Phonological decomposition of inflectional markers: paradigms vs. allomorphy

EGG 2018 in Banja Luka

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July 30 - August 3, 2018

Outline

Outline

This class deals with...

An interesting debate in morpho-phonological literature concerns "the division of labor in exponence" (Bermúdez-Otero 2012), that is the question of how lexical vs. derived information is treated. In theories assuming that phonological material is associated with syntactic terminals -that is, morphemes- late in derivation (Embick 2010 among the most relevant ones), the mechanism doing this job -spell-out- plays a central role. The way spell-out works is at core of intense discussions.
This course deals with the representation of phonological exponents, and focuses on how surface forms may be derived from basic, abstract items. In other words, the less lexical you go, the more abstract your phonological representations must be. We pursue a decomposition-based approach to exponence, as proposed and elaborated in Guerssel & Lowenstamm (1990), Bendjaballah (2003) and related work, and argue that (allomorphic) alternations result from the application of regular phonology. Put differently, paradigms are epiphenomenal, non-active linguistic objects.

Rough timeline of topics to be covered

- Today (Monday) and Tomorrow (Tuesday). Paradigms, allomorphy, and the decompositional approach. Bendjaballah (2003), Bendjaballah & Haiden (2013, 2014), Bermúdez-Otero (2012), Bobalijk (2008), Bonet & Harbour (2012), Blevins (2006), Guerssel & Lowenstamm (1996), McCarthy (2005).
- Wednesday. Case study 1. The Italian definite article: Allomorphy? (Faust, Lampitelli & Ulfsbjorninn 2018)
- Thursday. Case study 2. The Somali verb inflection. (Barillot & Ségéral 2005; Barillot, Bendjaballah & Lampitelli 2018)
- Friday. (Time permetting) Case study 3. Gender, number (and case) in nouns.

Outline

The decompositional approach

In this class, I will

- defend the idea the paradigms are not active objects in language (rather, a descriptive tool made by linguists);
- show that the more abstract you go phonologically, the more generalizations you get morphologically;
- decompose the phonological exponents of inflection as much as we get to one-to-one correspondence between the form and the function of morphemes.

The decompositional approach

What I've been calling the decompositional approach since the beginning of this class results from two papers: Bendjaballah (2003) and Guersell & Lowenstamm (1996 [1990]).

(1) Basic tenets of the decompositional approach

a. Reduced role of the lexicon
b. Surface forms result from sophisticated phonological representations

The apophonic path

Guerssel & Lowenstamm (1996) claim, wrt to the vocalization of Arabic measure I verbs, that 'that the role of the lexicon in the vocalization of the root medial consonant is much more reduced than has hitherto been assumed. We argue, indeed, that the vocalic alternations exhibited [in the figure below] are part of a genuine apophonic system serving in synchronically active fashion as the vehicle of derivation of aspect and voice".

a.	b.	c.	d.
√	Gloss	Perfective	Imperfective
lbs	"dress"	*labis+a*	*ya+lbas+u*
ktb	"write"	*katab+a*	*ya+ktub+u*
ḍrb	"hit"	*ḍarab+a*	*ya+ḍrib+u*
kbr	"be great"	*kabur+a*	*ya+kbur+u*

The apophonic path

a.

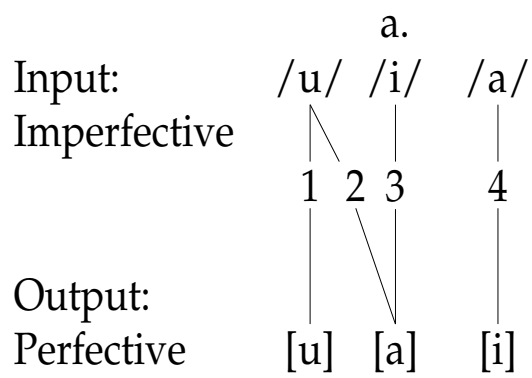
Perfective	Imperfective	b.
i	*a*	*labis/yalbas*
a	*u*	*katab/yaktub*
a	*i*	*ḍarab/yaḍrib*
u	*u*	*kabur/yakbur*

Perfective	Imperfective
*u	*i*
*u	*a*
*i	*u*
*i	*i*[5]
*a	*ai*[6]

The apophonic path

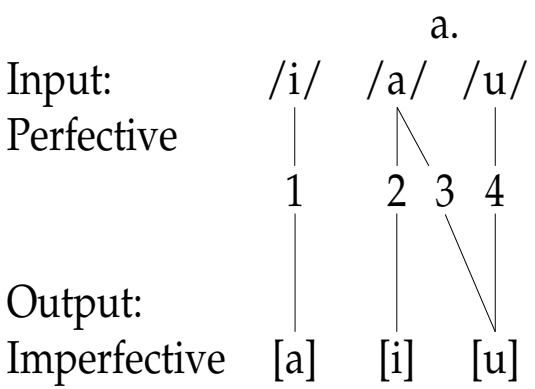
Guerssel & Lowenstamm show that the sound changes occurring between the perfective and the imperfective forms are unnatural because "they take place in the absence of any phonetic conditioning".

In addition, there is opacity:



b.

1. *yakbur/kabur*
2. *yaktub/katab*
3. *yaḍrib/ḍarab*
4. *yalbas/labis*

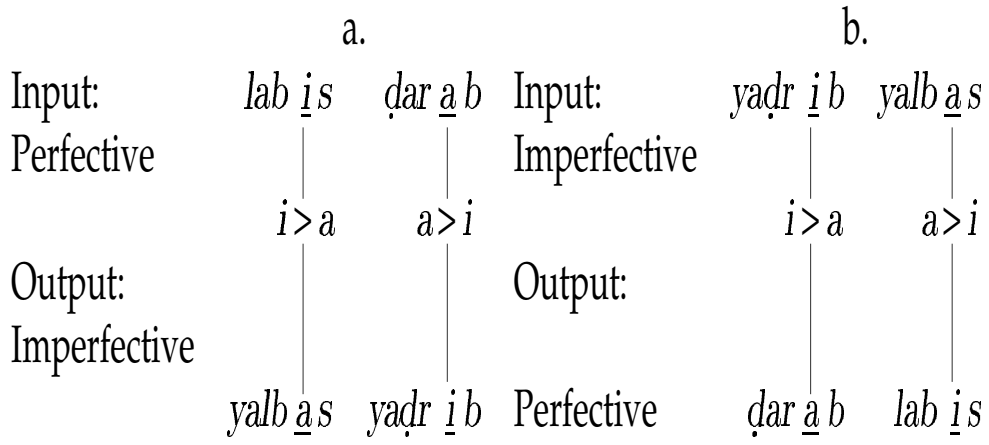


b.

1. *labis/yalbas*
2. *ḍarab/yaḍrib*
3. *katab/yaktub*
4. *kabur/yakbur*

The apophonic path

There is polarity, too:



The apophonic path

Four logical possibilities to avoid both opacity

a.

Input:	*i*	*a*	x	*u*
Perf.	|	|	|	|
	3	1	2	4
	|	|	|	|
Output:	|	|	|	|
Imperf.	*a*	*i*	*u*	*u*

b.

1. *ḍarab* → *yaḍrib*
2. *katab* → *yaktub*
3. *labis* → *yalbas*
4. *kabur* → *yakbur*

a.

