Thus it is a natural move to introduce them by postsyntactic redundancy rules

Decomposed Φ

- Many DM (and other) analyses assume that Φ -features are decomposed into more basic features which account for systematic syncretism
 - a. $[+Auth, +Part] = 1st\ person$
 - b. $[-Auth, +Part] = 2nd\ person$
 - c. $[-Auth, -Part] = 3rd\ person$
 - d. $[+Auth, -Part] = \text{logically impossible}$
- (Nevins 2006)
- But at least part of these features do arguably not play any role in syntax and are only poorly motivated semantically
 - Thus it is a natural move to introduce them by postsyntactic redundancy rules

Hidden Parasitic Features in DM: Meta-Features on Markedness

- allow to encode the markedness of different features into vocabulary items (Bejar & Hall 1999, Arsenault 2007, Trommer 2005, Wunderlich 2011)

- this amounts to a (restricted) version of parasitic features

Weak Adjectival Inflection in German (Trommer 2005)

	Mask	Neut	Fem	Plu
Nominative				
Accusative		e		
Dative				
Genitive		en		

Feature Decomposition for Case (Bierwisch, 1967)

Nominative	=	[−governed −oblique]
Accusative	=	[+governed −oblique]
<hr/>		
Dative	=	[+governed +oblique]
Genitive	=	[−governed +oblique]

Weak Adjectival Inflection in German (Trommer 2005)

	Mask	Neut	Fem	Plu
Nominativ				[mpl]
Akkusativ	[mgov]			
Dativ		[mgov]	[mobl]	
Genitiv		[mobl]		

[+/-masc +/-fem]_{gend} [+/-gov +/-obl]_{case} [+/-pl]_{num}

m / — []_{gend} : **-en**

Default : **-e**

Stump (2001) on Algonquian Direct-Inverse Marking

- Algonquian direct-inverse markers specify specific sets of subject-object cooccurrence which cannot be captured by natural classes
- Stump (2001): Specific markers realize values of the arbitrary feature MR (“Major” Reference)
- The specific values of MR ([MR subject] or [MR object]) are computed by feature cooccurrence constraints tying them to specific combinations of subject and object agreement

Direct-Inverse Marking in Algonquian (Menominee)

- a. *ke-na:n-a:-w-a:w* 'you (pl.) fetch him' (p. 153)
2-fetch-D-[+3]-[-1+pl]
- b. *ke-na:n-eko-w-a:w* 'he fetches you (pl.)' (p. 154)
2-fetch-D-[+3]-[-1+pl]

Direct-Inverse Marking in Algonquian (Menominee)

Direct: If the subject is higher on the hierarchy than the object, the verb is marked by **-a**:

1st/2nd person \succ indefin. actor \succ proximate \succ obviative \succ inanimate

Inverse: If the object is higher on the hierarchy than the subject, the verb is marked by **-ek**

Stump (2001) on Algonquian Direct-Inverse Marking

- a. In a transitive form where subject \gg object, [MR] has the value subject
- b. In a transitive form where object \gg subject, [MR] has the value object
- c. $X \gg Y$ holds if:
 - (i) X is 1st or 2nd person and Y is 3rd person **or**
 - (ii) Y is obviative **or**
 - (iii) X is animate and Y inanimate

[MR subject] \Rightarrow X-a:

[MR object] \Rightarrow X-ek

Translating Stump's Analysis into DM

Redundancy Rules (disjunctively ordered)

- (i) [] \rightarrow [+MR] / [____+Acc -3] [+Nom +3]
- (ii) [] \rightarrow [+MR] / [____+Acc] [+Nom +obviative]
- (iii) [] \rightarrow [+MR] / [____+Acc +anim] [+Nom -anim]
- (iii) [] \rightarrow [-MR] / [____+Acc] [+Nom]

Vocabulary Items (Object Agreement)

[+Acc -MR] \leftrightarrow -a:

[+Acc +MR] \leftrightarrow -ek

Baerman et al. (2001) on Dhaasanac Subject Markers

	SG	PL
1INCL	—	A
1EXCL	A	B
2	B	B
3F	B	A
3M	A	A

	A	B	
a.	leeði	leeti	‘fall down.PERF’
b.	kufi	kuyyi	‘die.PERF’
c.	guurma	guuranna	‘migrate.IMPERF’
d.	ʔuufumi	ʔuufeeni	‘cough.PERF’
e.	seð	sieti	‘walk.PERF’
f.	yes	ces	‘kill.PERF’

Baerman et al. (2001) on Dhaasanac Subject Markers

VERB:

