



# **Contrastive vowel length: How layered feet and uneven trochees interact**

WCCFL 39

University of Arizona

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# Outline

1. Data
2. Representational assumptions and constraints
3. Factorial typology
4. Alternatives
5. Complementary distribution
6. Conclusion

**Data**

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# 1. Data

(1) Distribution of CVL in northern Italo-Romance (Loporcaro 2015: 207)

		<i>Cremonese</i>	<i>Friulian</i>	<i>Milanese</i>	<i>Standard Italian</i>
		i.	ii.	iii.	iv.
a.	$\dots^{\text{'}}\sigma]_{\omega}$	+	+	+	—
b.	$\dots^{\text{'}}\sigma\sigma]_{\omega}$	+	+	—	—
c.	$\dots^{\text{'}}\sigma\sigma\sigma]_{\omega}$	+	—	—	—

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a.	$\dots^{\text{t}}\sigma]_{\omega}$	+	+	+	—
b.	$\dots^{\text{t}}\sigma\sigma]_{\omega}$	+	+	—	—
c.	$\dots^{\text{t}}\sigma\sigma\sigma]_{\omega}$	+	—	—	—

CVL  $\neq$  OSL  $\neq$  pre-voiced obstruent (F)VL  
(see also Iosad and Wetzels 2021)

# 1. Data

## (2) Cremonese (Loporcaro 2015: 84-87)

- |    |          |         |         |         |
|----|----------|---------|---------|---------|
| a. | 'le:     | 'she'   | 'le     | 'there' |
|    | 'pe:l    | 'hair'  | 'pel    | 'skin'  |
| b. | 'la:na   | 'wool'  | 'kana   | 'reed'  |
| c. | 'ta:vula | 'table' | 'fabula | 'tale'  |

# 1. Data

## (3) Friulian (Loporcaro 2015: 98-100)

- |    |         |           |         |                                  |
|----|---------|-----------|---------|----------------------------------|
| a. | can'ta: | 'to sing' | can'ta  | 'sing-prf.3sg'                   |
|    | 'mi:l   | 'honey'   | 'mil    | 'thousand'                       |
| b. | 'fra:di | 'brother' | 'lade   | 'gone-fsg (cf. 'la:t 'gone-msg') |
| c. | —       |           | 'regule | 'rule'                           |

# 1. Data

## (4) Milanese (Loporcaro 2015: 94-96)

- |    |        |        |                   |                    |
|----|--------|--------|-------------------|--------------------|
| a. | an'da: | 'went' | an'da             | 'to go'            |
|    | 'ka:l  | 'loss' | 'kal              | 'corn'             |
| b. | —      |        | 'dyra (cf. 'dy:r) | 'hard-fsg' ('msg') |
| c. | —      |        | 'legura           | 'hare'             |



## **Representational assumptions and constraints**

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  - a. Proparoxytones (Krämer 2018)  
 $((\sigma\sigma)_{min}\sigma)_{max}$

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    - i.  $(('\text{HL})_{min}\text{L})_{max}$
    - ii.  $**(('\text{H})_{min}\text{L})_{max}\text{L}$

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#### a. Proparoxytones (Krämer 2018)

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#### b. Proparoxytones with a 'V:

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ii.  $**(('\text{H})_{min}\text{L})_{max}\text{L}$

#### c. Paroxytones with a 'V:

i.  $(('\text{HL})_{min,max}$

ii.  $(('\text{H})_{min}\text{L})_{max}$

## 2. Representational assumptions and constraints

### (6) Constraints

- a. \*LAYEREDFOOT (\*LF)
- b. \*UNEVENTROCHEE (\*UT)
- c. \*LONGVOWEL (\*LV)
- d. IDENT(length) (ID(length))
- e. ALIGN-Right(Foot,  $\omega$ ) (AL-R(Ft,  $\omega$ ))

# Factorial typology

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### 3. Factorial typology

(7) Factorial typology

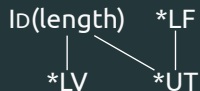
	a. L	b. H	c. LL	d. HL	e. LLL	f. HLL
1	('L)	('L)	('LL)	('LL)	((('LL)L)	((('LL)L)
2	('L)	('H)	('LL)	('LL)	((('LL)L)	((('LL)L)
3	('L)	('H)	('LL)	((('H)L)	((('LL)L)	((('LL)L)
4	('L)	('H)	('LL)	('HL)	((('LL)L)	((('HL)L)
5	('L)	('H)	('LL)	((('H)L)	((('LL)L)	((('HL)L)