Input:	*i*	x	*a*	*u*
Perf.	|	|	|	|
	3	1	2	4
	|	|	|	|
Output:	|	|	|	|
Imperf.	*a*	*i*	*u*	*u*

b.

1. *ḍarab* → *yaḍrib*
2. *katab* → *yaktub*
3. *labis* → *yalbas*
4. *kabur* → *yakbur*

a.

Input:	*u*	x	*i*	*a*
Imperf.	|	|	|	|
	4	2	1	3
	|	|	|	|
Output:	|	|	|	|
Perf.	*u*	*a*	*a*	*i*

b.

1. *yaḍrib* → *ḍarab*
2. *yaktub* → *katab*
3. *yalbas* → *labis*
4. *yakbur* → *kabur*

a.

Input:	x	*u*	*i*	*a*
Imperf.	|	|	|	|
	4	2	1	3
	|	|	|	|
Output:	|	|	|	|
Perf.	*u*	*a*	*a*	*i*

b.

1. *yaḍrib* → *ḍarab*
2. *yaktub* → *katab*
3. *yalbas* → *labis*
4. *yakbur* → *kabur*

The apophonic path

The second possibility "happens to be the only configuration free of the undesirable 'partial polarity' effect.": hence Guerssel & Lowenstamm (1996) choose this one.

(2) a. Apophony maps the Perfective melody into that of the Imperfective;
b. darab/yadrib is the verb type "bearing x".

What is the exact nature of x?

The apophonic path

x is zero!

	a.	b.
1.	$\emptyset \rightarrow i$	*ḍarØb* *yaḍrib*
2.	$i \rightarrow a$	*labis* *yalbas*
3.	$a \rightarrow u$	*katab* *yaktub*
4.	$u \rightarrow u$	*kabur* *yakbur*

(3) ø → i → a → u → u

Take home message: more abstract representations lead to finer generalizations.

The basic ingredients of the determiner in Bedja

We saw, with Guerssel & Lownestamm (1996), that the lexicon has reduced role if one accepts abstract phonological representations. Bendjaballah (2003) purses this idea forward and points to two major weaknesses of DM-like approaches to morphology. Bendjallah (2003:35) claims that DM misses two things:

(4) a. "First, a crucial property of phonological strings, namely that they have internal structure, is not exploited."

b. "Second, the relation of a particular phonological string to the context in which it is inserted is simply stipulated in the vocabulary of the language."

The basic ingredients of the determiner in Bedja

1. The determiner in Beja

	Singular		Plural	
	Subject	Non-subject	Subject	Non-subject
Masculine*	u:-	o:-	a:-	e:-
Feminine	tu:-	to:-	ta:-	te:-

2. a. *u:-me:k* *e:a*
DET-donkey come.3MS.PAST
"The donkey came."
vs. *me:k* *e:a*
donkey come.3MS.PAST
"A donkey came." (Almkvist 1881:§54)

b. *tó:-fna* *iháyt*
DET-spear take.3MS.PAST
"He took the spear." (Reinisch 1893b:§122e)

c. *é:-mana* *támya*
DET-viscera eat.3MS.PAST
"He ate the viscera." (Reinisch 1893a:24, 9)

The basic ingredients of the determiner in Bedja

(5) DM-style Vocabulary Items

a. /u:-/ $\Longleftrightarrow$ [+subject, -plural, -feminine]
b. /o:-/ $\Longleftrightarrow$ [-subject, -plural, -feminine]
c. /a:-/ $\Longleftrightarrow$ [+subject, +plural, -feminine]
d. /e:-/ $\Longleftrightarrow$ [-subject, +plural, -feminine]

(6) The One-to-One-Primitive Hypothesis (Bendjaballah 2003:37)

a. Grammatical features, i.e., the primitives of grammatical representations, are expressed by the primitives of phonological representations.
b. There is a correspondence between the type of grammatical feature and the type of phonological primitive that expresses it.

The basic ingredients of the determiner in Bedja

Two theories are crucial:

(7) a. Element Theory as proposed by KLV (1990).
b. CVCV phonology (Lowenstamm 1996).

The phonological ingredients of each the determiner.

	Phonetic exponent	Cons.	Internal structure Voc.	Gramm. features
a.	[u:]	Ø	U	<Masc, Sg, S, Def>
b.	[o:]	Ø	A.U	<Masc, Sg, nonS, Def>
c.	[a:]	Ø	A	<Masc, Pl, S, Def>
d.	[e:]	Ø	A.I	<Masc, Pl, nonS, Def>
e.	[tu:]	t	U	<Fem, Sg, S, Def>
f.	[to:]	t	A.U	<Fem, Sg, nonS, Def>
g.	[ta:]	t	A	<Fem, Pl, S, Def>
h.	[te:]	t	A.I	<Fem, Pl, nonS, Def>

The basic ingredients of the determiner in Bedja

(8) a. Definiteness = CV
b. Gender: M = zero; F = /t/

(9) a. Number: Sg = A; Pl = I
b. Case:
(i) Subject = non-association of the number feature exponent.
(ii) nonSubj = association of the number feature exponent.

Bendjabllah (2003: 41): "Subject forms are forms which are not overtly marked for number and non-subject forms are forms which are overtly marked for number."

The basic ingredients of the determiner in Bedja

Masculine determiner

	Singular		Plural	
	S	nonS	S	nonS
— gnr —	Ø	Ø	Ø	Ø
— def+?? —	CVCV	CVCV	CVCV	CVCV
	\/	\/	\/	\/
??	U	U	A	A
— case —		|		|
— num —	A	A	I	I
	[u:]	[o:]	[a:]	[e:]

Feminine determiner

	Singular		Plural	
	S	nonS	S	nonS
— gnr —	t	t	t	t
	|	|	|	|
— def+?? —	CVCV	CVCV	CVCV	CVCV
	\/	\/	\/	\/
??	U	U	A	A
— case —		|		|
— num —	A	A	I	I
	[tu:]	[to:]	[ta:]	[te:]

The basic ingredients of the determiner in Bedja

The analysis is incomplete: what about Element U in the singular and Element A in the plural?

(10) Hypothesis: "the additional element in both the singular and the plural is the apophonic output of the element present in the representation".

	Element in the representation	Additional element	Apophonic step
Singular:	A	U	A → U
Plural:	I	A	I → A

The Apophonic Addition:

	Singular		Plural	
	S	nonS	S	nonS
— apo. der. —	U	U ←	A	A ←
	CV	CV AP	CV	CV AP
— num —	A	A	I	I
Interpretation:	[u]	[o]	[a]	[e]

The Apophonic Addition is triggered by a language-specific parameter which enforces the phonetic expression of the grammatical features of the determiner.

The basic ingredients of the determiner in Bedja

The core ideas elaborated by Bendjaballah (2003):

(11) a. Identify the phonological primitives consisting of segmental material, skelettal material (CV-units), or both.

b. Establish a (one-to-one) relation between one phonological primitive and one grammatical feature.

The decompositional approach revolves around these points.

