

Italian velar palatalization: Into the phonology or into the lexicon?



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1 Introduction

Italian velar palatalisation

- | | | |
|--------|--|-------------------------------------|
| (1) a. | amiko, amítʃi, amíke | 'friend/pl./fem.pl.' |
| b. | bróntʃo, bróntʃi | 'sad face/pl.' |
| b'. | kwóko, kwóki | 'cook _N /pl.' |
| c. | mániko, mánitʃi / mániki | 'door handle/pl.' |
| (2) a. | dirídʒere, dirígo, dirídʒi, dirídʒe | 'direct _V inf./1/2/3sg.' |
| b. | kwótʃere, kwótʃo, kwótʃi, kwótʃe | 'cook _V inf./1/2/3sg.' |
| b'. | *tokere, toko, toki, toke | unattested |
| (3) a. | legáre, légi, léga, légo | 'tie _V inf./1/2/3sg.' |
| b. | komintʃáre, komintʃo, komintʃi, komintʃa | 'begin _V inf./1/2/3sg.' |

Questions:

1. Is a palatalisation process still active or are these forms lexicalised?
If the pattern is lexicalised how do we represent this?
2. Should nouns and verbs be treated the same?
3. How do we treat vacillating stems (1c)?

First tentative answer to 2: Verbs show either completely regular palatalisation or none at all. We don't find this distinction among nominal forms (nouns, adjectives). Hence, there is a difference. Irregularity is a matter of lexical class.

But: It's one language after all. (Not two or three)

Strong OT hypothesis: 1 language = 1 constraint ranking

Possibilities to relativise this to accommodate sub-phonologies:

- Write everything into the lexicon in form of allomorphs.
- Write everything into the lexicon in form of pre-/under-specified representations.
- Co-phonologies: Different rankings determine the surface forms of different parts of the lexicon.
- Constraint indexation (Pater 2000, 2006)

Burzio (2000, 2004): Underapplication of a process and absence of irregularity = high ranking of BO-Faith -> explains the difference between *-ere* and *-are* paradigm.

[Ⓕ] CASTL = Center for Advanced Study in Theoretical Linguistics. <http://uit.no/castl>

Burzio's BO-Faith constraints have to be relativised to specific lexical sets anyway. Otherwise they can't explain phenomena in specific paradigms.

Strong hypothesis part 2: PALATALISATION >> IO-FAITH

Whether a masculine noun palatalises or not is unpredictable.

But A: The stems are only *weakly* suppletive.

Nouns don't show *strongly* suppletive forms as some of the verbs do.

But B: Suppletion follows a regular pattern: Velar palatalisation.

(4)	Infinitive	1sg	2sg	3sg	1pl	2pl	3pl	
	andare	vado	vai	va	andjamo	andate	vanno	'to go'
	essere	sono	sei	e	sjamo	sjete	sono	'to be'
	avere	o	ai	a	abbjamo	avete	anno	'to have'

These forms don't have anything to do with velar palatalisation, but they show that nouns are relatively uniform: In fact it is this extreme uniformity that raises suspicion.

2 How ambivalent are nouns with respect to palatalisation?

Q1: How vacillating are the vacillating noun stems?

Celata & Bertinetto (2005): Some vacillating words tend towards palatalisation some towards non-application. There is no balanced vacillating stem.

Q1.1: Can this tell us something about the nature of palatalisation in the noun paradigm?

Q2: Is palatalisation synchronically active in nouns at all?

Celata & Bertinetto (2005): All plural forms of nouns ending in velars are lexically stored, nouns ending in nonvelars are produced compositionally.

A1: Google search on plural forms of vacillating nouns.

(5) Vacillating stems					
a. Preferably palatalising			b. Preferably not palatalising		
transcription	orthography	gloss	transcription	orthography	gloss
fármajtʃi/	farmaci/	'drugs'	kirúrgi/	chirurgghi/	'surgeons'
fármaki	farmachi		kirúrdzi	chirurgi	
mánitʃi/	manici/	'door			
mániki	manichi	handles'			
sarkófadjʃi/	sarcofagi/	guess			
sarkófagi	sarcofaghi	what			
stómatʃi/	stomaci/	'stomachs'			
stómaki	stomachi				
mónatʃi/	monaci/	'monks'			
mónatʃi	monachi				

Statistics on vacillating nouns:

www.google.it accessed 07.04.06 /09. 04. 06 only Italian pages scanned (pagine in italiano).

