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Vowel Length in Northern Italian Dialects. A Government Phonology Account

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Introduction

In this thesis vowel length patterns in Northern Italo-Romance varieties are taken into account.

In the first chapter a presentation of the relevant data from Northern Italo-Romance varieties is given. It will be shown that vowel length is a relevant phenomenon for most Northern Italo-Romance varieties nowadays, and that the diatopic variation also suggests that vowel length probably characterised, at their initial stage of evolution from Proto-Romance, most if not all Northern Italo-Romance varieties (Venetan varieties aside), even those that do not display vowel length nowadays.

In the second chapter Friulian will be analysed in detail. It will be shown that the classical account of Friulian vowel length patterns (and therefore of Northern Italo-Romance varieties vowel length patterns) oversimplifies the characteristics of such phenomenon and that a revised account is needed.

In the third chapter the different diachronic proposals that account for vowel length in Northern Italo-Romance varieties will be discussed, focusing in particular on the works of Loporcaro (2015) and Vanelli (2005), which represent the two main accounts of the diachronic path of vowel length. It will be actually shown that incorporating some aspects of the two proposal could help to shed new light of the evolutionary derivation of vowel length from Proto-Romance.

In the fourth chapter the different synchronic proposals advanced to account for vowel length patterns in Friulian are revised, from the ones couched within the theoretical framework of Moraic Phonology to the ones couched within Optimality Theory. The role of lexicon as opposed to phonological derivation will be also discussed.

In the fifth and last chapter, a Government Phonology 2.0 account of Friulian length alternations will be proposed. It will be outlined a non-arbitrary connection between vowel length and the voicing properties of Friulian obstruents, and in particular a non-arbitrary account of final devoicing and vowel lengthening will be presented.

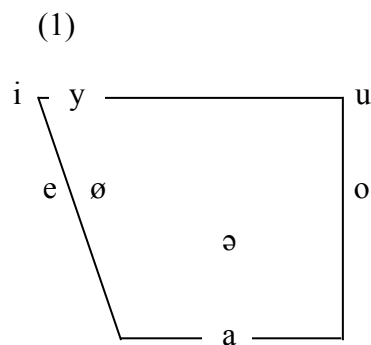
1. Vowel Length in Northern Italian Dialects

In this chapter a presentation of length patterns that can be found in Northern Italo-Romance varieties will be given following Loporcaro's (2015) wide-ranging study on the subject. It will be shown that vowel length, far from being an exception of some kind, characterise a large number of Northern Italo-Romance nowadays, and that there are strong indications that it could have been there at the origins of the entire Northern Italo-Romance dominion (the only exception being Venetan varieties).

1.1. Piedmontese¹

Piedmontese is set apart from the other Northern Italo-Romance varieties with respect to contrastive vowel length, because it is one of the examples (the others being most notably Veneto varieties and Eastern Lombard) of a Northern Italo-Romance variety *not* displaying contrastive vowel length.

This situation is exemplified, for instance, in Turinese², that has the following stressed vowel system (Loporcaro 2015: 150):



Nonetheless, there are good indications that at least some Piedmontese varieties did present at some point long vowels. These indications consist, for instance, in the occurrence of falling diphthongs in Turinese, shown below (taken from Loporcaro 2015: 151):

¹ For a first introduction on the main characteristics of Piedmontese in the context of the other Northern Italian dialects see Benincà / Parry / Pescarini (2016) and references therein.

² For Turinese see for example Berruto (1974) and Soffietti (1949).

(2)

	i.	ME(N)SEM	SERAM	TELAM	ii.	SICCAM	(OF)FELLAM X -ITTAM
a.	Turinese	['mɛ̃js]	['sɛ̃jra]	['tɛ̃jla]		['səkɪa]	['fətɪa]
b.	Italian	['me:se]	['se:ra]	['te:la]		['sekɪa]	['fetɪa]
		'month'	'evening'	'cloth'		'dry.FSG'	'slice'

The occurrence of the falling diphthongs in what was a Proto-Romance open syllable strongly suggests that they derive from a long vowel.

Furthermore, there are rural Piedmontese dialects that still show nowadays contrastive vowel length.

In the Upper Canavese dialect of Trausella one can find pairs such as the following (from Loporcaro 2015: 151; see also Vignola Saffirio 1978):

(3)

[pu'li:t]	'clean'	vs.	[pu'lit]	'chick, pl.'
[fy:s]	'spindle'		[ys]	'door'
[mu:t]	'milked'		[mut]	'dumb'
[pɛ:s]	'lost'		[pɛs]	'wilted'
[nɔ:]	'knot'		[nɔ]	'no'
[pa:s]	'peace'		[pas]	'pace'

The variety of Valle d'Andorno too shows contrasts based on vowel length, even if only with /a/ and /i/ (see Loporcaro 2015: 151; Berruto 1974: 28; Berruto 1970: 14-15; Grassi 1968: 158):

(4)

[di:]	'finger'	vs.	[al 'di]	'say, 3 m. sg.'
[na:s]	'nose'		[al 'nas]	'be born, 3 m. sg.'

The dialects of Valsesia (found in the northeastern part of Alpine Piedmontese) show contrastive vowel length too.

So, for example, the variety of Rossa (in Valsesia, province of Vercelli) presents the following pairs (see Loporcaro 2015: 151; Dell'Aquila 2010: 71-76):

(5)

[me:s]	‘month’	vs.	[mes]	‘half, m.’
[sɔ:t]	‘solid, m.’		[ɔt]	‘eight’
[me:]	‘honey’		[ca'me]	‘call, inf.’
[saw'ta:]	‘jumped, f. sg.’		[saw'ta]	‘jumped, m. sg.’

While, the nearby Campertogno variety (also in Valsesia) has the following pairs that display contrastive vowel length (see Loporcaro 2015: 151; Molino / Romano 2008: 31, 36, 58):

(6)

[pa:s]	‘peace’	vs.	[pas]	‘pace’
[fra:]	‘grating’		[fra]	‘friar’
[di:]	‘say, inf.’		[di]	‘day’

1.2. Ligurian³

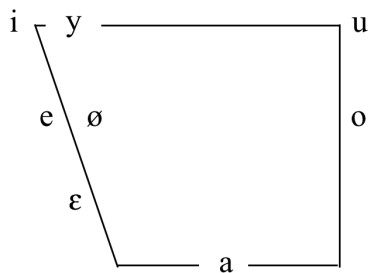
While the western varieties of Ligurian (the Intemelio group – see Azaretti 1982: 25 for Ventimigliese – and Western Ligurian with Imperia, Albenga etc. – see Forner 1988: 25 –) lack contrastive vowel length⁴, Genoese and Central Ligurian do display contrasts based on vowel length.

Genoese has the following vowel system (cf. Loporcaro 2015: 89; Forner 1988: 458, where /æ ɔ/ instead of /ø o/ are given; Ricciardi 1975: 60):

³ For a first introduction on the main characteristics of Ligurian in the context of the other Northern Italian dialects see Benincà / Parry / Pescarini (2016) and references therein.

⁴ For the lack of vowel length in some particular contexts in the Genoese enclave of Bonifacio (in southern Corsica, where it was exported after the Genoese conquest in 1995) see Loporcaro 2015: 149-150 Ricciardi 1975: 19, 23-24 Dalbera 1994b: 98-99.

(7)



In the following pairs, contrastive vowel length is exemplified (Loporcaro 2015: 89; and see also Toso 1997a: 16, 26 and *passim*; Ricciardi 1975: 60-69; Forner 1975: 50):

(8)

['pɔ:su]	‘relax, 1 sg.’	vs.	['pɔsu]	‘can, 1 sg.’
['pu:su]	‘wrist’		['pusu]	‘pit’
['fa:su]	‘false’		['fasu]	‘do, 1 sg.’
['va:zu]	‘vase’		['mazu]	‘May’
['la:gu]	‘lake’		['vagu]	‘go, 1 sg.’
['ri:ku]	‘Henry’		['riku]	‘rich’
['fi:tu]	‘quick, soon’		['fitu]	‘rental’
['fry:tu]	‘fruit’		['brytu]	‘ugly’

One thing that has to be said about these examples is that, as can be seen, they show one major difference that sets Ligurian apart from the other Northern Italo-Romance varieties, viz. that the last unstressed vowel was not erased in Ligurian dialects, unlike the other Northern Italo-Romance varieties that undergo apocope of the final unstressed vowels (/a/ excluded).

Genoese also exhibits word-final contrasts based on vowel length (from Loporcaro 2015: 90)⁵:

⁵ See Loporcaro (2015: 90-91) for discussion of long vowels being present in unstressed position.

(9)

[da:]	‘to give’	vs	[da]	‘she gives’
[dur'mi:]	‘to sleep’	vs	[mi]	‘I’
[di:]	‘to say’	vs	[ti]	‘thou’
[pa'pɛ:]	‘paper’	vs	[ka'fɛ]	

In the following examples it will be shown that there are still instances of the relationship between vowel length and the syllable structure of Proto-Romance, with long vowels arising from a stressed open Proto-Romance syllable (which was not the case for all the examples above; from Loporcaro 2015: 92):

(10)

a. ['ka:za] ‘house’	< CASAM ≠	b. ['pasa] ‘pass.IMPER.2SG’	< *PASSA
['va:zu] ‘vase’	< VASUM	['mazu] ‘May’	< MAI(I)UM
['di:ʒe] ‘say.3SG’	< DICIT	[fi'ni]e] ‘end.3SG’	< FIN(*ISC)IT
['ta:ʒe] ‘be silent 3SG’	< TACET	['na]e] ‘be born.INF’	< NASCERE

However, this correlation has been oftentimes blurred by other processes such as lengthening before certain consonants (usually /g g^w v z ʒ r/, see Loporcaro 2015: 93; Ghini 2001: 183; Toso 1997a; Forner 1975: 51-52, 250-251). Furthermore, one can find long vowels derived from a closed Proto-Romance syllable and short ones derived from an open Proto-Romance syllable, as the following examples show (from Loporcaro 2015: 92):

(11)

a. ['di:tu] ‘said’	b. ['dadu] ‘dice’
['krɛ:tu] ‘believed’	['vede] ‘see.INF’
['tʃɔ:su] ‘closed’	['kaze] ‘fall.3SG’
['ɛ:se] ‘be.INF’	['treze] ‘thirteen’
['dɔ:ta] ‘twice’	['vagu] ‘go.3SG’
['pɔ:ku] ‘few’	['digu] ‘say.3SG’

These examples show long vowels in an original closed syllable as instances of coalescence (e.g. CLAUSUM > ['tʃɔ:su] ‘closed, m.’, DICTUM > ['di:tu] ‘said, m.’, with -C- that was vocalized to [j]) or they show short vowels in an original open syllable that are the expected diachronic output (TREDECIM > *‘tred(e)ze > ['treze] ‘thirteen’, with a short vowel

due to the position in a Latin proparoxytone) (cf. Toso 1997b: 34; Parodi 1902-5: 156-159, 358 and see Loporcaro 2015: 92-93 for these and other processes that obscured the relationship between the length of the vowels and Proto-Romance syllable structure).

1.3. Lombard⁶

In this paragraph I will follow the distinction of Lombard made by Loporcaro (2015: §§3.4.1.1., 3.4.1.4., 5.1.3.) in Western, Eastern and Alpine Lombard. First I will describe Western Lombard, represented by Milanese, then Eastern and Alpine Lombard and then, before proceeding on with Emilian, I will analyse the variety of Cremona, which is a transitional variety from Lombard to Emilian.

1.3.1. Western Lombard

Milanese can be chosen as the representative for the Western Lombard group, as far as contrastive vowel length goes.

Milanese has the following stressed vowel system (Loporcaro 2015: 93)⁷:

(12)

i i:	y y:	u u:
ε ε:	Ø Ø:	ɔ ɔ:
	a a:	

Contrastive vowel length is displayed in the following pairs (from Loporcaro 2015: 94):

⁶ For a first introduction on the main characteristics of Lombard in the context of the other Northern Italian dialects see Benincà / Parry / Pescarini (2016) and references therein.

⁷ For different descriptions on the relationship between vowel quality and quantity see the comparison in Gökçen (1990) and the references therein.

(13)

a.	[¹ na:z]	‘nose’	≠	b.	[¹ nas]	‘be born.3SG’
	[¹ ka:l]	‘loss’			[¹ kal]	‘corn’
	[¹ fi:g]	‘fig’			[¹ rik]	‘rich’
	[¹ tu:z]	‘boy’			[¹ tus]	‘cough’
	[¹ y:z]	‘usage’			[¹ ys]	‘door’
	[¹ rø:d]	‘wheel’			[¹ røt]	‘burp’
	[¹ me:z]	‘month’			[¹ mɛz]	‘half’
	[¹ pe:l]	‘hair’			[¹ pɛl]	‘skin’
a.	[an ¹ da:]	‘went’	≠	b.	[an ¹ da]	‘go.INF’
	[¹ di:]	‘said’			[¹ di]	‘say.INF’
	[ri ¹ dy:]	‘laughed’			[ri ¹ dy]	‘reduce.INF’
	[¹ tø:]	‘your.MPL’			[¹ tø]	‘take.INF’
	[¹ pe:]	‘feet’			[¹ pɛ]	‘foot’

It is important to notice that all the examples above are instances of oxytonic words. In fact, Milanese displays contrastive vowel length only in the final stressed syllable of word (ending either with a coda consonant or with the stressed long vowel, as the examples above show). In all non-final stressed syllables, vowel length does not contrast. This can be seen first of all in paroxytonic words, where the vowel is invariably short (from Loporcaro 2015: 94):

(14)

Root /V:/		b. Root /V/	
[¹ di:z]/[¹ dizi]	‘say.3/1SG’	[¹ rik]/[¹ rika]	‘rich.M/FSG’
[¹ dy:r]/[¹ dyra]	‘hard.M/FSG’	[¹ my:f]/[¹ myfa]	‘rotten.M/FSG’
[¹ pe:l]/[¹ pela]	‘hair/peel.3SG’	[¹ mɛz]/[¹ mɛza]	‘half.M/FSG’
[¹ nø:f]/[¹ nøva]	‘new.M/FSG’	[¹ gøb]/[¹ gøba]	‘hunchbacked.M/FSG’
[¹ na:z]/[¹ naza]	‘nose/sniff.3SG’	[¹ gat]/[¹ gata]	‘cat/she-cat’
[¹ mɔ:d]/[¹ mɔda]	‘fashion.PL/SG’	[¹ mɔs]/[¹ mɔsa]	‘move.PL/SG’

The vowel is also short in all instances of proparoxytones (from Loporcaro 2015: 95):

(15)

[¹pegura] ‘sheep’, [¹legura] ‘hare’, [¹strɔlega] ‘gipsy(F)’, [¹nivula] ‘cloud’ (also in etymological proparoxytones like [¹azen] ‘donkey’ < ASINUM)

The distribution of vowel length in Milanese represents the characteristics of Western Lombard, and it can be found mirrored in other Western Lombard varieties such as the following, where contrastive vowel length can be found only in the final stressed syllable of a word. (16) exemplifies the variety of Premana, in the province of Como (Loporcaro: 2015: 95-96; Bellati / Bracchi 2007: 67; Sanga 1984b: 31-34); (17) exemplifies the variety of Casale Corte Cerro, in the province of Verbania (Loporcaro 2015: 96; Weber Wetzel 2002: 31-34); (18) exemplifies the variety of Novate Mezzola, in the province of Sondrio (Loporcaro 2015: 96-97; Bonfadini 1997; Massera 1985).

(16)

a.	[ˈka:r]	‘dear’	≠	b.	[ˈkar]	‘chariot’
	[ˈpɛ:s]	‘weight’			[ˈpɛs]	‘fish’
	[ˈfɔ:]	‘do.1SG’			[ˈfɔ]	‘outside’
	[vesˈti:]	‘dressed’			[vesˈti]	‘dress.INF’
	[ˈkro:s]	‘cross’			[ˈros]	‘red’

(17)

a.	[puˈli:t]	‘well’	≠	b.	[puˈlit]	‘turkey.PL’
	[ˈta:z]	‘be silent.3SG’			[ˈtas]	‘badger’
	[ˈvø:j]	‘empty’			[ˈvøj]	‘want.1SG’
	[ˈly:j]	‘he’			[ˈlyj]	‘July’

(18)

a.	[ˈli:s]	‘worn out’	≠	b.	[ˈlis]	‘smooth’
	[ˈgy:s]	‘squirrel.PL’			[ˈgys]	‘shell’
	[ˈka:l]	‘loss’			[ˈkal]	‘corn’
	[ˈpɔ:s]	‘positions’			[ˈpɔs]	‘stale’
	[ˈtu:s]	‘boy’			[ˈtus]	‘cough’
a.	[ˈdi:]	‘finger’	≠	b.	[ˈdi]	‘day’
	[pruˈdy:]	‘produced’			[pruˈdy]	‘produce.INF’
	[faˈzø:]	‘bean’			[griˈzø]	‘blueberry’
	[ˈsa:]	‘salt’			[ˈsa]	‘know.3SG’

And see Loporcaro 2015: 97 for the mention of still other varieties (with the relative references) that present the same pattern regarding vowel length.

1.3.2. Alpine and Eastern Lombard

Some peripheral varieties of Alpine Lombard do not display contrastive vowel length anymore.

Thus, for instance, the varieties of upper and middle Val Leventina, in northern Tessin, at the periphery of the Lombard dialect area have lost contrastive vowel length. Airolo has short vowels both in [set] ‘thirst, f.’, [kret] ‘3 sg. pres. ind.’ (where one would have expected long vowels) and [net] ‘clean, m.’, [met] ‘3 sg. pres. ind.’ (with the expected short vowels) (Loporcaro 2015: 152; and see Sganzini 1924-26: 100, 103).

Also, the dialect of Giornico, another variety of Leventinese, does not display contrastive vowel length (Loporcaro 2015: 152), as the following examples show:

(19)

- | | | | | |
|----|----------------------------|---|----|---------------------------|
| a. | ['pes] ‘weight’ < PE(N)SUM | = | b. | ['pes] ‘fish’ < PISCEM |
| | ['mes] ‘month’ < ME(N)SEM | | | ['mes] ‘put.FPL’ < MISSAE |

The varieties of Valtellina are another example of absence of contrastive vowel length in the Alpine Lombard group.

Thus, for instance, the dialects of Livigno and Trepalle (in Upper Valtellina) have no contrastive vowel length, as the following examples show (from Loporcaro 2015: 153; Bosoni / Mambretti 2011: 133-134):

(20)

- | | | | | |
|----|------------------------|---|----|-----------------|
| a. | ['paʃ] ‘peace’ | = | b. | ['pas] ‘step’ |
| | ['pes] ‘weight’ | | | ['peʃ] ‘fish’ |
| | ['taʃ] ‘be silent.3SG’ | | | ['tas] ‘badger’ |

Much more consistently than Alpine Lombard (which represent a mix between Western and Eastern Lombard features, see Bonfadini 2010), Eastern Lombard is characterised by the absence of contrastive vowel length.

This can be clearly seen by the following examples from Bergamasco (the variety spoken in the urban area of Bergamo) (from Loporcaro 2015: 154; and cf. Bernini / Sanga 1987: 75; Sanga 1987c: 37, n.1):

(21)

- | | | | |
|-------------------|-----------------|--------------------|---------------|
| a. ['nas] < NASUM | 'nose' | b. ['nas] < NASCIT | 'be born.3SG' |
| ['tas] < TACERE | 'be silent.INF' | ['tas] < TAXUM | 'badger' |
| ['pas] < PACEM | 'peace' | ['pas] < PASSUM | 'step' |
| ['kar] < CARUM | 'dear' | ['kar] < CARRUM | 'wagon' |

Nonetheless there are good indications that in Bergamasco too once there was a contrast based on vowel length. In the following examples, a mid-high vowel [e] derives from what was expected to be a long vowel, while a mid-low vowel [ɛ] derives from a short one:

(22)

- | | | | | | | |
|-----------|--------------|----------|---|-----------|----------|---------|
| a. ['set] | < SITIM(-EM) | 'thirst' | ≠ | b. ['set] | < SEPTEM | 'seven' |
| ['pes] | < PE(N)SUM | 'weight' | | ['pɛs] | < PEIUS | 'worse' |

Note, in fact, that these same words show a contrast based on vowel length in Milanese (which still preserves long vowels):

(23)

- | | | | | | | |
|---------------|------------|----------|---|-----------|----------|--------|
| a. ['pe:s/-z] | < PE(N)SUM | 'weight' | ≠ | b. ['pɛs] | < PISCEM | 'fish' |
| ['me:s/-z] | < ME(N)SEM | 'month' | | ['mɛs/-z] | < MEDIU | 'half' |

The interpretation of these data would be that Bergamasco, while losing the vowel length contrast, still retained the one based on vowel quality (which, as is widely reported, combines with the contrast in duration, long vowels being more tense and short vowels being more lax)⁸.

The variety spoken in Brescia, the easternmost province of Lombardy, also offers interesting data. Like Bergamasco on the west and Veneto varieties on the east, Bresciano

⁸ And see Loporcaro (2015: 154-155) for further discussion on this interpretation.

does not present any long vowels nowadays (not only in its urban variety, but also in the varieties of the entire province). Nonetheless, similarly to what has just been said for Bergamasco, in Bresciano too one can find convincing arguments that vowel length had to be there at some point. Again, these arguments come from the observation of vowel quality.

In Eastern Lombard varieties (of which Bresciano is one of the representatives), the vowels /e/ and /ø/ correspond (etymologically, viz. have the same origin) to Western Lombard /i/ and /y/. Furthermore, nowadays Eastern Lombard /i/ and /y/ correspond to Western Lombard long /i:/ and /y:/, as exemplified below (from Loporcaro 2015: 156, and see also Loporcaro 2015: 156, n.11; Sanga 1997b: 257; Bonfadini 1990: 47; Merlo 1960-61: 3):

(24)

a.	(E)RĪCIUM	BRŪT(T)UM	b.	ECCUM-HĪC	PLŪS	c.	FĪLUM	MŪRUM
BS	['res]	['brøt]		['ke]	['pjø]		['fīl]	['myr]
MI	['ris]	['bryt]		['ki]	['py]		['fi:l]	['my:r]
	'curl'	'ugly'		'here'	'more'		'thread'	'wall'

In all these examples, the vowels /e/ and /ø/ are seen as instances of a lowering process that affected Eastern Lombard varieties (whereas Western Lombard ones still present the high counterparts /i/ and /y/). Furthermore, similarly to what has just been argued for Bergamasco, it can be seen how the lowering process affects only short vowels⁹, while a long vowel retained its quality (namely /i/ and /y/) in Eastern Lombard varieties.

1.3.3. Cremonese

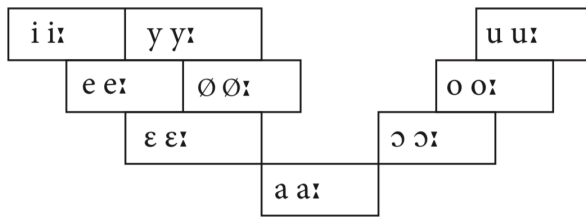
Cremonese, the variety of Cremona, in southern Lombardy, is a transitional variety between Lombard and Emilian (Loporcaro 2015: 83; Lurati 1988: 494; Merlo 1960-61: 6).

Its phonological vowel system is the following (from Loporcaro 2015: 83)¹⁰:

⁹ The vowels in (18a) are short, since they derive from a closed Proto-Romance syllable (for the syllabification of (E)RĪCIUM see Loporcaro 2015: 141, n.18). As for the short duration of the vowels in the contexts of (18b) and (18c), it has to do with the features characterising Northern Italo-Romance, on which see the discussion in Loporcaro (2015: 156; §5.3.4.; §5.4.2.).

¹⁰ For discussion on Cremonese phonological vowel system see Maddalon / Miotto (1986), Heilmann / Oneda (1976), Oneda (1964). For phonological analyses of vowel length in Cremonese see, for instance, Loporcaro (2005a; 2007a), Morin (2003; 2012), Prieto (1994); Repetti (1992).

(25)



In the following pairs it can be seen that Cremonese displays contrastive vowel length in oxytonic words (from Loporcaro 2015: 83-86; and cf. Rossini 1975:187-192, Oneda 1965: 34; 1964: 8-9):

(26)

- | | | |
|-------------------|---|----------------------|
| a. ['ri:s] 'rice' | ≠ | b. ['ris] 'curl(y)' |
| ['y:s] 'custom' | | ['ys] 'door' |
| ['me:s] 'month' | | ['mes] 'half' |
| ['pe:s] 'weight' | | ['pes] 'worse' |
| ['sɛ:t] 'be.2SG' | | ['set] 'seven' |
| ['pa:s] 'peace' | | ['pas] 'step' |
| ['na:s] 'nose' | | ['nas] 'be born.INF' |
| ['la:k] 'lake' | | ['sak] 'sack' |
| ['na:t] 'born' | | ['mat] 'crazy' |

(27)

- | | | |
|-------------------|---|------------------|
| a. ['pe:l] 'hair' | ≠ | b. ['pel] 'skin' |
| ['ka:r] 'dear' | | ['kar] 'chariot' |
| ['pa:n] 'bread' | | ['pan] 'cloth' |
| ['mɔ:l] 'pier' | | ['mɔl] 'soft' |

In all the above instances, the long vowels derive from a Proto-Romance vowel occurring in an open syllable (PACEM > [pa:s] 'peace, f.')

while the short ones derive from a Proto-Romance vowel occurring in a closed syllable (PASSUM > [pas] 'step, m.').

Cremonese contrastive vowel length is not limited to the final syllable of the word, and in fact it can be seen also in penultimate syllables as the following examples show:

(28)

a.	['fa:la]	'do.INTERR.3FSG'	≠	b.	['fala]	'fault (in a cloth)'
	['sta:la]	'stay.INTERR.3FSG'			['stala]	'stable, cowshed'
	['la:na]	'wool'			['kana]	'reed'
	['ve:der]	'glass'			['veder]	'see.INF'
	['po:di]	'can.1SG'			['podi]	'prune.1SG'

One can find examples of contrastive vowel length also in a word-final open syllable, which is something less frequently attested in other Romance varieties:

(29)

['me:]	'my'	['me]	'me'
['le:]	'she'	['le]	'there'
['ase:]	'enough'	['trɛ]	'three.F'
['pɔ:]	'Po river'	['pɔ]	'then'
['sta:]	'stay.INF'	['sta]	'stay.3SG'
['fa:]	'do.INF'	['fa]	'do.3SG'

One generalization that emerges from the data, though not without exceptions, is that long vowels are usually followed by a voiced obstruent, while short vowels usually occur before a voiceless one:

(30)

a.	['ro:da]	'wheel'	≠	b.	['rota]	'broken.FSG'
	['spu:za]	'bride'			['rusa]	'red.FSG'
	['rɔ:za]	'pink'			['grɔsa]	'big.FSG'
	['pe:za]	'scales'			['pesa]	'rag, cloth'
	['pa:ga]	'pay.3SG'			['paka]	'slap'
	['ne:gi]	'deny.1SG'			['beki]	'peck.1SG'

Cremonese it is also interesting because one can find long vowels in the antepenultimate syllables (while usually in the most Northern Italo-Romance varieties the stressed vowel of a proparoxytone is short), whether the final Latin vowel has undergone final apocope or not:

(31)

- a. ['ta:vula] 'table' < TABULAM, ['ma:zena] 'grinder, grindston' < MACHINAM,
[kwa're:zima] 'Lent' < QUADR(AG)ESIMAM
b. ['a:zen] 'donkey' < ASINUM, ['ma:zer] 'rettery' (cf. SI *màcero*), ['ba:ver]
'collar' (cf. SI *bàvero*)

1.4. Emilian¹¹

In Emilian varieties, as we have just seen for Cremonese, contrastive vowel length can occur both in the last and in the penultimate syllable of the word, as the examples below, taken from Bolognese, serve to show (Loporcaro 2015: 87, and cf. Hajek 1997: 135; 1995 and Coco 1971: 165-167; 1970: 88):

(32)

['me:l]	'honey'	≠	b. ['mel·]	'thousand'
['sa:k]	'sack'		['sak·]	'dry'
['fa:ta]	'done.F'	≠	b. ['fat·a]	'slice'
['la:pa]	'whine'		['lap·a]	'wood'
['me:ter]	'metre'		['met·er]	'put.INF'

What these examples also show is that there is a correlation between the length of the vowel and the length of the following consonant. After a long vowel we get a short consonant, and after a short vowel we get a (half-)long consonant.

These trade-off in length is further exemplified from the following examples, which belong to the dialect of Benedello (in the province of Modena; data from Uguzzoni 1974: 241):

¹¹ For a first introduction on the main characteristics of Lombard in the context of the other Northern Italian dialects see Benincà / Parry / Pescarini (2016) and references therein.

(33)

- | | | | | | | |
|----|----------|--------------------|---|----|----------|-------------|
| a. | ['re:d] | 'network.PL' | ≠ | b. | ['red:] | 'laugh.1SG' |
| | ['pe:z] | 'weight' | | | ['pez:] | 'worse' |
| | ['tø:t] | 'take.PRS.INT.2SG' | | | ['tøt:] | 'all' |
| | ['pɔ:s] | 'can.1SG' | | | ['pɔs:] | 'pit' |
| | ['ma:t] | 'crazy' | | | ['mat:] | 'put.2SG' |
| | | | | | | |
| a. | ['me:la] | 'honey' | ≠ | b. | ['mel:a] | 'thousand' |
| | ['bɔ:ta] | 'blow' | | | ['bɔt:a] | 'barrel' |
| | ['pa:na] | 'cream' | | | ['pan:a] | 'pen' |

As can be seen from these examples, here too we have only two possible sequences: long vowel + short consonant (V:C) or short vowel + long consonant (VC:), both in an oxytonic form or in a paroxytonic one.