<> ==

<syn> == verb

<index> == _A

<index 2nd> == _B

<index 3rd sg f > == _B

<index 1st_excl pl> == _B

<mor pos imprf> == "<form imprf><index>>"

(p.185)

Dhaasanac in DM

Redundancy Rules (disjunctively ordered)

$$(i) \quad [\quad] \rightarrow [+B] \quad / \quad [\text{---} +Agr \ +1 \ -2 \ +pl]$$

$$(ii) \quad [\quad] \rightarrow [+B] \quad / \quad [\text{---} +Agr \ +2 \ -1]$$

$$(iii) \quad [\quad] \rightarrow [+B] \quad / \quad [\text{---} +Agr \ +3 \ -masc \ -pl]$$

$$(iv) \quad [\quad] \rightarrow [-B] \quad / \quad [\text{---} +Agr \quad \quad]$$

Morphomes in the Morphome Literature

Some Classical Morphemes

- Aronoff (1994) on English Past/Passive Participles
- Maiden (2004) on the Romance U-morpheme

Aronoff (1994) on English Past/Passive Participles

The English Perfect Participle has two major uses syntactically: to form the passive verb and to form the perfect verb (always in company with the verb HAVE). Within recent Chomskyan syntax, the most widely accepted treatment of the passive is in terms of thematic role or case absorption. Jaeggli (1986) and Roberts (1987) treat the passive morphology as absorbing the thematic role and the case, while Baker, Johnson, and Roberts (1989) analyze passive syntax as resulting universally from an abstract subject pronoun of sorts in Infl. Presumably this abstract pronoun or some structure containing it is realized through the morphological function that I have labeled F_{en} . What about the perfect construction? The most recent detailed analysis of its semantics (Klein 1992) makes no connection to the passive. Nor is there any currently popular analysis of its syntax that attempts to accommodate the perfect to recent accounts of the passive (which pretend to universality). As far as I know, the two may be totally independent of one another syntactically, although there are good historical reasons for the synchronic fact that both participles are identical (Benveniste 1966). From a universal perspective, it would be odd for passive and perfect constructions to be identical at some deep syntactic level, since the two only rarely coincide morphologically. Let us assume then, for the sake of argument, that passive and perfect are not closely related syntactically.³⁵ Nonetheless, the two must be identical on some

Irregular English Past/Passive Participles

- | | | |
|-------|---------------------------|-------------------------|
| a. i. | beat – beat – beat-en | break – broke – brok-en |
| | drive – drove – driv-en | fall – fell – fall-en |
| ii. | put – put – put | bind – bound – bound |
| | sing – sang – sung | come – came – come |
| b. | dwell – dwel-t – dwel-t | send – sen-t – sen-t |
| | leave – lef-t – lef-t | buy – bough-t – bough-t |
| c. i. | prove – prove-d – prove-n | do – di-d – do-ne |
| ii. | yell - yell-ed - yell-ed | tell – tol-d – tol-d |

(Halle & Marantz 1993)

Aronoff (1994) on English Past/Passive Participles

related syntactically.³⁵ Nonetheless, the two must be identical on some level, since there are no English verbs for which they are morphologically distinct. The complete morphological covariance of the two is striking, since innovation in the F_{en} participle is rampant among children. Furthermore, though there have been many changes in individual F_{en} participles over the centuries, with certain verbs showing variants today (e.g. *kneeled/knelt*), the two participles remain firmly linked throughout the innovation for any given verb: no speaker has an innovative passive participle and a conservative perfect participle; if a speaker varies, then both participles vary. I therefore assume that passive and perfect are paired by means of the morphologically abstract entity F_{en} , regardless of any possible syntac-

Aronoff (1994) on English Past/Passive Participles

What is F_{en} ? Formally, we may say that both Passive and Perfect are syntactic elements mapped onto the morphological function F_{en} . This function occupies a cell in the morphological paradigm of English that is neither syntactic nor phonological. Because the function itself is mapped from either Passive or Perfect and because the domain of the function (the class of verb lexemes) is morphological or lexemic, and not syntactic, its effect is to erase any possible distinction between the two syntactic elements in their realizations on the verb itself (though the difference in the auxiliary will distinguish the two constructions). F_{en} is neither morpho-syntactic nor morphophonological but rather purely morphological—morphology by itself. Let us call the level of such purely morphological functions *morphomic* and the functions themselves *morphomes*. What is

English Past/Passive Participles in DM

Redundancy Rules

(i) [] → [+P] / [____-fin +pass]

(ii) [] → [+P] / [____-fin +perf]

Impoverishment

[F] → ∅ / [____ +P]