### 3. Factorial typology

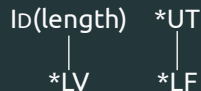
(8) Faithful grammars

	a. L	b. H	c. LL	d. HL	e. LLL	f. HLL
4	('L)	('H)	('LL)	('HL)	((('LL)L)	((('HL)L)
5	('L)	('H)	('LL)	((('H)L)	((('LL)L)	((('HL)L)

(9) Grammar 4



(10) Grammar 5



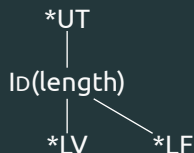


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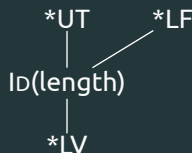
(11) Faithful grammars

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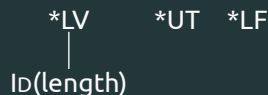
(12) Grammar 3



(13) Grammar 2



(14) Grammar 1



# Alternatives

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## 4. Alternatives

- Two alternatives to layered feet:
  - flat ternary feet (Bafile 1999)
  - binary feet (uneven trochees) + extrametricality (Jacobs 2019)

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- 2 constraints  $*('HL), *('HLL) \rightarrow$  **overgeneration**: a grammar in which CVL is restricted to oxytones and proparoxytones but not in paroxytones; if freely rankable, no relative markedness can be expressed
- 1 constraint  $*('HLL) = *('HL)$  (no uneven binary or uneven dactyl)  $\rightarrow$  **undergeneration**: no language with CVL in paroxytones but not in proparoxytones is predicted; no distinction can be made between  $('HL)$  and  $('HLL)$
- 2 constraints in stringency relation  $*('HLL)$  and  $*\{('HLL), *('HL)\} \rightarrow$  **expected typology**; stringency expresses relative markedness

- Flat ternary feet force the introduction of a markedness constraint \*('HLL)
- If layered feet are assumed, \*('HL) is the only constraint needed. This constraint crucially interacts with foot alignment to express the relative markedness between 'HLL and 'HL → a complex pattern is derived from the interaction of independently motivated constraints



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- Jacobs (2019) resorts to uneven trochees (also) + final extrametricality to explain 'HLL, where H = long vowel or geminate

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(15) 'HLL in Emilian (Jacobs 2019: 184, taken from Loporcaro 2015: 189)

('laggri)<ma>	'tear'
('peggo)<ra>	'sheep'
('pevva)<ro>	'pepper'
('tavvo)<la>	'table'

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- **undergeneration**: no system in which CVL is only banned in proparoxytones

## 4. Alternatives

(16)

	HL	Non-Fin <sub>1</sub>	*UT	Id(lg)	*Al-R(Ft, $\omega$ )
a.  ('H)L					*
b. ('LL)				* <sub>W</sub>	<i>L</i>
c. ('HL)			* <sub>W</sub>		<i>L</i>

(17)

	HLL <sub>1</sub>	Non-Fin <sub>1</sub>	*UT	Id(lg)	*Al-R(Ft, $\omega$ )
a.  ('H)LL					**
b. ('LL)L				* <sub>W</sub>	* <sub>L</sub>
c. ('HL)L			* <sub>W</sub>		* <sub>L</sub>
d. H('LL)		* <sub>W</sub>			<i>L</i>

(If final extrametricality is regarded as an option in Romance, it follows that right alignment can be dominated.)

## Complementary distribution

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## 5. Complementary distribution

- Besides CVL, the same analysis can be applied to cases of complementary distribution of:
  - long and short V
  - diphthongs and monophthongs
  - tense and lax V
- in verbs and encliticized kinship terms in southern Italo-Romance.