1.5. Venetan¹²

There is actually not much to say about Venetan varieties with respect to vowel length. We have seen cases in which large groups of Northern Italo-Romance varieties lack nowadays contrastive vowel length. Nonetheless it was possible to find for those group very convincing evidence that a difference in the length of the vowels was there at the beginning and then it got lost, leaving though traces of itself in the system of such varieties.

This argument does not hold for Venetan varieties. Vowel length is not contrastive anywhere (see Zamboni 1988: 527; Wanner 1971: 72; Trumper 1972: 9) and for all we can say, it was *never* there (see Stussi 1965; Bertoletti 2005).

The question that arises for Venetan is the same that arises for Ibero-Romance varieties and Daco-Romance varieties, viz. whether vowel length was there and then was lost without leaving any trace or was never there (and since this is the situation, it is hard to imagine finding strong arguments in favour of one interpretation or the other)¹³.

¹² For a first introduction on the main characteristics of Venetan in the context of the other Northern Italian dialects see Benincà / Parry / Pescarini (2016) and references therein.

¹³ See Loporcaro (2015: 164) on this point.

1.6. Rhaeto-Romance Varieties

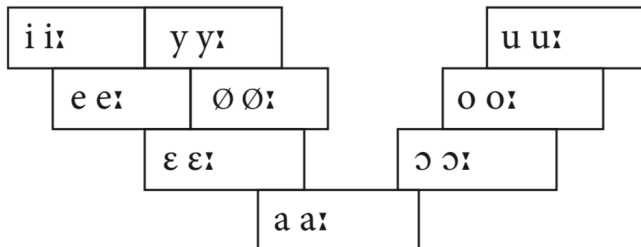
1.6.1. Central Ladin

The label *Central Latin* can be used in two different ways. It can have a narrow meaning indicating the varieties spoken in the Dolomites around the Sella massif (cf. Salvi 1997) or it can have a broader meaning, including the Ampezzano-Cadorino varieties and the upper Veneto area (the “ladino-veneto” varieties, with Agordino, Zoldano etc.) (cf. Pellegrini 1997).

Among the Dolomitan varieties of the Central Ladin group (Gardenese, Marebbano and Badiotto in the province of Bolzano; Livinallese in the province of Belluno; Fassano in the province of Trento) only Marebbano and Badiotto display contrastive vowel length today (see Videsott 2001: 154, Videsott / Plangg 1998: 30, Kramer 1981: 57-58, Mair 1973: 29).

Marebbano has the following phonological vowel system (Loporcaro 2015: 110, Mair 1973: 29):

(34)



In the following examples, instances of contrastive vowel length operating in Marebbano are shown:

(35)

<p>a. ['ma:] 'only' ≠</p> <p>['ma:t] 'only'</p> <p>['va:l] 'something'</p> <p>['a:ra] 'threshing floor'</p> <p>['e:rt] 'trade, craft'</p> <p>['tɛ:] 'tea'</p> <p>['o:res] 'work.PL'</p> <p>['my:ʃ] 'face.PL'</p>	<p>b. ['ma] 'May'</p> <p>['mat] 'crazy'</p> <p>['mat] 'be worth.3SG'</p> <p>['ara] 'wing'</p> <p>['ert] 'steep'</p> <p>['tɛ] 'take.IMP.2SG'</p> <p>['ores] 'hours'</p> <p>['myʃ] 'donkey'</p>
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Even if the other Dolomitan varieties of the Central Ladin group do not display contrastive vowel length today, there are proofs to say that, at least in an earlier stage, there had to be a difference in length between stressed vowels (with the stressed vowel in an open syllable being longer than its counterpart in a closed syllable). In the following tables data from Fassano are presented (from Loporcaro 2015: 110, and cf. Elwert 1943: 26-30):

(36)

i.	STRATAM	PALUM	PLACET	NASUM	ii.	*STALLA	VALLEM	BRACHIUM
Fassano		[ˈpɛl]	[ˈpjɛʃ]	[ˈnɛs]		[ˈʃtalɑ]	[ˈval]	[ˈbratʃ]
Italian	la]	[ˈpa:lɔ]	[ˈpja:tʃe]	[ˈna:so]		[ˈstalɪa]	[ˈvalɪe]	[ˈbratʃo]
	‘road	‘post’	‘please.3SG’	‘nose’		‘stable’	‘valley’	‘arm’

These data show that the change from /a/ to [ɛ] affected all and only the vowels that were found in an open stressed syllable (corresponding to a long vowel in the standard Italian counterpart), while it left the stressed vowels found in a closed syllable unchanged. This argument would account for the reconstruction of a previous stage where vowel did contrast for length (with [ɛ] being the ending result of a lengthened allophone of the low vowel).

In the tables below, a comparison of different Central Ladin varieties and their development of vowel length is shown (from Salvi 2016: 157):

(37) Development of stressed vowels in historical lengthening contexts

	ROMANCE VOWEL	MAREBBANO	BADIOTTO	GARDENESE	FASSANO	LIVINALLESE
NASUM ‘nose’	a	ne:s	nɛ:s	nes	nɛs	nɛs
MĒL (*ˈmɛle) ‘honey’	ɛ	mi	mi:l	miəl	mjel	mjel
NŌUEM ‘nine’	ɔ	nø	ny	nuəf	nɛf	nɔwɔf
ACĒTUM ‘vinegar’	e	aˈʒej	aˈʒaj	aˈʒæj	aˈʒɛj	aˈʒɛj
LŪPUM ‘wolf’	o	lu	lu	læwɔf	lɔwɔf	lɔwɔf

(38) Development of stressed vowels in historical non-lengthening contexts

	ROMANCE VOWEL	MAREBBANO	BADIOTTO	GARDENESE	FASSANO	LIVINALLESE
SACCUM ‘sack’	a	sak	sa:k	sak	sak	sak
SĒPTEM ‘seven’	ɛ	set	set	set	set	set
CŌLLUM ‘neck’	ɔ	kɔ:l	kɔ:l	kəl	kəl	kəl
SĪCCUM ‘dry’	e	sek	sak	sæk	sek	sak
MŪSCAM ‘fly’	o	'moʃa	'moʃa	'moʃa	'moʃa	'moʃa

1.6.2. Romansh

Contrastive vowel length in Romansh varieties clearly characterise at least Surmeiran and Engadinian.

The following examples show vowel length operating in Surmeiran (cf. Anderson 2016: 171, Loporcaro 2015: 113, Thöni 1969: 16, 275)

(39)

- a. ['e:r] ‘field’ < AGER ≠ b. ['er] ‘also’ < *ERA
 ['go:t] ‘forest’ < Germ. WALD ['got] ‘drop’ < GUTT(AM)
 ['bo:t] ‘early’ < Germ. BALD ['bot] ‘hill’ < *BOTT-

The contrastive vowel length of Engadinian is exemplified by the following data (Loporcaro 2015: 113):

(40)

- a. ['fi:t] ‘trust.1SG’ < FIDO ≠ b. ['fit] ‘rental’ < FICTUM
 ['fy:s] ‘spindle’ < FUSUM ['fys] ‘be.IPF.SBJ.3SG’ < FU(I)SSET
 ['mø:ts] ‘wat/fashion.PL’ < MODOS ['møts] ‘bushel’ < MODIUM
 ['tʃe:l] ‘sky’ < CAELUM ['tʃel] ‘that.MSG’ < *ECC(E)-ILLUM
 ['tʃa:r] ‘dear’ < CARUM ['tʃar] ‘waggon’ < CARRUM
 ['bo:f] ‘ox’ < BOVEM ['bof] ‘gust of wind’ < *BUFF
- a. ['be:] ‘beautiful’ < BELLUM ≠ b. ['be] ‘only’ < BELLUM
 ['ma:] ‘never’ < MA(GI)S [ma] ‘but’ < MA(GI)S
- a. ['fɔ:sa] ‘false.FSG’ < FALSAM ≠ b. ['fɔsa] ‘grave’ < FÖSSAM
 ['ku:la] ‘ball’ < Germ. KUGEL DRG 4.354 ['kula] ‘flow.3SG’ < CŌLAT

Surselvan is usually analysed as lacking contrastive vowel length. Nonetheless, in the variety spoken in the Tavetsch valley (on the western border of Surselvan area), vowel length does contrast¹⁴:

(41)

- | | | |
|------------------------------------|---|---------------------------------------|
| a. [ˈpa:lɐ] ‘grassy slope’ < PALAM | ≠ | b. [ˈbalɐ] ‘ball, bale’ < Germ. BALLA |
| [ˈna:s] ‘nose’ < NASUM | | [ˈpas] ‘step’ < PASSUM |
| [ˈa:lɐ] ‘wing’ < ALAM | | [ˈval] ‘valey’ < VALLEM |
| [ˈkla:f] ‘key’ < CLAVEM | | [ˈʃat] ‘cat’ < *GATTUM |

¹⁴ For a discussion on Surselvan see Loporcaro (2015: 115).

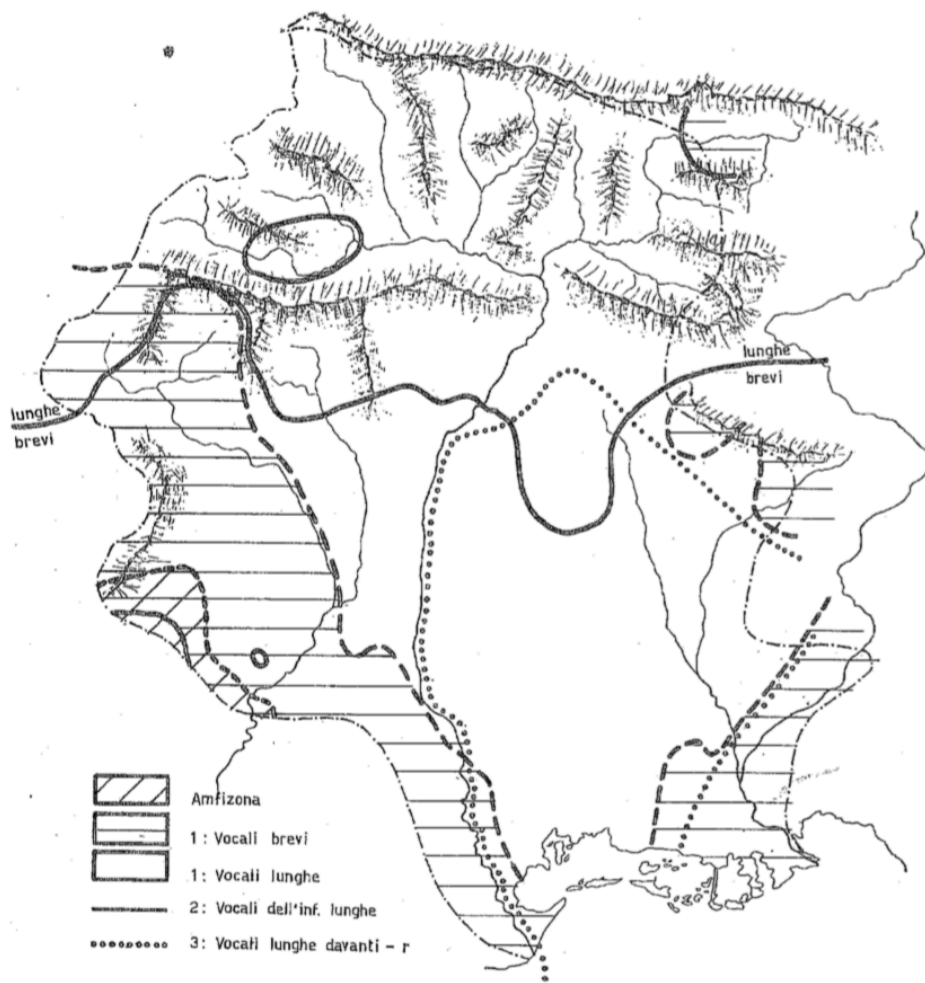
2. Friulian Vowel Length

2.1. Diatopic Variation in Friulian Vowel Length

Vowel length in Friulian characterise the vast majority of Friulian varieties, in particular those spoken in the central and upper part of the region. In the western and most eastern areas no vowel length is found (which usually corresponds, in the most western area, to a falling diphthong).

Below I report the map from Francescato (1966: 21) that illustrated the diatopic distribution of vowel length (in the course of the discussion the other isoglosses will be described as well):

(1)



In the map the white area represents the area where vowel length is found, while the areas marked by the solid horizontal lines are the ones where no vowel length is found.

2.2. The “Classical” Account

In this paragraph, I follow the discussion as it is outlined in Vanelli (2005).

In Friulian vowel length has a phonological status in stressed position¹. By this I mean, first and foremost, that it is possible to find phonological alternations based on vowel length.

In the following examples, some minimal pairs based on vowel length are given, to better illustrate the phonological status of long vowels:

(2)

[la:t]	‘gone (m.)’	~	[lat]	‘milk’
[pa:s]	‘peace’	~	[pas]	‘step’
[lu:s]	‘light’	~	[lus]	‘luxury’
[bru:t]	‘broth, daughter-in-law’	~	[brut]	‘ugly (m.)’
[pe:s]	‘weight’	~	[pɛs]	‘fish’
[po:k]	‘little (m.)’	~	[pɔk]	‘root’

As can be seen from these examples, in a closed final syllable² it is possible to find either a long vowel or a short one. It will be shown later that Friulian does not allow any other kind of vowel length in this position.

A vowel can be long if and only if it is found in the position exemplified in (1), namely: it has to sit in a final syllable, the syllable has to be closed; the coda of the syllable can have just one consonant³. In Friulian there can be an extra-long vowel if and only if these three conditions are met.

For example, the vowel in *la:t* ‘gone, m.’ is long, and this is possible only because it sits in a final syllable, the syllable is closed and the coda of the syllable contains only one consonant.

Therefore, if one of these conditions is violated, the vowel *cannot be* long:

¹ Long vowels can only be stressed. There cannot be an unstressed long vowel in Friulian.

² All the examples above are monosyllabic words. This is just due to the fact that is much simpler to find minimal pairs with monosyllables. We will see later some other examples of long vowels in longer words. This does not change the distribution of long vowels, that can be found only in the final syllable of a word.

³ At this point of the discussion, I will only consider examples that have a stop or a fricative in coda position, to simplify the argument. All the other cases will be discussed in detail later.

(3)

*[ˈri:di] ‘to laugh’

*[aˈmi:] ‘friend (m.)’

*[gu:st] ‘taste’

As these three words exemplify, there cannot be a long vowel if one of the conditions mentioned earlier is violated.

In particular, the vowel in *[ˈri:di] ‘to laugh’ cannot be long because it is found in the penultimate syllable, and not in the final one.

The vowel in *[aˈmi:] ‘friend, (m.)’, on the other hand, cannot be long because, even if it is found in the last syllable, the syllable is open.

The third word, *[gu:st] ‘taste’, cannot have an extra-long vowel either, because even though the vowel position “satisfies” the first two conditions (the vowel sits in a final syllable and the syllable is closed), the coda of the syllable contains two consonants and therefore the vowel cannot be long.

As far as the distributional pattern goes, one more piece of information needs to be added to complete the picture. In fact, the three conditions just given (final syllable, closed, monoconsonantal coda) are necessary but not sufficient to describe the presence or absence of a long vowel. As can be seen from the examples in (2), all the words in the second column satisfy the three conditions. For instance, *lat* ‘milk, m.’ has the vowel sitting in a final syllable (I condition); the syllable is closed (II condition); the coda is simple (just one consonant, III condition). There is another condition that has to be met in order for the vowel to be long. In the paradigmatically related forms, the consonant following the vowel *has to be voiced*. I will discuss an example right away to clarify this last condition.

Let us look at *la:t* again. As already noted, the first three conditions are met: the long vowel sits in a final syllable; the syllable is closed; the coda contains just one consonant. What about the IV condition then? Looking at the paradigmatically related forms of *la:t*, it is possible to see that indeed the following consonant is voiced. Taking for instance the feminine, the Friulian form is [ˈlade] ‘gone, f.’, where the consonant following the vowel is voiced. This fourth condition is the result of the application of a devoicing process, still synchronically active in Friulian, that devoices all final obstruents (final obstruent devoicing).

In the examples below it is shown that in the related forms of a word with a long vowel the consonant following the vowel is voiced:

(4)

[stu'dja:t]	‘studied, m.’	~	[stu'djadɛ]	‘studied, f.’
[me:s]	‘month, m.’	~	[me'zadɛ] ⁴	‘monthly, f.’
[u'li:f]	‘olive tree, m.’	~	[u'live]	‘olive, f.’
[fu:k]	‘fire, m.’	~	[fu'gut] ⁵	‘small fire, m.’

On the other hand, when the final vowel is short (see 2 above, II column), the following consonant will be voiceless (it has to be) in the paradigmatically related forms too (and therefore there is no devoicing process going on either):

(5)

[mat]	‘crazy, m.’	~	['mate]	‘crazy, f.’
[mus]	‘donkey, m.’	~	['muse]	‘donkey, f.’
[pa'taf]	‘slap’	~	[pata'fa]	‘to slap’
[sak]	‘bag’	~	[sa'kut]	‘little bag’

Following Vanelli (2005: 163-164), one can state this predictability of the distribution of long vowels like this: if in the penultimate syllable of a word, the structure [...VC_[+voi]...] ⁶ is found, then, in the paradigmatically related forms, the structure will *always* be [...'V:C_[-voi]#].

⁴ As one can see from this example, there is a shift in the stress between the two words. This doesn't change the fact that the consonant following the vowel surfaces as voiced, but it does change the nature of the vowel “status” (stressed when long; unstressed in the morpho-phonological related form).

⁵ Adding the diminutive suffix *-ut* also changes the stress pattern of the word. See previous note.

⁶ For simplicity, at this stage, I am using the feature [±voiced]. Later on, elements will be used instead.

So, as one can see from the examples in (4), [stu'djade] 'studied, f.' has the structure [...'VC_[+voi]...]. This means that, in the paradigmatically related forms (in which the consonant following the vowel appears at the end of the word and gets, therefore, devoiced) a long vowel will appear, and it is what one can see in [stu'dja:t] 'studied, m.' (and in all the other examples in (4), which has the structure [...'V:C_[-voi]#]. I want to emphasize here, and later it will be shown why this is crucial for the interpretation of vowel length patterns in Friulian, that these two conditions *always go together*. Stating it in a different fashion, that brings about broader theoretical implications, it is *always* true that when one finds a long vowel in the last syllable of the word, the following consonant has undergone a devoicing process. If the vowel is short, there is no such process going on.

This means that, considering again the two forms *la:t* 'gone, m.' and *lat* 'milk', the *t* of *la:t* has been devoiced, while the *t* of *lat* was never voiced in the first place (and cannot, therefore, be devoiced). As was done earlier, their paradigmatically related forms reveal this difference, as can be seen considering *'lade* 'gone, f.' and *'late* 'she breastfeeds'. In *'lade*, one can see that the consonant is voiced, and this is taken as proof of a final devoicing process going on in the form *la:t*. In the case of *'late*, the consonant is voiceless, therefore in *lat* there is no devoicing process going on.

Before proceeding with the discussion, there is one more thing that needs to be addressed and made explicit. Up to now, I have talked about alternations (like *la:t* and *'lade*) and processes going on like final devoicing, without specifying what this means on a phonological level of representation. These two aspects considered together (alternations and the phonological process of final devoicing) are taken as evidence for a phonological representation containing, in the case of words with long vowels and devoiced final consonants, *a voiced consonant*.

The phonological representation of a form like [la:t] 'gone, m.' is, then, /lad/.

Below, I am giving (to better exemplify what has just been said) the phonological representations of the forms with the extra-long vowel listed in (4):

(6)			
[stu'dja:t]	'studied, m.'	→	/stu'djad/
[me:s]	'month'	→	/mez/
[u'li:f]	'olive tree'	→	/u'liv/
[fu:k]	'fire'	→	/fug/

Obviously, when there is no long vowel and the following consonant is voiceless in the paradigmatically related forms, the phonological representation will contain a voiceless consonant.

The phonological representation of a form like [lat] ‘milk’ is, then, /lat/.

As it was done for the forms with the extra-long vowel in (4), I am giving below the phonological representation of the forms with a short vowel listed in (5):

(7)

[mat]	‘crazy, m.’	→	/mat/
[mus]	‘donkey, m.’	→	/mus/
[pa'taf]	‘slap’	→	/pa'taf/
[sak]	‘bag’	→	/sak/

Going back for a moment to the phonological representation of [la:t], /lad/, that can be taken as representative for all the phonological representations of strings that have a long vowel, there are two things that need to be discussed. As it has just been shown, there is a process of final obstruent devoicing in Friulian, and this accounts for the difference that can be observed between the forms *la:t* and *'lade*. In fact, to get the masculine, one simply devoices the final obstruent (since there is no ending) and obtains the right form. To get the feminine, the *-e* morpheme is added; at this point the voiced consonant is no longer devoiced, because it is no longer in final position (being “covered” by the vowel marking the feminine). This takes care of the difference between the two forms (masculine vs. feminine), one can find in the *consonant*. The difference in the length of the tonic vowel still needs to be accounted for. This will be done at length when the GP formalization will be presented and used, and the relation between the difference in length of the vowels and its relationship with final obstruent devoicing will be accounted as well.

Before going on with the discussion about the details of vowel length patterns before obstruents and about the particular cases we can find, I am going to present the main findings on the phonetic literature about Friulian vowel length, discussing their relevance for the phonological analysis to present the phonological pattern which will be at the base of the formalisation presented in the final chapter (and that will underlie the whole thesis).

2.3. The “Revised” Account

Stops

I am going to start the discussion of Friulian phonetic data by revising the analysis made by Baroni / Vanelli (2000). In their phonetic study, a native speaker of a central Friulian variety was recorded. The task was to read a list of non-words (non-words so to have the contextual conditioning as controlled as possible) in which all the stressed vowels occurred before an alveolar obstruent (/t/ and /d/). Every token was inserted in an appropriate carrier sentence (for which see Baroni / Vanelli 2000: 29). The non-words were given the form of well-formed Friulian adjectives, both masculine and feminine: *atade* (f.) / *atât*⁷ (m.), *atate* (f.) / *atat* (m.) (cf. these forms with the ones presented above such as *lade* (f.) / *la:t* (m.), *late* (f.) / *lat* (m.)).

In what follows, I report the properties measured and the results found (cf. Baroni / Vanelli 2000: 30-43 for further phonetic details about the findings and for the statistical analysis)⁸:

Duration of the stressed vowel.

The measurements show that the vowel before a final devoiced consonant (viz. the vowel of *la:t*) the vowels traditionally labeled as long, are indeed extremely long – often, more than twice as long as vowel before word-final /t/. We will refer to the vowel before word-final /d/ [the devoiced consonant] as the ‘extra-long’ vowels (Baroni / Vanelli 2000: 31). Furthermore, there is another interesting finding about vowel length, namely that the vowels before the word-internal voiced consonant /d/, which are traditionally referred as short (see in the examples above), are *consistently longer than the vowels before /t/* (Baroni / Vanelli 2000: 31).

I want to report now Baroni / Vanelli’s (2000) concluding paragraph about the duration of the stressed vowel in its entirety, for its relevance to the argument I will make (mostly in the last chapter) and for the discussion at the end of this chapter:

⁷ The forms with the expected long vowel were marked by the circumflex, which currently indicates in Friulian orthography the presence of a long vowel. This was obviously done to prompt the speaker to produce a long vowel there, otherwise, being non-words, the production of long vowels would have been left to chance (which was, on the contrary, the explicit purpose of Bais 1997). See Baroni / Vanelli (2000: 29) for a discussion on the orthographic forms used.

⁸ I won’t discuss in detail here the position of the F0 peak in the stressed vowel (for which see Baroni / Vanelli 2000: 33-34), because it is less relevant in the discussion about length patterns. This being said, I will briefly discuss it at the end of this paragraph, especially, as just mentioned, about its relevance on length patterns.

Thus, our results confirm the existence of a marked length contrast between the vowels before word-final /D/ [the devoiced consonant] vs. /t/, but they also reveal the existence of a consistent vowel length distinction before word-internal /d/ vs. /t/. The latter cannot be considered a ‘physiological’ fact, since Keating (1985) has shown that the vowel length differences before voiced and voiceless consonant is a cross-linguistically common, but not universal, phenomenon: Hence [sic.], it cannot be physiological, and speakers must be phonologically aware of the lengthening.⁹

These findings are confirmed by the phonetic analysis of Finco (2015, 2007b). In particular, as for the least traditionally discussed point (the difference in length in paroxytones), Finco (2015: 35-36) reports that *phonetically short stressed vowels are found [...] in the penultimate open syllable followed by a voiceless consonant* and that *phonetically half-long vowels are found [...] in the penultimate open syllable followed by a voiced consonant*. And this is exactly the findings, just reported, of Baroni / Vanelli (2000) (and also note that Finco’s analysis is not limited to stops, and that it takes into account all manner of articulation, as we will see in the discussion that follows).

Furthermore, Hajek / Cummins (2006) also report the same finding. In their study, they analyse the duration of the vowel /a/ in a word-internal open syllable both before voiceless and voiced consonants (and exactly, before /f v s z t d/). Their results confirm the findings just discussed, viz. that the vowel in word-internal position is substantially longer before a voiced consonant than before a voiceless onefriulian (see the table in (9)).

First and Second Formant Frequency of the Stressed Vowel

The general pattern that emerges is that long vowels are peripheral while short vowels tend to be central (which is a cross-linguistic and phonetic common pattern, as Baroni / Vanelli 2000: 32 notice). In fact, *there is always a vowel quality contrast accompanying [sic] the vowel quantity contrast* (Baroni / Vanelli 2000: 33). Below, the schema that reports the correlation between length and vowel quality is reported (from Baroni / Vanelli 2000: 33):

⁹ Baroni / Vanelli (2000: 32).

(8)

<i>shorter</i>	>>		<i>longer</i>
___t#	___tV#	___dV#	___D#
a	a	a	ɑ
ɔ	ɔ	ɔ	o
ɛ	ɛ	e	e
ʊ	u	u	u
ɪ	i	i	i

Closure Duration of the Consonant Following the Stressed Vowel

Even in the case of consonant duration the findings of Baroni / Vanelli (2000: 34-35) are extremely interesting, and, with obvious differences, are statistically significant (see Baroni / Vanelli 2000: 34-35 for the statistical details).

As expected, voiceless consonants are longer than voiced ones in word-internal position, but this is not all.

It is also the case that word-final devoiced consonants are consistently shorter than the voiceless ones. This means that final devoicing *does not represent a complete neutralization*. While there is no vibration of the vocal folds, the consonant retains its original length (in fact, there is no significant difference between the duration of a word-internal voiced consonant and a word-final devoiced one).

Furthermore, *word-final /t/ tends to be the longest category* (Baroni / Vanelli 2000: 34): while, as just said, there is no significant difference between the duration of a word-internal voiced consonant and a word-final devoiced one, this is not the case for voiceless consonants. There is a difference, reaching also statistical significance, between the duration of word-internal /t/ and word-final /t/¹⁰.

Fricatives

For the fricatives, the same pattern emerging with the stops is found.

First of all, as expected and reported by all the literature, the longest token of vowel duration is in the final closed syllable (see Finco 2015: 36).

¹⁰ Finco (2015, 2007b) does not report data duration for the consonant following the stressed vowel. Nonetheless says that such a trade-off in duration represents a cross-linguistically common pattern, for which see e.g. Jepson / Stoakes (2015) (which also confront their result with Baroni / Vanelli's 2000 ones) and Hargus (2009) (Finco, p.c.).

Second, as reported before, Finco's (2015, 2007b) findings in word-internal position are valid both for stops and for fricatives when he says that that *phonetically short stressed vowels are found [...] in the penultimate open syllable followed by a voiceless consonant* and that *phonetically half-long vowels are found [...] in the penultimate open syllable followed by a voiced consonant* (Finco 2015: 33-36).

To this, we can add the results of Hajek / Cummins (2006) represented in the table below, where the average duration of the vowel, expressed in milliseconds, as well as the standard deviation are reported (recall that Hajek / Cummins's 2006 analysis the duration of the vowel /a/ in a word-internal open syllable before /f v s z t d/) (from Hajek / Cummins 2006: 241):

(9)

	vowel	SD	consonant	SD
/z/	309	47	104	20
/s/	177	34	175	16
/v/	228	50	90	20
/f/	194	35	147	24
/d/	233	42	82	21
/t/	165	29	132	27
All C	218	40	122	21

As can be seen, the vowel is consistently longer before a voiced consonant than before a voiceless one word-internally. Furthermore, there is also a clear difference in the duration of the consonants. The voiceless consonants are always and consistently longer than the voiced ones.

Baroni / Vanelli's (2000) findings together with Finco's (2015, 2007b) analyses and Hajek / Cummins's (2006) investigation draw a quite clear picture of Friulian phonetics duration patterns in the cases of stops and fricatives. Which is not to say, obviously, that more studies and analyses are not needed to make the results more robust (or to challenge them). But since the same pattern continue to emerge in different studies and it is also cross-linguistically well established, it represents a good working base to say the least. With this in mind, I will now discuss the relevance of the phonetic data for the phonology.