Taqbaylit Berber prepositions as floating markers

The syntactic distribution of Taqbaylit prepositions is correlated with their phonological weight: light prepositions appear to be stranded next to the complementizers *i*, *ara* and *ur* under further extraction of their DP complement, see (1a) and (2a) (Bendjaballah & Haiden 2013:331)

(1) a. *akʷərs-aki* *f* *i* *qqim-əʁ*
chair.FS-DEM on C_{real} sit.PF-1S
'On this chair I sat.'

b. **axxam-aki* *arif/nniɣ* *i* *zðʁ-əʁ*
house.FS-DEM beside/behind C_{real} live.PF-1S
intended: 'Beside/behind this house I lived.'

c. *axxam-aki* *arif-is/nniɣ-əs* *i* *zðʁ-əʁ*
house.FS-DEM beside-IO:3S/ behind-IO:3S C_{real} live.PF-1S
'Beside/behind this house I lived.

(2) a. *anwa akʷərsi* *f* *i* *qqim-əʁ*
what.FS chair.FS on C_{real} sit.PF-1S
'On which chair did I sit?'

b. **anwa axxam* *arif/nniɣ* *i* *zðʁ-əʁ*
what.FS house.FS beside/behind C_{real} live.PF-1S
intended: 'Beside/behind which house did I live?'

c. *arif/nniɣ* *pp-wənwa axxam* *i* *zðʁ-əʁ*
beside/behind GEN-what.CS house.FS C_{real} live.PF-1S
'Beside/behind which house did I live?'

Taqbaylit Berber prepositions as floating markers

Three major facts about Taqbaylit light prepositions (Bendjaballah & Haiden 2013:349-350)

(12)
a. Light prepositions are always affixes to a host.
b. Light prepositions can be prefixed to C and to N, but not to T.
c. The cases of apparent P stranding in the left clausal periphery involve prefixation of P to C.

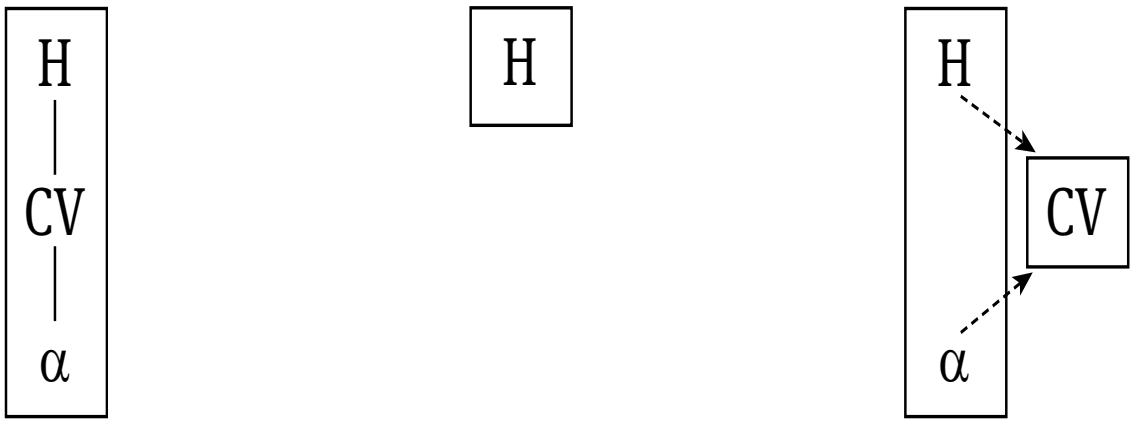
They propose what they call the "Weight Correlation, version 2":

(13) A preposition in the le clausal periphery introduces a barrier for extraction of DP, unless it is spelled out as an a x to C.

Taqbaylit Berber prepositions as floating markers

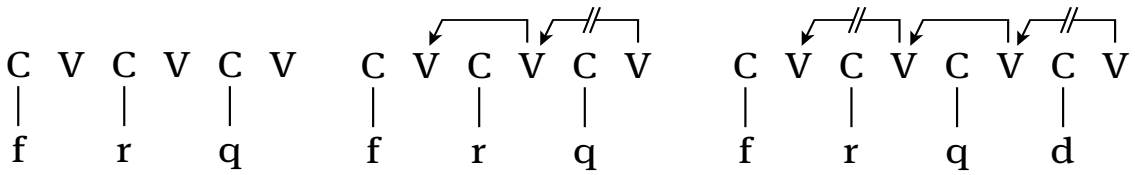
A typology of exponents:

a. overt morpheme b. empty category c. floating marker plus host position



H=syntactic node, α=phonological (auto)segment.

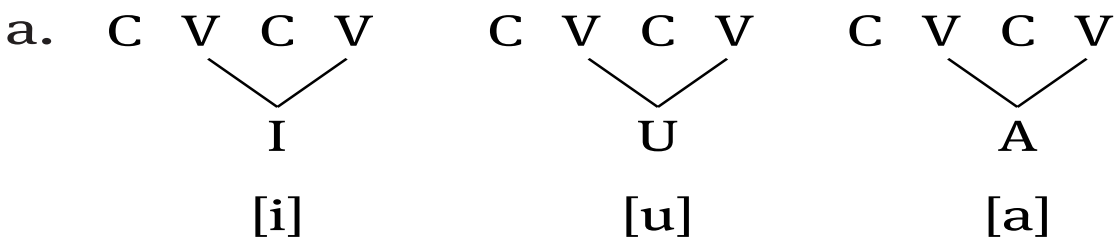
Taqbaylit Berber prepositions as floating markers

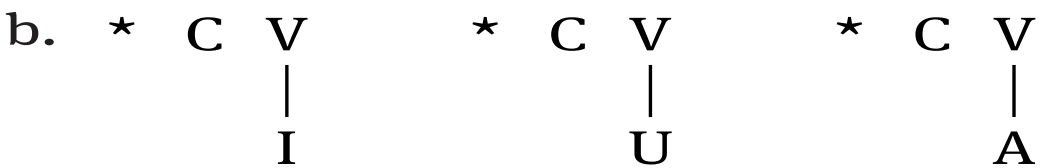


i u

ə

a





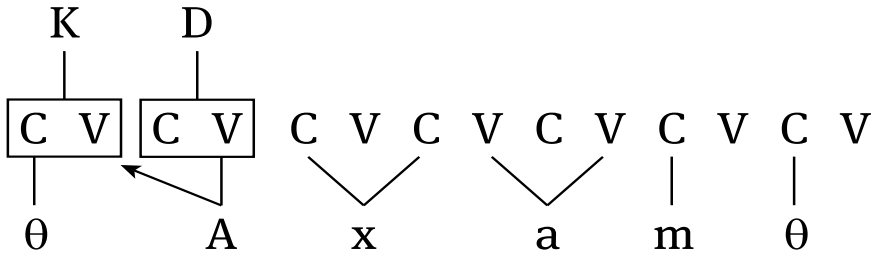
Taqbaylit Berber prepositions as floating markers

In Construct State (CS), the node K is empty.