## 5. Complementary distribution

(18) Southern Italo-Romance varieties (Marotta and Savoia 1994: 48-49)

a. Accettura (southern Lucania)

'dɛ:tʃə	'he says'	'dɪtʃənə	'they say'
'fɛ:ʃə	'I flee'	'fʊʃənə	'they flee'
'mɛ:tə	'I reap'	'mɛtənə	'they reap'
nə'pɔ:tə	'nephew'	nə'pɔtəmə	'my nephew'
'lɛ:və	'I wash'	'lavənə	'they wash'

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'lɛ:və	'I wash'	'lavənə	'they wash'

b. Stigliano (southern Lucania)

'dejkwə	'I say'	'dɪs:ə	'I said'
'fewfə	'I flee'	'fɪfənə	'they flee'
mə'ʝ:ɛ:rə	'wife'	mə'ʝ:ɛrəmə	'my wife'
'ʃɔ:kə	'I play'	'ʃɔkənə	'they play'
'la:və	'I wash'	'fan:ə	'they do'



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'ʃɔ:ɫə	'I play'	'ʃɔkənə	'they play'
'la:və	'I wash'	'fan:ə	'they do'

c. Saracena (northern Calabria)

'di:kə	'I say'	'dɪɫfənə	'they say'
'durnə	'he/she gives'	'dʊnəsə	'you give'
'mɛ:tə	'he/she reaps'	'mɛtəsə	'you reap'
'ʃɔ:kə	'he/she plays'	'ʃɔkəsə	'you play'
'cæ:mə	'he/she calls'	'camənə	'they call'

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'cæ:mə	'he/she calls'	'camənə	'they call'


### (19) Proparoxytones = paroxytones with a stressed closed syllable (Marotta and Savoia 1994: 48-49)

'dɪ:tə	'they say'	'vɛŋgwə	'I come'	Accettura
'frɔ:ndə	'brow'	'aʃ:ə	'garlic'	Oliveto Lucano (southern Lucania)
		('nɛ:sə	'nose')	


## 5. Complementary distribution

(20) Complementary distribution of length

a. OSL in paroxytones

dunə	Al-R(Ft, $\omega$ )	*UT	STW	*LF
a.  (('duː)nə)				*
b. ('dʊnə)			* <sub>W</sub>	L
c. ('duːnə)		* <sub>W</sub>		L

b. No OSL in proparoxytones

dunəsə	Al-R(Ft, $\omega$ )	*UT	STW	*LF
a.  (('dʊnə)sə)			*	*
b. (('duːnə)sə)		* <sub>W</sub>	L	*
c. (('duː)nə)sə)	* <sub>W</sub>		L	*

## 5. Complementary distribution

(21) Complementary distribution of tenseness/laxness

a. Lax vowel in proparoxytone

$nəpotə=mə$	Al-R(Ft, $\omega$ )	*UT	tense $\leftrightarrow\mu\mu$ , lax $\leftrightarrow\mu$	STW
a. $nə((pətə)mə)$				*
b. $nə((potə)mə)$			$*_W$	*
c. $nə((po:tə)mə)$		$*_W$		L
d. $nə((po:)tə)mə$	$*_W$			L

b. Lax vowel in paroxytone's closed syllable

$sordə$	WBP	$*_{\mu\mu\mu}\sigma$	tense $\leftrightarrow\mu\mu$ , lax $\leftrightarrow\mu$	$*C/\mu$
a. $((sə_{\mu}r_{\mu})də_{\mu})$				*
b. $((so_{\mu}r_{\mu})də_{\mu})$			$*_W$	*
c. $((so:_{\mu\mu}r_{\mu})də_{\mu})$		$*_W$		*
d. $((so:_{\mu\mu}r)də_{\mu})$	$*_W$			L

## 5. Complementary distribution

### (22) Diphthongization/breaking

$fu\text{f}\theta$	$*V_{high}$	$*V_{open-mid}G$	tense $\leftrightarrow\mu\mu$ , lax $\leftrightarrow\mu$	Integrity
a. $\text{f}\text{ew}$ (( $'\text{few}$ ) $\text{f}\theta$ )			*	*
b. (( $'\text{f}\varepsilon\text{w}$ ) $\text{f}\theta$ )		$*_W$	$L$	*
c. (( $'\text{fu}$ ) $\text{f}\theta$ )	$*_W$		$L$	$L$

(In Palmoli (Chieti, Abruzzo) we find instead [ $'\text{s}\varepsilon\text{wr}\theta$ ] 'sister', [ $'\text{s}\theta\text{r}\theta\text{m}\theta$ ] 'my sister' (Loporcaro 2015: 212-213; Savoia 1990: 352).)