I want to propose that the following phonetic representations need to be accounted for, instead of the “classical” ones reported in §2.2. above¹¹:

[lat:]

['lat:e]

['la:de]

[la::d]

First of all. I take the alveolar voiced and voiceless stops as representative both for *all* stops and for *all* fricatives. While the discussion on the different places of articulation will follow, what I am claiming is that neither place of articulation nor manner of articulation has an effect on vowel length¹². The only phonological variable that has an effect on vowel length is the laryngeal properties of the following stop or fricative (this means that there is no *phonological* difference between an extra-long vowel before a final devoiced /d/, /g/, /v/ or /z/). This is what is usually (implicitly) assumed by all the literature on the topic, and it is also one of the findings of Hajek / Cummins (2006), stated in explicit terms: *[w]ith respect to consonant manner of articulation (stop v. fricative), the effect on vowel duration did not appear to be consistent [...]. Consonant place also did not appear to have a consistent effect.* (Hajek / Cummins 2006: 241).

I use the diacritic : in **['la:de]** to mark that the vowel in a penultimate open syllable before a voiced stop or fricative is longer than the vowel in the same context before a voiceless consonant. In the same fashion, I use the double diacritic :: in **[la::d]** to represent that the vowel in such a form, as seen before, is indeed extra-long, and longer than the vowel in **['la:de]**. These diacritics do not represent, obviously, a phonetic reality, in the sense that it is not the case that the vowel in **[la::d]** is double than the vowel of **['la:de]** which in turn is double than the vowel in **['lat:e]**. What it is represented is a “progression of length”: the vowel in **[la::d]** is consistently longer than the vowel of **['la:de]**, which in turn is consistently longer than the vowel in **['lat:e]**. It would not change anything to represent the long vowel in **['la:de]** with the half-long diacritic ː as in **['laːde]**, and then the extra-long vowel in **[la::d]** with the long diacritic :: as in **[laːːd]**. In both cases the relation between the different forms does not change and there is in both cases a three-way length distinction. Nonetheless I am not using the half-long diacritic because this simplifies the comparison between the formalisation proposed here and the one proposed in Pöchtrager (2006). More importantly,

¹¹ For a quite similar claim (although in a rather different fashion and in with very different theoretical claims) see Hajek (2000) and Castellani (1980).

¹² The case of the sibilant is rather particular and may behave differently. I will discuss it at the end of this chapter.

the notation with the double diacritic :: represents the intuition that, in forms such as [la::ɖ], we are not simply dealing with a long vowel, *but with an extra-long one*. Furthermore, this representation makes it easier to compare Friulian vowel length pattern with other language descriptions e.g. Italian. In Italian long vowels in open syllables are marked as long. Their duration, at least on an impressionistic perceptual level, is comparable with the duration of a Friulian vowel sitting in a penultimate open syllable before a voiced obstruent. Friulian extra-long vowels are indeed perceptually much longer than Italian long vowels (obviously a detailed phonetic study comparing vowel length patterns of the two languages would be useful to confirm this intuition).

As for the consonants, the interpretation is the same of what has just been said for the vowels: the consonant in [lat::] is the longest token of a voiceless stop or fricative, and it is longer even than its word-internal counterpart as in ['lat:e], which in turn is longer than a voiced stop or fricative as in ['la:de]. Note that in [la::ɖ] I use the ɖ for two main reasons. First of all to make clear that there is a process of final devoicing going on (and the importance of extra-long vowels and final devoicing will be discussed at length during the all dissertation), and secondly to mark that this consonant is more similar in duration to a voiced consonant than to a voiceless one. Again, these diacritics are a phonological tool to represent a pattern; they do not represent a physical reality. The duration of the t:: in [lat::] is not the double of the duration of the t in ['lat:e], and it is certainly not the same duration of the extra-long vowel a:: in [la::ɖ], which is marked with the same double diacritic. As already said, these diacritics only represent a length relation between the different segments.

I want to conclude this paragraph discussing more closely the relation between this “revised” account and the “classical” one, and the relation between phonetics and phonology they entail.

First let us compare the two phonetic transcriptions:

“Classical” transcription

[lat] ['late] ['lade] [la:t]

“Revised” transcription

[lat::] ['lat:e] ['la:de] [la::ɖ]

As far as length goes, in the “classical” transcription the only indication of length is the long vowel of [la:t]. In the “revised” transcription, on the other hand, what emerges is a real *trade-off phenomenon in length* (as Pöchtrager 2006 describes it too). In particular, in word final position Friulian allows only a short vowel plus an overlong consonant, or a short consonant plus an overlong vowel. Similarly, in internal position we either find a long vowel plus a short consonant (as in the case of [ˈla:de]) or a short vowel plus a long consonant (as in the case of [ˈlat:e]).

As Pöchtrager (2006: 147, n. 6) states:

The transcription as such is of course nothing real, it is only a rough guide to pronunciation. The only real objects we are dealing with are phonological representations.

He is talking here on the transcriptions he uses about Estonian length facts. Nonetheless I do think that, even if what just reported seems to be an obvious concept, it needs to be stated in explicit terms (this is why I have insisted on this before).

What I want to add here is that no transcription is “innocent”. They all represent, and rightly so, the phonological believes that underlie them. This has to be stated, again, in explicit terms because otherwise it could lead to confusion as to what it is really going on, particularly dealing with length patterns. As we have just seen, in the “classical” transcription, the only length that was marked was that of the form [la:t]. This is absolutely fine, as long as we are clear that there is much more going on in terms of length (as the discussion on the phonetic literature just showed). The reason why the two transcriptions are different is that they entail a different phonological reasoning behind: the “classical” transcription reflects a classical view of phonology, with a clear division between phonemes and allophones; the “revised” transcription has behind the debate couched within Government Phonology (on which more in chapter 5).

The point is how much and which phonetic characteristics one thinks are relevant and needed to be accounted for in the phonology. Therefore, neither one transcription represents a phonetic reality, not even the “revised” transcription. To make this point as clear as possible, I am going to briefly discuss three examples (among the many one could choose from) that represents phonetic facts not taken into account in the revised transcription:

- Baroni / Vanelli (2000:) report that extra-long vowels are characterised by a descending High-Low tonal contour. There is no indication of this in the transcription.
- Hajek / Cummins's (2006) study aim was to demonstrate that the vowel is longer in word internal position before the voiced alveolar fricative /z/ than before any other voiced consonant. And actually, in Finco's (2015, 2007b) analyses too the sibilants seem to play some role regarding vowel length. All this would need a dedicated thorough study to decide whether there is some correlation between vowel length and the alveolar fricatives /s/, /z/.
- In his studies, Finco (2015, 2007b) actually reports four different phonetic lengths for the vowels. While I presented three of them above, there is also an extra-short vowel duration which is found, interestingly enough, in final position before a ("true") voiceless consonant (e.g. [lat] 'milk'). This also suggest that, confirming Baroni / Vanelli's (2000) findings, the vowel is extra-short because the following consonant is overlong. Baroni / Vanelli (2000: 31) also report that *vowels before word-internal /t/ are only slightly longer than vowels before word-final /t/ and the contrast is not systematic.*

In the transcription I propose as relevant to be accounted for in the formalization outlined in chapter 5, there is no trace of all these different phonetic facts (again, among many others). The assumption is, therefore, that these phonetic characteristics have no bearing on the account I am advocating here. Or better, the case is that we are not sure yet whether these details pertain to the phonetics or to the phonology (or something else). The peculiar intonational contour characterizing an extra-long vowel, while being certainly there, it is probably something on a different level respect to the phenomenon at end. The effect of the sibilant on the length of the preceding vowel is something worth looking at (also for the attention sibilants have received in the Government Phonology 2.0 literature; see e.g. Pöchtrager 2006 and Živanović 2017), but it needs more detailed studies to better comprehend the pattern. The extra-short vowel duration is probably something that does pertain to the phonetics and simply represents a phonologically short vowel being uttered before an overlong consonant. The point is that there is every chance that in the future one or more of these findings may be accounted for in a different model of phonology, and this is why, while discussing vowel length, we should be as phonetically precise and as explicit about the phonetics / phonology interface we envision as possible.

2.4. Stops and Fricatives Data Discussion

In the previous paragraph I have outlined a major characterization of the distributional pattern of vowel length in Friulian. It has been shown that extra-long vowels can appear only in a final syllable that has a monoconsonantal coda, and that the consonant following the extra-long vowel has to appear as voiced in the paradigmatically related forms (e.g. [la:t] ‘gone, m.’ ~ [ˈlade] ‘gone,f.’ vs. [lat] ‘milk, m.’ ~ [ˈlate] ‘she breastfeeds’).

This paragraph will be devoted to an analytical presentation of the data relating vowel length in Friulian as well as a thorough discussion of the data presented. In this paragraph I will describe the different vowel length contexts considering only stops and fricatives. Another paragraph will be devoted to the analysis of the other major consonantal classes (affricates, nasals, rhotics and laterals).

Stops

Friulian has the following series of stops: p/b; t/d; c/ɟ; k/g¹³.

I will now discuss the different places of articulation separately, starting with labials.

¹³ For a description of Friulian consonantal system see, for example, Miotti (2002) and Finco (2015).

Stops: Labials

p / b	
klap 'stone' flap 'soft, m.' tap 'stopper, m.' klɔp 'unsteady, m.' klip 'warm, m.' sklɔp 'shot, m.' grɔp 'knob, m.' trop 'how much, m.' grup 'group, m.' vu'lup 'tangle, m.' ga'lɔp 'gallop, m.'	*** 'flape 'soft, f.' *** 'klɔpe 'unsteady, f.' 'klipe 'warm, f.' 'sklɔpe 'shotgun, f.' 'grɔpe 'she ties' 'trope 'how much, f.' *** vu'lupe 'she envelopes' ga'lɔpe 'she gallops'
	'ba:be 'tattler, f.' 'ga:be 'prank, f.' 'ro:be 'thing, f.' 'gɔ:be 'hump, f.' 'fle:bo 'intravenous drip, f.'

In this table and in the ones that will follow, I present a list of examples of vowel length patterns that can be found within the different places of articulation of stops and fricatives. In the first line of all the tables, examples such as the pair *lat* 'milk, m.' ~ *late* 'she breastfeeds' (viz. examples with a short vowel followed by an underlying voiceless consonant that surfaces as voiceless one in the morpho-phonological related forms too) are given (as can be seen here, examples such as *flap* ~ *flape*). In the second line of all the tables, examples such as *la:t* 'gone, m.' ~ *la:de* 'gone, f.' are presented. Three stars indicate that there is not an obvious or commonly used morpho-phonological related form (not that it is impossible to find).

For the sake of simplicity, and to keep the transcription as simple as possible too, only the difference in vowel length is represented following the "revised" transcription discussed above. The consonant is represented in a more "classical" fashion. This has no bearing on the discussion of this paragraph.

Turning now to the data about labial stops, the first thing that strikes immediately looking at the contexts where a labial follows the stressed vowel, is that *there is no instance of extra-long vowels*.

In fact, we only found the other three patterns: there are alternations of the kind of *lat* ~ *'late*, where we can see that, as previously said, the consonant following a syllable-final short vowel, surfaces as voiceless in the paradigmatically related forms too. See for examples [flap] ‘soft, m.’ ~ [flape] ‘soft, f.’, where it is clear that no devoicing process is going on and only short vowels are found.

We also found a long word-internal vowel, preceding a voiced consonant, of the kind of *'la:de*. See for example [ba:be] ‘tattler, f.’, where the long vowel precedes the voiced consonant.

There is, however, no instance of extra-long vowels. One would expect, keeping in mind what has been said earlier, that in the paradigmatically related forms of the ones with a voiced word-internal consonant, an extra-long vowel should appear. We would expect alternations of the kind of *'la:de* ~ *la::t*. Something like *'ba:be* ~ **ba::p*, but no alternation like this one exists. There are no extra-long vowel preceding a word-final devoiced labial.

To explain this apparent counter-example to the generalization stated in the previous paragraphs, Friulian diachronic evolution has to be considered. In Friulian we found an extra-long vowel only when it derives from a Proto-Romance open syllable (for more discussion on this point see chapter 3), therefore when the vowel was followed by a singleton consonant. This is the reason why there is no extra-long vowel with a following labial consonant.

Let me explain this with an example. The Latin accusative form for *wolf* was LŪPU(M).

This is a good candidate for the following formation of an extra-long vowel, exactly like LATU(M) > *la::t*. And indeed, in the Friulian form an extra-long vowel *is* found, but not the labial consonant: *lo::f* ‘wolf, m.’. This is due to the fact that from Latin to Friulian, a lenition process was active (while it is no more productive in Friulian synchrony), that turned all intervocalic labials into fricatives. Below I am giving some examples of the application of this process:

(10)

RĪPA(M)	>	'ri:ve ¹⁴	‘shore, f.’
SCRĪBERE	>	'skri:vi	‘to write’
PĪPERE(M)	>	'pɛ:var	‘pepper, m.’

This lenition process is the reason why no extra-long vowel followed by a labial consonant can be found. Not because the intrinsic structure of labials would not allow for a vowel to become extra-long, but just because the history of Friulian made it impossible for a configuration like V::P# (viz. an extra-long vowel followed by a labial *devoiced* stop) to appear. This means that there is no phonological reason and that the situation that we find today is merely due to historical accident. Nothing else would have prevented a configuration like V::P# to arise.

¹⁴ There is also a voicing process going on. Therefore, the output of an intervocalic P is not, as one could have expected, a voiceless [f], but its voiced counterpart [v].

Stops: Alveolars

t / d	
mat 'crazy, m.' jat 'cat, m.' lat 'milk, m.' brut 'ugly, m.' a'fit 'rent, m.' frit 'fried, m.' skrit 'written, m.' tʃit 'small pot, m.' konflikt 'conflict, m.' dit 'told, m.' met 'she puts'	'mate 'crazy, f.' 'jate 'cat, f.' 'late 'she breastfeeds' 'brute 'ugly, f.' a'fite 'she rents' 'frite 'fried, f.' 'skrite 'written, f.' 'tʃite 'pot, f.' *** 'dite 'told, f.' 'meti 'to put'
avi'li:t 'sad, m.' ri:t 'she laughs' bu'li:t 'boiled, m.' ka'pi:t 'understood, m.' kolo'ri:t 'coloured, m.' fi'ni:t 'finished, m.' depe'ri:t 'emaciated, m.' dilu'i:t 'watered down, m.' ku'zi:t 'sewn, m.' fa'li:t 'failed, m.'	avi'li:de 'sad, f.' 'ri:di 'to laugh' bu'li:de 'boiled, f.' ka'pi:de 'understood, f.' kolo'ri:de 'coloured, f.' fi'ni:de 'finished, f.' depe'ri:de 'emaciated, f.' dilu'i:de 'watered down, f.' ku'zi:de 'sewn, f.' fa'li:de 'failed, f.'

As can be seen from this table, with alveolars everything works with no problems. All the different length durations are fully exemplified. We can observe the *lat* ~ *'late* kind of alternations (see for example [mat] 'crazy, m.' ~ [mate] 'crazy, f.') as well as the *la:de* ~ *la::t* ones (see for example [avi'li:de] 'sad, f.' ~ [avi'li:t] 'sad, m.'). Obviously, this synchronic situation is a reflection of peculiar historical developments too. In particular, no lenition process leading to spirantization interested intervocalic alveolar stops (differently from what happened to labials) and this is one of the reasons why (certainly not the only one) we can observe such a stable pattern in the alveolar case.

Stops: Velars

k / g	
a'tak 'attack, m.'	a'take 'she attacks'
bi'zjak 'from Gorizia, m.'	bi'zjake 'from Gorizia, f.'
ma'drak 'snake, m.'	***
pak 'pack, m.'	pa'kut 'small pack, m.'
sak 'bag, m.'	sa'kut 'small bag, m.'
strak 'tired, m.'	'strake 'tired, f.'
ta'bak 'tobacco, m.'	***
tak 'heel, m.'	***
bek 'beak, m.'	'bɛke 'she stings'
lek 'snail, m.'	***
sek 'thin, m.'	'sɛce 'thin, f.'
stek 'stick, m.'	ste'kut 'small stick, m.'
cɔk 'drunk, m.'	'cɔke 'drunk, f.'
tɔk 'piece, m.'	tu'kut 'small piece, m.'
la'drik 'chicory, m.'	ladri'kut 'chicory variety, m.'
fu::k 'fire, m.'	fu'gut 'small fire, m.'
lu::k 'place, m.'	***
dʒu::k 'game, m.'	***
***	'a:ge 'water, f.'
***	'ru:ge 'wrinkle, f.'
***	bu'te:ge 'shop, f.'
'ko:go 'cook, m.'	'ko:ge 'cook, f.'

As can be seen from the table, there are also some instances of palatal stops. The reason why such instances of palatal stops can be found will be also discussed in detail later. For now, it is sufficient to say that, in the case of velars, we can also find all the different length patterns. But it must be also said that there are very few examples with extra-long vowels (three here)¹⁵.

Fricatives

Turning now to fricatives, Friulian has the following fricative segments: f/v, s/z¹⁶.

As was done for stops, I will now discuss separately fricative segments, starting with labiodentals.

¹⁵ Examples such *po::k* and *o::k* will be discussed later.

¹⁶ Different Friulian varieties have different sibilant system, the diatopic distribution of which is quite complex, with systems that vary between two or even three different places of articulation spanning between alveolar, postalveolar and alveolo-palatal sibilants (see Francescato 1966). For the sake of simplicity, I will present the data reporting only the alveolar fricatives. This issue has no bearing on length patterns.

Fricatives: Labiodentals

f / v	
baf 'moustache, m.' pa'taf 'slap' tfuf 'tuft, m.' sbuf 'sigh, m.' stuf 'tired, m.' skuf 'hat, m.'	'bafe 'slice, f.' pa'tafe 'she slaps' *** 'sbufe 'she sighs' 'stufe 'tired, f.' 'skufe 'hat, f.'
a::f 'bee, f.' bra::f 'good, m.' ca::f 'head, m.' kla::f 'key, f.' gra::f 'serious, m.' na::f 'ship, f.' ra::f 'turnip, m.' gre::f 'stodgy, m.' ne::f 'snow, f.' ple::f 'church, f.' lo::f 'wolf, m.' u'li::f 'olive, m.' be::f 'I drink' skri::f 'I write'	*** 'bra:ve 'good, f.' *** *** 'gra:ve 'serious, f.' *** 'ra:ve 'turnip, f.' 'gre:ve 'stodgy, f.' *** *** 'lɔ:ve 'wolf, f.' u'li:ve 'olive, f.' be:vis 'you drink' 'skri:vis 'you write'
-i::f 'adj, m.' such as: vi::f 'alive, m.' ati::f 'active, m.' pu::f 'new, m.'	-i:ve 'adj, f.' such as: 'vi:ve 'alive, f.' a'ti:ve 'active, f.' 'pu:ve 'new, f.'
u::f 'egg, m.'	***

As can be seen from the table, labiodental fricatives do not raise any particular issue. It is again possible to easily find all the length distributional patterns of the kind of both *lat* ~ *'late* (see for instance [pa'taf] 'slap, m.' ~ [pa'tafe]) and *'la:de* ~ *la::t* (see for instance [bra:ve] 'good, f.' ~ [bra::f] 'good, m.'). I want to add here one more thing. We have seen earlier that in the case of labials no extra-long vowel was found preceding a devoiced final labial stop. I have accounted for such an asymmetry taking into consideration Friulian diachrony and we saw that a lenition process was in place, turning intervocalic labials into fricatives. The reason why I am saying this now, is because (to complete the picture) we

actually can find extra-long vowels with a following labiodental fricative that was, originally, a labial stop, like CĂPU(T) > [ca::f] ‘head, m.’. It goes without saying that this is just a diachronic and etymological reality; there is no difference whatsoever, once one considers synchrony, between a labiodental fricative that comes from a Latin labiodental fricative and one that comes from a Latin labial stop. From a synchronic point of view there is no difference between the extra-long vowel of [ne::f] ‘snow, f. < NIVE (from a Latin labiodental) and the extra-long vowel of [be::f] ‘I drink’ < BIBO (from a Latin labial).

Fricatives: Alveolars

s / z	
bas 'short, m.' gras 'fat, m.' kom'prəs 'compressed, m.' rəs 'red, m.' tos 'caugh, f.' kur'tis 'knife, m.' fis 'thick, m.' tfus 'stupid, m.' mus 'donkey, m.' skus 'shell, m.'	'base 'short, f.' 'grase 'fat, f.' kom'prəse 'compressed, f.' 'rəse 'red, f.' 'tosi 'to caught' *** 'fise 'thick, f.' 'tfuse 'stupid, f.' 'muse 'donkey, f.' 'skuse 'shell, f.'
ca::s 'coincidence, m.' na::s 'nose, m.' pa::s 'peace, f.' va::s 'vase, m.' fran'tfe::s 'french, m.' gre::s 'rude, m.' me::s 'month, m.' pe::s 'weight, m.'	*** 'na:ze 'she sniffs' *** tra'va:ze 'she decants' fran'tfɛze 'french, f.' 'grɛ:ze 'rude, f.' *** 'pɛ:ze 'she weights'
-o::s 'adj, m.' such as: paw'ro::s 'scary, m.' ba'vo::s 'sloppy, m.'	-ɔ:ze 'adj, f.' such as: paw'rɔ:ze 'scary, f.' ba'vɔ:ze 'sloppy, f.'
gri::s 'grey, m.' li'dri::s 'root, f.' pa'i::s 'village, m.' pre'tfi::s 'precise, m.' su'ri::s 'rat, f.' bu::s 'hole, m.' lu::s 'light, f.' u::s 'habit, m.' ku::s 'I sew'	'gri:ze 'grey, f.' *** *** pre'tfi:ze 'precise, f.' *** 'bu:ze 'hole, f.' *** 'u:ze 'to be used to' 'ku:zis 'you sew'

What has just been said for the labiodental fricatives is also true for the alveolar fricatives, namely that they do not raise any particular issue. It is possible to find, again, lots of examples of all the length patterns, both of the kind of *lat* ~ *'late* (see for instance [bas] ‘short, m.’ ~ [‘base] ‘short, f.’) and of *'la:de* ~ *la::t* (see for instance [‘na:ze] ‘she sniffs’ ~ [na::s] ‘nose, m.’).

In this section I have presented some data regarding stops and fricatives, relating them to the different length patterns one can find in Friulian. Some discussion of the data has also been given. One thing has to be stated clearly at this point of the discussion. No matter the (apparent) exceptions and asymmetries described in this section, I will consider hereafter that there is just one explanation for all the contexts given above (labials and velar, stops and fricatives etc.). I consider, therefore, that the data asymmetries seen in this section (e.g. no extra-long vowel with labials) are just historical accident that characterise the development of Friulian phonology. It is not the case, for instance, that there *cannot* be an extra-long vowel with labials, it just did not happen *by chance*.

2.5. Other Cases

2.5.1. Long Vowels in Word-Final Position

Up to now we have talked about long vowels in oxytones only when they were followed by a word-final consonant (since this phonotactic configuration presents the more stable and larger number of instances of long vowels). Nonetheless, there are some Friulian varieties, particularly the conservative ones, that present long vowels in absolute word-final position, as Francescato (1966: 23-24) reports.

This happens mostly with the final vowel of infinitive forms, where also minimal pairs can be found (see Finco 2015: 33; Finco 2007b: 121; Miotti 2002: 244; Frau 1984: 20, 77; Francescato 1966: 23-24):

- (11)
- | | | | | |
|----------|------------|----|---------------------|-----------|
| [di] | ‘day’ | vs | [di:] ¹⁷ | ‘to say’ |
| [can'ta] | ‘she sang’ | vs | [can'ta:] | ‘to sing’ |
| [mu'ri] | ‘she died’ | vs | [mu'ri:] | ‘to die’ |

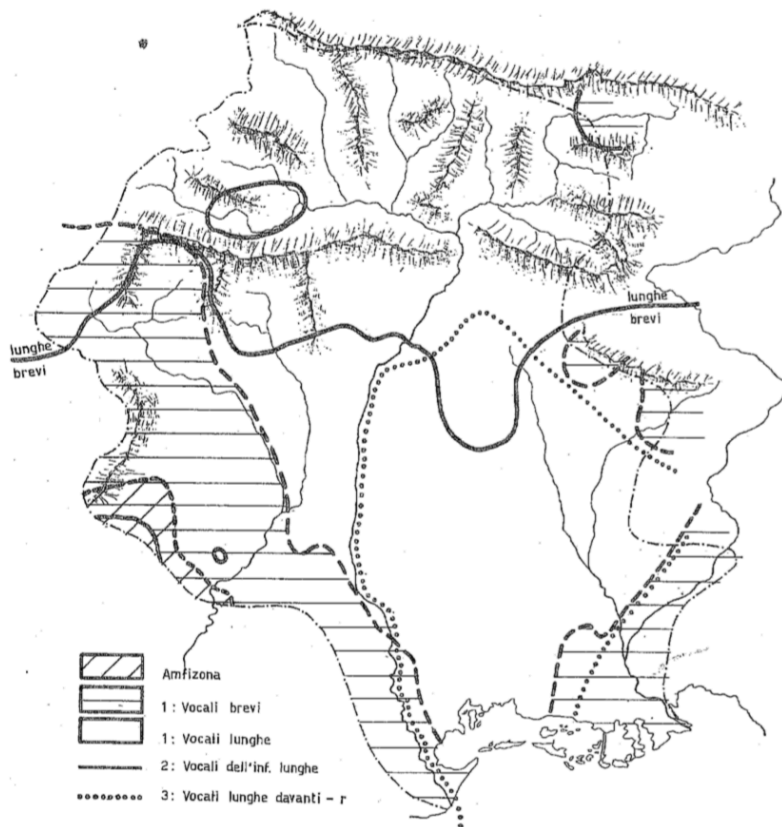
As Vanelli (2005: 161, n. 5) points out, the origin of these long vowels is probably due to a compensatory lengthening following the loss of the final Proto-Romance rhotics of these contexts (e.g. CANTARE > *cantar > canta:).

It has also to be noted that the area in which such long vowels can be found nowadays is quite restricted, spanning only few dialects of Upper Friuli and in mountain areas (Finco 2015: 33). In the rest of the territory, there is no difference in length between the forms reported in (11) (viz. less conservative varieties lost a distinction in vowel length in this position).

Below I report the map found in Francescato (1966: 21) with the distributional account of vowel length in word-final position (varieties *with* long vowels are the ones above the solid line):

¹⁷ I use here a single diacritic : to indicate length in this context (as it is classically done). It is still not clear whether the duration of these vowels is closer to the duration of a long vowel or to the duration of an extra-long one, and moreover it is not yet clear its relationship with the duration of a non-long word-final vowel. Finco's (2007b) findings seem to strongly support a resemblance to an extra-long vowel in these cases (so if this is confirmed, the notation could be changed).

(12)



2.5.2. Long Vowels in Paroxytones

There are two cases in the literature where long vowels are reported to occur in paroxytones, going against the generalisation outlined for instance in Vanelli (2005), discussed above, according to which long vowels in Friulian can appear only in a final, closed syllable, followed by just one consonant (and indeed Vanelli reports such cases of “anomalous long vowels”, see Vanelli 2005: 161, nn. 4 and 5).

I am going to discuss separately the two different instances of vowel length in paroxytones. The first instance concerns a long vowel deriving from a Proto-Romance AU diphthong; the second instance concerns the treatment of a Proto-Romance *muta cum liquida* cluster.

AU Diphthong

The examples about the derivation characterising a Proto-Romance AU diphthong are the following:

(13)

['o:ce]	‘goose’ < *AU(I)CA	[o:k]	‘gander’	< *AU(I)CU
['po:ce]	‘few, f.’ < PAUCA	[po:k]	‘few, m.’	< *PAUCU

As promised by the subparagraph title, in all these cases the long Friulian vowel derives from a Proto-Romance AU diphthong.

In the left column the forms with a long vowel in the penultimate syllable are reported. In the right column, their morpho-phonological related forms are reported too, where it can be seen that the long vowel surfaces in the final syllable ([‘po:re] does not have an obvious morpho-phonological related form).

The problem in the interpretation of these data is the following. The “classical” transcription is based on a two-way length distinction, while as we have seen before, the phonetic data does not support such an analysis. In particular, I propose that in these cases we are actually talking about two different vowel lengths. The length of the vowels in forms such as [o:k] ‘gander’ and [po:k] ‘few, m.’ corresponds to an extra-long vowel in “revised” terms. On the other hand, the length of the vowel in forms such as ['o:ce] ‘goose’ and ['po:ce] ‘few, f.’ is much more similar to a long vowel in “revised” terms (there is no question that the vowel classically marked as long in ['o:ce] is much shorter than the vowel classically marked as long in [la:t]; the difference is perceptually very clear). This is to say that a more accurate transcription of these examples would be:

(14)

['o:c:e] ¹⁸	‘goose’ < *AU(I)CA	[o::k]	‘gander’	< *AU(I)CU
['po:c:e]	‘few, f.’ < PAUCA	[po::k]	‘few, m.’	< *PAUCU

¹⁸ As was discussed before, I am assuming here that the voiceless consonant is longer than its voiced counterpart, even if we do not have phonetic measurements for this specific form. This is the reason why the palatal stop is followed by the diacritic : indicating length.

This does not, however, complete the picture and a discussion of these transcriptions is in order.

In fact, it is the first time we encounter a long vowel, speaking now in “revised” terms, followed by a voiceless consonant. Recall that in all the other obstruent cases, a long vowel was always followed by a voiced consonant as in *la:de*, while a short vowel was always followed by a voiceless consonant as in *la:te*. The examples in the left column above are an exception to this pattern, due to the peculiar development of the AU diphthong. In these cases what I am proposing is that the long vowel has to be present in the underlying representation; therefore the underlying representation of a form such as [ˈo:c:e] would be /ˈo:ce/¹⁹ with the underlying long vowel.