(6) Occurrences of vacillating nouns in the Italian web

item	webpages	%		item	pages	%
fármaci	3,730,000	99.99%		mónaci	1,350,000	98.01%
farmachi	420	0.01%		monachi	27,400	1.99%
total	3,730,420			total ¹	1,377,400	
chirúrghi	718,000	95.82%		mánici	338,000	94.95%
chirurgi	31,300	4.18%		manichi	18,000	5.05%
total	749,300			total	356,000	
singular	1,460,000			singular	1,020,000	
sg/pl ratio	3:1 (2.94)			sg/pl ratio	3:1	
sarcófagi	83,300	77.5%		stómaci	73,900	71.61%
sarcofaghi	24,200	22.5%		stomachi	29,300	28.39%
total	107,500			total	103,200	
singular	242,000				2,300,000	
sg/pl ratio	3:1 (3.25)				23:1 (23.28)	

(7) Frequencies of non-vacillating forms in the Italian web

Item	count	%
amici	42,600,000	99.941%
*amichi	25,400	0.059%
total	42,625,400	
singular	65,100,000	
*amice	59,300	1.62%
amiche	3,600,000	98.38%
total	3,659,300	
singular	6,540,000	
amicizia	3,350,000	99.999%
*amichizia	46	0.001%
total	3,350,046	

Vacillation is below significance (*farmachi; *monachi; *chirurgi), just as with test words.

Inverse frequency correlation: The less frequent a noun occurs the more likely the occurrence of the less used form.

The 'tendencies' can be explained in a systematic way:

¹ Singular of *monaci* was difficult to google, because the word is homophonous with a German city and a monarchy in southern Europe. Therefore this was excluded.

(8) The vacillating stems

a. Palatalising

(fárma)_{ftʃi}

(máni)_{ftʃi}

sar(kófa)_{ftdʒi}

(stóma)_{ftʃi}

(móna)_{ftʃi}

b. Non-palatalising

ki(rúrgi)_{ft}

Position protecting from palatalisation: Inside a foot:

If the velar is inside the foot it does not palatalise, if it is outside the foot, speakers tend to palatalise.

However, for the ordinary noun that is not claimed to vacillate this generalisation is not valid:

amico overapplies: a(mí:tʃi) (inside foot)

pizzico underapplies: (pít.tsi)ki (outside foot) (google: 67,500:16 / 0.0023%)

Double-check with Celata & Bertinetti's priming data corpus:

(9) C&B's palatalising test words (all stressed on antepenult)

pratico pratici

arabico arabici

sindaco sindaci

storico storici

anarchico anarchici

celtico celtici

grafico grafici

acrostico acrostici

distico distici

tipico tipici

biblico biblici

chierico chierici

classico classici

portico portici

drastico drastici

cantico cantici

Perfect palatalisation conditions: Outside a foot and between two /i/

(10) C&B's nonpalatalising test words (a. penult, b. antepenult)

a. elenco elenchi

b. valico valichi

antico antichi

carico carichi

opaco opachi

pizzico pizzichi

imbarco imbarchi

ubriaco ubriachi

pudico pudichi

ombelico ombelichi

bifolco bifolchi

azteco aztechi

alterco alterchi

macaco macachi

paranco paranchi

bolscevico bolscevichi

The only stems in C&B's study that behave against expectation are those in (10b).

Results so far:

☞ Vacillation in test words below significance. (Big theory of vacillation cancelled)

☞ Low frequency nouns follow regular pattern of foot-external palatalisation

☞ Still: Does this mean there is a hidden palatalisation mechanics active?

Q2 How active is velar palatalisation as a process in nouns?

A2: Nonsense word tests with native speakers

Freshly invented nonsense words were presented to four test persons, two grown up females a 12 year old female and a 9 year old male. 50% of the test words were fillers, they did not contain a root-final dorsal or they were feminine or both.

All words were checked with a native speaker before the test to a) confirm acceptable phonotactics, b) exclude accidental real words or c) similarity with real words

The subjects had to produce the following sentence for each word directly after hearing it for the first time:

(11) *Carrier sentence:*

Ieri ho visto due _____ .

Yesterday have-1sg see-past.part two _____ .

Yesterday, I have seen two _____ .