## 5. Complementary distribution

### (23) Centralization

#### a. Contrast preservation-based centralization

fuɤə	*V <sub>high</sub> :	Contrast	Id(F)
a.  (( <sup>h</sup> fə: )ɤə)			round,high
b.  (( <sup>h</sup> fə: )ɤə)		[* <sub>w</sub> ]	high <sub>L</sub>
c. (( <sup>h</sup> fu: )ɤə)	* <sub>w</sub>		<sub>L</sub>

#### b. Faithful mapping

nəpəɤə	*V <sub>high</sub> :	Contrast	Id(F)
a.  nə(( <sup>h</sup> pə: )ɤə)			
b. nə(( <sup>h</sup> pə: )ɤə)			round <sub>w</sub>

### (24) PRESERVECONTRAST( $\varphi$ )(Stress,non-low) (based on Mascaró 2016: 271)

Let  $s$ ,  $s'$ ,  $t$ ,  $t'$  be segments, and  $s$  and  $t$  differ in the values of [high] and [ATR] (/i,u,ɪ,ʊ vs. e,o,ɛ,ɔ/).

Assign a violation mark to a candidate  $Cs'D$  from input /AsB/,  $sRs'$ , iff;

a) there is a possible input /AtB/ whose winning candidate is  $Ct'D$

b)  $tRt'$

c)  $s'=t'$

d) the candidate  $Cs'D$  from /AsB/ is less harmonic than the candidate  $Ct'D$  from /AtB/.

## Conclusion

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- According to Loporcaro (2015), in those northern Italo-Romance varieties in which CVL is possible in proparoxytones, it is also possible in paroxytones, but not the other way around. The same implicational relation exists between paroxytones and oxytones.



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- The same analysis can be extended to account for synchronic alternations in which long/short V, diphthongs/monophthongs, and tense/lax V stand in complementary distribution in southern Italo-Romance.
- This paper contributes to the growing body of contemporary work on layered feet (Martínez-Paricio 2013 and subsequent work).

**Thank you!**

## References

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## References i



Laura Bafile.

**Antepenultimate stress in Italian and some related dialects: Metrical and prosodic aspects.**

*Rivista di Linguistica*, 11(2):201–229, 1999.



Pavel Iosad.

**Final devoicing and vowel lengthening in Friulian: A representational account.**

*Lingua*, 122(8):922–951, 2012.



Pavel Iosad.

**Rule scattering and vowel length in Northern Romance.**

*Papers in Historical Phonology*, 1:218–237, 2016.



Pavel Iosad and Leo W. Wetzels.

**Length and weight in Romance.**

In Christoph Gabriel, Randall Gess, and Trudel Meisenburg, editors, *Manual of Romance Linguistics: Phonetics and Phonology*. Berlin: De Gruyter, 2021.



Haike Jacobs.

**On the relevance of the uneven moraic trochee foot in OT: Trochaic lengthening and syncope.**

In Jolanta Szpyra-Kozłowska and Marek Radomski, editors, *Phonetics and Phonology in Action*, pages 177–190. Berlin: Peter Lang, 2019.



Martin Krämer.

**The perfect word in Italian: Or fruit salad matters.**

In Ryan Bennett, Andres Angeles, Adrian Brasoveanu, Dhyana Buckley, Nick Kalivoda, Shigeto Kawahara, Grant McGuire, and Jaye Padgett, editors, *Hana-Bana. A Festschrift for Junko Itô & Armin Mester*, pages 1–21. Berlin: Mouton de Gruyter, 2018.



Giovanna Marotta and Leonardo M. Savoia.

**Vowel properties and nuclear constituents: Evidence from Italian dialects.**

*Probus*, 6(1):43–79, 1994.

## References iii



Violeta Martínez-Paricio.

**An exploration of minimal and maximal metrical feet.**

PhD dissertation, University of Tromsø-Arctic University of Norway, 2013.



Joan Mascaró.

**On the typology of metaphony/stress dependent harmony.**

In Francesc Torres-Tamarit, Kathrin Linke, and Marc van Oostendorp, editors, *Approaches to metaphony in the languages of Italy*, pages 259–276. Berlin & Boston: Walter de Gruyter, 2016.