Much more complex is the discussion on the cases reported in the right column above. Taking [po:k], for example, it is not a simple matter to decide what is present in the underlying form, and specifically whether the vowel is long or extra-long²⁰. As for the final consonant, in all the morpho-phonological related forms it surfaces as voiceless: see again the feminine [ˈpo:c:e] and the diminutive form [puˈkut]. This means that a voiced consonant *cannot be posit in the underlying representation* since this would undermine the reasoning behind all the other morpho-phonological relationships discussed above. These two forms would constitute, then, the only case in which a final extra-long vowel is followed by a voiceless consonant (and not by a devoiced one). It would be also necessary, to solve this puzzle, to have the exact phonetic measurements of the final consonant of such forms, to understand whether their duration is similar to the duration of a true word-final voiceless consonant (such as the overlong consonant of [lat:] ‘milk, m.’) or to the duration of a devoiced consonant (such as the devoiced consonant of [la:d̥] ‘gone, m.’). This issue remains open for further research.

¹⁹ It has no bearing on the point I am making the issue of whether the final vowel indicating feminine is present in the underlying form as an added morpheme or not. An underlying representation such as /ˈo:c + e/ is perfectly acceptable too in my view.

²⁰ The choice, I argue, is between these two options, since we have just seen for the feminine that an AU Proto-Romance diphthong results in a lexical long vowel. Therefore, the vowel in the masculine form has to be at least long and it cannot be short in the underlying form.

Muta cum Liquida Clusters

There is another case in the literature where a long vowel, in “classical” terms, is reported in the penultimate syllable, and it has to do with the treatment of a *muta cum liquida* Proto-Romance cluster:

(15)

NĪGRU	>	*nɛgr	>	['nɛ:ri]	‘black, m.’
MĀTRE	>	*madr	>	['ma:ri]	‘mother’
ŌC(U)LU	>	*voɣl	>	['vo:li]	‘eye, m.’
*SOLĪC(U)LU	>	*sorɛɣl	>	[so'reli]	‘sun, m.’

As can be seen from these examples, after apocope deleted the final unstressed vowel, the *muta cum liquida cluster* appeared at the end of the word, and at this point a final unstressed epenthetic -i was added (I am not going to discuss now the reasons behind this process of epenthesis). What is interesting is that after epenthesis, Friulian deleted the stop forming the *muta cum liquida cluster* and, as a consequence of that, the vowel lengthened. These cases would therefore represent an instance of compensatory lengthening for the loss of the stop (see for instance Vanelli 2005: 161, n.4). Note also that in the morpho-phonological related forms, where the stressed vowel *follows* the cluster, the stop surfaces again:

(16)

['nɛ:ri]	‘black, m.’	~	[ne'grure]	‘blackness, f.’
['ma:ri]	‘mother,	~	[ma'drine]	‘godmother, f.’
['vo:li]	‘eye, m.’	~	[vo'glade]	‘glance, f.’
[so're:li]	‘sun, m.’	~	[sore'glade]	‘sunstroke, f.’

As previously discussed for the development of the Proto-Romance AU diphthong, there is no doubt that the long vowels in these examples are by far shorter than the long vowels in form as [la:t] ‘gone, m.’.

Concluding this section of long vowels in paroxytones, one can see that actually these cases just discussed do not constitute an exception at all. When Vanelli (2005) argues that long vowels can be found only in the last syllable closed by a monoconsonantal coda, in “revised” terms she is actually referring to *extra*-long vowels. And it holds with no exceptions that no extra-long vowel can be found in penultimate position. What *is* found in penultimate position in “revised” terms is long vowels. But then these cases stop being an exception because, as it has been argued above, long vowels always appear in penultimate position before a voiced stop or fricative (and we will see later some more examples of long vowels preceding sonorants).

Before going on, I want to discuss for a moment the data relative to these cases of long vowels in absolute word-final position and in paroxytonic words. Besides having a theoretical relevance that will be discussed in the fifth chapter, the “revised” transcription allows us to make more sense of these apparent counter-examples of the main pattern found with stops and fricatives. The so-called exceptions just discussed, seen in the light of the “revised” account, simply stop being exceptions. This also suggests that conflating all the different length patterns we find within Friulian in a two-way distinction between long and short vowels, completely blurs the complexity of the phenomena at hand, no matter how elegant using just one hypothesis to explain all the data presented in this chapter may seem. All the different contexts analysed in this chapter require a one-by-one thorough explanation, and only then can we realise if any bigger regularity emerges.

2.5.3. Vowel Length and Sonorants

Nasals

One thing all the literature on vowel length agrees on is that there cannot be a long vowel before a word-final nasal in Friulian.

Not even in those contexts that should have developed one (viz. Proto-Romance open syllable developing in a Friulian final closed one): e.g. CANE > [can] and not *[ca:n] (cf. (AL)LATU > [la:t] ‘gone, m.’; VALE(T) > [va:l] ‘it is worth’).

Not even for those forms in which other Northern Italo-Romance varieties have a long vowel: cf. Cremonese PANE > [pa:n] ‘bread’ vs PANNU > [pan] ‘cloth’ (where the vowel in the first form is long) and Friulian PANE > [pan] ‘bread’ vs PANNU > [pan] (where both vowels are short).

Therefore, in all the forms below, the vowel is short:

- (17)
- | | |
|---------------------|--------------|
| [caŋ] ²¹ | ‘dog, m.’ |
| [saŋ] | ‘healty, m.’ |
| [sa'lam] | ‘salami, m.’ |
| [fuŋ] | ‘smoke, m.’ |
| [domaŋ] | ‘tomorrow’ |
| [om] | ‘man’ |

Why? There is no intrinsic phonological nor phonetic reason why a nasal should stop a lengthening process, and in fact we find long vowels before nasals in the other Northern Italo-Romance varieties.

To the best of my knowledge, the literature does not present any reason to explain such anomaly²².

What I want to propose here is that the absence of long vowels before nasals is connected with another process in Friulian, also affecting word-final nasals, namely post-nasal epithesis.

In Friulian there is a process (characterized by great diatopic variation and lexical dispersion) by which a homorganic stop is added at the end of a word ending with a nasal

²¹ A word-final nasal has a tendency to surface as velar (see Vanelli 2005: 162, n.6).

²² I am talking here of explaining the deep reason, not offer a formalisation of the fact that we cannot find a long vowel before a word-final nasal (on which there are several proposed accounts, more recently Torres-Tamarit 2015: §3.5.5. and Iosad 2012: §4.3.2.).

(see Benincà / Vanelli 2016; Vanelli 2015; Heinemann 2003; Tuttle 1992)²³: [sa'lamp] 'salami', [omp] 'man', [lɛɲc] 'wood', [ˈzovint] 'young', [straŋk] 'hay', [fluŋk] 'river'.

In my view, there can be a common explanation for these two processes, and it is very similar to what Ascoli (1873: 533) proposed to account for the process of epithesis in Friulian (Ascoli did not discuss long vowels): *[t]he final nasal, as if it was afraid to disappear [...], calls the homorganic stop to the rescue*²⁴.

A well-formed word in Friulian, in the vast majority of cases, ends with a consonant, and nasals are classically the first consonants to undergo deletion (also through nasalisation of the preceding vowel). Taking these facts into account, Ascoli proposes that the process of epithesis be explained saying that a word-final stop is added in order to prevent the deletion of the final nasal.

In my view, the same cause is at the basis for the absence of long vowels before word-final nasal, and it has to do with the length of the word-final nasal. We have seen before that extra-long vowel are followed by short stops and fricatives (devoiced ones); having an extra-long vowel before a word-final nasal would mean that that word-final nasal would have to be short and more prone to deletion. To avoid this, Friulian never allowed vowel lengthening before a word-final nasal.

This is obviously still highly speculative, but it represents a first attempt in trying to solve the anomalous relationship between vowel length and nasals.

Rhotics

What is usually reported in the literature (see for instance Vanelli 2005: 162) is that a vowel *always* surfaces as long, in “classical” terms, before a rhotic. Vanelli (2005: 162) also reports a long vowel preceding a rhotic plus a following consonant (recall that in the other cases, a long vowel could arise only in a final closed syllable with a *monoconsonantal* coda):

²³ I am not going to discuss at length this process. See the literature reported above. That we are dealing with epithetic stops it can be seen comparing the forms that follow with the ones reported in 17 above.

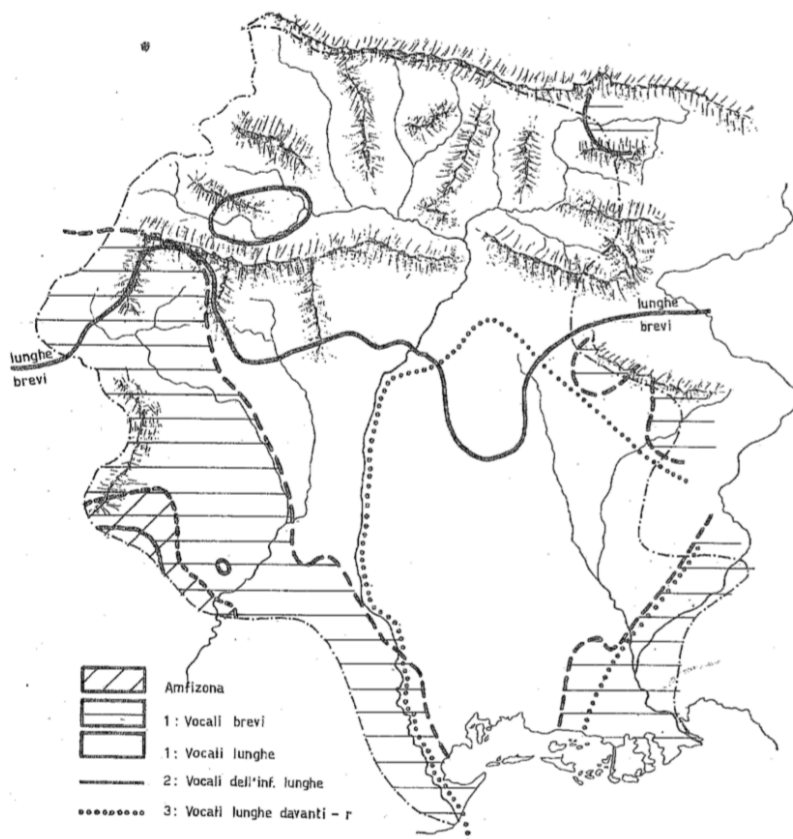
²⁴ “La nasale all’uscita, quasi temesse di dover dileguare [...], chiama in suo soccorso la muta congenere” (Ascoli 1873: 533).

(18)

- [spɔ:rk] ‘dirty, m.’
- [vɛ:rt] ‘green, m.’
- [la:rk] ‘wide, m.’

In fact, there is a clear process of vowel lengthening before rhotics, which is actually independent from the canonical long vowels the origin of which has its causes in Proto-Romance. This lengthening process, contrary to what has been said about nasals above, clearly has to do with the intrinsic phonological make-up of rhotic consonants (for which see chapter 5 in which an account of such a process is proposed). Below I report again the map found in Francescato (1966: 21) in which the distribution of “canonical”²⁵ long vowels and the distribution of lengthening before /r/ is reported:

(19)



²⁵ “Canoniche” is Vanelli’s (2005: 161, n.4) terminology. She uses this term to distinguish between long vowels derived through the processes we will discuss in ch.3 and long vowels derived “by other means” such as those discussed above (from an AU Proto-Romance diphthong, or due to a peculiar treatment of *muta cum liquida* clusters, or due to the lengthening process before rhotics consonants we are discussing here).

The dotted line represents the area in which the process of vowel lengthening before rhotic consonants is attested (and compare it with the white area of the map in which varieties with “canonical” long vowels are found).

Conservative varieties are still reported to have a contrast of long vs short vowels before rhotic consonants depending on the Proto-Romance base: CARRU > [car] ‘chariot’ vs. CARU > [ca:r] ‘dear, m.’ (viz. with a short vowel when it derived from a closed syllable and a long one when it derived from an open syllable).

This contrast has been lost in less conservative varieties, where, for instance, the same phonetic realisation [ca:r] stands for ‘chariot, dear, meat’ (with ‘meat’ that derives from Proto-Romance CARNE and which represents therefore another instance of a long vowel from a closed syllable where we could have expected a short one).

Laterals

Having just discussed nasals and rhotics, it starts to be rather clear that Friulian vowel length patterns are not that clear-cut in the case of sonorants as in the case of stops and fricatives. We saw that no long vowel (extra-long in “revised” terms) can occur before a nasal and that a consistent number of (more innovative) varieties presents only long vowels before rhotics.

With laterals, the situation is reportedly more similar to stops and fricatives cases, in that one can find minimal pairs based on vowel length in the case of laterals, and this should be true for all varieties. In the examples below, we find a long vowel when it derives from a vowel followed by a singleton lateral; we find a short vowel when it derives from a vowel followed by geminate²⁶ lateral.

(20)

[mil] ‘one thousand’	< MILLE	vs	[mi:l] ‘honey’	< *MELE
[val] ‘it is worth’	< VALLE	vs	[va:l] ‘valley, f.’	< VALE(T)

²⁶ Throughout this dissertation I will use *geminate*, *extra-long* and *overlong* as synonyms, otherwise differently specified, both in the case of consonants and in the case of vowels (obviously *geminate* is not been used for vowels).

Nonetheless, as Vanelli (2005: 177) points out, in the case of laterals too there are some unexpected occurrences of long and short vowels:

Since the V: is not the result of the application of a general process [obstruent final devoicing], but it is lexically given, we find in different varieties cases in which the V has a different duration than the expected one: one informant of ours has [ba:l] for ‘ballo’ [dance] instead of the expected [bal], as it is found in other varieties; it can be seen on the Friulian vocabulary “Il Nuovo Pirona” (1992) *cal* (= [kal]), which correspond to the Italian *calo* [‘drop’], and *câl* (= [ka:l]), which corresponds to the Italian *callo* [‘callus’]. This unpredictability of the presence of V: before a lateral [...] seems coherent to us with the fact that in these cases vowel length is lexically determined and therefore subject to variation.²⁷

2.5.4. Vowel Length and Affricates

The pattern that emerges with affricates is quite interesting.

The first observation is that affricates do not allow long vowels before them, even if all the conditions for the surfacing of a long vowel (for which see above) are met.

We therefore encounter the following examples:

(21)

[mjetʃ]	‘half, m.’
[avanˈtatʃ]	‘advantage, m.’
[bratʃ]	‘arm, m.’
[pɔtʃ]	‘water well’

As was just said, we do not find any long vowel, not even when the four synchronic conditions mentioned before (final syllable; closed; monoconsonantal coda; voiced consonant surfacing in the morpho-phonological related forms) are met, as in the case of the first two examples. In fact, the morpho-phonological related

²⁷ “Proprio perché la V: non è il risultato dell’applicazione di un processo generale, ma è lessicalmente data, troviamo nelle diverse varietà casi in cui la V ha una durata diversa da quella che ci si aspetterebbe: si veda ad es. proprio il caso di un nostro informatore che ha per it. ‘ballo’ [ba:l] invece dell’atteso [bal], che si trova in alter varietà; o si veda anche sul vocabolario friulano “Il Nuovo Pirona” (1992) *cal* (= [kal]), corrisp. all’it. *calo*, e *câl* (= [ka:l]), corrisp. all’it. *callo*. Questa imprevedibilità nella presenza o meno delle V: davanti a laterale, [...] ci sembra coerente con il fatto che in questi casi la lunghezza vocalica è lessicalmente determinata e quindi soggetta a variazione.” (Vanelli 2005: 177).

forms of both [mjetʃ] and [avan'tatʃ] present a voiced consonant: ['mjedʒe] 'half, f.'; [avan'tadʒe] 'she advantages'. This tells us that there is a final devoicing process going on, exactly like in the pair [lade] vs [la:t], still we do not get any long vowel.

Baroni / Vanelli (2000) ascribe this absence of vowel length to the intrinsic duration of affricates. Affricates would be complex segments and as such, longer than plain stops, and this would be the cause for not having the process of lengthening of the preceding vowel.

Furthermore, while this longer duration still needs to be tested and demonstrated, there actually *are* some cases in which one can find a long vowel followed by an affricate, and these are reported in Yamamoto's (1993) study on adapted loanwords from Italian to Friulian.

Yamamoto interviewed different speakers from different places in Friuli, asking them to render in Friulian a series of Italian verbs which have a voiced affricate in their infinitive form such as [kor'rɛddʒere] 'to correct', [dis'truddʒere] 'to destroy', [di'ridʒere] 'to direct', [protɛd'dʒere] 'to protect', which would be rendered in Friulian as [kor'reɖʒi], [dis'trudʒi], [di'ridʒi], [pro'tedʒi].

The test was meant to demonstrate the behaviour of the stressed vowel in the case of a verbal form with a zero desinence (such as the first and the third person of the present indicative), in which the consonant following the vowel surface in word-final position and gets, therefore, devoiced.

The answer given were divided in two: in some varieties (those of Enemonzo, Tolmezzo) the vowel was pronounced as short: [kor'retʃ] 'she corrects', [dis'trutʃ] 'she destroys', [di'ritʃ] 'she directs', [pro'tetʃ] 'she protects'; in some other varieties (those of Qualso, Buia, Tarcento, Artegna, Taboga) the vowel was pronounced as long: [kor're:tʃ] 'she corrects', [dis'tru:tʃ] 'she destroys', [di'ri:tʃ] 'she directs', [pro'te:tʃ] 'she protects'.

This finding was particularly interesting because, as was said before, Friulian does not present long vowels before affricates in the forms derived by diachronic evolution.

Following Yamamoto's (1993) interpretation, it seems that in these cases there are two contrastive requirements at play. The first requires a short vowel before an

affricate. The second requires a long vowel before a devoiced final consonant. In some varieties the first one of these two requirements prevail; in some other varieties it is the second one to win.

This finding represents another argument in favour of the synchronic strength of the connection between vowel lengthening and final devoicing: there would be no reason otherwise for the Italian vowel to be rendered as long in the Friulian forms (and note, in fact, in form such as [kor'ɾeddʒere], the Italian vowel is short, therefore the long Friulian vowel cannot be linked with the duration of the Italian one).

3. The Diachronic Account

In this chapter I am going to analyse two main proposals to account for the diachronic origin of contrastive vowel length and for its evolution. Loporcaro's (2015) hypothesis and Vanelli's (2005, 1979) hypothesis will be taken as representatives for two main views held by scholars on the raise of contrastive vowel length.

To account for the fact that some varieties display contrastive vowel length both in paroxytones and in oxytones while some varieties display it only in oxytones, two main answers have been given (see Loporcaro 2015: 122):

- the diatopic variation represents two stages in the same development: Weinrich (1958: 188); Morin (2003); (Loporcaro 2015; 2007a).
- The diatopic variation represents two distinct developments: Francescato (1966: 130-143); Zamboni (1984: 56); Montreuil (1991); Repetti (1992); Hualde (1992); Benincà (1995:51); Bonfadini (1997); Prieto (2000, 1994); Videsott (2001); Vanelli (2005; 1997).

Though the list is obviously not exhaustive, it represents a trend in the discussion about contrastive vowel length, with the second answer having more favour than the first one.

Loporcaro (2015) and Vanelli (2005) are taken as representative because they are the two main recent and comprehensive works about contrastive vowel length that advocate the two main positions.

3.1. Loporcaro's (2015) Hypothesis

According to Loporcaro (2015), there is a common cause for the diatopic variation one can observe nowadays in Northern Italo-Romance varieties, and that is the process of open syllable lengthening that characterised Proto-Romance.

This means that, in Loporcaro's view, all Northern Italo-Romance varieties inherited contrastive vowel length *in the same way and with the same characteristics*. This means that there was an initial stage in which all Northern Italo-Romance varieties displayed length for all those vowels derived from a Proto-Romance vowel sitting in a Proto-Romance open syllable, no matter their position in the Northern Italo-Romance output (be that an oxytone or a paroxytone).

The other ingredient of Loporcaro’s hypothesis is deciding which of the different processes that affected the passage from Proto-Romance to Northern-Italo Romance varieties is responsible for the phonologization of vowel length. Recall, in fact, that the process of open syllable lengthening that characterised Proto-Romance was “only” an allophonic process.

In Loporcaro’s view, the responsible factor for the phonologization of vowel length (and or making it contrastive in the Northern Italo-Romance varieties therefore) was degemination.

Before discussing more at length this point of Loporcaro’s hypothesis, below I present a table with a schematized representation of the processes that affected Proto-Romance in its evolution towards the Northern-Italo Romance varieties (adapted from Loporcaro 2015: 105):

(1)

PRom Input	'VtV	'V:tV	'Vtta	'V:ta
Voicing	'VtV	'V:dV	'VttV	'V:da
Degemination	'VtV	'V:dV	'Vta	'V:da
(Apocope)	'Vt	'V:d	'Vta	'V:da
(Final Obstruent Devoicing)	'Vt	'V:t	'Vta	'V:da
NItRom Output	'Vt	'V:t	'Vta	'V:da

In the table, the first line represents the Proto-Romance input, where V indicates any vowel other than /a/, and /t/ stands as representatives for any voiceless obstruent. As it can be seen, in the Proto-Romance input the process of open syllable lengthening is active, and this is the reason why the forms 'V:tV and 'V:ta are marked with a long vowel. The reason why in the first line there are two forms with a final V (indicating any vowel other than /a/) and two with a final a is that this situation has a very important repercussion on the Northern Italo-Romance output, since apocope effects all vowels but the low ones (at least in the Northern Italo-Romance varieties). This means that the forms in the first line ending with a vowel different than -a will result in a Northern Italo-Romance oxytone, while only the

paroxytonic Proto-Romance words ending with /a/ will result in a Northern Italo-Romance paroxytone.

This being said, the form 'VttV represents a Proto-Romance paroxytonic word with a geminate consonant and ending with any vowel but /a/. The form 'V:tV represents a paroxytonic word with a singleton consonant ending with any vowel but /a/. Since the tonic vowel sits in an open syllable, the vowel is lengthened by the process of open syllable lengthening affecting Proto-Romance. The form 'Vtta represents a Proto-Romance paroxytonic word with a geminate consonant and ending in /a/, a low vowel that won't be affected by apocope. The form 'V:ta represents a Proto-Romance paroxytonic word with a singleton consonant and ending in /a/. Since the tonic vowel sits in an open syllable, it is lengthened by the process of open syllable lengthening, as we have already seen for the form 'V:tV.

The first process that operates on the Proto-Romance forms is voicing of singleton intervocalic consonants. Voiceless consonants become voiced in this position so, for example, starting from the form 'V:tV, we get 'V:dV, where the voiceless consonant gets voiced in intervocalic position. On the other end, a form like 'VttV is not affected by such a process, having a geminate consonant (the devoicing process, an instance of lenition, affects only singleton obstruents).

The second process operating in the reconstruction of the path from Proto-Romance to Northern Italo-Romance varieties is degemination of geminate obstruents between vowels (another instance of lenition affecting the Proto-Romance forms), resulting in singleton voiceless obstruents: a form like 'VttV will then result in 'VtV.

It is at this point, after degemination, that, in Loporcaro's hypothesis, vowel length becomes phonologically contrastive, from being "simply" the output of an allophonic process of open syllable lengthening. Sure, after degemination other processes apply, like apocope and final obstruent devoicing, but in Loporcaro's view they are not relevant for the phonologization of vowel length (and this is why they are put between parentheses in the table above).

To recapitulate: Loporcaro (2015) proposes that Northern Italo-Romance vowel length derives from a Proto-Romance allophonic process of open syllable lengthening. Vowel length then reached a phonological status after degemination. This means that all Northern Italo-Romance varieties inherited vowel length in the same way and with the same characteristics: Loporcaro (2015) assumes in fact that there was a stage in the development of modern Northern Italo-Romance varieties where *all* vowels derived from a vowel sit in a

Proto-Romance open syllable were long, no matter the syllable structure of the output (oxytone or paroxytone, open or closed syllable).

How to account then for the Diatopic variation we found nowadays in these varieties? And more specifically, how do we account for the fact that today one finds varieties where long vowels are found only in the ultimate (closed) syllable, and not in the penultimate; only in oxytonic words and not in paroxytonic ones?

According to Loporcaro (2015, see for instance ch.5), the varieties that nowadays present vowel length only in the last syllable, actually had in the penultimate syllable too, and then lost it. Similarly, varieties that nowadays do not present any kind of vowel length at all (like Piedmontese varieties), still developed it in all positions like the other varieties, and then lost it everywhere.

Postulating a fading of contrastive vowel length in Northern Italo-Romance (see Loporcaro 2015: §5.1.) is the only way to account for the diatopic variation found in these varieties after positing a common path of vowel length development for all of them.

The following table (taken from Loporcaro 2015: 172) show this path of fading of contrastive vowel length in Northern Italo-Romance varieties.

(2)

	a. Cremonese	b. Milanese	c. Bergamasco
i. ó] _{PW}	+	+	-
ii. óσ] _{PW}	+	-	-

[+ = contrastive VL in the given environment]

In the table, Cremonese is taken as representative for all those varieties that display contrastive vowel length both in the penultimate and in the last syllable (ó indicates a Phonological Word that has the accent on the last syllable – an oxytone –; óσ indicates a Phonological Word that has the accent on the penultimate syllable – a paroxytone –). On the other hand, Milanese represents all those varieties (like Friulian) that have contrastive vowel length only in the last syllable, viz. that display contrastive vowel length only in oxytonic words. Finally, Bergamasco represents those varieties that do not display, nowadays, any kind of vowel length in any position (Bergamasco being an example of Eastern Lombard,

one of the areas that do not display any vowel length, together with Piedmontese, the peripheries of Ligurian and Friulian and Veneto and so on and so forth).

This table exemplifies Loporcaro’s (2015) proposal: in a first phase, all varieties (Cremonese, Milanese and Bergamasco and all the others) must have been like Cremonese, in displaying contrastive vowel length in all positions (penultimate and last syllable in the same way). Then some varieties (Milanese and Bergamasco and similar varieties) lost it in the penultimate syllable, while retaining contrastive vowel length only in the last syllable. Then, the most innovative varieties like Bergamasco lost contrastive vowel length in every position and today they do not display any kind of vowel length. These last varieties can be considered the most innovative ones (cf. Loporcaro 2015: §5.1.) since they develop further than the others, losing contrastive vowel length; on the other end of this “diachronic line”, Cremonese and varieties alike represent a more conservative situation, since they display contrastive vowel length both in paroxytonic and oxytonic words (which is the Proto-Romance starting point for all Northern Italo-Romance varieties).

3.2. Vanelli’s (2005, 1979) Hypothesis

Vanelli’s diachronic hypothesis accounts first and foremost for the raising of Friulian contrastive vowel length, in oxytonic words (recall that Friulian does not display contrastive vowel length in the antepenultimate syllable, similarly to Milanese and varieties alike).

I will first present the schematized version of Vanelli’s hypothesis in the table below and then I will discuss it.

(3)

PRom Input	'VtV	'VtV
Voicing	'VtV	'VdV
Degemination	'VtV	'VdV
Apocope	'Vt	'Vd
Final Obstruent Devocing	'Vt	'Vt
Friulian Output	'Vt	'V:t

In this table only two columns are presented. This is because, as just said, Vanelli's hypothesis deals only with the raising of contrastive vowel length in oxytonic words, since this is the only position in which Friulian displays contrastive vowel length. Therefore, the only two forms taken into account are the ones with a final V different than /a/. In fact, since apocope deletes all final vowels but /a/, these are the only forms that will result in a Friulian oxytone. The other two forms considered above for Loporcaro's hypothesis, namely 'Vtta and 'V:ta, won't be affected by apocope and would then result in a Friulian paroxytone, where no contrastive vowel length is found. This is the reason why they do not appear in the schematized table for Vanelli's hypothesis.

The other major difference between Loporcaro's and Vanelli's hypotheses (that can be seen right away just confronting the first line of the two tables) is that Vanelli does not posit any difference in length for the vowels of the Proto-Romance input forms. As discussed earlier, this is instead one of the main aspects of Loporcaro's account of contrastive vowel length in Northern Italo-Romance varieties.

Note also that the two hypotheses agree on the relative order of the processes affecting the Proto-Romance input forms, in their diachronic evolution.

The main point in which Vanelli's and Loporcaro's accounts differ, beside the open syllable lengthening rule affecting the Proto-Romance forms, is deciding which process is responsible for the raising of contrastive vowel length.

In Loporcaro's view, as seen before, the raise of contrastive vowel length is caused by degemination.

In Vanelli's view, the raise of contrastive vowel length is caused by obstruent final devoicing (and this is the reason why, in the table representing Vanelli's hypothesis, the last two processes are not written between parentheses).

Let us take this step by step.

In Vanelli's hypothesis, things proceed like in Loporcaro's one, only that degemination is not the cause for the raise of contrastive vowel length. After degemination applied, the two resulting forms are 'VtV (derived from the 'VttV Proto-Romance form) and 'VdV (derived from the 'VtV Proto-Romance form). In Vanelli's view, at this point in time, the contrast between these two forms is still based on the difference in voicing between the two obstruent consonants, and there is no reason for contrastive vowel length to play any role.

Then apocope applies, erasing all final vowels but /a/, and giving the two following resulting forms: 'Vt and 'Vd. Here again, the contrast between these two forms is still based

on the difference in voicing between the two (now) final obstruents, and again no contrastive vowel length needs to play any role to have these two forms contrasting.