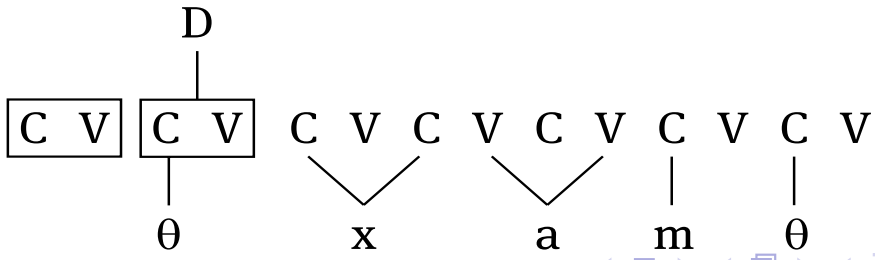
		FS	CS	Gloss
MASCULINE	SG.	***a***xxam	***wə***xxam	'house'
	PL.	***i***xxamən	***jə***xxamən	'houses'
FEMININE	SG.	***θa***xxamt	***θə***xxamt	'room'
	PL.	***θi***xxamin	***θə***xxamin	'rooms'

Feminine singular:

FS: *θ**a**xxamt*



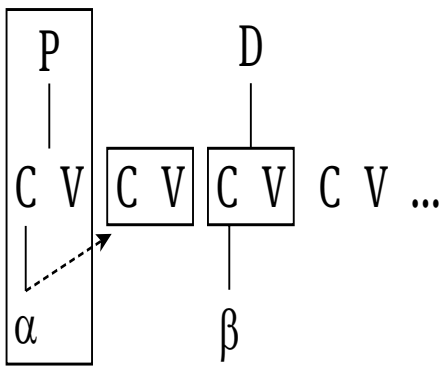
CS: *θ**ə**xxamt*



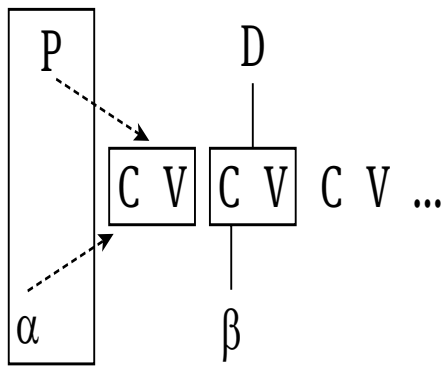
Taqbaylit Berber prepositions as floating markers

The representation of light prepositions and the CS

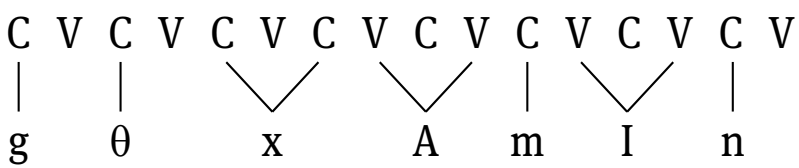
a. light P with inherent skeletal support



b. light P as a floating marker



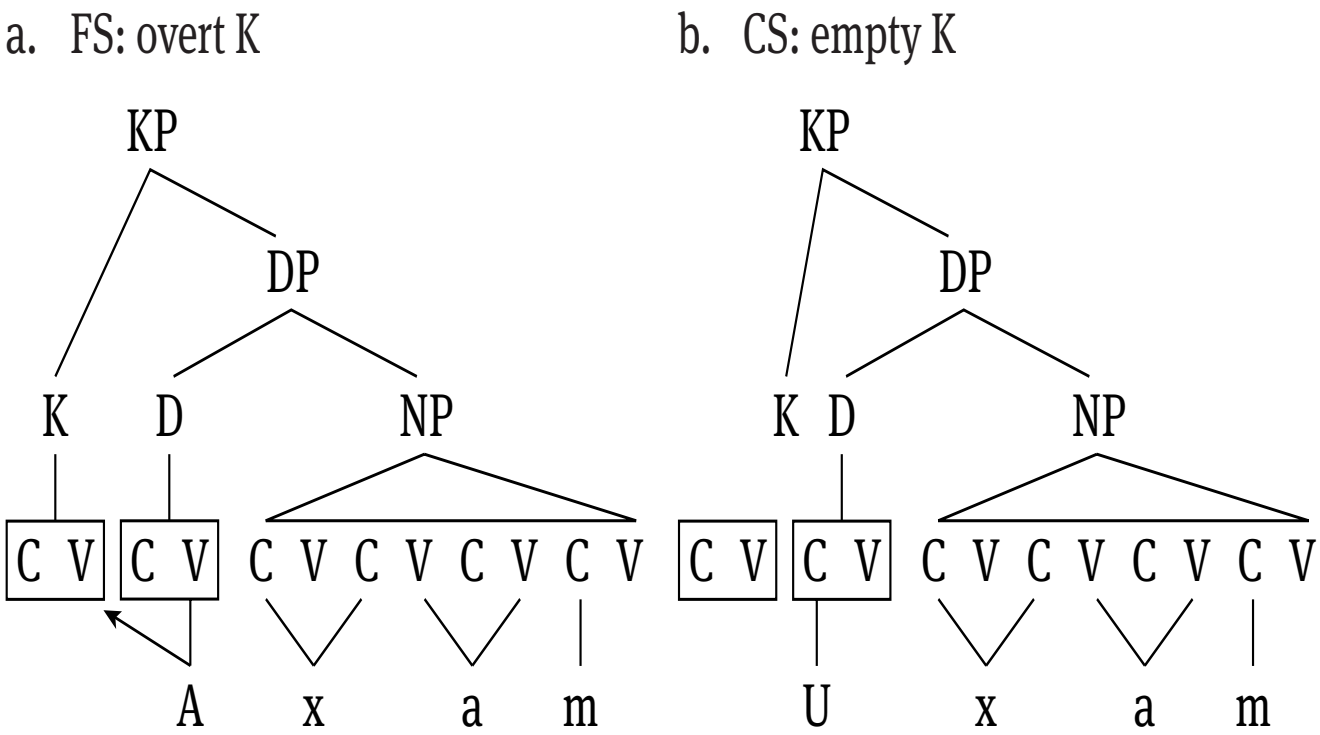
/*g-θxxamin*/ → *gθəxxamin* 'in the rooms'



Nota: light prepositions are realized as single, non-geminate segments.

Taqbaylit Berber prepositions as floating markers

(14) a. The FS is marked by an overt prefix K. (B&H 2013:365)
b. In the CS, K is empty.