Michele Loporcaro.

***Vowel length from Latin to Romance.***

Oxford: Oxford University Press, 2015.



Leonardo Savoia.

**Proprietà vocaliche e struttura metrico-sillabica in alcune varietà abruzzesi.**

In Pisa: Giardini, editor, *Studi in memoria di E. Giammarco*, pages 331–380, 1990.





Francesc Torres-Tamarit.

**Length and voicing in Friulian and Milanese.**

*Natural Language & Linguistic Theory*, 33(4):1351–1386, 2015.

# Appendix

## (25) Cremonese (Loporcaro 2015: 84-87)

### a. Vowel-final oxytones

'le: 'she' 'le 'there'

### b. Ostruent-final oxytones

'pa:s 'peace' 'pas 'step'  
'pe:s 'weight' 'pes 'worse'

### c. Sonorant-final oxytones

'pe:l 'hair' 'pel 'skin'

### d. Paroxytones

'la:na	'wool'	'kana	'reed'
'spu:za	'bride'	'rusa	'red-fsg'
'pe:za	'scales'	'meza	'half-fsg'
'tʃo:sa	'broody hen'	'osa	'shoehorn'

### e. Proparoxytones

'ta:vula	'table'	'fabula	'tale'
kwa're:zima	'Lent'	'fregula	'heat, itch'

# Appendix

## (26) Friulian (Iosad 2012, Torres-Tamarit 2015)

### a. Vowel-final oxytones (Loporcaro 2015: 98; \*Roseano p.c.)

\*'mɛ: 'my-fsg' \*'mɛ 'me-acc.1sg'  
can'ta: 'to sing' can'ta 'sing-prf.3sg'

### b. Obstruent-final oxytones (Loporcaro 2015: 99; Iosad 2012: 937; 2016: 226; Roseano p.c.)

'lo:f (cf. 'love) 'wolf' ('she-wolf') 'ros (cf. 'rose) 'red-msg' ('red-fsg')  
'o:k (cf. 'o:ce) 'gander' ('goose')  
'po:k (cf. \*'po:cas) 'few-msg' ('few-fpl')

### c. Sonorant-final oxytones (Iosad 2016: 222)

'mi:l 'honey' 'mil 'thousand'

### d. Paroxytones (Loporcaro 2015: 100; Iosad 2012: 923)

'vo:li 'eye' 'pale 'shovel'  
'fra:di 'brother' 'lade 'gone-fsg' (cf. 'la:t 'gone-msg')

### e. Proparoxytones (Loporcaro 2015: 99-100)

'lɛtare 'letter'  
'rɛgule 'rule'

# Appendix

## (27) Milanese (Loporcaro 2015: 94-96)

### a. Vowel-final oxytones

an'da: 'went'    an'da 'to go'  
'pe: 'feet'    'pɛ 'foot'

### b. Obstruent-final oxytones

'fi:g 'fig'    'rik 'rich'  
'y:z 'usage'    'ys 'door'  
'mɛz (cf. 'mɛza) 'half-msg' ('fsg')  
'gøb (cf. 'ga) 'hunchbacked-msg' ('fsg')

### c. Sonorant-final oxytones

'ka:l 'loss'    'kal 'corn'  
'pe:l 'hair'    'pɛl 'skin'

### d. Paroxytones

'dizi (cf. 'di:z) 'he/she says' ('I say')  
'dyra (cf. 'dy:r) 'hard-fsg' ('msg')  
'spale (cf. 'spa:l) 'shoulder' ('pl')


### e. Proparoxytones

'pegura 'sheep'  
'legura 'hare'


## Appendix: no CVL

### (28) Oxytones

#### a. short input vowel

pa	*('HL)	*LFt	*V:	ld(lg)
a.  ('pa)				
b. ('pa:)			*W	*W


#### b. long input vowel

pa:	*('HL)	*LFt	*V:	ld(lg)
a.  ('pa)				*
b. ('pa:)			*W	L


## Appendix: no CVL

### (29) Paroxytones

#### a. short input vowel

pata	*('HL)	*LFt	*V:	Id(lg)
a.  ('pata)				
b. ('pa:ta)	*W		*W	*W
c. (('pa:)ta)		*W	*W	*W