It is when final obstruent devoicing applies that the situation changes. The two forms, before the application of final obstruent devoicing, were 'Vt and 'Vd. Once final obstruent devoicing applies, the voiced obstruent in the second form gets devoiced and this gives the following two homophonous forms: 'Vt (derived from the previous 'Vt form, where no final devoicing applied since the obstruent was already voiceless) and 'Vt (derived from the previous 'Vd form, where the voiced consonant became voiceless after being devoiced). It is at this point, in Vanelli's proposal, when the contrast can no longer be based on the voicing of the two obstruents (being both voiceless after final devoicing applied) that contrastive vowel length raises, as a tool for re-establishing a previous existing contrast that got destroyed by the application of final obstruent devoicing. The two final forms are then: 'Vt (derived from the previous 'Vt form) and 'V:t (derived from the previous 'Vd form after it underwent final devoicing).

Since Vanelli does not posit any difference in length in the Proto-Romance input, the formal way to account for the raise of contrastive vowel is to say that *[i]t is also well known [...] that the difference in voicing of a C has a conditioning phonetic effect on the duration of the previous V: the V before a voiced C is always longer than before a voiceless C* (Vanelli 2005: 166)¹. It is this allophonic difference in length of the vowels (the vowel preceding a voiced consonant being longer than a vowel preceding a voiceless one) that gets exploited once that contrast based on the voicing of the obstruents gets erased by the process of final obstruent devoicing.

The contrast shifts from the voicing of the obstruent to the duration of the preceding vowel (and this new opposition *is presumably matched by a phonetic increment of the difference in the duration* Vanelli 2005: 166²).

This account works for those cases where vowel length raises before an obstruent, but it obviously cannot work for those forms that present a sonorant consonant following the vowel. The reason is clearly that when the consonant following the vowel is a sonorant, no final devoicing process is possible and therefore the "trigger" for the raise of contrastive vowel length is missing.

¹ È altresì noto [...] che la differenza di sonorità di una C condiziona foneticamente la durata delle V precedenti: la V davanti a una C sonora è invariabilmente più lunga che davanti a una C sorda (Vanelli 2005: 166).

² [opposizione] accompagnata presumibilmente da un incremento anche fonetico della differenza di durata (Vanelli 2005: 166).

Oppositions like the following still need an explanation: [va:l] ‘valley, f.’ ~ [val] ‘it is worth’; [mi:l] ‘honey, m.’ ~ [mil] ‘one thousand’. Vanelli (2005: 167-168) gives the following explanation for these pairs:

In Vanelli 1979 an interpretation of this phenomenon, that cannot be subsumed in the general process, is given, on the basis of the hypothesis of Pellegrini 1975, according to which in Northern Italy the opposition between /ll/ and /l/ should have been preserved at least until the XIII century (while the other geminate consonants were being reduced already to singletons). Since, as it is well known, Vs before geminate Cs are shorter than before singleton Cs, the V before /ll/ should have been phonetically shorter than the V before /l/. When /ll/ degemination applied, the same phonologization process that occurred before obstruents applied: the allophonic distinction became distinctive so that also the words ending with a lateral C were integrated in the existing phonological system.³

So, in Vanelli’s hypothesis, two distinct operations to make vowel length contrastive are needed to account for all the data.

One is obstruent final devoicing. When this process applies, the contrast based on the voicing of the obstruent consonant is deleted. At that point, the allophonic difference in length of the vowels (longer vowel before voiced consonant; shorter vowel before voiceless consonant) becomes phonological and vowel length becomes contrastive.

The second operation that causes vowel length to become contrastive is basically the same as the one advocated in Loporcaro’s (2015) proposal, viz. degemination. As we have just seen, Vanelli (2005, 1979) appeals to degemination in those cases where the consonant following the vowel is a sonorant, and therefore cannot undergo final devoicing. In her view, when degemination applies, the contrast based on the length of the consonant is deleted. At that point, the allophonic difference in length of the vowels (longer vowel before singleton consonant; shorter vowel before geminate consonant) becomes phonological and vowel length becomes contrastive.

³ In Vanelli 1979 si dà un’interpretazione di questo fenomeno, non riportabile al processo generale, sulla base dell’ipotesi di Pellegrini 1975 per cui in Italia settentrionale si sarebbe conservata almeno fino al sec. XIII l’opposizione tra /ll/ e /l/ (mentre ormai tutte le altre consonanti geminate si erano già da tempo ridotte a scempie). Dal momento che, come è noto, le V davanti a C geminate sono più brevi che davanti a C scempie, la V davanti a /ll/ doveva essere foneticamente più breve della V davanti a /l/. Quando si è verificato lo scempiamento di /ll/, si è verificato lo stesso processo di fonologizzazione che già era avvenuto per le V davanti alle ostruenti: la distinzione allofonica è diventata distintiva cosicché anche le parole uscenti in C laterale sono state integrate nel sistema fonologico già esistente (Vanelli 2005: 167-168).

3.3. Discussion

Both hypotheses have their strengths and their weaknesses.

In Loporcaro's account for the raise of contrastive vowel length, one has to postulate that every Northern Italo-Romance variety developed in the same way and that all varieties had long vowels both in the penultimate and in the last syllable (like Cremonese). Varieties that nowadays display contrastive vowel length only in oxytones must have lost it in the penultimate syllable. And this is not without problems for varieties like Friulian ones, where we found no trace at all for long vowel being there in paroxytonic words too.

On the other hand, Vanelli's account is explicitly built to explain Friulian data, and says nothing about how contrastive vowel length could have raised in Northern Italo-Romance varieties like Cremonese, that have long vowels both in oxytonic and paroxytonic words. In these varieties, the final devoicing process cannot be responsible for the raise of contrastive vowel length, since no devoicing process was going on in syllable internal position. Furthermore, Vanelli has to assume two different causes for the raise of contrastive vowel length in Friulian. One is obstruent final devoicing, that accounts for all those cases where a vowel is followed by an obstruent consonant. The other is degemination, and this would account for those cases where the vowel is followed by a sonorant (that cannot get devoiced).

In my view, the two accounts differ in one crucial aspect, viz. recognising only one possible cause for the raise of contrastive vowel length in Northern Italo-Romance varieties or two major causes. This is different in a crucial aspect from how Loporcaro sees the different interpretations about Northern Italo-Romance contrastive vowel length.

In his view (cf. Loporcaro 2015: 122) there are two main groups of scholars: one that proposes only one cause for vowel length for all Northern Italo-Romance varieties, viz. the Proto-Romance process of open syllable lengthening; the other that proposes two distinct developments, viz. the process of open syllable lengthening for those varieties that display contrastive vowel length both in oxytones and paroxytones and some other process (e.g. obstruent final devoicing for Friulian) for those varieties that display contrastive vowel length only in oxytones.

After Loporcaro's (2015) work the situation is slightly different. His argument for an open syllable lengthening process in Proto-Romance is both strong and very convincing, so much that it is indeed, with all probability, the starting point for the raise of contrastive vowel length in all varieties. This being said, positing the process of open syllable lengthening for

all varieties does not solve the controversy between the two views: only one cause vs. distinct developments. Even if the terms are changed.

The difference is now between a view in which the only factor playing a role in the raise of contrastive vowel length is the process of open syllable lengthening occurring in Proto-Romance and a view in which the process of open syllable lengthening is there but again it is not the only factor in play⁴.

In this second view, there is another factor responsible for the raise of contrastive vowel length besides the process of open syllable lengthening of Proto-Romance: the factor responsible for the raise of contrastive vowel length and responsible for its diatopic distribution in Northern Italo-Romance varieties (with some varieties displaying it only in oxytones and others displaying it in both penultimate and last syllable) is *the relevance of syllable structure and its development from Proto-Romance to Northern Italo-Romance varieties*.

There are some varieties (like Cremonese) that indeed work like Loporcaro (2015) says, where the only relevant factor for the raise of contrastive vowel length was Proto-Romance syllable structure. If a vowel was found in an open syllable and got therefore lengthened by the process of open syllable lengthening, then that vowel will be long in the Northern Italo-Romance variety, no matter the position or the syllable structure of the Northern Italo-Romance output.

But, there is another body of varieties that does not work according to Loporcaro's (2015) hypothesis. In these varieties Proto-Romance syllable structure is not the only relevant factor. Proto-Romance syllable structure is a necessary condition, but not a sufficient one. In line with what Francescato argues for Friulian, in the varieties that display contrastive vowel length only in oxytones, two factors are in play: Proto-Romance input syllable structure (viz. the process of open syllable lengthening) *and* Northern Italo-Romance output syllable structure, with contrastive vowel length that arises only from an open Proto-Romance syllable that develops in a Northern Italo-Romance final closed syllable (viz. a Proto-Romance paroxytone that develops in a Northern Italo-Romance oxytone; this is what Francescato calls *strong position* 'posizione forte', for which see Francescato 1966: 9ff.). The obvious question is what is the reason that brings a variety to

⁴ For instance, Vanelli has no problem in positing the process of open syllable lengthening in Proto-Romance, still retaining though the interpretation based on two different developments for those varieties with contrastive vowel length in both oxytones and paroxytones, and for those with contrastive vowel length only in oxytones (p.c.).

make use of contrastive vowel length only in oxytonic words and to take into account not only Proto-Romance syllable structure but also the syllable structure of the Northern Italo-Romance output. The answer has to be searched variety by variety (although the spectrum of different answers is quite narrow), but taking Friulian as example, in Friulian the reason to make use of contrastive vowel length only in oxytones is the application of final obstruent devoicing and the effects it had on Friulian lexical contrasts.

Loporcaro's (2015) hypothesis is neat and elegant. Positing one and only one cause for contrastive vowel length for all Northern Italo-romance varieties is certainly appealing. In this case though, I think it blurs the real story diatopic variation and diachronic facts are telling us.

Every variety started from the same point, but different varieties could follow different evolutionary paths. For some of them, the Proto-Romance starting point will be reflected in the output. For some others, the Proto-Romance starting point will be measured against the output forms.

4. The Synchronic Account

In this chapter different synchronic proposals to account for Friulian vowel length will be analysed and discussed. Vanelli's (2005) account will be analysed for last because it is the one with which I will directly confront to and on which in some way I will base my own account and formalisation in the next chapter.

One last paragraph will be dedicated to discussing the topic of the phonological place of vowel length, namely whether its place is the lexicon or the phonological computation. In this same paragraph Loporcaro's (2015) synchronic account will be discussed.

4.1. Hualde (1990)

Hualde's (1990) work belongs to the line of thought that sees synchronic contrastive vowel length in Friulian as being an active process rather than being completely lexical, part of the underlying representation.

The theoretical framework in which Hualde operates is that of Moraic Phonology and the aim of his work is

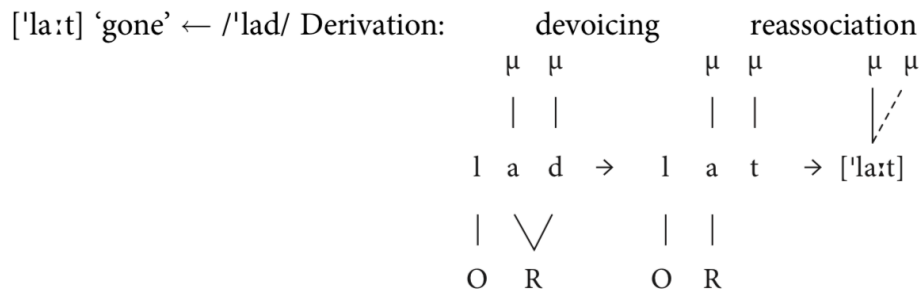
to try to relate both rules [final obstruent devoicing and vowel lengthening] in a motivate way, instead of viewing them as two unrelated and externally ordered processes. The facts of Final Devoicing and Vowel Lengthening, indeed, seem to lend themselves to a unitary treatment, as two effects of a single phenomenon of compensatory lengthening.¹

Hualde's (1990) solution is based on the assumption *that only voiced segments in a rime can be mora-bearing units in present-day Friulian* (Hualde 1990: 43). With this assumption in mind, final obstruent devoicing would delink the association between a final voiced coda consonant and the mora associated to it. This in turn would make "floating" the mora previously associated with the voiced consonant, which would later re-associate with the preceding vowel, making it bimoraic and therefore long.

The process goes as follows (Hualde 1990 43-44; and cf. also Iosad 2016: 222 and *passim*, 2012: 941; Loporcaro 2015: 130; Torres-Tamarit 2015: 1366; Vanelli 2005: 174-177 for more discussion on Hualde' 1990 formalization):

¹ Hualde (1990: 43).

(1)



It is worth noticing, as Vanelli (2005: 175) points out, that in Hualde's (1990) view, the two rules of final obstruent devoicing and vowel lengthening must be applied in a given order (specifically, final obstruent devoicing has to apply before vowel lengthening), representing an instance of opacity: *[t]hus, in Hualde's account, final devoicing counterbleeds weight-by-position, creating opacity* (Iosad 2012: 941).

Furthermore, the mora associated to the final voiced consonant has to be assigned by a syllabification algorithm, since it cannot be lexically specified (in Moraic Phonology, lexically specified moras mark geminate consonants – cf. Hayes 1989 – and this is obviously not the case for Friulian): this means that an intermediate level of representation has to be assumed, in which the voiced consonants receives the mora.

Obviously, no vowel lengthening process applies when the final consonant is lexically voiceless like the one of words such as *mat* 'crazy, m.' or *lat* 'milk, m.' and so on and so forth. In these cases, the voiceless consonant cannot bear any mora and therefore the vowel stays short (obviously, following what has just being said, in these cases of short vowels followed by a voiceless obstruent, Hualde 1990 has to assume a degenerate foot structure, with just one mora, cf. Torres-Tamarit 2015: 1365-1366).

While Hualde's (1990) account works for those cases of vowel lengthening preceding an obstruent, it cannot be applied in those cases where the lengthened vowel is followed by a sonorant, e.g. in the forms [va:l] 'valley, f.' ~ [val] 'it is worth'; [mi:l] 'honey, m.' ~ [mil] 'one thousand' and so on. In these cases, a different explanation has to be given, since the final consonant does not undergo final devoicing. Therefore, for these cases, the long vowel has to be posited in the lexical representation since it cannot be derived by rule.

The main problem with Hualde's (1990) proposal is that (as it has been often pointed out in the literature, see for instance Vanelli 2005: 176; Torres-Tamarit 2015: 1366) there is no strong external argument to assume that only voiced obstruents can be mora-bearing units,

and not voiceless ones. Furthermore, since moras represent timing units, positing voiced obstruents as mora-bearing units instead of voiceless ones would mean for voiced obstruents to be longer than voiceless ones, which is contrary to usual observation (voiceless obstruents are longer than voiced ones).

4.2. Repetti (1994, 1992)

The position advocated in Repetti's (1994, 1992) works is that contrastive vowel length in Friulian is not a synchronic active process anymore, but only the reflection of the diachronic development from Proto-Romance.

This means that the underlying representations for forms such as [la:t] 'gone, m.' and [lat] 'milk, m.' (the first with a long vowel and the second with a short one) would be /la:t/ and /lat/ respectively. As can be seen, the long vowel of [la:t] is present in the underlying representation and it is not derived via rule or some other formal mechanism.

Since in Repetti's proposal long vowels are underlying, what remains to be explained is why one does not find a long vowel in the morpho-phonological related forms, viz. why the vowel of ['lade] 'gone, f.' is short even if its related masculine form has a long vowel [la:t] (the tacit assumption here is obviously that the form ['lade] would be analysed as /la:d+e/ or something like it, with a long underlying vowel).

To account for the vowel being short in forms morpho-phonological related to others that display a long vowel, Repetti introduces a "shortening rule" that would allow for long vowels to appear only in oxytones, while being shortened in penultimate position.

In the critical cases of laterals, earlier discussed for Hualde's proposal too, such as [va:l] 'valley, f.' ~ [val] 'it is worth'; [mi:l] 'honey, m.' ~ [mil] 'one thousand', in Repetti's analysis they work exactly like the cases with a following obstruent consonant. Since in her proposal long vowels are lexically specified in the lexicon even when they are found before an obstruent (and not derived by rule), their treatment is exactly the same of long vowels found before a sonorant. In the cases just mentioned, the underlying form of, say, [va:l] will be /va:l/ (with an underlying long vowel), while the underlying form of [val] will be /val/ (with a lexically specified short vowel).

Several issues arise from Repetti's proposal, the first of which is why one never finds a lexical form with a long vowel followed by a voiceless consonant, as in */ta:t/, from which one could get the forms *[ta:t] and *['tate] respectively (cf. Vanelli 2005: 177). Note that in Hualde's (1990) approach revised above, such a question would get a straightforward

answer: since in his proposal vowel length is an active synchronic process connected with the voicing of the following obstruent, only a voiced consonant could get the preceding vowel to lengthen (as showed above), and this automatically rules out a form like *[ta:t] where the final obstruent is a true lexical voiceless. Only devoicing triggers lengthening.

This is not the case for Repetti's proposal. Since in her proposal long vowels belong in the underlying representation, there is no reason *in principle*, for Friulian never to display a form such as *[ta:t]. This absence needs to be justified somehow.

The justification for this state of things, viz. for the absence of a lexical form containing a long vowel followed by a voiceless obstruent consonant, is addressed in Repetti's (1994) work, that takes into account the possible syllable structures of Friulian.

In Repetti's (1994) work, it is claimed that Friulian could have only monomoraic and bimoraic syllables. Those syllables that *seem* trimoraic (forms such as CVCC with a final consonant cluster or CVVC with a long vowel) are actually the composition of a bimoraic syllable plus a degenerated one.

To account for the absence of forms such as */ta:t/, Repetti poses a restriction on the quality of the consonant sitting in the degenerate syllable: the final degenerate syllable could host only a sonorant or a voiced obstruent.

This condition excludes right away a form like */ta:t/, which present a voiceless consonant in the final degenerate syllable, solving the problem raised above.

But, as Vanelli (2005: 179) argues, such a condition also excludes perfectly acceptable forms like [fwart] 'strong, m.', [mwart] 'dead, m.', [alt] 'tall, m.', in which the proof that the final obstruent is underlying voiceless is that it surfaces as such, viz. voiceless, also in the morpho-phonological related forms: ['fwarte] 'strong, f.', ['mwarte] 'dead, f.', ['alte] 'tall, f.'. As just said, all the forms just mentioned ([fwart], [mwart], [alt]) are ruled out too by the condition that does allowed only for a sonorant or a voiced obstruent to occupy the last degenerate syllable (they all present, in fact, a final voiceless obstruent).

According to Repetti's analysis, these forms are allowed in Friulian because the final voiceless consonant belongs to the final mora of the bimoraic syllable (see the representation of [alt] below), and not to a degenerate syllable like in the case of a voiced obstruent. There would be a condition, in fact, that allows for a mora to dominate two consonants if and only if the second consonant is a voiceless one.

As Vanelli (2005: 180) further argues, though, it is not clear why such a solution could not be applied to the disallowed form */ta:t/, with the second mora dominating both the vowel and the following voiceless consonant.

To exclude this possibility Repetti states that a mora cannot dominate both a V and a C.

On other problem raised by Repetti's analysis is that, if long vowels are present in the underlying form and morpho-phonological related forms present a short vowel, as in ['lade], due to a shortening process, then we should never be able to find a long vowel in the penultimate syllable (cf. Iosad 2016: 225-227). And this is not the case for Friulian that, although rarely, does display paroxytones with a long vowel, such as ['o:ce] 'goose, f.', ['po:ce] 'few, f.', ['po:re] 'fear, f.' (the long vowel in these forms derives from a Proto-Romance *au* diphthong: *AU(I)CA, PAUCA, PAU(O)RE). These cases are difficult to account for in a proposal that is based on a shortening rule that should, in principle, exclude any long vowel in any penultimate syllable.

Concluding this review of Repetti's (1994, 1992) proposal, it seems that, to explain (almost) all empirical data of Friulian, quite a number of rather *ad hoc* assumptions has to be made; assumptions that are not strongly justified on an independent base.

4.3. Iosad (2012)

Iosad (2012) analyses vowel lengthening in Friulian within the framework of Optimality Theory (henceforth OT). In his view, and contrary to Repetti's (1994, 1992) position just analysed, lengthening is still an active property in Friulian synchronic phonological system.

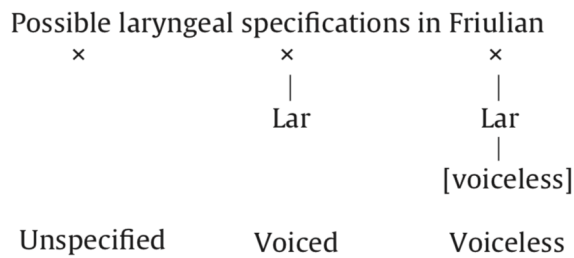
Iosad's (2012) analysis is divided in two main parts. In the first part he presents the representational assumptions which are at the basis of his proposal; in the second part he presents the formal analysis first in autosegmental terms and then within OT framework.

Iosad's (2012) representation of obstruents builds on Baroni / Vanelli's (2000) findings. Specifically, he takes into account that devoiced obstruents at the end of the word are still phonetically different than voiceless one, being still as short as a voiced obstruent (between other phonetic differences, for which see Baroni / Vanelli 2000: 30-37; Iosad 2012: 926).

With this in mind, in Iosad's (2012) proposal Friulian obstruents can have one of the three representations shown below²:

² For discussion on this feature-geometrical approach see also Rice / Avery (1989), Avery (1996), Mascaró (1995), Lombardi (1995).

(2)



The rightmost segment is a voiceless obstruent; it is the only segment fully specified with a privative [voiceless] feature that in Iosad's (2012) view characterises Friulian obstruent system (in which, therefore, the most marked segments, as far as obstruents go, are the voiceless ones. Voiced obstruents are underspecified, not having any Laryngeal feature in their representation).

The central segment is a voiced obstruent. As just said, it is unspecified for Laryngeal features, though still being characterised by having the Laryngeal node ⟨Lar⟩. Voiced obstruents are less marked than voiceless ones, having no laryngeal feature.

The leftmost segment is a devoiced obstruent. In Iosad's (2012) approach, a devoiced obstruent is unspecified even for the laryngeal node (and it is, therefore, the least marked of all obstruents).

Two specifications are in order before proceeding with Iosad's (2012) autosegmental analysis.

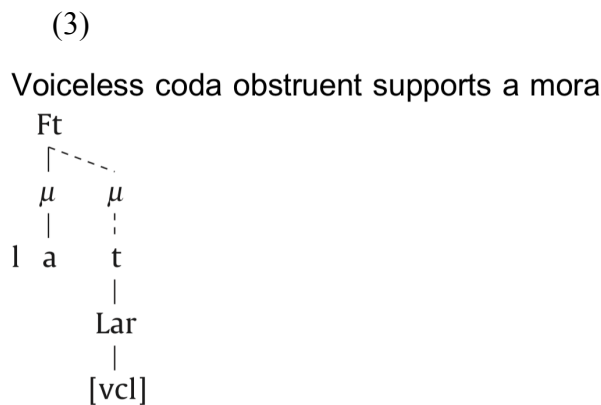
First of all, Iosad assumes that only laryngeally specified obstruents, viz. only voiceless obstruents, can support a mora.

Secondly, Iosad sees final devoicing not as *an instance of final laryngeal neutralization [...] but rather selective reduction of markedness in word-final position* (Iosad 2012: 929). Note that such a position is possible to hold only because, in Iosad's (2012) account, 1) there are three different types of obstruents and the unspecified one is the least marked and 2) voiceless consonants are the most marked ones, and they can resist markedness reduction in word final position by Preservation of the Marked (see Iosad 2012: 929). Otherwise, without a third possible obstruent consonant (the one unspecified even for the Laryngeal node) there would be nothing a voiced consonant could be reduced to, and also there would be no reason for voiceless consonants not to undergo markedness reduction, like voiced ones, giving the unspecified obstruent seen before. This is a very different position than the other that we will

analyse (or that we have already seen) in this chapter: final devoicing is not an instance of lenition anymore (lenition by devoicing), but an instance of reduction of markedness.

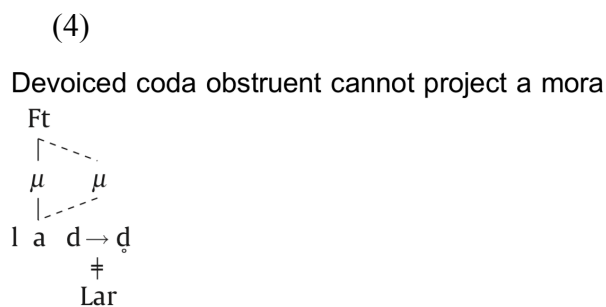
The autosegmental analysis proceed as follows.

A form like /lat/ is not targeted by markedness reduction word-finally, because voiceless consonants resist it. And since only laryngeally specified obstruent can support a mora, this represents a bimoraic foot already and there is no reason for the vowel to lengthen (from Iosad 2012: 929):



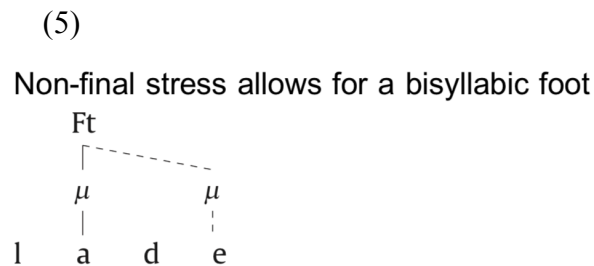
As just said, nothing changes when the representation of /lat/ surfaces. There is no markedness reduction nor any pressure for the vowel to acquire another mora since the final voiceless consonant can support a mora itself creating a bimoraic foot.

This is not what happens when a form such as /lad/ surfaces. In this case the final voiced obstruent is not specified for the Laryngeal node, and therefore it is the most marked obstruent and cannot resist markedness reduction by the Preservation of the Marked. Furthermore, the voiced underlying consonant cannot support a mora, because, again, it is not laryngeally specified. Therefore, *[v]owel lengthening is due to pressure to create a bimoraic foot* (Iosad 2012: 929), viz. the vowel has to be linked to one additional mora to satisfy foot bimoraicity (from Iosad 2012: 929):



This representation shows that the final voiced consonant undergoes markedness reduction (resulting in an unspecified obstruent) and since it cannot support a mora itself, an additional mora is linked to the vowel, to get a bimoraic foot.

Before turning to Iosad's (2012) OT analyses, I show the representation Iosad proposes for a paroxytonic form (from Iosad 2012: 930):



In this case, a binary foot can span two syllables, so neither coda moraicity nor vowel lengthening are necessary for binarity. Therefore, there is no difference between stressed vowel before different kinds of obstruents in non-final stressed syllables (Iosad 2012: 930). This point will be discussed later, after having presented Iosad's (2012) OT analysis.

Below the main constraints adopted in Iosad's (2012) are presented (from Iosad 2012: 930):

- For faithfulness and markedness, I use the constraints MAX(A) and *A, where A can be [sic] any phonological element (i.e. a node or a feature). The constraints are interpreted non-exhaustively;
- Moraic markedness constraints: following Morén (2001), I assume a constraint schema which militates against the association of certain classes of segments with a mora. For instance *μ[nas] assigns a violation mark for each segment which both contains the feature or set of features representing nasals in Friulian and is associated with a mora;
- Moraic faithfulness constraints: again following Morén (2001), I assume a constraint MAXLINK-μ[a], which penalizes the removal of underlying association lines between a mora and a segment bearing the feature or feature bundle [a] [...];
- Binarity constraints: for the purposes of this analysis, I use FTBIN as a (moraic) minimality constraint. I also use *μμμ to militate against trimoraic syllables;
- Weight-by-position constraints: I propose to amend the weight-by-position schema [...]. I propose to parametrize WEIGHT BY POSITION to featural structure, and employ constraints such as WBP (Lar). These constraints penalize nonmoraic coda segments iff they contain the relevant feature or geometrical node, and are therefore vacuously satisfied by non-coda segments, as well as by coda segments lacking the relevant specification [...];
- Delaryngealization in word-final position: I suggest that the analysis of Friulian requires markedness reduction in word-final position to derive from a "disalignment" constraint (e.g. Hall, 2009), which simply penalizes a token of ⟨Lar⟩ at the right edge of a word;

- I also use an EXTRAMETRICITY constraint, which I understand to militate against moraic segments in word-final position. Extrametricality is often understood in terms of the extrametricality of higher-order prosodic constituents visible in stress assignment, or in terms of phonotactics; however, this notion can be extended to require that word-final consonants not occupy a moraic coda position [...].

Having described the constraints used in Iosad (2012), I now present his formalization, proposed within an OT theoretical framework, starting from the obstruents contexts.

First of all, the following tableau shows the process of markedness reduction that affects (only) underlying voiced obstruents (Iosad 2012: 936):

(6)

*ALIGN-R(Wd,Lar) ≫ MAX(Lar)

lad	⟨Root,Lar⟩	*ALIGN-R(Wd,Lar)	MAX(Lar)
a. $la:_{\mu\mu}d$	⟨Root⟩		⟨Lar⟩
b. $la_{\mu}d$	⟨Root,Lar⟩	*!	
c. $la_{\mu}d_{\mu}$	⟨Root,Lar⟩	*!	
d. $la:_{\mu\mu}d$	⟨Root,Lar⟩	*!	

As can be seen, the effect of markedness reduction is due to the ranking *ALIGN-R(Wd,Lar) ≫ MAX(Lar) which prevents the surfacing of a final obstruent specified only for the node ⟨Laryngeal⟩, without any feature specification (viz. a voiced obstruent).