(12) Results

	Context	Item	Subject A	B	C	D
a.	...V) _{ft} ki	frunaco, cincuco	p, n	n, n	n, n	n, n
b.	...i) _{ft} ki	plantico, gnalico	p, p	p, p	n/p, n	p, n
c.	...iki) _{ft}	gico	p	n	n	n
d.	...irki) _{ft}	tapirco	n	n	n	n
e.	...ikki) _{ft}	giompicco	no response	n	n	n
f.	...Vki) _{ft}	frampeco,	n	n	n	n

All: Palatalisation of short /k/ outside foot between two /i/. (70.75%)

Otherwise: no significant sign of an active process.

Between 2 /i/ inside foot = 25%

inside foot no palatalisation,

3 Analysis

I ignore the issue of foot structure in nouns and concentrate on group effects.

I.e., why do the two verb groups behave differently but exceptionless; why do nouns show exceptions?

3.1 Verbs

-ere verbs: 100% palatalization for all speakers, all words containing velars:

(13) Representation

a. $\begin{array}{c} k \\ | \\ \text{[dors]} \end{array}$

b. $\begin{array}{c} i/e \\ | \\ \text{[cor]} \end{array}$

c. $\begin{array}{c} tʃ \\ / \quad \backslash \\ \text{[dors]} \quad \text{[cor]} \end{array}$

d. $\begin{array}{c} x \quad \quad x \\ | \quad \quad \backslash \\ \text{[dors]} \quad \quad \text{[cor]} \end{array}$

(For a more elaborate representation of velar palatalisation in the Parallel Structures Model (Morén 2003) see Morén 2006.)

(14) PAL » IO-IDENT[place]

(15) *-are* verbs exceptionless nonapplication:
IO-IDENT[place] » PAL ?

We also have to block lexical exceptionality (stored allomorphs): A paradigm effect?
All *-are* verbs have to be faithful to e.g. 3rd singular present tense form or infinitive.

This gives us a uniform grammar with BO-Faith indexed to the *-are* paradigm:
BO-IDENT[place]_{-are} » PAL » IO-IDENT[place]
Base: Infinitive or third person

(16) Potential exceptional palatalisation in *-are* paradigm

	/leg/ /-i/ or /ledʒi/	BO-IDENT[place] _{-are}	PAL	IO-IDENT[place]
a.	ledʒi	*!		
b.	ledʒ-i	*!		
☞ c.	leg-i		*	
Base:	legare / lego			

Why do *-ere* verbs not have non-alternating allomorphs?
High ranking of PAL always selects the form with palatalisation, even if we have two forms in the input:

(17) Potential stored allomorphs of *-ere* verbs

	/diridʒ, dirig/ /-i/	BO-IDENT[place] _{-are}	PAL	IO-IDENT[place]
☞ a.	diridʒi			
b.	dirigi		*!	
	/diridʒ, dirig/ /-o/			
¿ c.	diridʒo			
¿ d.	dirigo			
Base:	<i>none</i>			

(18) Stored *-ere* allomorph and non-palatalisation context

	/diridʒ, dirig/ /-i/	BO-IDENT[place] _{-are}	PAL	IO-IDENT[place]	*COMPLEX PLACE
☞ a.	diridʒi				
b.	dirigi		*!		
	/diridʒ, dirig/ /-o/				
c.	diridʒo				*!
☞ d.	dirigo				

Hence, allomorphs in the input will never make a surface difference in verbs.

(19) No allomorph in alternating *-ere* forms

	/dirig/ /-i/	BO-IDENT[place] _{-are}	PAL	IO-IDENT [place]	*COMPLEX PLACE
☞ a.	diridzi			*	
b.	dirigi		*!		
	/dirig/ /-o/				
c.	diridzo			*!	*
☞ d.	dirigo				

(20) No allomorph in non-alternating *-ere* forms

	/kwotʃ/ /-i/	BO-IDENT[place] _{-are}	PAL	IO-IDENT [place]	*COMPLEX PLACE
☞ a.	kwótʃi				
b.	kwóki		*!	*	
	/kwotʃ/ /-o/				
☞ c.	kwótʃo				*
d.	kwóko			*!	

*{tokere, toko toki} is impossible. See /dirig/ input

3.2 Nouns

What about nouns then? Some nouns show palatalisation, some don't.

(21) Two ways to explain nonapplication:

- a. IO-Faith » Markedness gives rise to syncretism (Burzio 2004)
- b. BO-Faith » Mark » IO-Faith gives rise to paradigm uniformity

Non-application = paradigm effect (pl looks like sg) (compare *-are* verbs)

Nonsense words only palatalise in very specific circumstances (see above).