#### b. long input vowel

parta	*('HL)	*LFt	*V:	Id(lg)
a.  ('pata)				*
b. ('pa:ta)	*W		*W	L
c. (('pa:)ta)		*W	*W	L


## Appendix: no CVL

### (30) Proparoxytones

#### a. short input vowel

pataka	*('HL)	*LFt	*V:	ld(lg)
a.  (('pata)ka)		*		
b. (('pa:ta)ka)	*W	*	*W	*W


#### b. long input vowel

partaka	*('HL)	*LFt	*V:	ld(lg)
a.  (('pata)ka)		*		*
b. (('pa:ta)ka)	*W	*	*W	L


## Appendix: CVL only in oxytones

### (31) Oxytones

#### a. short input vowel

pa	*('HL)	*LFt	ld(lg)	*V:
a.  ('pa)				
b. ('paː)			*W	*W

#### b. long input vowel


paː	*('HL)	*LFt	ld(lg)	*V:
a.  ('paː)				*
b. ('pa)			*W	L




## Appendix: CVL only in oxytones

### (32) Paroxytones

#### a. short input vowel

pata	*('HL)	*LFt	Id(lg)	*V:
a.  ('pata)				
b. ('pa:ta)	*W		*W	*W
c. (('pa:)ta)		*W	*W	*W


#### b. long input vowel

parta	*('HL)	*LFt	Id(lg)	*V:
a.  ('pata)			*	
b. ('pa:ta)	*W		L	*W
c. (('pa:)ta)		*W	L	*W


## Appendix: CVL only in oxytones

### (33) Proparoxytones

#### a. short input vowel

pataka	*('HL)	*LFt	ld(lg)	*V:
a.  (('pata)ka)		*		
b. (('pa:ta)ka)	*W	*	*W	*W


#### b. long input vowel

partaka	*('HL)	*LFt	ld(lg)	*V:
a.  (('pata)ka)		*	*	
b. (('pa:ta)ka)	*W	*	L	*W


## Appendix: CVL only in oxytones and paroxytones

### (34) Oxytones

#### a. short input vowel

pa	*('HL)	Id(lg)	*LFt	*V:
a.  ('pa)				
b. ('paː)		*W		*W


#### b. long input vowel

paː	*('HL)	Id(lg)	*LFt	*V:
a.  ('paː)				*
b. ('pa)		*W		L


## Appendix: CVL only in oxytones and paroxytones

### (35) Paroxytones

#### a. short input vowel

pata	*('HL)	Id(lg)	*LFt	*V:
a.  ('pata)				
b. ('parta)	*W	*W		*W
c. (('pa:)ta)		*W	*W	*W


#### b. long input vowel

pa:ta	*('HL)	Id(lg)	*LFt	*V:
a.  (('pa:)ta)			*	*
b. ('pata)		*W	L	L
c. ('parta)	*W		L	*


## Appendix: CVL only in oxytones and paroxytones

### (36) Proparoxytones

#### a. short input vowel

pataka	*('HL)	Id(lg)	*LFt	*V:
a.  (('pata)ka)			*	
b. (('pa:ta)ka)	*W	*W	*	*W


#### b. long input vowel

partaka	*('HL)	Id(lg)	*LFt	*V:
a.  (('pata)ka)		*	*	
b. (('pa:ta)ka)	*W	L	*	*W


## Appendix: CVL in all positions

### (37) Oxytones

#### a. short input vowel

pa	Id(lg)	*LFt	*('HL)	*V:
a.  ('pa)				
b. ('paː)	*W			*W


#### b. long input vowel

paː	Id(lg)	*LFt	*('HL)	*V:
a.  ('paː)				*
b. ('pa)	*W			L


## Appendix: CVL in all positions

### (38) Paroxytones

#### a. short input vowel

pata	Id(lg)	*LFt	*('HL)	*V:
a.  ('pata)				
b. ('pa:ta)	*W		*W	*W
c. (('pa:)ta)	*W	*W		*W


#### b. long input vowel

parta	Id(lg)	*LFt	*('HL)	*V:
a.  ('pa:ta)			*	*
b. (('pa:)ta)		*W	L	*
c. ('pata)	*W		L	L