As it has been said before, voiceless obstruents can resist this effect of markedness reduction. Therefore, MAX([vcl]) has to dominate the disalignment constraint *ALIGN-R(Wd,Lar), as shown below (Iosad 2012: 936):

(7)

MAX(VCL) ≫ *ALIGN-R(LAR) ≫ MAX(LAR)

lat	⟨Root,Lar,[vcl]⟩	MAX([vcl])	*ALIGN-R(Wd,Lar)	MAX(LAR)
a. $la_{\mu}t_{\mu}$	⟨Root,Lar,[vcl]⟩		⟨Lar⟩	
b. $la_{\mu}d_{\mu}$	⟨Root⟩	[vcl]!		⟨Lar⟩
c. $la:_{\mu\mu}d$	⟨Root⟩	[vcl]!		⟨Lar⟩
d. $la_{\mu}d_{\mu}$	⟨Root,Lar⟩	[vcl]!	⟨Lar⟩	
e. $la:_{\mu\mu}d$	⟨Root,Lar⟩	[vcl]!	⟨Lar⟩	

The two tableaux just presented account for the laryngeal specifications in word final position, and specifically they show how a voiced obstruent surfaces as an unspecified one due to markedness reduction, and why a word final voiceless obstruent can resist the same process.

With these preliminaries out of the way, we can now see how the weight facts can be accounted for. First of all, when the underlying final consonant is a voiceless obstruent, no lengthening process is going on. This is because the final voiceless obstruent is able to project a mora, thanks to the constraint WEIGHT BY POSITION(Lar), which has to dominate EXTRAMETRICITY, μ [cons] and $^*\mu$ as shown below (Iosad 2012: 936):

(8)

WEIGHT BY POSITION(LAR) \gg EXTRAMETRICITY, $^*\mu$ [CONS], $^*\mu$

lat	WBP(LAR)	EXTRAMETRICITY	$^*\mu$ [CONS]	$^*\mu$
a. $la_\mu t$	*!			*
b. $la_\mu t_\mu$		*	*	**
c. $la:_{\mu\mu} t$	*!			**

The situation is obviously very different with a form that has an underlying final voiced obstruent. As seen before, the consonant surfaces as a delaryngealized, unspecified segment and being an underlying voiced obstruent, it cannot project a mora (only a voiceless one can). The vowel therefore is lengthened, and this means that FOOT BINARITY has to dominate the general anti-moraicity constraint. As for $^*\mu$ [cons], its precise ranking cannot be established, but it is necessary to exclude the candidate with a moraic coda, as shown below (Iosad 2012: 937):

(9)

FTBIN \gg $^*\mu$; ranking of $^*\mu$ [cons] indeterminate

lad	FTBIN	$^*\mu$	$^*\mu$ [CONS]
a. $la:_{\mu\mu} d$		**	
b. $la_\mu d_\mu$		**	*!
c. $la_\mu d$	*!	*	

This is the account Iosad (2012) proposes for the forms where the final consonant is an obstruent. I am going to show now his proposal for the sonorant contexts too (and specifically for those characterised by a lateral consonant).

The forms that need to be accounted for are the ones with a final lateral consonant, already mentioned above such as [va:l] ‘valley, f.’ ~ [val] ‘it is worth’; [mi:l] ‘honey, m.’ ~ [mil] ‘one thousand’.

Taking the first two as representatives, here is the tableau Iosad (2012) proposes to account for [va:l] (Iosad 2012: 932):

(10)

MAXLINK(μ)[lat] \gg EXTRAMETRICALITY, * μ [lat], * μ [cons]

val μ	MAXLINK(μ)[lat]	EXTRAMETRICALITY	* μ [lat]	* μ [cons]
a. va va μ l μ		*	*	*
b. va: μ l	*!			
c. va μ l	*!			

Iosad (2012: 932) proposes that the difference in the forms [va:l] ~ [val] is one of underlying consonant weight. Specifically, the underlying final lateral consonant of the form [va:l] could not support a mora while the underlying final lateral consonant of the form [val] could. The tableau just reported shows the ranking for the form [val], which is characterised by a short vowel. Positing an underlying final lateral supporting a mora means that a faithfulness-over-markedness ranking is in operation, otherwise the final consonant could not surface bearing the associated mora. This in turn means that MAXLINK(μ)[lat] has to outrank at least EXTRAMETRICALITY, * μ [lat] and * μ [cons] (again, this is the only way for the underlying final lateral consonant to surface with the associated mora). As can be seen from the tableau, the winning candidate is a bimoraic foot (the vowel and the coda lateral both support a mora) and there is no need, then, for the vowel to be associated with an additional mora (viz. to be lengthened).

This is not the situation for the form with the long vowel [va:l]. In this case the long vowel is derived (and *not* lexical) due to a binarity requirement (as it was seen before for the forms with a final obstruent). Specifically, between two possible bimoraic candidates (the form with the vowel associated to two moras or the form with both the vowel and the coda consonant associated to a mora), the form with the vowel associated with two moras is

chosen, due to EXTRAMETRICITY, as can be seen in the following tableau (Iosad 2012: 933):

(11)

EXTRAMETRICITY \gg WEIGHT BY POSITION

val	EXTRAMETRICITY	WBP	FTBIN(μ)
a. $\text{va}_{\mu\mu}\text{l}$		*	
b. va_{μ}l		*	*!
c. $\text{va}_{\mu}\text{l}_{\mu}$	*!		

It is important to notice that candidate *c. va_μl_μ* does not have an underlying lateral bearing the mora. The mora that can be seen associated to the final lateral is *added* during the computation. Then, this candidate does not surface because EXTRAMETRICITY outranks the other constraints, and candidate *c. va_μl_μ* presents exactly a moraic segment word-finally (and this is what EXTRAMETRICITY militates against).

We have seen Iosad's (2012) proposal, couched within OT, to account for the length facts of Friulian. I will now briefly summarise it and then discuss the relevant issues that emerge.

First of all, two assumptions are needed for Iosad's (2012) proposal: 1) voiceless obstruents in Friulian are the only obstruents fully specified for laryngeal features; 2) only fully specified obstruents (viz. voiceless ones) can be lexically associated to a mora.

Then, contrary to the most common view, in Iosad's (2012) proposal final devoicing is not an instance of laryngeal neutralization, but one of markedness reduction instead (building also on Baroni / Vanelli 2000 finding of a three-way obstruent contrast word-finally).

Lengthening before a devoiced obstruent takes place, then, due to the pressure to create a bimoraic foot (the final devoiced consonant associated to a mora cannot surface due to the violation of * μ [cons]). As for the forms with a final lateral consonant, the two forms [va:l] ~ [val] are accounted for positing a different lexical weight for the two final laterals. The form [val] has a final lateral that can bear a mora and therefore surfaces with a short vowel; the form [va:l] has a final lateral that *cannot* bear a mora and therefore surfaces with

a long vowel (this time, a candidate form with a mora that gets associated to the final lateral cannot surface due to EXTRAMETRICALITY³).

Iosad (2012) raises several issues worth discussing (and see also the discussion in Torres).

A first issue concerns the different markedness characteristics attributed by Iosad to Friulian obstruents. For his proposal to work, voiceless obstruents have to be more marked than voiced ones (this is the only way they have to resist markedness reduction word-finally). This view is certainly not the most common held view, which sees voiceless obstruents as universally *less* marked than their voiced counterparts. This has to do with the fact that in Iosad theoretical account, markedness hierarchies are not universal (this issue is explicitly discussed in Iosad 2012: 946).

A second issue is somewhat similar to the one raised by Hualde's (1990) proposal discussed above: why is that, in Iosad's (2012) account, only coda voiceless obstruents can support a mora? Recall that in Hualde's (1990) proposal voiced obstruents were the only ones, instead, able to support a mora. This issue is also seen as problematic by Torres-Tamarit (2015: 1379-1381). The point is that there should be an independent and external reason to treat differently, with respect to moraicity, different obstruents based on their laryngeal properties (besides the necessity to account for the data at hand). Even if it is true, at least, that positing voiceless consonants as the only ones able to bear a mora accounts for the observed difference in duration (voiceless consonants being longer than voiced ones), which incidentally is the same point made by Vanelli 2005: 176 while discussing Hualde's 1990 proposal.

A third issue concerns the status of the three-way laryngeal contrast characterising obstruent consonants in Friulian. It is somewhat unclear in Iosad's (2012) discussion whether these three possible obstruents enjoy a similar lexical status, viz. whether they are three different "phonemes" (which seems actually what Iosad is advocating; see for instance Iosad 2012: §4.1.). If so, one obvious question arises: why can unspecified obstruents surface only at the end of a word and not word-initially or word-finally? This does not pose a problem for Iosad's (2012) analysis *per se*, but it requires an explicit discussion.

Besides these three "theoretical" issues just mentioned (on which the "answers" boil down to discussing different theoretical frameworks), a more serious and more problematic one arises from Iosad's (2012) analysis. One of the building blocks of Iosad's (2012)

³ See the discussion in Iosad (2012: 933) about why it is EXTRAMETRICALITY, and not * μ [lat] or * μ [cons] (contrary to what happened with obstruents), that prevents the form $va_{\mu}l_{\mu}$ to surface.

proposal is Baroni / Vanelli (2000) finding of a three-way obstruent distinction word-finally. Iosad (2012) advocates the necessity for the phonology to account to this phonetic distinction, and this raises a serious discussion about the roles of phonetics and phonology with respect to vowel length. In any case, there are at least other two very important findings of Baroni / Vanelli's (2000) study which are never mentioned in Iosad's (2012) discussion:

1. The difference in length between a word-finally devoiced obstruent and a voiceless one is not the only difference in consonant duration found in Baroni / Vanelli's analysis. They also show how voiceless consonants are consistently longer than their voiced counterparts word-internally.
2. Furthermore, the stressed vowel in paroxytonic forms is again consistently and statistically significantly longer before a voiced consonant than before a voiceless one.

These two points are not addressed at all in Iosad's (2012) analysis. And furthermore, as was already said above, he explicitly claims that *there is no difference between stressed vowel before different kinds of obstruents in non-final stressed syllables* (Iosad 2012: 930) which goes directly against the empirical evidence. The obvious way out of this "problem" is to advocate a position where these length facts word internally are not under the purview of phonology, and that they only represent phonetic differences which have no bear on the phonological computation (note that in the quoted passage just reported, Iosad is talking about *phonological* differences, even if not explicitly mentioned, and that in a substance-free framework as the one adopted by Iosad 2012 it would surely be possible to explain these length facts as something having relevance only on the phonetics). Be that as it may, first of all it is an aspect of the length patterns of Friulian that needs to be explicitly discussed at length, and second of all, another point has to be addressed at length. Namely why a seemingly mere phonetic difference between obstruent realisations word-finally has to be accounted for in the phonology, while similar phonetic differences between the length of vowels and consonants word-internally can remain under the purview of phonetics.

4.4. Torres-Tamarit (2015)

Torres-Tamarit's (2015) analysis sees vowel lengthening in Friulian as an active phonological process; his formalisation is couched within a particular version of OT, namely Harmonic Serialism⁴ (henceforth HS).

HS is a variant of OT that combines ranking with serial derivations [...]. GEN in HS generates those candidates that differ from the input by one single operation. The winning candidate is then fed back to GEN as a new input for another round of evaluation. This loop is repeated until the fully faithful parse of the latest input wins. In short, derivations in HS are always gradual and harmonically-improving, and converge when no further harmonic improvement is achievable.⁵

The preliminary assumptions in Torres-Tamarit's (2015) analysis of Friulian vowel length are as follows.

First of all, contrary to Hualde's (1990) account and Iosad's (2012), Torres-Tamarit proposes to represent both voiceless obstruents and devoiced ones (which are the result of voiced consonants undergoing final devoicing) in coda as able to bear a mora. Note that in Hualde's (1990) account only voiced coda obstruents were mora-bearing units; in Iosad's (2012) account, on the other hand, only voiceless obstruents were able to bear a mora. Lacking any independent argument to choose between one or the other, Torres-Tamarit proposes to consider both classes of obstruents as able to bear a mora, solving in some sense the problem already raised in the discussion both of Hualde's (1990) and Iosad's (2012) proposals on the asymmetry of obstruents behaviour regarding their ability to be mora-bearing units.

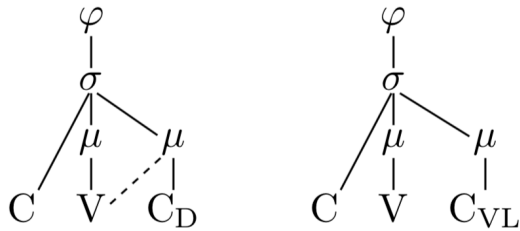
Following this assumption, the surface representations of devoiced and voiceless obstruents are as follows, where a subscript D stands for a devoiced final obstruent, and VL for a voiceless one (Torres-Tamarit 2015: 1358):

⁴ For HS see McCarthy (2010) et seq.

⁵ Torre-Tamarit (2015: 1356).

(12)

Moraic surface representations



As can be seen, vowel lengthening is the result of a mora-sharing configuration: the second mora branches and dominates both the vowel and the final devoiced consonant.

The second preliminary assumption in Torres-Tamarit's (2015) account is that final devoicing is a process that deletes the privative feature [voice] from a voiced final obstruent. The devoiced obstruent is assigned the same representation of a voiceless one. Positing that a voiced consonant undergoing final devoicing ends up having the same configuration of a voiceless consonant also means that Torres-Tamarit interprets final devoicing as complete neutralization. Recall that in Iosad's (2012) account, the voiced Friulian obstruent had no featural specification under the node Laryngeal, and that it was the voiceless obstruents which were characterised by the privative feature [voiceless]. Furthermore, Iosad (2012) considered final devoicing not as an instance of laryngeal neutralization, but as a process of markedness reduction.

Before proceeding with the HS representations proposed by Torres-Tamarit, in what follows I briefly list the constraints used in his analysis, as was done for Iosad 2012 (adapted from Torres-Tamarit 2015: 1358-1360):

PROSODICWORDHEAD (PWDHD): assign one violation mark for every prosodic word without a head metrical foot.

DEPPROMINENCE (DEPPROM): assign one violation mark for every metrical prominence in the output that is not present in the input.

WEIGHTBYPOSITION (WBP): assign one violation mark for every coda consonant that does not project a mora

***C μ :** assign one violation mark for every head of a mora that is a consonant.

FOOTBINARITY μ (FTBIN μ): assign one violation mark for every foot that does not contain at least two moras.

PARSESEGMENT (PRSESEG): assign one violation mark for every segment that is not associated with a syllable or a higher-level prosodic constituent.

NOVOICEDCODA (NOVCDC): assign one violation mark for every voiced obstruent in coda position.

MAX([voice]) (MAX([vc])): assign one violation mark for every feature [voice] in the input that has no correspondent in the output.

***[voice] (*[vc])**: assign one violation mark for every feature [voice] in the output.

DEP μ : assign one violation mark for every mora in the output linked to a non-positionally μ -licensed segment that has no correspondent in the input⁶.

DEPLINK (DEPLK): let s_1 be a segment in the input in correspondence with S_2 in the output: and let μ_1 be a mora in the input in correspondence with μ_2 in the output. Assign one violation mark for every μ_2 -to- S_2 link in the output that has no μ_1 -to- S_1 link correspondent in the input.

Having listed the constraints employed by Torres-Tamarit (2015), we can now move on with the derivation. Following Torres-Tamarit (2015: §3.5.1.), I start by presenting the derivation that interests the forms with a voiced final obstruent like /lad/ that surfaces with a long vowel as in [la:t].

The first step of the derivation is represented in the following tableau (from Torres-Tamarit 2015: 1362):

(13)

Step 1

/lad/	NOVCDC	PWDHD	FTBIN μ	PRSESEG
a.			*	*
b.		*W	L	L
c.	*W		L	L

As can be seen, there are different operations available at the first step. One is to project a foot, as candidate (c) shows; however, in this way candidate (c) fatally violates NOVOICEDCODA. Another possibility is to devoice the final consonant, as shown by

⁶ And see Torres-Tamarit (2015: 1360) for the discussion of the concept of *positionally μ -licensed*.

candidate (b), but since devoicing cannot co-occur with foot projection (see Torres-Tamarit 2015: 1356-1357), candidate (b) fatally violates PROSODICWORDHEAD (no foot is projected). Winning candidate (a) satisfies both NOVOICEDCODA (leaving the final voiced obstruent unparsed) and PROSODICWORDHEAD (by projecting a foot).

The second step of the derivation is shown below (from Torres-Tamarit 2015: 1362-1363):

(14)

Step 2

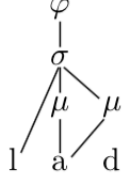
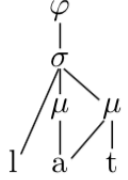
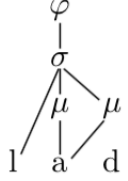
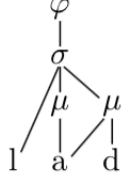
	NoVcDC	PWdHD	DEPLK	FTBIN μ	*C μ	PRSESEG	DEP μ
a.						*	*
b.					*W	L	L
c.				*W		*	L
d.		*W				*	L

At this second step, the winning candidate (a) is the one that lengthen the vowel. This is the optimal option to satisfy both FOOTBINARITY μ and *C μ (fatally violated by candidate (c) and candidate (b) respectively, while candidate (d) is ruled out by PROSODICWORDHEAD after deleting the foot).

The third step of the derivation is as follows (from Torres-Tamarit 2015: 1363):

(15)

Step 3

	NOVCDC	PRSESEG	MAX([vc])
a. 			*
b. 		*W	L
c. 	*W		L

At this third step of the derivation, both final devoicing and parsing the final obstruent apply (syllabification is not subject to gradualness, as opposed to stress assignment, see Torres-Tamarit 2015: 1356-1357). Candidates (a) in fact satisfy both PARSESEGMENT and NOVOICEDCODA (fatally violated by candidate (b) and candidate (c) respectively).

The derivation converges at the fourth step because no further harmonic improvement is available (from Torres-Tamarit 2015: 1364):

(16)

Step 4: convergence

<p>A phonological tree with root φ and child σ. σ has three children: μ, μ, and μ. The first μ has child l. The second μ has child a. The third μ has child t.</p>	NoVcDC	*C μ
a. <p>Identical to the first tree, but the node a is circled.</p>		
b. <p>Identical to the first tree, but the node t is circled.</p>		*W
c. <p>A phonological tree with root φ and child σ. σ has three children: μ, μ, and μ. The first μ has child l. The second μ has child a. The third μ has child d.</p>	*W	

The derivation just shown accounts for the surfacing form [la:t] from the underlying form /lad/. This is obtained firstly through leaving unparsed the final voiced obstruent, and then by word final devoicing and contextual vowel lengthening (due to the pressure to build a bimoraic foot).

Now, the derivation of a form with a final voiceless form such as /lat/, which surfaces as [lat], with a short vowel, is shown (from Torres-Tamarit 2015: 1364-1365):

(17)

Step 1

/lat/	WBP	NoVCD C	PWDHD	FTBIN μ	*C μ
<p>a. \varnothing l a t</p>					*
<p>b. l a t</p>				*W	L
<p>c. l a t</p>	*W			*W	L

At the first step, winning candidate (a) satisfies WEIGHTBYPOSITION, NOVOICEDCODA, PROSODICWORDHEAD and FOOTBINARITY μ at once. Therefore, the derivation converges already at the second step (from Torres-Tamarit 2015: 1365):

(18)

Step 2: convergence

<p>a. \varnothing l a t</p>	DEPLK	*C μ
<p>b. l a t</p>	*W	L

As can be seen, with a following underlying voiceless consonant, vowel lengthening is not possible, as candidate (b) shows, due to the violation of DEPLINK (so this is the reason why, in Torres-Tamarit's 2015 account, one does not get any long vowel before an underlying voiceless obstruent).

Having seen how Torres-Tamarit (2015) accounts for vowel length patterns before obstruent consonants, I will now show the representations he proposes for the forms which

have a final sonorant, and in particular for the forms ending with a lateral like [va:l] ‘valley, f.’ ~ [val] ‘it is worth’; [mi:l] ‘honey, m.’ ~ [mil] ‘one thousand’.

In order to do this, two more constraint need to be described (see Torres-Tamarit 2015: 1368):

FAITHFULNESS(extrametricity) (FAITH(extramet)): assign one violation mark for every lexically extrametrical consonant that is parsed below the foot.

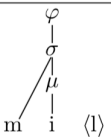
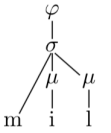
EXHAUSTIVITY (EXHAUST): assign one violation mark for every constituent C_i that immediately dominates a constituent C_k , $k < i - 1$.

To account for vowel length before laterals, Torres-Tamarit (2015: 1368) proposes that in this case too, the responsible factor for the lengthening of the vowel is the need to satisfy FOOTBINARITY μ , as in the obstruent cases just presented. Therefore laterals need to be temporally unparsed too, and this cannot be done by NOVOICEDCODA this time, because laterals (as all other sonorants) are not specified for laryngeal features. Torres-Tamarit proposes that *laterals triggering vowel lengthening are specified in the lexicon as extrametrical*. It is the lexicon this time, and not the derivation (as in the case of voiced obstruents), that leaves the final consonant unparsed, therefore requiring the vowel to lengthen to satisfy FOOTBINARITY μ . From this, it follows that the lateral in the forms that display a short vowel has to be parsed in coda position (like the voiceless obstruent of the form /lat/), therefore it is not specified as extrametrical in the lexicon.

The derivation of the form that surfaces with a long vowel [mi:l] proceeds as follows (from Torres-Tamarit 2015: 1368-1369):

(19)

Step 1

/mi(l)/	FAITH(extramet)	FOOTBIN μ	PRSE \bar{G}
a. 		*	*
b. 	*W	L	L

At step 1 of the derivation, the constraint FAITHFUL(extrametricity) just described, is responsible for leaving the lateral unparsed in word final position (while candidates (b) fatally violates it). At the same time a monomoraic foot is built. Note that this passage is fundamental to obtain a long vowel at the end of the derivation: the lateral consonant has to remain unparsed until FOOTBINARITY μ requires the creation of a bimoraic foot and the consequently lengthening of the vowel. This is what happen at step 2 of the derivation:

(20)

Step 2

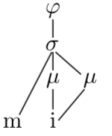

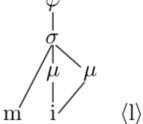
		FAITH(extramet)	FOOTBIN μ	PrsSEG	DEP μ	EXHAUST
a.			*	*		
b.			*W	*	L	
c.			*W	L	L	*W

As just said, the winning candidate (a) satisfy FOOTBINARITY μ by lengthening the vowel, while candidate (b) fatally violates it (since it does not build a bimoraic foot) and candidate (c) violates both FOOTBINARITY μ (since it does not build a bimoraic foot either) and EXHAUSTIVITY (which prohibits skipping of prosodic constituents, as it is the case for the unparsed *l*).

Finally, the lateral consonant gets parsed in the third and last step of the derivation, being adjunct to the prosodic word node, as in the case of the winning candidate (a):

(21)

Step 3

	FAITH(extramet)	FOOTBIN μ	PRSSSEG	DEP μ	EXHAUST
<p>a. $\text{m} \text{ i}$</p> 					*
<p>b. $\text{m} \text{ i}$</p> 			*W		L

As Iosad (2012), Torres-Tamarit (2015) too place the burden of vowel lengthening in the case of laterals on some characteristic of the consonant following the vowel (with the differences between the two approaches just seen). In Torres-Tamarit's (2015) proposal in fact, vowel lengthening arises iff the following lateral consonant is specified as extrametrical in the lexicon.

Concluding the presentation of Torres-Tamarit's (2015) proposal, two points are worth discussing. First of all, as already been said, positing that both voiceless and voiced coda consonants can surface as mora-bearing units solve the "asymmetry" problem faced by Hulade (1990) and Iosad (2012) in deciding whether it was the voiceless or the voiced consonant able to support a mora. But this would also mean, since moras are timing units, that the two consonant should have the same length, which is not borne out by the phonetic literature on Friulian obstruents (voiced obstruents being significantly shorter than voiceless ones).

This is closely related to the second point I wanted to discuss, namely final devoicing. While in Iosad's (2012) account the devoiced consonant had a different configuration than the voiceless one (building on the findings of Baroni / Vanelli 2000), in Torres-Tamarit's (2015) account, final devoicing is seen as an instance of complete laryngeal neutralization, with the devoiced consonant having the exact same representation as a voiceless one. Again, this is not borne out by the phonetic findings about final devoicing of Baroni / Vanelli (2000). It is clear that the issue at hand is one of interface between phonetics and phonology, and of which phonetic characteristics one wants to implement into the phonological computation.

In Torres-Tamarit's view, the phonetics differences found between devoiced and voiceless consonants, for instance, are not part of the phonology of Friulian (on which see also Torres-Tamarit's 2015: §5.2. discussion on van Oostendorp 2008 Turbidity Theory model to possibly account for incomplete neutralization).

4.5. Vanelli (2005)

In Vanelli's (2005) account, Friulian vowel length is seen as an active synchronic property of Friulian phonology. In particular, Vanelli posits a strong relation between the process of vowel lengthening and the process of final obstruent devoicing (both processes, as just said, synchronically active in Friulian phonology). In her view, vowel lengthening is caused by the process of obstruent final devoicing (which, recall, is the basis for Vanelli's 2005; 1979 account of the diachronic path of the origin of vowel length too), and no reference to moras or feet is present in her analysis (differently than basically any other study just revised in this chapter), which is couched in a classical generative model of phonology.

Vanelli (2005) discusses different ways to account for the relation between vowel length and phonology, proposing finally a "reinterpretation" of phonological contrasts to better account for the phenomenon at hand.

First, Vanelli (2005: 186-189) discusses a formalisation of vowel lengthening in a classical model of generative rule-based phonology. To account for vowel lengthening before obstruents, two rules are needed, one that accounts for the lengthening of the vowel before an underlying voiced obstruent, and another that would account for the process of final devoicing.

Note that the two rules have to be applied in a specific order (viz. first final devoicing and then vowel lengthening) otherwise one would get the wrong surface form. In particular, as can be seen from the derivation just shown, final obstruent devoicing counterbleeds vowel lengthening (in fact, in the reverse order – a bleeding one – final devoicing, applying first, would destroy the environment for the application of the vowel lengthening rule), and this is the reason why the relation between vowel length and final devoicing is often referred to as *opaque* (in the terms of Kiparsky 1971).

The formalisation just presented correctly accounts for the empirical data but presents, as Vanelli (2005: 188) herself points out, a rather unsatisfying aspect. In the derivation just shown, the lengthening rule only mention the presence of a following voiced consonant to

apply. The consonant then gets devoiced by the second rule, which has, however, no formal connection with the first rule, and this is not the result Vanelli wanted to achieve:

It would be desirable to connect the two processes, if one wants to account for the fact that long vowels are not simply found before phonological voiced consonants that get then devoiced on the surface by another rule, but that they are found before *devoiced* consonants [...]: the goal would be to find a way to account for the intuition that vowel lengthening could be interpreted as a sort of “compensation” for the loss of voicing of the consonant at the surface level.⁷

There is another problem arising from such an analysis.

While it is true that the lengthening rule as stated above correctly describes and predicts the lengthening patterns shown by Friulian, it also completely arbitrary in its formulation, in that there is no causal relationship between the output of the rule and its environment (it is, then, too powerful of a formalisation). I will discuss this at length in the next chapter, where it will constitute the starting point for the formalisation I will propose.

Having discussed a possible formalisation in a classic generative model of phonology, Vanelli (2005) then takes into account the findings of Baroni / Vanelli (2000), to try to solve the missing link between vowel length and final devoicing.

The main aspect emerging from the phonetic study of Baroni / Vanelli (2000) discussed in Vanelli (2005) is that, contrary to what previously assumed, final devoicing does not cause a complete neutralization in word final position. In particular, the devoiced consonant, even if it does not present any trace of vocal folds vibration, it stays shorter than a real voiceless consonant.

Building on this, Vanelli (2005: 191-192) proposes a possible rule that would lengthen a vowel before a word final short consonant (viz. a devoiced final consonant). Such a formalisation would avoid the opacity characterising the previous account, since there is now a direct link between the length of the vowel and the length of the following consonant (with the vowel staying short before a long, viz. voiceless, consonant and getting lengthened before a short, viz. devoiced, consonant).

⁷ “[S]arebbe desiderabile collegare tra di loro i due processi se si vuole render conto del fatto che le V: non si trovano semplicemente davanti a C sonore fonologiche, che poi un'altra regola rende sorde a livello superficiale, ma a C *desonorizzate* [...]: si vorrebbe insomma trovare il modo di rendere conto dell'intuizione che l'allungamento della V si potrebbe interpretare come una sorta di “compenso” per la perdita di sonorità della C a livello superficiale.” (Vanelli 2005: 188).

But, as Vanelli (2005: 192) further argues, this does not solve the problem either. Connecting the process of vowel lengthening with the duration of the following consonant does not explain why the vowel is lengthened only before a short *and devoiced* consonant. Such a formalisation does not explain why we find a long vowel before a final short consonant like in [la:t], while in ['lade], where the following consonant has basically the same duration, the vowel is not lengthened. The goal would be to account for the fact that a long vowel is found before a devoiced *and* short consonant, explaining at the same time this “two-fold” connection.

There is also another and more serious problem that arises from such a formalization. In such an account, there would be a lengthening rule of the vowel before a short final consonant. The problem is that the lengthening rule pertains to phonology, while the duration of the consonant pertains to phonetics, and phonology should not be able to refer to low phonetics characterisations of segments. Recall, in fact, that Iosad (2012) does introduce the same finding about incomplete neutralisation word-finally, but he has to offer a different *phonological* representation of the devoiced consonant to take it into account in the phonology. So, either one gives a *phonological* representation able to distinguish between a three-way laryngeal contrast (voiceless - voiced - devoiced) or there cannot be a reference to the phonetic duration of the following consonant in the phonological rule of vowel lengthening.

Finally, seen that neither the classical account nor the one based on the phonetic findings was able to account for the connection between the process of vowel lengthening and the process of final obstruent devoicing, Vanelli (2005: 193-195) proposes a “functional” approach, based on a slightly different view of phonological contrasts.

