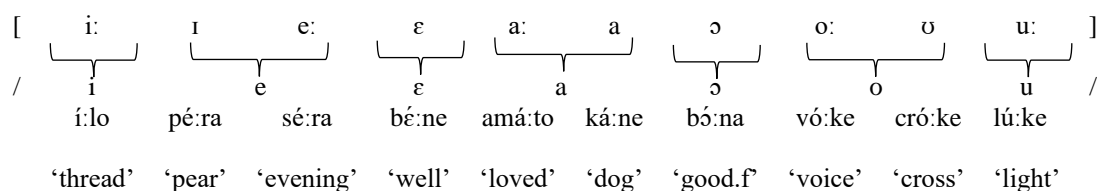


## When Vowel Reduction is Fortition: Constraints on weakness in early Romance

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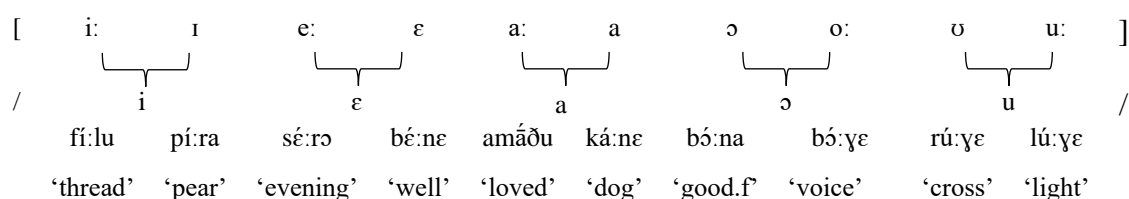
Since Diez (1836)'s foundational work, the reduction of Classical Latin's 10 phonemic monophthongs, 5 qualities /i/, /e/, /a/, /o/, /u/ contrasting both long and short varieties into the 7-vowel system of Continental Romance is perhaps the best-known phonological change of Romance historical linguistics. Loporcaro (2015) describes two variables which account for the breakdown of the Classical Latin system in favour of the romance one: 1. The existence, or not of a secondary qualitative distinction, between long and short vowels, and 2. The allophonic lengthening of tonic vowels, especially in open syllables, and the shortening of final syllables, which "muddied" the original length distribution. All modern and medieval romance languages are characterised by a reduction of these 10 original contrasts. In Western Romance /ĩ/ → /ē/, /ũ/ → /ō/ and /ã/ merged with /ā/ resulting in a 7- vowel system in tonic syllables.

Figure 3: Evolution of Late Latin vowels to Standard Italian



In Sardinian, this reduction happened differently with /ĩ/ → /ī/, /ẽ/ → /ē/, /ã/ → /ā/, /õ/ → /ō/ and /ũ/ → /ū/ resulting in a five-vowel system with a simple loss of length contrasts. Sicilian has an intermediary seven vowel system in which the lax mid vowels remain distinct, but in which the long mid tense vowels /ē/ and /ō/, the short high vowels /ĩ/ and /ũ/, and the long high vowels /ī/ and /ū/ have merged.

Figure 2: Evolution of Latin tonic vowel to Sardinian



In this poster we propose a unified account using Element Theory (KLV 1990; Backley 2011) for the process of vowel reduction and contrast loss, concentrating on the emergence of the 7 vowel Continental Romance system and providing a comparison of how the general procedure acted in both Sardinian and Sicilian. Our major proposal is that the same three vowels /ĩ/, /ũ/, /ã/ are targeted for elimination due to their representational weakness. In Element Theory, vowels are characterised by three major formant types: |A| which is energy mass and corresponds to vowel aperture, |U| a rump of energy around the F2 due to the lowering of F3, corresponding to vowel labiality or horizontal resonance and |I| which is a dip in F2 frequency and corresponds to vowel frontness (Backley 2011: 26). Representational strength corresponds to one of three conditions:

1. The association of a melody with multiple structural positions as is the case of long vowels.
2. The headedness of a melody usually corresponding to [+ATR] or Labovian peripheral vowel qualities, signalling a clarity of the vowel and distance from the central *schwa* |@| cold vowel position.
3. Through the combination of different elements, generally by the addition of |A| to |I| or |U|.

When we observe the representational distinctions of Late Latin monophthongs, we see that the three vowels /ĩ/, /ũ/, /ã/ lack any of the above correlates of representational strength and are thus weak.

Figure 4: Elemental representation of Late Latin Monophthongs

/	i:	ɪ	e:	ɛ	a:	ɐ	o:	ɔ	u:	ʊ	/
structure	x x	x	x x	x	x x	x	x x	x	x x	x	
	V		V		V		V		V		
melody	Ī	I@	ĪA	IA	Ā	A@	ŪA	OA	Ū	U@	
	FĪLO	PĪRA	SĒRA	BĒNĒ	AMĀTO	CĀNE	VŌCE	CŌLLO	LŪCE	CRŪCE	
	'thread'	'pear'	'evening'	'well'	'loved'	'dog'	'voice'	'neck'	'light'	'cross'	

The elimination of /ĩ/, /ũ/, /ã/ from the system of continental Romance can thus be understood as the reranking of a constraint against representationally weak vowels in the tonic syllable: \*WEAK-IN-STRONG, or more specifically *no weak vowel in the tonic syllable*, i.e. attribute a violation mark for every representationally weak vowel in a tonic syllable. Further constraints such as IDENT (Element) and MAX |A| assure that the more open vowel qualities are phonologized in continental Romance.

More interesting however is the language users repair strategy: the change of /ɪ/ → /e/, /ʊ/ → /o/ and /ɐ/ → /a/ in continental Romance can be described as a unified process: the increase of peripherality through headedness (1) and the increase of total vowel mass by the edition of the element |A| (2). Because these mergers increase the strength of the phonological representation through addition of |A| in continental Romance or through the addition of a head in southern Romance, thus running counter to Harris (2005)'s definition of reduction as content loss, vowel reduction in Romance is actually a process of fortition, increasing the robustness of phonological contrasts within the system.

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