Vocabulary Item

[+P] ↔ -ed

Aronoff (1994) on Latin Past/Future Participles

Present active infinitive	Perfect participle	Future participle	Gloss
laudā-re	laudāt-	laudāt-ūr-	'praise'
monē-re	monit-	monit-ūr-	'warn'
duce-re	duct-	duct-ūr-	'lead'
audī-re	audīt-	audīt-ūr-	'hear'
cape-re	capt-	capt-ūr-	'take'
vehe-re	vect-	vect-ūr-	'carry'
haerē-re	haes-	haes-ūr-	'stick'
preme-re	press-	press-ūr-	'press'
fer-re	lat-	lat-ūr-	'bear'
loqu-ī	locut-	locut-ūr-	'speak'
experī-rī	expert-	expert-ūr-	'try'

Latin Past/Future Participles in DM

Redundancy Rules

(i) [] \rightarrow [+P] / [____-fin -pass +fut]

(ii) [] \rightarrow [+P] / [____-fin +pass +perf]

(iii) [] \rightarrow [-P]

Theme Insertion

\emptyset \rightarrow [α P]_{Th} / []_V ____ [α P]

Vocabulary Items

[FER] \leftrightarrow lat / ____ [+P]

[FER] \leftrightarrow fer

Maiden (2004) on the Romance U-morpheme

'to fly'	1sg	2sg	3sg	1pl	2pl	3pl
Ind.	vol-o	vol-i	vol-a	vol-iamo	vol-ate	vol-ano
Subj.	vol-i	vol-i	vol-i	vol-iamo	vol-iate	vol-ino

'to climb'	1sg	2sg	3sg	1pl	2pl	3pl
Ind.	sal g -o	sal-i	sal-e	sal-iamo	sal-ite	sal g -ono
Subj.	sal g -a	sal g -a	sal g -a	sal-iamo	sal-iate	sal g -ano

The Romance U-Morpheme in DM

Redundancy Rules

- (i) [] \rightarrow [+P] / [+G]_V[____+1 -pl]
- (ii) [] \rightarrow [+P] / [+G]_V[____-pl][+subj]
- (iii) [] \rightarrow [+P] / [+G]_V[____+3][+subj]
- (iv) [] \rightarrow [-P]

Theme Insertion

$\emptyset \rightarrow$ [α P]_{Th} / []_V ____ [α P]

Vocabulary Item

[+P]_{Th} \leftrightarrow -g

Deriving Restrictions on Morphemes

In addition to establishing **unnatural** syncretism classes

morphemes typically block potential reflexes of **natural** classes

(cf. the non-distinction of English past/passive participles)

Background Assumptions on Allomorphy

- **Locality:**

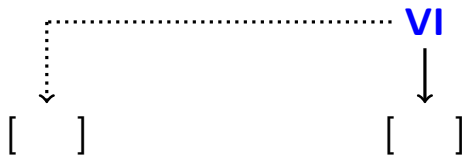
Context restrictions of VIs may not be sensitive to a head across another head
(Trommer 2000,2001)

- **Inwards-Sensitivity:**

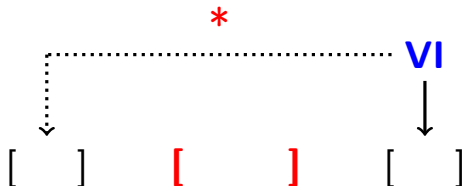
Context restrictions of functional VIs can only target heads/vocabulary items closer to the root (or the root itself)
(Wunderlich & Fabri 1994, Paster 2006)

Locality of Allomorphic Conditioning

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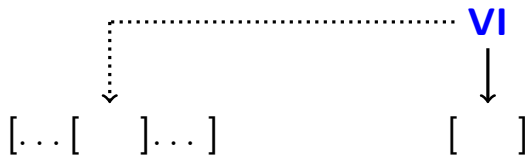


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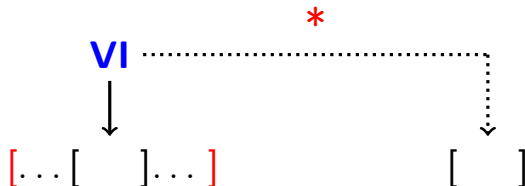


Inwards-Sensitivity of Allomorphic Conditioning

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Why English Speakers cannot Distinguish Past and Passive Participles

- The features characteristic for past vs. passive participles are deleted by Impoverishment prior to Vocabulary Insertion
- No vocabulary item can refer to this distinction