In word internal position, the contrast between two forms such as ['dade] ‘given, f.’ vs ['date] ‘date’ is based on the phonological feature of [\pm voice]. There are, though, other phonetic differences that enhance the contrast, such as the duration of the consonant (the voiceless consonant being longer than its voiced counterpart) and the duration of the vowel (the vowel is longer before a voiced consonant than before a voiceless one). What happens when the voiced consonant find itself at the end of the word? While it is true that the voicing properties of the consonant are deleted, the contrast is still present, and the laryngeal neutralization is not complete. In particular, the same phonetic differences that enhanced the contrast in word internal position are still present in word final position. At this point, the difference in length of the vowel, which was just a phonetic difference in word internal

position, gets “promoted” to phonologically relevant at the end of the word, restructuring the contrast that cannot be based anymore on the voicing of the consonant.

Since in word-final position the contrast cannot be based on the difference in voicing as in word-internal position, one of the phonetic “traits” that in word internal position enhanced the contrast, becomes phonological in word final position (and this would also be the reason why the vowel is much longer in the last syllable).

As Vanelli (2005: 198) concludes:

It is still just a sketched account, which requires more investigations mostly about the crucial topic [...] of the relationship between phonetic conditioning properties and phonological interpretation; of the relationship, in other words, between phonetic substance and its linguistic use.⁸

This will be exactly the starting point of the analysis presented in the next chapter.

One last thing has to be said about Vanelli’s (2005) account of vowel length. While her formalisation can work for the contexts constituted by the obstruents, it cannot possibly work for forms such as [va:l] ‘valley, f.’ ~ [val] ‘it is worth’; [mi:l] ‘honey, m.’ ~ [mil] ‘one thousand’, i.e. the forms with a sonorant (lateral) consonant. For these contexts, in fact, no final devoicing process can be posited and therefore vowel length has to be explained in a different way. As was seen for the other approaches revised above (although with obvious differences between one approach and the other), Vanelli too proposes that in these cases a reference to the lexicon is necessary. In particular, Vanelli (2005) proposes that in these cases vowel length has to be represented in the underlying form, and it cannot be derived like in the obstruents cases.

On this aspect of the debate I turn now in the following paragraph.

⁸ “Si tratta di un’impostazione che si presenta ancora in uno stato di abbozzo, che richiede ulteriori indagini soprattutto per quanto riguarda la questione cruciale [...] del rapporto tra condizionamenti fonetici e interpretazione fonologica, del rapporto cioè tra la sostanza fonica e la sua utilizzazione a fini linguistici.” Vanelli (2005: 198).

4.6. Lexicon vs. Derivation

The main problem about the interpretation of the status of vowel length arises from a situation like the following (where not differently specified, the following examples are from Friulian)⁹:

(22)

[la:t] ‘gone, m.’ ~ [ˈlade] ‘gone, f.’

[lat] ‘milk, m.’ ~ [ˈlate] ‘she breastfeeds’

(23)

[va:l] ‘it is worth’ ~ [val] ‘valley, f.’

[anˈda:] ‘went’ ~ [anˈda] ‘to go’ (Milanese)

[ˈve:der] ‘glass, m.’ ~ [ˈveder] ‘to see’ (Cremonese)

Varieties like Friulian show different patterns regarding vowel length.

In the contexts exemplified in (22) (viz. the contexts characterised by an obstruent¹⁰), vowel length *is completely predictable* (based on different factors according to different scholars).

On the other hand, in the context exemplified in (23), *no predictability is possible* (since everything stays the same but the length of the vowel).

Among scholars, there is no doubt that vowel length plays a role in the phonology such varieties. The topic of the debate is *where* in the phonology it plays that role.

There are (at least) two possible answer to this question: one that posit vowel length as part of the lexicon, pertaining therefore to the phonological inventory of one particular variety; the other that sees vowel length not as underlying but as a derived property, through some phonological computation (and it is not important in this case if we are talking about rules or constraints or something else: the common core is that vowel length can be derived).

Loporcaro (2015) strongly advocates the first position:

⁹ I follow here the presentation of the argument as found in Iosad 2016: 219, where Friulian is taken as example too.

¹⁰ Keeping in mind that affricate constitute a special case that has to be accounted on its own.

The view defended here is much more traditional: [vowel length] in these dialects is contrastive at the surface, and hence must be encoded underlyingly as a /V:/ vs /V/ contrast.¹¹

It is as “simple” and as straightforward as this for Loporcaro. Vowel length is contrastive at the surface therefore must be encoded in the lexicon. And this is how usually things are done: in Italian [t] and [d] create contrasts at the surface (e.g. [ˈdato] ‘given, m.’ vs [ˈdado] ‘dice’) hence this contrast can be and must be encoded in the lexicon and in the phonological inventory of Italian. Note that, however, usually contrastive lexical properties are not predictable, while Friulian vowel length, for instance, has a predictability to it.

One consequence of Loporcaro’s (2015) synchronic proposal is that two forms as [la:t] ‘gone, m.’ ~ [ˈlade] ‘gone, f.’ cannot be derived from the same lexical input, since vowel length is underlying and different for the two forms. The underlying representations of such forms in an account that sees vowel length as underlying would be something like /la:d/ (assuming one wants to account for obstruent final devoicing as an active process) ~ /lade/¹².

The main argument of Loporcaro’s (2015) account is that the approaches that see vowel length as a derived property, are not able to cope with the facts exemplified in (23), since in these cases no derivation is possible¹³. Therefore, it is easier and more economical to posit vowel length in the underlying forms because this would allow us to account for the entire distribution of long vowels. Once vowel length became contrastive due to the phonologization of Proto-Romance open syllable lengthening process, then it became underlying everywhere, even in those position where it is synchronically predictable and derivable by rule.

Here instead I take the view expressed by Iosad (2016: 220), in viewing *no contradiction between accepting Loporcaro’s (2015) account of the diachronic development of vowel length in Romance and postulating a synchronic rule of lengthening to account for alternations such as those in (2) [22 above]*.¹⁴

¹¹ Loporcaro (2015: 138).

¹² As Iosad (2012: 227) points out.

¹³ The case of laterals is a bit different than the other two, as we have seen for Iosad (2012) and Torres-Tamarit (2015), where some derivation is still possible. In any case, even if some derivation is possible, there are nonetheless some properties of these forms that must be encoded in the lexicon. The situation is, therefore, very different from the obstruents contexts.

¹⁴ As I stated in chapter 3, I do not espouse Loporcaro’s (2015) diachronic account completely, but this has no relevance here.

Iosad (2016) argues that one language such as Friulian can display at the same time both underlying vowel length *and* a synchronic rule of vowel lengthening. Specifically, he resorts to the concept of *rule scattering*¹⁵. This notion is related to the theory of the life cycle of phonological processes¹⁶: phonological patterns start at the postlexical level and then reach the lexicon (entering, therefore, the underlying phonological representations), through the word and the stem level. What is crucial is that there is no need for a phonological process to stop existing at one specific level when it reaches the next. As Iosad (2016: 225) argues, *it is quite common for cognate patterns to exist at several levels of the grammar simultaneously, even though the details in the different strata may differ*.

For vowel length, this means that it is not strange to find in one variety that vowel length is, at the same time, part of the lexicon and result of a derivation process (whatever the formalisation one wants to use).

¹⁵ See for instance Robinson (1976), Cohn (1998), Bermúdez-Otero (2015) and Iosad (2016) for other literature on this topic.

¹⁶ See references in Iosad (2016: 225) for the theory of life cycle.

5. Friulian's Structure of Length

First of all, let us start the analysis of Friulian length patterns within the framework of GP 2.0 by repeating the “revised” transcription (as seen in §2.3. above), which is at the base of the following phonological account¹:

[**lat::**] ‘milk’ [**ˈlat:e**] ‘she breastfeeds’ [**ˈla:de**] ‘gone f.’ [**la::d̥**] ‘gone m.’

As discussed in §2.3., I take alveolar stops (viz. /t:/ and /d/) as representatives for *all* possible places of articulation of stops (since alveolars present the most stable and large pattern).

Fricatives will be discussed separately, and to exemplify the same pattern we find for stops, the following transcriptions are given (again, alveolars are taken as representatives, to make structure comparison between stops and fricatives easier):

[**nas::**] ‘she is born’ [**ˈnas:i**] ‘to be born’ [**ˈna:ze**] ‘she sniffs’ [**na::z̥**] ‘nose’

Before starting with the presentation of the structures I propose for stops and fricatives, two more premises are in order, which constitute the bases the structures below will be built on.

The first premise has to do with the properties of the element |L|, which represents voicing in obstruent projections. In particular, it makes explicit where |L| is placed within an onset projection. What I want to propose is the following²:

¹ In what follows I am not going to analyse Friulian *bee*-type structures because they do not present phonological relevant aspect as regarding vowel length (see discussion above for long vowels in absolute word-final position). I am not going to discuss affricates and *bid*-type sonorant structures either. For affricates there are no phonetic data on which to base an analysis, and there are also no GP 2.0 structure proposals to represent them to the best of my knowledge. There is also lack of phonetic data and no agreement between scholars in the case of sonorant duration in *bid*-type sonorant structures, while there is some consensus on the phonetic transcription of *Libby*-type sonorant structures, that in fact will be discussed.

² The properties of |L| as the voicing element and its place in onset structures have not been thoroughly analysed yet within GP 2.0 literature (but see Kaye / Pöchtrager 2017). There seems to be nonetheless a consensus that |L|, when responsible for voicing, occupies the highest unannotated x-slot of an onset projection (see Kaye / Pöchtrager 2017; Živanović 2017: 1, note 3).

(1)

When |L| represents voicing, it has to occupy the highest x-slot of an onset structure.³

This obviously apply only to obstruents, since they are the only segments contrasting for laryngeal properties such as voicing. Before giving some examples, let me state the second premise. This has to do with the kind of onset structures we can find in Friulian. What I want to propose for Friulian is the following:

(2)

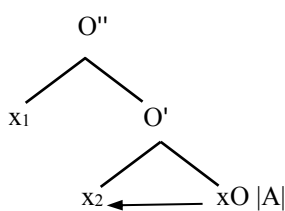
Friulian only has *lenis* onset structures in its phonological inventory.

Differently to what has just been said for the first premise, this second premise does not apply only to obstruents, but also to sonorants, because being *fortis* or *lenis* has to do with the m-command of the highest unannotated x-slot (among sonorants, rhotics are excluded from this since they do not project and therefore no *fortis* / *lenis* distinction is possible).

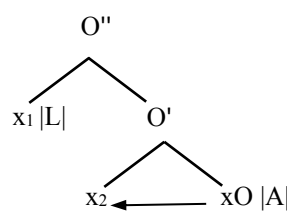
Before discussing the two premises just made, let us look at some examples for stops and fricatives:

(3)

a. *lenis* voiceless stop /t/

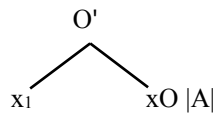


b. *lenis* voiced stop /d/

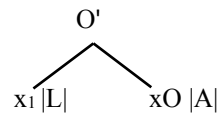


³ I take a different view than Kaye / Pöchtrager (2017), where they argue that |L| would be present only in stops since it sits in the specifier position (which fricatives, projecting only up to O', do not have). From a phonetic point of view, in Friulian the vibration of the vocal cords is visible in the spectrogram of both a voiced stop and a voice fricative. Furthermore, from a phonological perspective, they behave exactly like stops (as we will see). This being said, it is also possible that there are languages like Friulian with voiced stops and voiced fricatives and languages like Hungarian (as analysed by Kaye / Pöchtrager 2017) with voiced stop and a contrast of *fortis* vs *lenis* fricatives.

c. *lenis* voiceless fricative /s/



d. *lenis* voiced fricative /z/



As stated in (1), |L| sits in the highest unannotated x-slot both in stops and in fricatives. Note that in both cases, this x-slot is, correctly, x_1 , which represents in both type of structures the x-slot right below the maximal projection. In the case of stops it is the specifier of xO; in the case of fricatives it is the complement of xO.

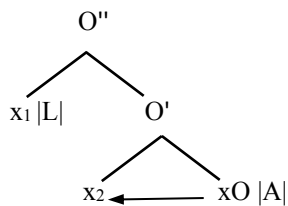
The examples above also show what have been stated in (2), viz. that Friulian only allows for lenis configurations in its phonological inventory.

Having seen some examples of Friulian stops and fricatives, a comment on the two premises presented above is now in order.

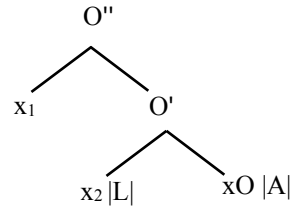
First of all, (1) states that |L| sits in the highest unannotated x-slot of an onset projection. This gives us right away a different representation of a *lenis* voiced stop and a nasal (which also contains the element |L|, responsible for nasality):

(4)

a. *lenis* voiced stop /d/



b. *lenis* nasal /n/



As was said before, (2) applies to every projecting onset structure, not only in the case of stops and fricatives. This means (as the example of /n/ shows) that, since Friulian only admits lenis configurations, nasals to have to be lenis.

Note also that in both structures of /d/ and /n/, |L| annotates a non-head position. The crucial difference is that in the case of |L| representing voicing, that position is the highest of the structure; in the case of |L| representing nasality, the element annotates the complement of xO, viz. the lowest unannotated x-slot.

This gives us also an interesting prediction about fricatives. Since fricatives project only to O', no possible distinction between highest and lowest x-slot is possible. Fricatives only have a complement, viz. x_1 . When this complement is annotated by |L|, it gives us a voiced fricative. This would also mean that no nasal fricative is possible (since |L| can only represent voicing when sitting in x_1 in a one-layered structures), which is correct⁴.

Assuming that |L|, when responsible for voicing, sit in the highest position of a projecting onset structure also has a welcome result for the discussion on the process of final devoicing, that will be addressed later.

As for the second premise expressed in (2), which states that Friulian only has lenis structures in its phonological inventory (viz. in its lexicon), this does not mean that a fortis structure cannot surface as the output of the derivation, and indeed we will later see that fortis structures do surface⁵. The difference being that they are not present in the underlying level (like in English).

On a more general level, I want to propose that this assumption made for Friulian tells us something about how languages behave with respect to laryngeal properties, and specifically it is related to the distinction between L-languages and H-languages (see for instance Scheer 2015; Cyran 2014; Backley 2011: 124-158; Harris 1994; Kaye / Lowenstamm / Vergnaud 1990). L-languages display voicing as an active phonological property (Romance languages are taken as an example of L-languages) while H-languages (e.g. English or Mandarin Chinese) display aspiration as the active property (the discussion is obviously more complex than what just stated; see previous references), and there are more complex systems in some languages that can manipulate both properties.

After the H element has been replaced by structure, this distinction has to change too. I want to reinterpret it in these terms: with H gone, there are now languages (previously referred as L-languages, like Friulian) that can only manipulate the presence or absence of |L| at their lexical level, but not the alternation between *fortis* and *lenis* (in fact, in Friulian all onset projections are *lenis*). And there are languages (previously referred to as H-languages) that can manipulate the alternation between *fortis* and *lenis* structure at their lexical level, but that do not possess |L| in their phonological inventory (and, as before, there

⁴ The same prediction is made in Kaye / Pöchtrager (2017), although in a different fashion.

⁵ See Pöchtrager's (2006: 229-242) discussion on Italian, where it said that Italian onsets can never be fortis (Pöchtrager 2006: 239). This could now be reinterpreted as Italian having, like Friulian, only lenis structures in its phonological inventory and not admitting *fortis* structures even at the surface level (unlike Friulian).

are languages that can manipulate both properties, possessing more complex contrasts based on laryngeal properties).

Friulian is an L-language. This meant that it did not have the element H in its phonological inventory. With H gone, being an H-language for Friulian means that it cannot have a distinction between *fortis* and *lenis* at its lexical level, and this is why Friulian only have *lenis* structures⁶.

Now that we have stated these two premises, we can move on with the analysis of Friulian structures, starting from Friulian *bid*-type structures where the onset projection following the domain head is either a stop or a fricative (sonorants will be discussed later).

5.1. Friulian *bid*-type Structures

As reported above, the *bid*-type structures we want to account for in Friulian are exemplified by the following forms:

[lat::] ‘milk’ **[la::ɫ]** ‘gone m.’
[nas::] ‘she is born’ **[na::z]** ‘nose’

I want to propose that Friulian has the following condition on domain heads regarding *bid*-type structures (we will see later that this condition will need to be revised):

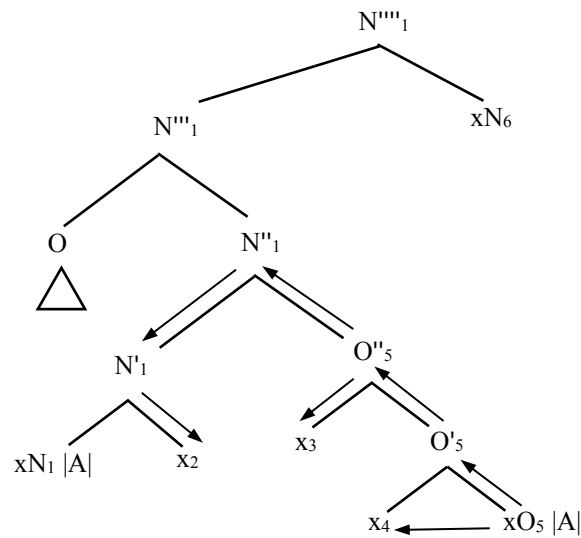
(5) Condition on Domain Heads in Friulian (to be revised)

A Friulian domain head in a *bid*-type structure must expand into a c-expansion.

Let us see this condition in play right away presenting the structure for **[lat::]** ‘milk’.

⁶ Future research will show if this new interpretation of the difference between L and H-languages has merit. For now, Friulian has been said to possess only *lenis* structures. Nothing prevents at this stage an L-language possessing only *fortis* structures and only further research can show whether it is necessary for an L-language to have only *lenis* structures in the lexicon or L-languages can simply not have a distinction based on *fortis* / *lenis* alternations (expecting to find, then, L-languages with only *fortis* onsets).

(6) [lat:]

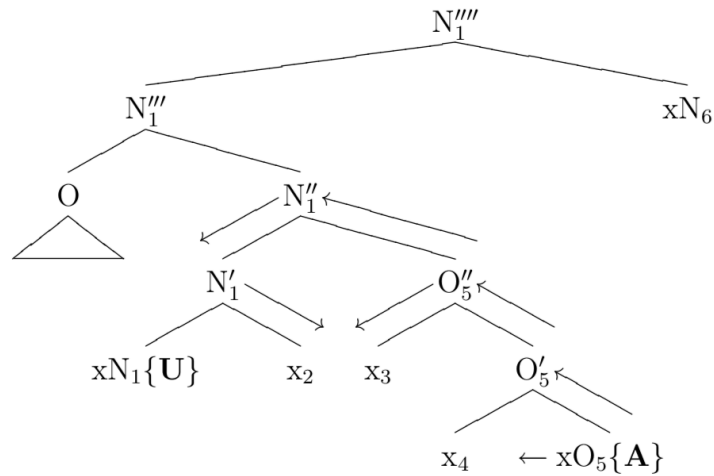


As can be seen in this structure, xN_1 expands into a c-expansion as required by the condition on domain heads in Friulian stated above. xO_5 represents an underlying *lenis* voiceless stop (no |L| is found in x_3 position). Since it m-commands two points, namely x_3 and x_2 , it surfaces as an extra-long onset (note that *lenis*, *fortis* and extra-long are three different structural configurations and therefore, for instance, banning a *fortis* configuration in certain positions *does not mean* banning an extra-long configuration in that same position, since they are two different objects). This structure also represents an instance of transgression (the notion of transgression will be discussed at length in what follows).

This Friulian structure represents a perfect parallelism with the Estonian form [jud:] ‘story’, which have the exact same resulting structure (melody aside), reported below (from Pöchtrager 2006: 148):

(7)

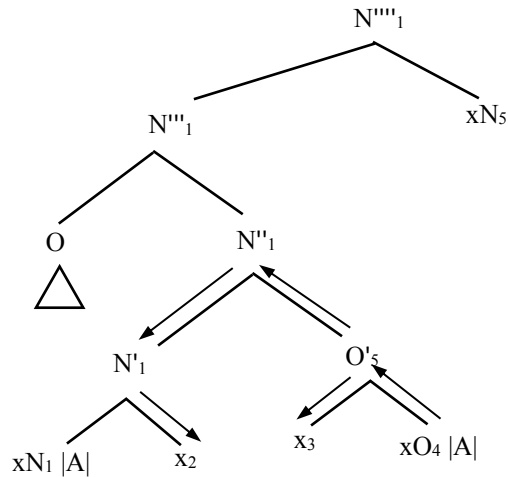
jutt jud:: ‘story’



In Estonian too xO_5 m-commanded two unannotated x-slots, resulting once again in an overlong onset configuration.

In the representation below, the structure for the form **[nas::]** ‘she is born’, that contains an overlong voiceless fricative, is given:

(8) **[nas::]**



As expected we see another instance of transgression, with xO_4 m-commanding two unannotated x-slots, namely x_2 and x_3 . Here too xO_4 represents an underlying *lenis* voiceless fricative that surfaces as extra-long. Note that nothing changes in terms of the relations between structural nodes between the structures of **[nas::]** and **[lat::]**: in both cases the head

of the onset projection m-commands two unannotated x-slots resulting in an overlong onset configuration. The difference (beside the first consonant of the two forms) is that while [la:t:] presents, at the end of the derivation, a final extra-long voiceless stop, [nas:] presents a final extra-long voiceless fricative.

Before presenting the structures for the forms of [la:t:] ‘gone m.’ and [nas:] ‘nose’, one point has to be made explicit, and exactly what obstruent final devoicing looks like in the model I am proposing.

As is usually assumed, I described final devoicing in the following way:

(9) Final Devoicing

Final devoicing consists of |L|-deletion in word-final position.

This means that an underlying voiced obstruent will surface as voiceless in absolute word-final position.

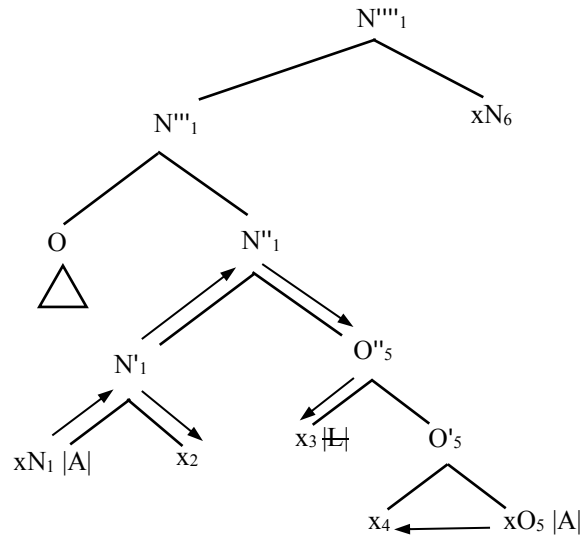
There is, nonetheless, another point that has to be addressed after having described final devoicing as |L|-deletion in word final position. In fact, voiced obstruents are not the only segments containing |L| in their structure. |L| is also found in nasal consonants, where it does not represent voicing, but it represents nasality. If final devoicing is characterised as |L|-loss, there is nothing in principle that would exclude nasals from being affected by this process too. What I want to propose here is that it is |L| positioning that exclude nasals from undergoing |L|-loss word finally. In fact, within nasal segments, |L| sits *in the lowest* unannotated x-slot of the configuration (see the representations of /d/ and /n/ above) and it is, therefore, to deep down in the structure to be affected by final |L|-loss (which is what final devoicing is)⁷.

With this in mind, I now present the structures of [la:t:] ‘gone m.’ and [nas:] ‘nose’. In these structures, the final onset projection represents an underlying *lenis* voiced onset. To make final devoicing more explicit, the element |L| is still represented as barred in the structures, so to show the position it occupied and the action of final devoicing.

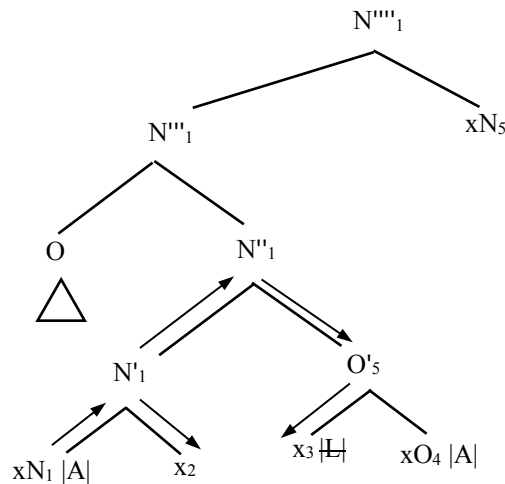
⁷ At this stage this argument is still stipulative, and a more refined characterisation of different structural positions and the effect they have on melody is needed. The argument just made, nonetheless, represents a first step in this direction.

(10) [la::d] and [na::z]

a. [la::d]



b. [na::z]



As was said before for the structures of [lat::] and [nas::], here too the only difference (first onset aside) is that the final onset configuration is an underlying *lenis* voiced stop in the case of [la::d] and an underlying *lenis* voiced fricative in the case of [na::z]. The relations between structural points do not change.

First of all, in these configurations final devoicing applies, deleting [L]. This results in an unannotated x_3 slot that must now be licensed, since it is not annotated by melody anymore. Therefore, xN_1 , viz. the domain head, has to m-command not only x_2 , but also the by now unannotated x_3 slot (the reason why x_3 cannot be licensed by xO_4 will be discussed in a

moment). In this way, x_3 is m-commanded and therefore licensed, and xN_1 results in an extra-long vowel, since it m-commands two unannotated x-slots. Note that in these structures too we can find an instance of transgression, this time going top-down (from the domain head into the onset projection), while in the structures of **[lat::]** and **[nas::]** transgression was bottom-up (from within an onset projection to the domain head).

It is the first time we have a non-arbitrary connection between obstruent final devoicing and the extra-length of the preceding vowel⁸.

|L|, as every other element, occupied a structural position (in particular, the highest unannotated x-slot of an onset configuration). When final devoicing applies, |L| gets deleted and, as a result, a previously annotated x-slot becomes unannotated (and therefore in need of licensing). Deleting |L| means freeing up structural space (viz. length!) that must be occupied. This structural space gets taken up by the domain head, that m-commands it. Taking up structural space by means of m-command means becoming longer, since structural space *is* length.

GP 2.0 is the only theory that allows for a non-arbitrary connection between the interaction of melody, structure and length.

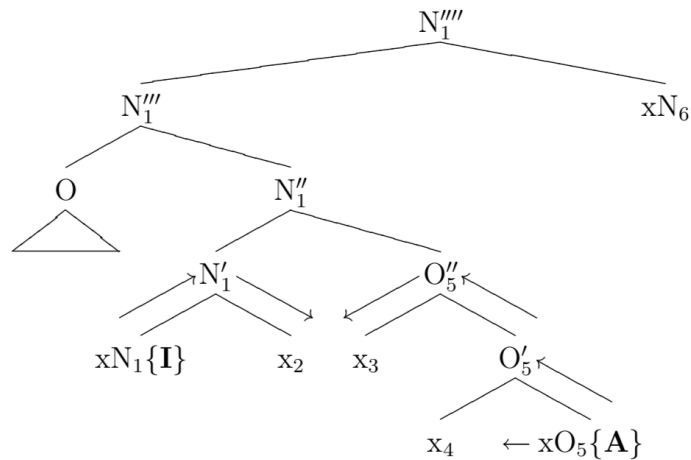
In all four structures presented above, as already noted, a case of transgression was found (bottom-up for **[lat::]** and **[nas::]**; top-down for **[la::d]** and **[na::z]**). I actually want to claim that this is not by chance and that *bid*-type structures in Friulian *require* transgression (we will later see that also *Libby*-type structures present some requirements about transgression).

This predicts right away that we should not be able to find in Friulian *bid*-type structures like English *beat* bi:t or Estonian *kitt* [gi:d:] ‘praise’ (viz. a structure with a long vowel and a following long and *fortis* consonant) reported here (from Pöchtrager 2006: 147):

⁸ Note that while it is true that in the most recent OT literature about vowel length discussed above (Iosad 2012; Torre-Tamarit 2015) as well as in the more classic moraic theory (e.g. Hualde 1990) some connection between voicing and vowel length is established, the connection is not direct, since it is always a third factor that links the two (foot bimoraicity or something similar).

(11)

Common structure for NYC English *beat* birt and Estonian *kiit* gi:d:



And this is actually borne out by Friulian empirical data: in word-final position (viz. in *bid*-type structures) we never find a long vowel followed by a long *fortis* consonants, and this holds true both for obstruents and for sonorants.

The requirement for transgression in *bid*-type structures is stated below.

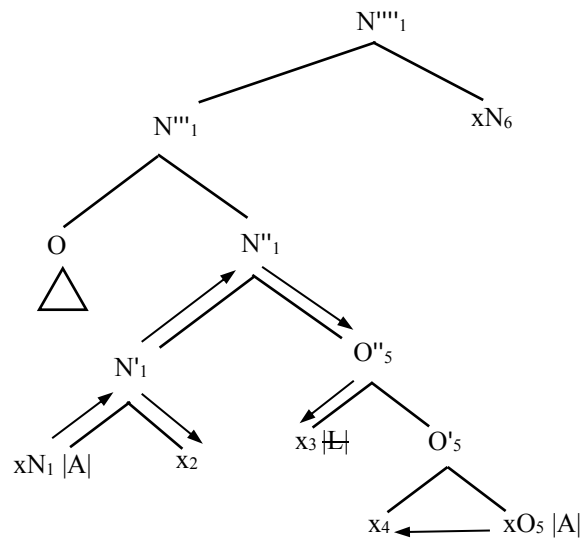
(12)

In Friulian *bid*-type structures, the maximal projection of an onset configuration must be transgressed.