## Appendix: CVL in all positions

### (39) Proparoxytones

#### a. short input vowel

pataka	Id(lg)	*LFt	*('HL)	*V:
a.  (('pata)ka)		*		
b. (('pa:ta)ka)	*W	*	*W	*W

#### b. long input vowel


partaka	Id(lg)	*LFt	*('HL)	*V:
a.  (('pa:ta)ka)		*	*	*
b. (('pata)ka)	*W	*	L	L




## Appendix: CVL in all positions (structural ambiguity)

### (40) Paroxytones

#### a. short input vowel

pata	ld(lg)	*('HL)	*V:	*LFt
a.  ('pata)				
b. ('parta)	*W	*W	*W	
c. (('pa:)ta)	*W		*W	*W

#### b. long input vowel

pa:ta	ld(lg)	*('HL)	*V:	*LFt
a.  (('pa:)ta)			*	*
b. ('parta)		*W	*	L
c. ('pata)	*W		L	L

## Appendix: Alternative analyses

- Two alternatives to layered feet are:
  - flat ternary feet (Bafile1999)
  - binary feet (uneven trochees) + extrametricality (Jacobs2019)

## Appendix: Alternative analyses: flat ternary feet

(41) Proparoxytone as a flat ternary foot  
( $\sigma\sigma\sigma$ )

- In order to exclude proparoxytones with a stressed long vowel, the most marked structure, \*('HL) alone does not suffice, and a new markedness constraint is needed, e.g. \*('HLL).
  - A: 2 separate constraints? \*('HL), \*('HLL)
  - B: 1 merged constraint? \*('HL(L))
  - C: 2 constraints in stringency relation? \*('HLL), \*{'('HLL), \*('HL)}

## Appendix: Alternative analyses: flat ternary feet

- 2 separate constraints run into an overgeneration problem: a language in which CVL is restricted to happen in oxytones and proparoxytones but not in paroxytones (language 4). This is so because the 2 separate constraints are freely rankable and the relative markedness between \*('HLL) and \*('HL) cannot therefore be expressed.

	pata	paata	patara	paatara	pa	paa		
1.	(pata)	(pata)	(patara)	(patara)	(pa)	(pa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
2.	(pata)	(pata)	(patara)	(patara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
3.	(pata)	(paata)	(patara)	(patara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
4.	(pata)	(pata)	(patara)	(paatara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
5.	(pata)	(paata)	(patara)	(paatara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>

## Appendix: Alternative analyses: flat ternary feet

- A merged constraint \*('HL(L)) runs into an undergeneration problem: no language with CVL in both oxytones and paroxytones is predicted. This is so because a single merged constraint \*('HL(L)) makes no distinction between the structures \*('HL) and \*('HLL).

	pata	paata	patara	paatara	pa	paa		
1.	(pata)	(pata)	(patara)	(patara)	(pa)	(pa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
2.	(pata)	(pata)	(patara)	(patara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
3.	(pata)	(paata)	(patara)	(paatara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>

## Appendix: Alternative analyses: flat ternary feet

- 2 constraints in stringency relation derive the exact typology: proparoxytones with a long stressed vowel violate both \*('HLL) and \*{'HLL),\*('HL)}, but paroxytones with a long stressed vowel only violate the more stringent constraint \*{'HLL),\*('HL)}. The correct patterns are derived because stringency expresses the relative markedness of the two structures.

	pata	paata	patara	paatara	pa	paa		
1.	(pata)	(pata)	(patara)	(patara)	(pa)	(pa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
2.	(pata)	(pata)	(patara)	(patara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
3.	(pata)	(paata)	(patara)	(patara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
4.	(pata)	(paata)	(patara)	(paatara)	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>

## Appendix: Alternative analyses: flat ternary feet

- One advantage of layered feet over flat ternary feet is that only the latter forces the introduction of a new markedness constraint \*('HLL), which simply restates the descriptive fact that ('HLL) is more marked than ('HL). If layered feet are used, \*('HL) is the only constraint needed, which crucially interacts with right alignment to express the relative markedness between 'HLL and 'HL structures: a complex pattern is thus derived from the interaction of independently needed constraints.