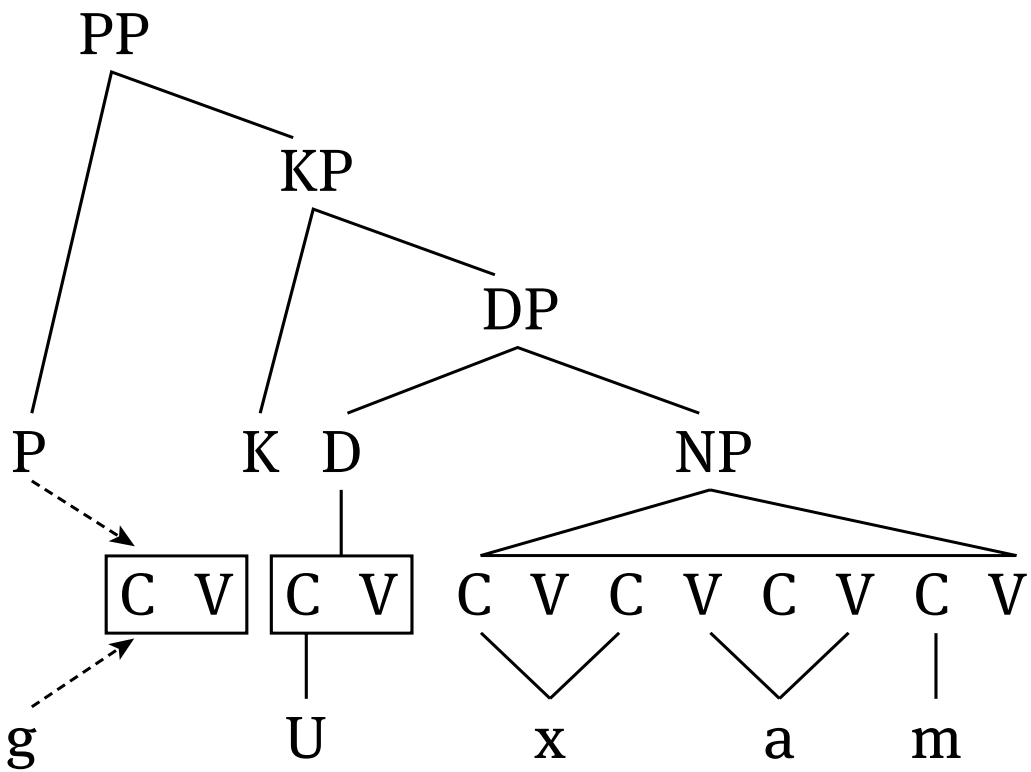


This asymmetry is corroborated by the phonological data discussed extensively in the paper.

Taqbaylit Berber prepositions as floating markers

The initial CV unit of the nominal template in the CS remains free, and it may host a floating preposition (B&H 2013:366).

c. light P + CS



Taqbaylit Berber prepositions as floating markers

Take home message: "The explanation relies on articulated phonological representations, and on the assumption that the spell-out of overt syntactic heads consists in the association of a syntactic terminal nodes with sequences of positions at the CV-skeleton. These assumptions predict that floating morphemes cannot project a syntactic terminal node, unless a host template provides a free skeletal position for the linearization of their syntactic features." (Bendjaballah & Haiden 2013:372)

Allomorphy vs. Paradigms

The analyses we have just discussed share the way they look at allomorphy. Briefly said, decomposing two (or more) morpho-syntactically related affixes makes allomorphy epiphenomenal.

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This is exactly what we're doing!

Allomorphy vs. Paradigms

There's a longstanding debate on allomorphy that, to my opinion, is mainly theory-related (or approach-related).

In the morphology literature, people tend to put a theory in one of the following three categories as has been proposed by Hockett (1954):

1. Item-and-Arrangement
2. Item-and-Process
3. Word-and-Paradigm

Allomorphy vs. Paradigms

The typology of approaches to morphology proposed by Hockett is closely related to the way a given theory handles allomorphic alternations.

The decompositional approach we're describing in this class belongs to the first category (Item-and-Arrangement): such a category is characterized by two things:

(15) Item-and-Arrangement

a. A morpheme-based view ("item")
b. A (complex) derivational device ("arrangement")

Allomorphy is determined by the ratio between the number of morpheme and the complexity of the derivational device.

Pushing the line higher wrt to the complexity of the derivational device, gives us the decompositional approach!

Allomorphy vs. Paradigms

(16) (Strong, radical) Hypothesis

a. A given feature [F] is associated to a unique phonological string X throughout the whole paradigm;

b. "Allomorphic" alternations are accounted for by the phonology;

c. The phenomenon traditionally referred to as "allomorphy" is limited to suppletion:

   (i) Two or more entries spelling out the same feature.

   (ii) These entries are neither phonologically nor structurally similar (in other words: regular phonology cannot account for them).

Allomorphy vs. Paradigms

(17) Morphophonological alternations (Bonet & Harbour 2012:9):

a. systematic across the entire language
b. systematic but with some exceptions (a regular rule with some exceptions)
c. systematic but only within a circumscribed environment (a minor rule)
d. systematic but only within an arbitrarily listed set of cases (a minor rule for a diacritically marked class)
e. wholly unsystematic

The division of labor in exponence

Bermúdez-Otero (2012:9-ff) uses the following Spanish example to show that theories may differ dramatically wrt the way each approach analyzes cases of what he calls "analytic underdetermination" (see "An alternation of this sort will often admit a wide variety of analyses, each apportioning different roles to lexical storage and to morphological and phonological computation." *ibidem*:8)

	1^{st}-*conjugation base*		2^{nd}-*conjugation base*		3^{rd}-*conjugation base*	
a.	a$\eth$mi'ɾ-a-ɾ	'admire.INF'	be'β-e-ɾ	'drink.INF'	su'fɾ-i-ɾ	'suffer'
b.	a$\eth$miɾ-a-'$\eth$oɾ-Ø	'admirer'	beβ-e-'$\eth$oɾ-Ø	'drinker'	sufɾ-i-'$\eth$oɾ-Ø	'sufferer'
c.	a$\eth$mi'ɾ-a-βl-e	'admirable'	be'β-i-βl-e	'drinkable'	su'fɾ-i-βl-e	'sufferable'
d.	a$\eth$mi'ɾ-a-$\eth$-o	'admire.PTCP'	be'β-i-$\eth$-o	'drink.PTCP'	su'fɾ-i-$\eth$-o	'suffer.PTCP'

In the Spanish examples above, the interesting fact concerns 2nd conjugation.

The division of labor in exponence

Plausible morphosyntactic analysis of the stem *beb* associated with theme V *e*:

a. *Th* ↔ -e- / [II]^_ (see Embick 2010: 76)

b. <[V, class II], (*V* → *Ve*)> (see Aronoff 1994: 68)

c. BEBER ↔ [[$_{\sqrt}$ beb] [$_{\text{Th}}$ e]] (see Bermúdez-Otero 2013)

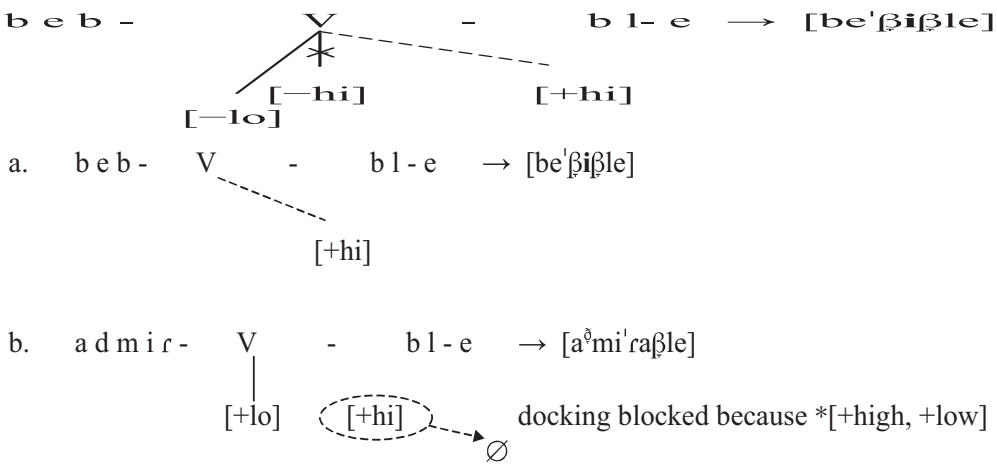
The division of labor in exponence

How do theories differ in analyzing the deviant pattern ThV=i before certain suffixes?