Note that the condition just stated applies to *every* onset configuration, be it single or double-layered, projecting or non-projecting, and it excludes configurations such as the English and Estonian just reported in (11).

Note also that, without the transgression requirement just posited, nothing would ban in principle such a configuration in Friulian. In fact, while it is true that (11) present a fortis onset, it would not be sufficient to say that Friulian does not possess underlying *fortis* structures. To make this point clear, let us look at the structure of **[la::d]** again (repeated here):

(13) [la::d]



Crucially, as can be seen, the underlying structure of [la::d] (viz. /lad/) *does not contain a fortis onset structure*. In fact, the word-final onset is an underlying *lenis* voiced stop that surfaces as a *lenis* voiceless (devoiced) stop due to derivation. Therefore, nothing would prevent xO₅ to m-command its specifier, viz. x₃. This would result in a fortis configuration (following a long vowel) as seen in (11), but since such fortis configuration is not lexically given but derived through computation, Friulian has no problem with it (recall, as already mentioned, that one thing is disallowing *fortis* structure in the phonological inventory; another thing is allowing *fortis* structures to surface in the course of the derivation: these two things are different and must be kept apart).

This concludes our discussion of Friulian *bid*-type structures. In the next paragraph I move on considering *Libby*-type structures, in which, again, the onset projection following the domain head is either a stop or a fricative (as already said sonorants will be discussed later).

5.2. Friulian *Libby*-type Structures

As reported above, the *Libby*-type structures we want to account for in Friulian are exemplified by the following forms:

['lat:e] 'she breastfeeds' ['la:de] 'gone f.'
['nas:i] 'to be born' ['na:ze] 'she sniffs'

I want to propose that Friulian has the following condition on domain heads regarding *Libby*-type structures (we will see later that this condition will need to be revised):

(14) Condition on Domain Heads in Friulian (to be revised)

A Friulian domain head in a *Libby*-type structure must expand into a c-expansion.

Having state also the condition on domain heads for Friulian *Libby*-type structures, we can now subsume the condition for both *bid* and *Libby*-type structures under one general condition:

(15) Condition on Domain Heads in Friulian

A Friulian domain head has to expand into a c-expansion in both *bid*-type and *Libby*-type structures.

Or, to state it in a different fashion:

(16) Condition on Domain Heads in Friulian (final)

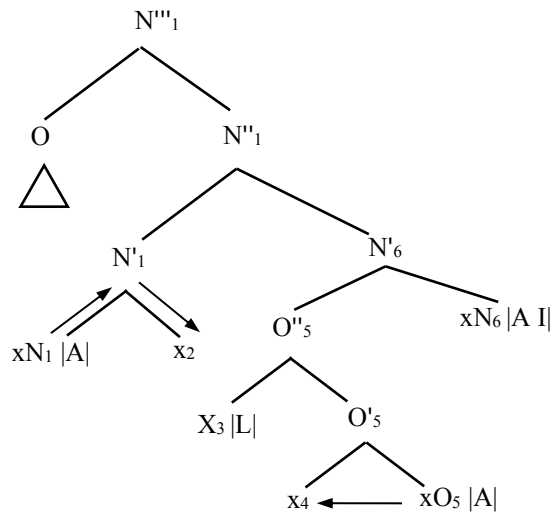
When a Friulian domain head is not the last nucleus of the domain, it must expand into a c-expansion.

Note that the condition stated in this fashion correctly excludes *bee*-type structures (in which the domain head can be expanded into a c-expansion but does not have to) and correctly includes *bid*-type structures (in which the last nucleus of the domain is not the domain head but the last p-licensed nucleus, see the structures above) and *Libby*-type structures (in which the last nucleus of the domain is not the domain head but the last realised nucleus, see structures below).

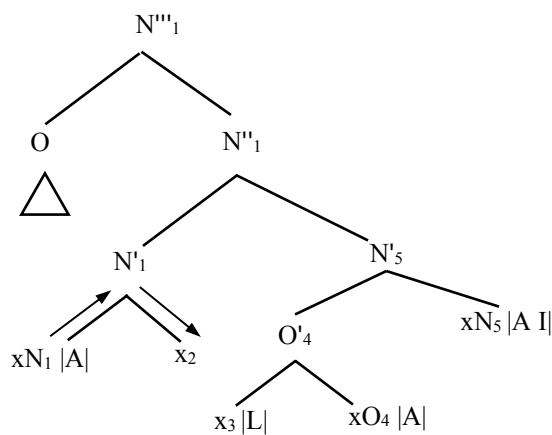
I present now the structures I have in mind for Friulian *Libby*-type structures starting from the forms ['la:de] 'gone f.' and ['na:ze] 'she sniffs', viz. the forms with a long vowel followed by a *lenis* voiced onset.

(17)

a. ['la:de]



b. ['na:ze]



As required by the condition on domain heads in Friulian, in these structures the domain head is expanded into a c-expansion.

Both structures present a *lenis* voiced onset following the domain head. As required by (1), |L| sits in both cases in the highest x-slot (viz. x₃ in the structures just presented). Since x₃ is annotated with melody, it does not need licensing (being annotated, it *cannot* be licensed⁹). The licensing of x₂ is taken care, in both structure, by the domain head, that

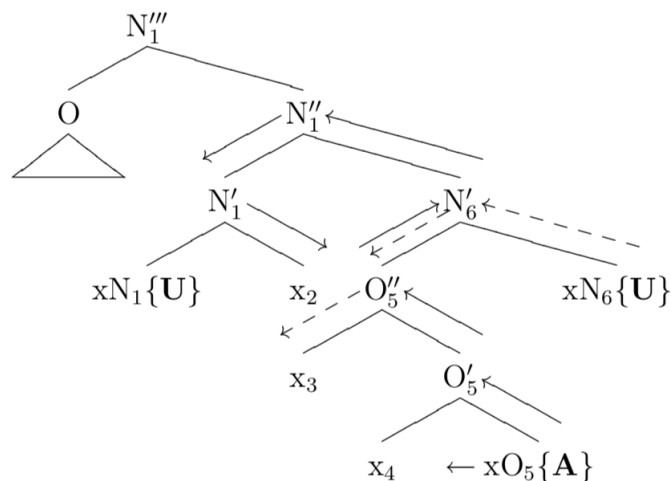
⁹ Actually, in GP 2.0 literature, since Pöchtrager (2006), it is clearly stated that an annotated x-slot does not require licensing. It is not stated with the same clarity, however, that an annotated x-slot *cannot* be licensed, which is not exactly the same thing as saying that it does not *require* licensing. To the best of my knowledge, no proposal within GP 2.0 has ever posited licensing of annotated x-slots. Nonetheless, this remain a point worth of discussion. As just said, I am assuming that an annotated x-slot *cannot* be licensed.

m-commands it, resulting in a long nucleus (later it will be discussed why it has to be the domain head to license x_2 , and why xO , the head of the onset projection, *cannot* m-command x_2).

Now, the structures of the forms ['**lat:e**] 'she breastfeeds' and ['**nas:i**] 'to be born' will be presented. We will see how they will prompt further discussion on the role of transgression in Friulian. These structures are based on Pöchtrager's (2006: 190) formalization of the Estonian form *jutu* [jud:u] 'story, genitive' reported here (the broken arrow indicates an m-commanding relation just as the solid one; it is only used for clarity):

(18)

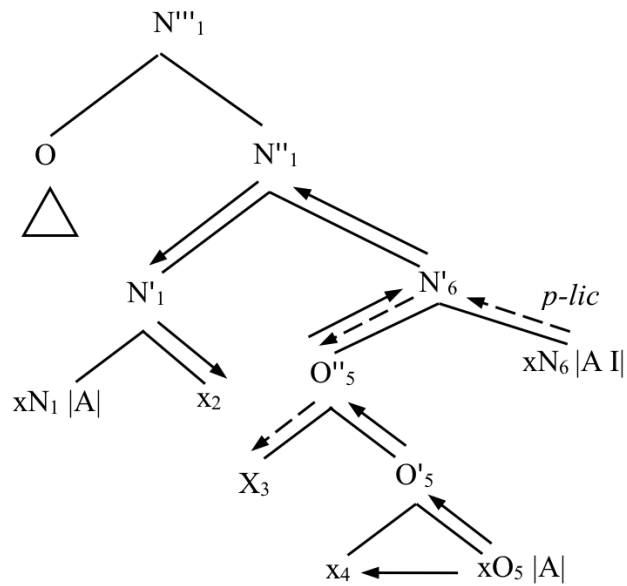
The genitive *jutu* jud:u



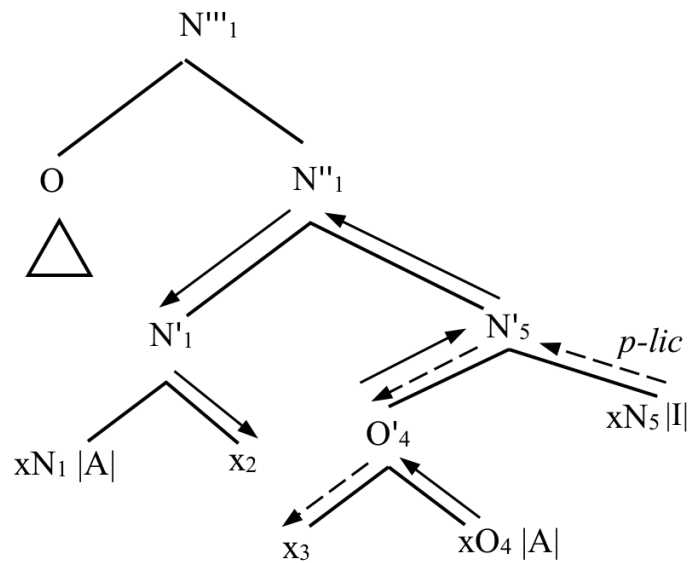
Before discussing this, the Friulian structures for ['**lat:e**] 'she breastfeeds' and ['**nas:i**] 'to be born' are presented (again, the broken arrow is used for clarity; this time, as it will be later discussed, it represents a p-licensing relation):

(19)

a. ['lat:e]



b. ['nas:i]



First of all, as Pöchtrager (2006: 190) says about the structure he proposes for [jud:uː]:

[T]here is nothing that excludes m-command between xO₅ and x₂, which is exactly what we find [...]. Since x₃ cannot be m-commanded by xO₅, it has to be taken care of by the only other potential licenser: xN₆ has to m-command x₃.

While this holds true for the Estonian form, it can be applied to Friulian as well, with some crucial modification. Like in Estonian, there is nothing in Friulian that excludes m-command between the head of the onset projection (xO_5 in ['**lat**:e] and xO_4 in ['**nas**:i]) and x_2 (viz. the complement of the domain head xN_1). The difference between the Estonian and the Friulian structure is that, while in Estonian the relationship between xN_6 and x_3 is one of m-command (and this is reflected by the fact that the last realized nucleus is lengthened), in Friulian the same relation is one of p-licensing (since the final realized nucleus is not lengthened, and therefore the relationship cannot be one of m-command).

Note that in the structures just given for ['**lat**:e] and ['**nas**:i], the onset projection is long, but crucially it is not *fortis*. In fact, the onset head does not m-command the highest unannotated x of its configuration, and therefore, by definition, is not *fortis*. This does not exclude, however, that possibility to acquire length by m-commanding x_2 . What *at the surface* seems like a fortis stop, it is actually a *lenis* voiceless long onset, both in Estonian and in Friulian.

It is also important to notice that both structures present an instance of transgression, going bottom-up from within the onset projection to the domain head. Again, what I want to claim is that this is not by chance in Friulian.

It is now time to discuss transgression in detail.

I propose the following requisites for transgression:

- (α) Transgression can occur at maximum once in every structure.
- (β) 1. In Friulian *bid*-type structures, transgression must always occur.
- (β) 2. In Friulian *Libby*-type structures, transgression occurs iff a projecting onset structure with no melody in non-head position follows the domain head.

What I am claiming is that requisite (α) holds true for every language and every structure. On the other hand, requisite (β) is language specific¹⁰.

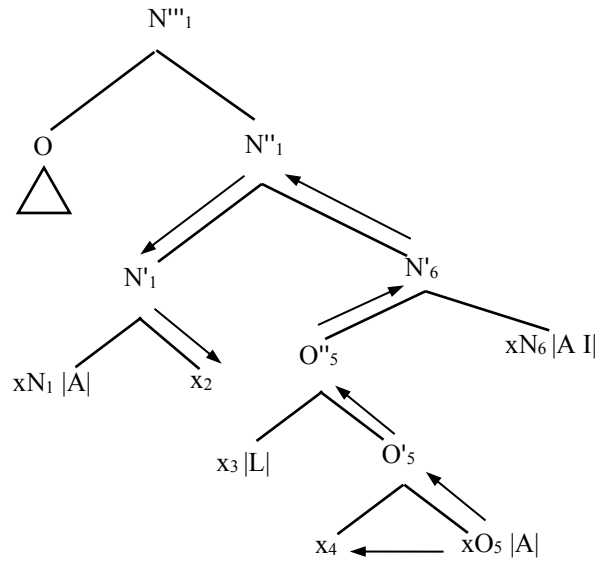
We have already seen requisite (β) 1. in action, correctly excluding a form such as (11) where no instance of transgression was found.

¹⁰ And in fact, cf. this with the account of Estonian presented in Pöchtrager (2006: 143-203) and the different transgression requirements there presented.

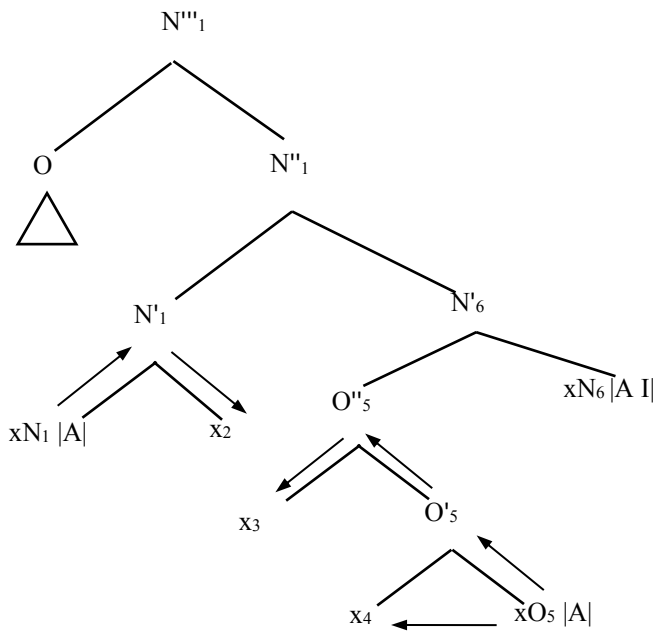
We will discuss more requisite (β) 2. when presenting the sonorant cases. For now, within stops and fricatives, we can see that this requisite successfully rules out structures like the followings:

(20)

a. *['lad:e]



b. *['la:t:e]



Note that without requisite (β) 2. nothing would prevent such structures to emerge (which would go against Friulian empirical data).

In particular the structure of *['lad:e] is ruled out because the projecting onset following the domain head has melody in non-head position (namely the [L] element sitting in x_3), therefore the (β) 2. condition for the application of transgression is not satisfied and the structure is ruled out.

On the other hand, the structure of *['la:t:e] present a long vowel followed by a *fortis* stop. As already discussed above, while Friulian does not have *fortis* structures in its phonological lexicon, it does not prohibit them to surface at the end of the derivation. In fact, in this case one could argue that the resulting *fortis* stop is actually a phonological *lenis* voiceless stop and that, in the course of the derivation, xO_5 m-commands x_3 , since x_3 is unannotated and in need of being licensed. The structure, therefore, is not ruled out by the presence of the *fortis* stop. The structure is ruled out because, despite the conditions in (β) 2. are met (there is a projecting onset structure with no melody in non-head position that follows the domain head), transgression does not apply, and therefore the structure is ruled out.

While at this point this characterization of transgression proposed above is still speculative and more research is needed to confirm or deny what I am claiming, it is nonetheless a first step in finding the deep reason behind the different language-specific structural configurations.

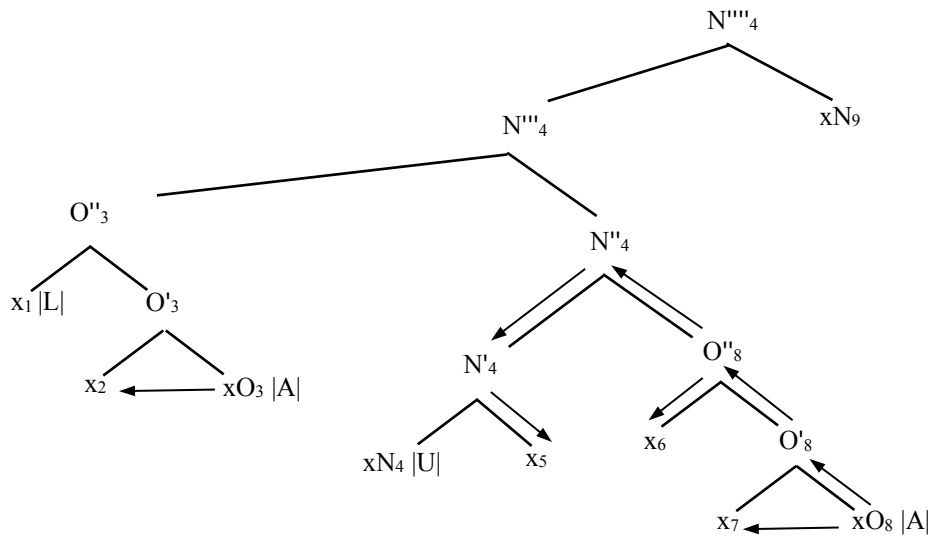
5.3. Initial Position

The requisites posited above for transgression make also prediction for word-initial onset, and specifically that *fortis* obstruents can surface as the result of derivation.

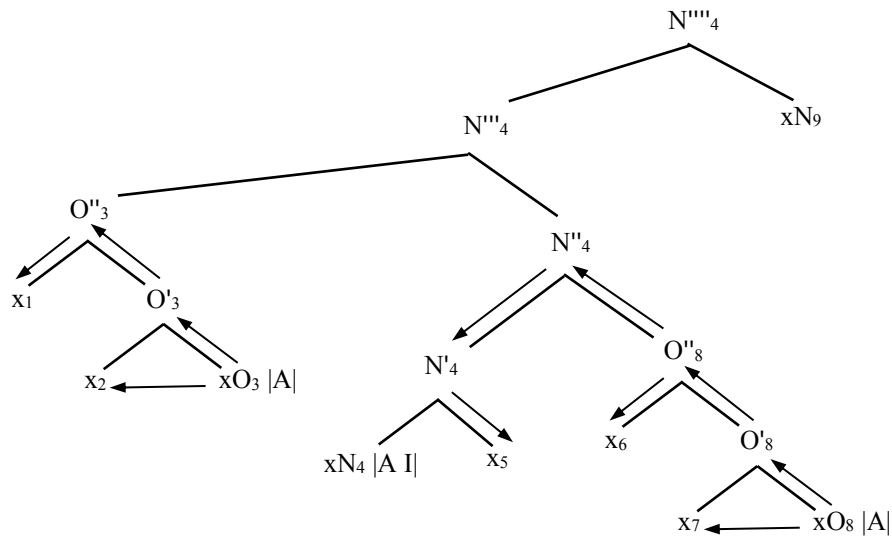
To illustrate this point I represent below the structures for [dʉt:] ‘all, m.’ and [tɛt:] ‘roof’.

(21)

a. [dut::]



b. [t:et::]



As discussed earlier, in both structures the domain head is expanded into a c-expansion (since the domain head is not the final nucleus of the domain). As expected from condition (β) 1. on transgression, in these two structures we find the same instance of bottom-up transgression, from within the onset to the domain head.

Let us now discuss the onset projection in first position. Not much has to be said about the structure of [dut::]: a word-initial *lenis* voiced stop is lexically given. It comes with no unannotated x-slots, and therefore nothing is going on there.

The situation is different for the structure of [t:et:]. In this case the fortis stop we see (it is a *fortis* structure since xO₃ m-commands the highest unannotated x-slot, viz. x₁) cannot be lexically given, because Friulian does not have *fortis* structures in its phonological inventory. Therefore, it must be derived through computation. And in fact, this is what I want to claim for this structure. The word-initial onset projection of [t:et:] is an underlying *lenis* voiceless consonant (I propose that the underlying form of [t:et:] is /tet/). This *lenis* voiceless onset comes with an unannotated x-slot, namely x₁, that needs licensing. Therefore, xO₃ m-commands it highest x-slot, licensing it and resulting at the same time in a (long) *fortis* configuration.

Note that in the form given above for ['lat:e], and in the rejected structure for *['la:t:e], as discussed earlier, a *fortis* onset could not have surfaced, since transgression is mandatory, as stated in condition (β) 1. On the other hand, in word-initial position no transgression is expected by the conditions stated above, and therefore xO₃ is free to m-command x₁, surfacing as a *fortis* structure.

5.4. Friulian Sonorant *Libby*-type Structures

Now I present the structures of the following forms, which are the only instances of *Libby*-type structures one can find in Friulian (any other form being excluded):

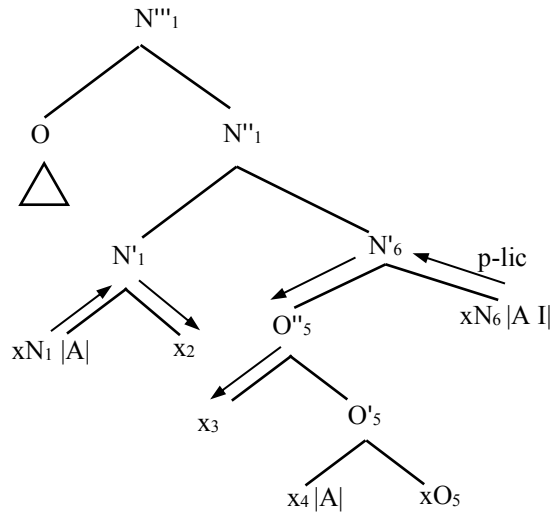
['sa:le] ‘she salts’

['ta:re] ‘tare’

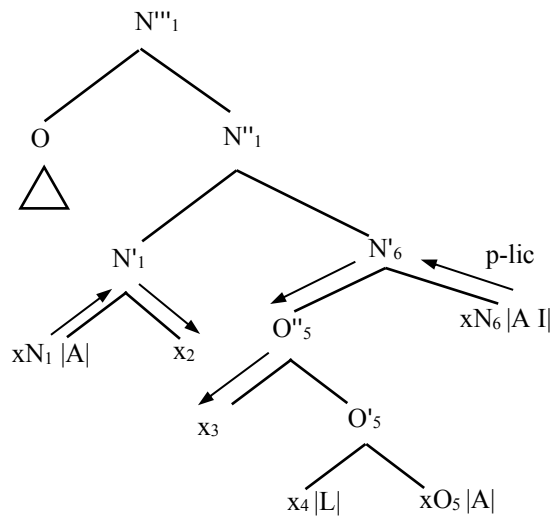
['sa:ne] ‘healthy, f.’

(22)

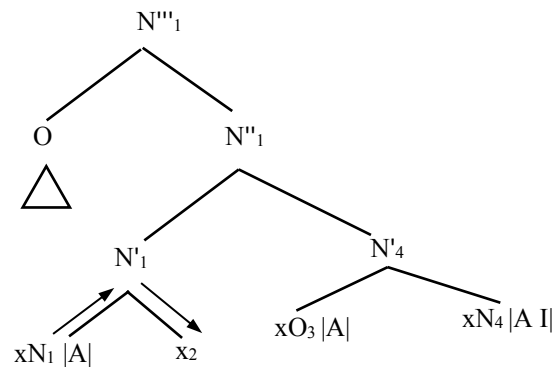
a. ['sa:le]



b. ['sa:ne]



c. ['ta:re]

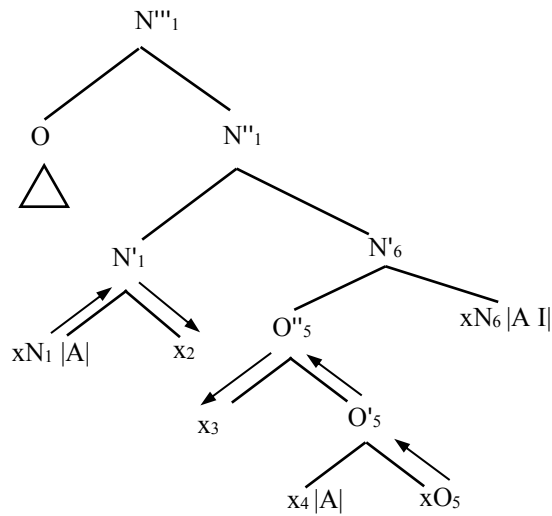


In all these structures, according to Friulian condition on domain heads, xN_1 expands into a c-expansion. The complement of the domain head (viz. x_2) is licensed by the domain head itself, in a very similar way to what we have seen for the form of ['la:de] and ['na:ze] above. Note however that there is a crucial difference between those forms and ['sa:le] and ['sa:ne], namely that while in the forms with a following voiced obstruent x_3 was annotated with |L| melody and in no need to be licensed, in the forms presented here, x_3 is an unannotated x-slot and in very much need to be licensed (obviously this does not refer to /r/, which is a non-projecting xO). In these case, therefore, it is the last realised nucleus that licenses it, by the means of p-licensing (as already discussed, it has to be a p-licensing relation, since the last nucleus does not acquire additional length, and therefore it cannot be an m-command relation).

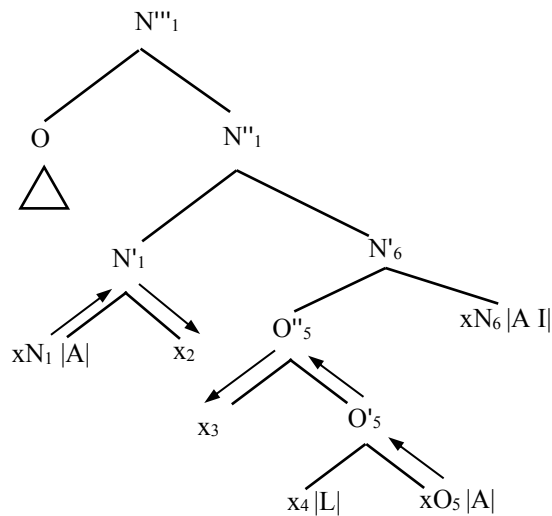
One further comment about this solution is in order, and specifically why the structures below are ruled out in Friulian:

(23)

a. *['sa:l:e]



b. *['sa:n:e]



These structures are ruled out in Friulian, and still from all we said up till now, there is no formal reason why. Again, as it is already being said, the *fortis* structures here presented are not lexically given (Friulian does not possess *fortis* structures in its phonological lexicon), but are the result of computation, and we have already said that Friulian does not have a problem with surfacing *fortis* structures. The fact that these structures are ruled out seems to suggest a further condition of what can be *fortis* on the surface and what cannot. What I am saying is that it seems that in Friulian while a surfacing *fortis* obstruent is

admitted, a surfacing sonorants is not. The condition to account for this would be the following:

(24)

In Friulian an onset projection can surface as fortis *iff* it has no melody in non-head positions.

This condition correctly excludes the cases just discussed, with a fortis sonorants following the domain head. Furthermore, this condition is strikingly similar to the one Pöchtrager (2006: 192) posits for Estonian:

(25) Fortis Onsets in Estonian:

In Estonian, an onset head xO can only be fortis *iff* the onset projection is a double-layered projection with no melody in non-head positions.

And actually, see Pöchtrager (2006: 193, note 19) for a possible inclusion of fricatives, changing the wording of the just mentioned condition on fortis onsets in Estonian, that would end up, in this last scenario, to exclude only sonorants. In any case, it seems that languages like Friulian and Estonian have a strong dislike for *fortis* sonorants structures (in which melody is found in non-head positions¹¹), suggesting that there could be a more general principle underlying the conditions just posited.

¹¹ Note that also voiced Friulian obstruents present melody in non-head position. But since in those cases [L] annotate the highest x-slot, this automatically exclude that such configurations could be *fortis*.

Conclusions

I want to make three final remarks as they arise from the discussion outlined in these pages.

First of all, I want to emphasise the importance of studying length patterns of a specific variety in connection with the variation we find within all Northern Italo-Romance varieties, both from a diachronic and from a synchronic standpoint. It is not possible to fully understand length patterns in one specific variety without contrasting its characteristics with the richer picture offered by the other Northern Italo-Romance varieties.

Second, as I am finishing this work, I came to realise more and more that the label *vowel length* is actually only one part of the story Northern Italo-Romance varieties are telling us. And that vowel length patterns in one variety never go without related consonantal length patterns. We will be able to fully appreciate the depths of length patterns in Northern Italo-Romance varieties when we will change our scope of investigation from simply *vowel length* to trade-off length phenomena, taking into account the always present interaction between vowel length and consonantal length.

Third and last, GP 2.0 showed us that some properties we believed to be melodic are actually structural. While a lot more ink is still needed to reach a more fine-grained version of the theory, it is clear that the path opened by GP 2.0 could be able to account in a non-arbitrary way for phenomena that concern the interaction between melody and structure. This thesis is a step in that direction.

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