## Appendix: Alternative analyses: binary feet + extrametricality

(42) Proparoxytone as a binary foot + extrametricality

(<sup>1</sup>σσ)σ

- Jacobs (2019) also claims for the need for uneven trochees to account for proparoxytones with a stressed long vowel or a geminate consonant.

(43) Consonant gemination in Emilian proparoxytones (Jacobs 2019: 184; Loporcaro 2015: 189)

<sup>1</sup> lag:rima	'tear'	lacrimam
<sup>1</sup> peg:ora	'sheep'	pecoram
<sup>1</sup> pev:aro	'pepper'	pipere
<sup>1</sup> tav:ola	'table'	tabulam

(44) (<sup>1</sup>HL)

(<sup>1</sup>lag.gri)ma



## Appendix: Alternative analyses: binary feet + extrametricality

“The above-discussed instances of increase of segmental duration by either vowel lengthening or consonant gemination in otherwise perfect moraic trochees thus reopens the case for the existence of uneven trochee (HL), next to the even moraic trochee, as a relevant metrical constituent in metrical theory.” (Jacobs 2019: 184-185)

## Appendix: Alternative analyses: binary feet + extrametricality

- Although reference to the uneven trochee can explain vowel lengthening and consonant gemination in proparoxytones, it is insufficient to explain the attested patterns of CVL because the system with CVL only in oxytones and paroxytones is undergenerated. (Constraint set:  $\text{Id}(\text{lg})$ ,  $\text{*('HL)}$ ,  $\text{*V:}$ ,  $\text{Al-R}(\text{Ft}_{\text{max}}, \sigma, \omega)$ )

	pata	paata	patara-L	paatara-L	pa	paa		
1.	(pata)	(pata)	(pata)ra	(pata)ra	(pa)	(pa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
2.	(pata)	(pata)	(pata)ra	(pata)ra	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
3.	(pata)	(paata)	(pata)ra	(paata)ra	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
4.	(pata)	(paa)ta	(pata)ra	(paa)tara	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>

## Appendix: Alternative analyses: binary feet + extrametricality

	pata	paata	patara-L	paatara-L	pa	paa		
1.	(pata)	(pata)	(pata)ra	(pata)ra	(pa)	(pa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
2.	(pata)	(pata)	(pata)ra	(pata)ra	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
3.	(pata)	(paata)	(pata)ra	(paata)ra	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
4.	(pata)	(paa)ta	(pata)ra	(paa)tara	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>

- In language 3, uneven trochees are allowed, e.g. (paata)ra. If so, they are also available in paroxytones, e.g. (paata).
- In language 4, uneven trochees are not allowed, but Align-Right can be violated as a response to satisfy Ident(length), e.g. (paa)tara. If violations of Align-Right are allowed, they are also permissible in paroxytones, e.g. (paa)ta.
- For a single grammar to select as optimal candidates the forms (paa)tara and (pata), contradictory rankings between Ident(length) and Align-Right( $Ft_{max}$ ,  $\sigma$ ,  $\omega$ ) are needed.

## Appendix: Alternative analyses: binary feet + extrametricality

	pata	paata	patara-L	paatara-L	pa	paa		
1.	(pata)	(pata)	(pata)ra	(pata)ra	(pa)	(pa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
2.	(pata)	(pata)	(pata)ra	(pata)ra	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
3.	(pata)	(paata)	(pata)ra	(paata)ra	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>
4.	(pata)	(paa)ta	(pata)ra	(paa)tara	(pa)	(paa)	<a href="#">HG Solution</a>	<a href="#">OT Solution</a>

- Besides undergenerating an attested system, another disadvantage of extrametricality in systems like language 4 is that it cannot account for the three syllable window: an underlying stress on the fourth-to-last syllable would also survive in such a grammar, e.g. \*(paa)taraka.

## Appendix: Feature specifications in Accettura, Stigliano and Saracena

	i	ɪ	e	ɛ	ə	a	ɔ	o	u	ʊ
high	+	+	–	–	–	–	–	–	+	+
low	–	–	–	–	–	+	–	–	–	–
ATR	+	–	+	–	+	–	–	+	+	–
post	–	–	–	–	+	+	+	+	+	+
round	–	–	–	–	–	–	+	+	+	+