(18) Morphological analyses:

a. $<[\text{V, BLE}], (Ve \longrightarrow Vible)>$
b. /e/ ⟶ /i/ / [[*Th*,___]] ⁀ [[*a*,-bl-]]

(19) Phonological analyses (feature changing vs. feature filling):



The division of labor in exponence

Allomorph selection is made in the phonology. In the input, both vowels appear (*e* and *i*), suffixes like *ble* comes into computation with a floating [+high] feature in order to let them be the optimal candidate:
/beb-(e,i)-[-high]bl-e/

(20) OT analysis

		IDENT(stem)-[high]	MAX(affix)-[high]	*[+high]
(a) ⟦stem admir-a ⟧⟦affix bl-e⟧ [−hi]1 [+hi]2	admiɾible [+hi]2	*!		(*)*
	admiɾable [−hi]1 ☞		*	(*)
(b) ⟦stem beb-{ e , i} ⟧⟦affix bl-e⟧ [−hi]1 [+hi]2 [+hi]3	bebeble [−hi]1		*!	
	bebible [+hi]2,3 ☞			*
(c) ⟦stem beb-{ e , i} ⟧⟦affix doɾ⟧ [−hi]1 [+hi]2	bebidoɾ [+hi]2			*!
	bebedoɾ [−hi]1 ☞			

The division of labor in exponence

A refined dual-route model of morphophonology

	Pattern type (with English examples)	*Grammatical encoding* (with properties)
(a)	Family resemblance between irregulars: e.g. strong-verb inflection (*string* ∼ *strung*, *stick* ∼ *stuck*, *sneak* ∼ *snuck*)	Distributed associative memory • subsymbolic, implicit • nonanalytic listing • sporadic extension
(b)	Semiproductive pattern: e.g. stem-level derivational morphology (*divine* ∼ *divinity*, *impress* ∼ *impression*)	Lexical redundancy rules • symbolic, explicit • nonanalytic listing • structure-building only • leave gaps; when used generatively, the new outputs undergo nonanalytic listing
(c)	Productive pattern: e.g. regular weak-verb inflection (*play* ∼ *played*, *talk* ∼ *talked*, *load* ∼ *loaded*)	Standard rules • symbolic, explicit • outputs can be unlisted or listed analytically • specifiable as structure-building or structure-changing • no gaps; fulfill Pinker's criteria for regularity

(Bermúdez-Otero 2012:42)

The division of labor in exponence

Bermúdez-Otero (2012:44-ff) proposes The Four-Hypothesis Program to handle the division of labor in exponence:

(21) The Four-Hypothesis Program

a. According to the Morph Integrity Hypothesis [see 41 in the text], the representational currency of morphology is the morph: morphology is not allowed to operate directly upon elements of phonological representation such as features, segments, nodes, or association lines.

b. [...] I adapt Inkelas's (1989[1990: 10]) strong formulation of the Indirect Reference Hypothesis to an optimality-theoretic framework [see 71 in the text]: in this version, Indirect Reference prevents phonological constraints other than those on prosodic alignment from referring to morphosyntactic information. [no to readjustment rules]

c. The Phonetic Interpretability Hypothesis [see 76 in the text] asserts that derived phonological representations must be phonetically interpretable. This forbids the presence of diacritics of morphosyntactic affiliation in phonological output representations. [=the output of the phonology must be phonetically interpretable]

d. [...] I assume that certain morphosyntactic constituents define domains over which the phonology applies iteratively, starting with the most deeply embedded domains and moving progressively outwards (see e.g. Bermúdez-Otero 2011). Alone and in combination with Phonetic Interpretability, this assumption imposes locality restrictions on the way in which phonology can refer to morphosyntactic structure during a cycle, both outwardly and inwardly.

Construction vs. Paradigms

Let's read together what Blevins (2006:531-532) writes at the beginning of his paper: "The post-Bloomfieldian model is regarded as 'morpheme-based', on the grounds that it associates grammatical properties with individual morphs. Realization-based models are described as 'word- based' because they associate properties with words. Yet models can also be classified MORPHOTACTICALLY, in terms of the status that they assign to these units. From a morphotactic perspective, a model is 'word-based' if it treats surface word forms as the basic elements of a system, and regards roots, stems and exponents as abstractions over a set of full forms. A model is 'root-based' or 'morph-based' if it assumes an inventory of morphotactically minimal forms, from which surface forms are 'built' or 'derived'.

Construction vs. Paradigms

In the following paragraph, he goes on writing that: "The morphotactic assumptions of a model strongly influence the types of analysis that the model assigns. This influence is particularly salient in the treatment of morphological classes. In languages whose morphological systems are organized into inflectional classes, the shape of one or more word forms tends to identify the class of an item. Traditional models exploit this predictability by establishing a set of exemplary paradigms and rep- resenting individual items by diagnostic surface forms. Yet the properties of roots or exponents in isolation are rarely reliable indicators of inflection class. Hence models that represent items by underlying root forms must often introduce diacritic class properties to restore lost information about inflection class."

On the one had, I think that we all agree with Blevins on (at least) one point: "the morphotactic assumptions of a model strongly influence the types of analysis that the model assigns."

Construction vs. Paradigms

On the other hand, I don't agree with the final statement: "Hence models that represent items by underlying root forms must often introduce diacritic class properties to restore lost information about inflection class."

As we have seen with Guerssel & Lowenstamm (1996), Bendjaballah (2003) and partially Bendjaballah & Haiden (2013), this is not true! It is possible to pursue a post-Bloomfieldian model using a theory like Distributed Morphology (typically morpheme-based) and yet don't postulate any diacritic. The phonology does the job!

More is to come in the following classes.

Construction vs. Paradigms

Blevins proposes a different dichotomy of approaches to morphology:

(22) a. CONSTRUCTIVE models (morph-based)
b. ABSTRACTIVE models (word-based)

(23) CONSTRUCTIVE models (Blevins 2006:534-535 and Hockett 1954)
a. Morphological analysis 'isolates minimum meaningful elements'
b. Describes 'the arrangements in which the mini- mum meaningful elements occur'
c. Mapping is a typically constructive operation.

Construction vs. Paradigms

ABSTRACTIVE models regard the grammar as a set of relations among full surface forms.

	CLASS I		CLASS II		CLASS III		CLASS IV	
	SING	PLUR	SING	PLUR	SING	PLUR	SING	PLUR
NOM	zakon	zakony	škola	školy	kost’	kosti	vino	vina
GEN	zakona	zakonov	školy	škol	kosti	kostej	vina	vin
ACC	zakon	zakony	školu	školy	kost’	kosti	vino	vina
LOC	zakone	zakonax	škole	školax	kosti	kostjax	vine	vinax
DAT	zakonu	zakonam	škole	školam	kosti	kostjam	vinu	vinam
INST	zakonom	zakonami	školoj	školami	kostju	kostjami	vinom	vinami
	‘law’		‘school’		‘bone’		‘wine’	

Table 1
Exemplary noun paradigms in Russian (Corbett 1983: 36)

Construction vs. Paradigms

Given a new noun, like *muščina* 'man', the following analogical deduction applies:

(24) a. škola: školu=muščina: X
b. X=muščinu

(25) The key assumptions of an abstractive approach
a. Exemplary paradigms and principal part inventories contain word forms
b. Grammatically distinctive patterns are resident in these actual forms.