(22) Suppletive adverbs

- bene - meglio 'good - better'
- male - peggio 'bad - worse'

(23) Some exotic Italian plural forms

	Singular	Plural		Singular	Plural
a.	la tʃittá	le tʃittá	c.	il múro	le múri / múra
	il tassí	i tassí	d.	la máno	le máni
	il bús	i bús	e.	il poéta	i poéti
	il re	i re		il kómmunísta	i kómmunísti
b.	il brátʃo	le brátʃa	f. *	il frúmpolo	i gipú
	il labbro	le labbra			

Absence of strong suppletion in nouns is an argument for BO-FAITH » PAL » IO-FAITH

Noun/adjective stems that palatalise have to get a lexical mark now (x). This triggers indexed PAL_x

(24) Velar palatalisation grammar

BO-IDENT[place]_{-are} » PAL_x » BO-IDENT[place]_N » PAL » IO-IDENT[place] » *COMPLEXPLACE

(25) Non-application

	/kwok-/ /-i/	PAL _x	BO-IDENT[place] _{N,x}	PAL	IO-IDENT[place]
☞ a.	kwoki			*	
b.	kwotʃi		*!		*
Base:	kwoko				

(26) The effect of lexical indexation

	/amik/ /-i/	PAL _x	BO-IDENT[place] _N	PAL	IO-IDENT[place]
a.	amiki	*!		*	
☞ b.	amitʃi		*		*
base:	amiko				

What happens if we assume two allomorphs in the input?

(27) Alternating noun with allomorph in the input

	/amik/ /-i/ /amitʃi/	PAL _x	BO-IDENT[place] _N	PAL	IO-IDENT[place]	*COMPLEX PLACE
☛ a.	amiki			*		
☹ b.	amitʃi		*!			*
base:	amiko					

(28) Non-alternating forms might have a (pretty useless) allomorph in the lexicon

	/kwok-/ /-i/ /kwotʃi/	PAL _x	BO-IDENT[place] _N	PAL	IO-IDENT[place]
☺ a.	kwoki			*	
b.	kwotʃi		*!		*
Base:	kwoko				

Storing an allomorph /kwoki/ in the non-palatalising forms and removing both PAL_x and BO-IDENT[place]_N would simplify the grammar, but remove the explanation for the non-application of palatalisation in nonsense forms of the same shape.

(29) New or nonsense forms neither have a lexical allomorph nor a lexical mark.

	/frampik/ /-i/	PAL _x	BO-IDENT[place] _N	PAL	IO-IDENT[place]	*COMPLEX PLACE
☞ a.	frampiki			*		
b.	frampitʃi		*!			*
base:	frampiko					

An allomorph analysis would also have to explain the absence of completely arbitrary plurals.

Final stressed vowels resist inflection.
 Some nouns fall into a third gender class (b,c).
 Some show gender mismatches (d).

How about female forms? Female nouns are just like *-are* verbs: Nothing ever happens.
 /e/ triggers palatalisation in *-ere* verbs. Is feminine plural /e/ different?

Some nouns are lexically marked for palatalisation and can be inflected as feminine, but don't palatalise in the feminine plural form.
 Given RotB, even some lexically feminine nouns could be lexically marked.
 Hence there must be a BO-FAITH for females.

(30) Female uniformity with hypothetical x-marked input

	/amik-/ _x /-e/	BO-IDENT [place] _{fem}	PAL _x	...	IO-IDENT [place]	*COMPLEX PLACE
☞ a.	amike		*	*		
b.	amitʃe	*!		*	*	*
Base:	amika					

In this way we can treat palatalisation in a representationally uniform way, rather than to include the feature [high] (or V-manner [close]) as a trigger in the noun paradigm to account for the inactivity of the vowel /e/ when it comes to female plural.

4 Conclusion

- Velar palatalisation is synchronically active in Italian, but
- extremely watered down by paradigm effects;
- restricted to lexically marked items in the nominal class.
- Regular lexical exceptions are dealt with by indexation (Pater 2000, 2006), rather than stored allomorphs²
- Stored allomorphs are an option only in non-alternating forms. I.e., no option.
- Palatalisation in verbs and nouns is a uniform process (though not quite surface uniform).

Dressler (1985) found a correlation between prosodic structure (footing) and palatalisation. This was denied by Celata & Bertinetto (2005). Here a (weak) correlation emerged again in the nonsense word experiment. This deserves more research.

A detailed account of velar palatalisation in nouns still has to be done.

² For an analysis of irregular allomorphs see Bye (to appear).

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