Why Latin Speakers could not Distinguish Past and Future Participle Stems

- The postsyntactically inserted theme head intervenes between the verbal root and other heads which might trigger allomorphy

[FER][α P][$-\text{fin}$ βfut]

- Allomorphy can only be sensitive to structurally adjacent heads
- The following VIs would never be inserted

[FER] \leftrightarrow fat /_____[-fin +fut]

[FER] \leftrightarrow ler /_____[-fin +past]

Why Romance Speakers cannot have Partially U-Morphomic Verbs

'to climb'	1sg	2sg	3sg	1pl	2pl	3pl
Ind.	sal g -o	sal-i	sal-e	sal-iamo	sal-ite	sal g -ono
Subj.	sal g -a	sal g -a	sal g -a	sal-iamo	sal-iate	sal g -ano

'to wug'	1sg	2sg	3sg	1pl	2pl	3pl
Ind.	sil g -o	sil-i	sil-e	sil-iamo	sil-ite	sil-ono
Subj.	sil-a	sil g -a	sil g -a	sil-iamo	sil-iate	sil g -ano

Why Romance Speakers cannot have Partially U-Morphomic Verbs

- For lexemes to be partially u-morphomic, the VIs spelling out [+P] would have to be sensitive to concrete inflectional categories:

$$[+P]_{Th} \leftrightarrow \emptyset / \sqrt{SIL} \text{ — } [+1][+subj]$$

- Since allomorphic conditioning cannot be outward-sensitive, no such VI is possible
- Romance verbs can be [+G] or [-G], but nothing inbetween

Diachronic Predictions

Assumption: Small-scale language change is change in the specifications of lexical root VIs

- ⇒ Romance verbs getting U-morphomic or non-U-morphomic should do so for all relevant paradigm cells (cf. Maiden 2004)
- ⇒ The Romance U-morpheme might extend or disappear over time (due to root VIs losing or acquiring diacritic [+G] specifications)
- ⇒ The English Past/Perfect Participle Morpheme should stay stable since it is independent of root features

More Potential Restrictions on Parasitic Features

- Parasitic Features must be universal
(perhaps true for case, but not for lexical class features)
- Parasitic Features must be semantically interpretable
(true for agreement, but not for case)
- Parasitic Features must be uniconcatenative
(would exclude the sketched Algonquian analysis)

Carving $=_{\text{def}}$

Instead of introducing morphological features with unnatural distribution

syntactic features are impoverished in a way

which leads to an arbitrary distribution

English Past/Passive Participles by Carving

Impoverishment Rules

- (i) [+pass] → ∅ / [____-fin]
- (ii) [+perf] → ∅ / [____-fin]
- (iii) [-perf -fin] → ∅

Vocabulary Items

- [-fin] ↔ -ed
- [] ↔ -∅

Dhaasanac by Carving

Impoverishment Rules

- (i) $[+Agr] \rightarrow \emptyset / [____ +3 +masc]$
- (ii) $[+Agr] \rightarrow \emptyset / [____ +3 -masc +pl]$
- (iii) $[+Agr] \rightarrow \emptyset / [____ +1 -2 -pl]$
- (iv) $[+Agr] \rightarrow \emptyset / [____ +1 +2]$
- (v) $[\alpha 1 \ \alpha 2 \ \alpha 3 \ \alpha masc \ \alpha pl] \rightarrow \emptyset$

The Romance U-Morpheme by Carving

Impoverishment Rules

(i) $[+G] \rightarrow \emptyset / [\text{---} -3 +pl]$

(ii) $[+G] \rightarrow \emptyset / [\text{---} -1 -pl] [-subj]$

Fission

$[+G \dots]_V \rightarrow [\dots]_V [+G]_{Th}$

Vocabulary Item

$[+G]_{Th} \leftrightarrow -g$

Nuer Nominal Inflection by Carving

Impoverishment Rules

- (i) [+obl -loc -pl] → ∅ /{ cak, nhim, nyanyet } _____
- (ii) [+obl +loc -pl] → ∅ /{ cak, tac, lieth } _____
- (iii) [-obl +pl] → ∅ /{ cak, kεεc, poony, lith, nim } _____
- (iv) [+obl -loc +pl] → ∅ /{ cak } _____
- (v) [+obl +loc +pl] → ∅ /{ kεεc } _____

Vocabulary Items

- [+obl -pl] ↔ -kä
 [+pl] ↔ -ni

Summary

- If you want to do morphemes, it is straightforward to do it in DM
- This allows to give technical content to standard restrictions on morphemes which have been proposed in the morphomic literature
- If you do **not** want to do morphemes (but still DM), you have to find ways to restrict the theory