Construction vs. Paradigms

		NONE		QUANTITATIVE				QUALITATIVE	
	GRADE	SING	PLUR	SING	PLUR	SING	PLUR	SING	PLUR
GRAMMATICAL	NOMINATIVE	*pesa*	**pesad**	*ˋkool*	**koolid**	*ˋkukk*	**kuked**	*pidu*	**ˋpeod**
	GENITIVE	**pesa**	*pesade*	**kooli**	*ˋkoolide*	**kuke**	*ˋkukkede*	**ˋpeo**	*pidude*
	PARTITIVE	*pesa*	*pesasid*	*ˋkooli*	*ˋkoolisid*	*ˋkukke*	*ˋkukkesid*	*pidu*	*pidusid*
	STEM PARTITIVE		*pesi*		*ˋkoole*		*ˋkukki*		—
	SHORT ILLATIVE	*ˋpessa*		*ˋkooli*		*ˋkukke*		*ˋpittu*	
SEMANTIC	ILLATIVE	**pesa**sse	*pesade*sse	**kooli**sse	*ˋkoolide*sse	**kuke**sse	*ˋkukkede*sse	**ˋpeo**sse	*pidude*sse
	INESSIVE	**pesa**s	*pesade*s	**kooli**s	*ˋkoolide*s	**kuke**s	*ˋkukkede*s	**ˋpeo**s	*pidude*s
	ELATIVE	**pesa**st	*pesade*st	**kooli**st	*ˋkoolide*st	**kuke**st	*ˋkukkede*st	**ˋpeo**st	*pidude*st
	ALLATIVE	**pesa**le	*pesade*le	**kooli**le	*ˋkoolide*le	**kuke**le	*ˋkukkede*le	**ˋpeo**le	*pidude*le
	ADESSIVE	**pesa**l	*pesade*l	**kooli**l	*ˋkoolide*l	**kuke**l	*ˋkukkede*l	**ˋpeo**l	*pidude*l
	ABLATIVE	**pesa**lt	*pesade*lt	**kooli**lt	*ˋkoolide*lt	**kuke**lt	*ˋkukkede*lt	**ˋpeo**lt	*pidude*lt
	TRANSLATIVE	**pesa**ks	*pesade*ks	**kooli**ks	*ˋkoolide*ks	**kuke**ks	*ˋkukkede*ks	**ˋpeo**ks	*pidude*ks
	TERMINATIVE	**pesa**ni	*pesade*ni	**kooli**ni	*ˋkoolide*ni	**kuke**ni	*ˋkukkede*ni	**ˋpeo**ni	*pidude*ni
	ESSIVE	**pesa**na	*pesade*na	**kooli**na	*ˋkoolide*na	**kuke**na	*ˋkukkede*na	**ˋpeo**na	*pidude*na
	ABESSIVE	**pesa**ta	*pesade*ta	**kooli**ta	*ˋkoolide*ta	**kuke**ta	*ˋkukkede*ta	**ˋpeo**ta	*pidude*ta
	COMITATIVE	**pesa**ga	*pesade*ga	**kooli**ga	*ˋkoolide*ga	**kuke**ga	*ˋkukkede*ga	**ˋpeo**ga	*pidude*ga
		‘nest’		‘school’		‘rooster’		‘party’	

WORD-BASED MORPHOLOGY

Table 4
Exemplary first declension nouns in Estonian (Blevins 2005)

Grave accent=overlong syllables.

Construction vs. Paradigms

Blevins criticizes CONSTRUCTIVE models which, according to him, are unable to account for such a complex inflectional pattern, in particular because they would require too many stems and, in some cases, the stem would be identical to a full word. This fact is precisely what these models aim at avoiding.

What shall we respond to such a criticism?

(26) Opponents to IA approaches/CONSTRUCTIVE models point to the inability of these models to account for complex inflectional systems: this does not mean that the approach does not work elsewhere, or that an analysis of a (simpler) inflectional pattern is not valid.

(27) To the best of my knowledge, opponents to IA approaches/CONSTRUCTIVE models never look at phonology: phonology is the key to solve complex problems in morphology.

Optimal Paradigms

McCarthy (2005) has a similar view of inflectional systems, and develops a theory of constraint interaction in which candidates consist of entire inflectional paradigms:

OP in Outline

a. Candidates consist of entire inflectional paradigms, where an inflectional paradigm contains all and only the words based on a single lexeme (for similar ideas, see Bonet and Lloret 2001; Kenstowicz 1996: 385; McCarthy 1998; Raffelsiefen 1995, 1999*c*; Tesar and Smolensky 2000).[2]

b. Markedness and Input–Output faithfulness constraints evaluate all members of the candidate paradigm. The violation-marks incurred by each paradigm member are added to those incurred by all the others.[3]

c. The stem (output form of the shared lexeme) in each paradigm member is in a correspondence relation $\Re_{OP}$ with the stem in every other paradigm member. (That is, for every candidate paradigm P there is a relation $\Re_{OP}$ on PHP.) There is no distinctive base—rather, every member of a paradigm is a base of sorts with respect to every other member.[4]

d. There is a set of Output–Output faithfulness constraints on the $\Re_{OP}$ correspondence relation.

Optimal Paradigms

McCarthy (2005:174) claims that "[t]he OP model presupposes a distinction between inflectional morphology, which is organized into paradigms, and derivational morphology, which is organized hierarchically by the relation 'is derived from'" and goes on arguing that "in paradigms, all members are co-equal in their potential to influence the surface phonology of other members of the paradigm."

We won't go into details of McCarthy's analysis, but it is important to remember that McCarthy uses the existence of distinct restrictions between verb and noun templates in Classical Arabic as a crucial piece of evidence in favor of OP.

Optimal Paradigms

OP accounts for the lack of verb templates ending in either V:C# or VCC#

OP-IDENT-WT ≫ IO-IDENT-WT

/faʃa:l/ + {a, tu, . . .}	*μμμ]$_\sigma$	*App-σ	OP-Id-Wt	IO-Id-Wt
a. ☞ ⟨faʃala, faʃaltu, . . .⟩				**
b. ⟨faʃa:la, faʃa:l$_\sigma$tu, . . .⟩		*!		
c. ⟨faʃa:la, faʃa:l$_\mu$tu, . . .⟩	*!			
d. ⟨faʃa:la, faʃaltu, . . .⟩			*!	*

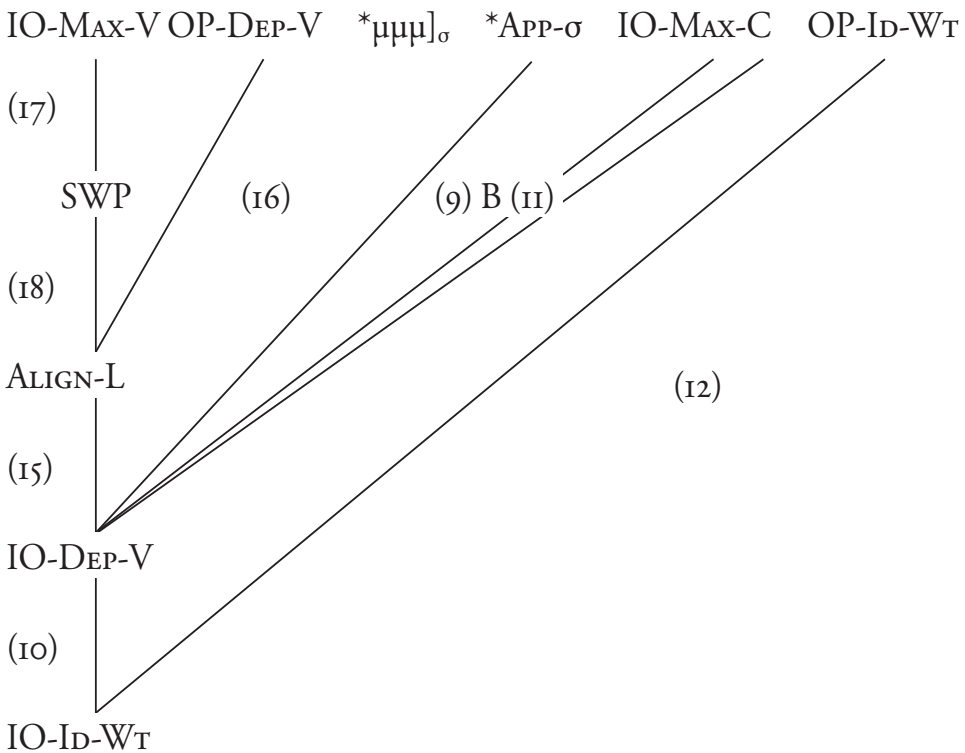
OP-DEP-V ≫ IO-DEP-V

/faʃl/ + {a, tu, . . .}	*μμμ]$_\sigma$	*App-σ	OP-Dep-V	IO-Dep-V
a. ☞ ⟨faʃila, faʃiltu, . . .⟩				**
b. ⟨faʃla, faʃlσtu, . . .⟩		*!		
c. ⟨faʃla, faʃlμtu, . . .⟩	*!			
d. ⟨faʃla, faʃiltu, . . .⟩			*!	*

This is possible crucially because the OP constraints are ranked above the IO constraints, uniformity within the paradigm takes precedence over faithfulness to the input.

Optimal Paradigms

McCarthy's (2005:195) constraint ranking:



Optimal Paradigms

An additional example:

*μμμ]$_\sigma$, *App-σ, OP-Ident-Wt ≫ SWP (cf. (12))

/faʃa:l/ + {a, tu, . . .}	*μμμ]$_\sigma$	*App-σ	OP-Id-Wt	SWP
a. ☞ ⟨(fáʃa)la, fa(ʃál)tu, . . .⟩				*
b. ⟨fa(ʃá:)la, fa(ʃá:l$_\sigma$)tu, . . .⟩		*!		
c. ⟨fa(ʃá:)la, fa(ʃá:l$_\mu$)tu, . . .⟩	*!			
d. ⟨fa(ʃá:)la, fa(ʃál)tu, . . .⟩			*!	

The winner (a) violates SWP, but this is unavoidable because of the high-ranking markedness and OP faithfulness constraints.

Optimal Paradigms: A Case for Scepticism

Bobaljik (2008) criticizes McCarthy's OP theory, and claims that "it is morpho-syntactic category and not paradigm properties, that determine phonological behaviour."

Among others things, Bobalijk claims that stems are active objects, contra McCarthy (2005).

German *sprech-en* 'speak-INFIN'
also *be-sprech-en* 'discuss', *(sich) ver-sprech-en* 'misspeak', etc.

	PRESENT		PAST		PARTICIPLE
	SG.	PL.	SG.	PL.	
1PSN	sprech-e	sprech-en	sprach	sprach-en	ge-sproch-en
2PSN	sprich-st	sprech-t	sprach-st	sprach-t	
3PSN	sprich-t	sprech-en	sprach	sprach-en	

Imperative: sprich

Optimal Paradigms: A Case for Scepticism

Bobalijk (2012:10) argus "that inflectional paradigms must have a base in whatever sense is relevant to Base Priority, within the logic of the system."

(28) a. [[Be-sprech]-ung] 'meeting, discussion' (nominalization -ung)
b. [[Ver-sprech]-er] 'slip of tongue' (nominalization -er)

(29) a. Ess-lokal 'eating-place' *ess Imperative iss, Past ass.
b. Treff-punkt 'meeting-point' *treff Imperative triff, Past traff.

There is indeed a base, even in those cases in which the base never surfaces as an independent word. (in OT vocabulary, this means that Faithfulness to the base is an active constraint, despite McCarthy tries to show that OP constraints are high-ranked)

Optimal Paradigms: A Case for Scepticism

A second, interesting point raised by Bobalijk is the following (2012:11): "OP effects are attested only where they are indistinguishable from category-sensitivity".

Evidence is brought from Itelmen, a language displaying "a striking tolerance of large consonant clusters". However, [+sonorant] consonants must be adjacent to a vowel:

$$\emptyset \rightarrow \text{ə} \; / \; \left\{ \begin{matrix} C \\ \# \end{matrix} \right\} \_\_ [+sonorant] \left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$$

Optimal Paradigms: A Case for Scepticism

(30) Nouns (the rule applies: V-zero alternations)

a.	ɬxəm	~	ɬxm-ɐ́n	'sable' sg, pl
b.	spəl	~	spl-ank	'wind' direct, locative[11]
c.	ʷtχəz-xʔal	~	ʷtχz-enk	'road' ablative, locative

(31) Verbs (the rule overapplies: schwa is stable)

a.	t-zəl-čen	1SG-give-1SG>3SG	'I gave it.'	
b.	zəl-en	give-2SG>3SG	'You gave it.'	*zlen
c.	t-ɬəm-čə́n	1SG-kill-1SG>3PL	'I killed them.'	
d.	q-ɬəm-in	2IMP-kill-2>3SG	'Kill it!'	*qɬmin
e.	spəl-qzu-in	windy-ASP-3SG	'It was windy.'	
f.	spəl-in	windy-3SG	'It was windy.'	*spl-in

Optimal Paradigms: A Case for Scepticism

Baseless nouns: a problem for OP

(32) Nouns with singular suffixes:

	UR	Sg.	Pl.	gloss
-m	/txtu/	txtu-m	txtu-ˀn	'dugout canoe'
	/atno/	atno-m	atno-ˀn	'village' (also 'home')
-n	/kəmlo/	kəmlo-n	kəmlo-ˀn	'grandchild'
	/reβla/	reβla-n	reβla-ˀn	'falcon'

(33) Reduplicative nouns:

a. alternating bases: [14]			b. non-alternating bases:		
Singular	Plural		Singular	Plural	
kəp-kəp	kpə-ˀn	'tooth'	silq-silq	silq-aˀn	'meat with berries'
k'uɸ- k'uɸ	k'ɸə-ˀn	'claw'	ŋəl-ŋəl	ŋə-ˀl	'roe, caviar'
°čełx-°čełx	°čłxə-ˀn	'cowberry'	tam-tam	tam-eˀn	'growth, tumour'

Optimal Paradigms: A Case for Scepticism

Bobalijk claims the following: "My (admittedly Itelmeno-centric) hunch is this: such a survey will reveal that lexical category is a recurring predictor of distinct phonological behaviour, whereas the contingent properties of paradigms are not." and concludes: "To predict the surface form of a word, it is sufficient to know the constituent pieces of that word, their hierarchical arrangement, and the general phonology of the language. Reference to other members of that word?s paradigm is neither needed nor possible."

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Outline

The Italian definite article

See handout.

Outline

The Somali verb inflection

See handout

Outline

Italian and Serbo-Croatian nouns

See handout.

This topic well be addressed time permitting: it will depend on how much time we will spend over the Italian definite article and Somali nouns.