The egoism of vowels: Long epenthesis and μ projection

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Main Claim The existence of long epenthetic vowels as result of morphological lengthening is another argument for a mechanism demanding morpheme-unique moraic licensing. The constraint I propose not only predicts long epenthetic vowels but solves the general problem of opaque mora assignment in contexts of (phonological or morphological) mora augmentation.

The phenomenon: long epenthesis In Southern Sierra Miwok (=SSM), some suffixes trigger lengthening of a preceding segment (1) (Broadbent, 1964; Sloan, 1991; Brown, 2003). Although the language employs an additional phonological process of iambic vowel lengthening, vowel (=V) lengthening in these contexts is truly morpheme-specific and is not predictable from the stress pattern. Another pattern of morphological lengthening exists in SSM where lengthening is the sole exponent of a morpheme, without the addition of segmental content. An example is the 3.SG morpheme that is only marked via lengthening of the final V (2). There are now two contexts for long epenthetic V's: *first*, SSM does not allow complex syllable margins and inserts epenthetic ɨ as a repair in, for example, /heːl–maː/ → [heːlɨmaː] 'I am fighting' (Broadbent, 1964, 20). If now such a phonologically motivated epenthetic V occurrs between the base and the lengthening-triggering affix, then the epenthetic V is long (1-c+d). And *second*, if lengthening of a final V is impossible for a lengthening-only morpheme, long epenthesis surfaces (2-d). Other potential examples of long epenthesis can be found in Guajiro (Álvarez, 2005) and Quechua (Weber, 1996).

(1) *Lengthening suffix* (Broadbent, 1964, 63)

a.	lit –h –a –ːmeʔ 'it's risen on us'	lithaːmeʔ
b.	kelːa –na –ːmeʔ 'It snowed on us'	kelːanaːmeʔ
c.	ʔopaː– t – ːmeʔ 'it's clouding up on us'	ʔopaːtiːmeʔ
d.	ʔumuːc – ːmeʔ 'it's raining on us'	ʔumuːciːmeʔ

(2) *Lengthening only* (Broadbent, 1964, 82+84)

a.	joːh –k –a –ː 'he got killed'	joːhkaː
b.	ʔɨniː–pa –hːaj –ni–ø–ː 'he wants to come to him'	ʔɨniːpahːajniː
c.	wɨn –si –na –ː 'he just now came'	wɨnsinaː
d.	haːja –ŋk –ː 'it is daylight'	haːjaŋkiː

Background: Opaque mora assignment Given a standard moraic theory, morphological lengthening as in the two SSM contexts can easily analysed as mora affixation (Lombardi and McCarthy, 1991; Samek-Lodovici, 1992): a floating mora is (part of) the representation for an affix and associates to a base V. However, there is an opacity problem with such an account in a standard parallel OT-account: the epenthetic V's are apparently dominated by their 'own' epenthetic μ in addition to the affix μ. In rule-based terms, a rule assigning epenthetic μ's to every μ-less V must apply after V epenthesis but before association of floating μ's in order to predict long epenthetic V's; an instance of *counterbleeding* (Kiparsky, 1973). In terms of OT, DEP-μ is expected to harmonically bind a candidate that inserts an epenthetic μ *and* associates the epenthetic V to the affix μ. The problem of opaque μ assignment has been discussed for two other domains: *1.)* the deletion of an underlying V only results in compensatory lengthening (=CL) if it is underlyingly associated to a μ, and *2.)* the association of a floating μ to an underlying μ only results in a long V if this V is underlyingly associated to a μ– since μ's on short V's and (moraic) coda consonant are non-contrastive and must hence not be part of the underlying representation ('Richness of the Base' (Prince and Smolensky, 1993/2002)), a problem for standard OT arises (Wolf, 2007; Topintzi, 2010; Kiparsky, 2011). One possible solution is the introduction of a serial component in OT: in a stratal model (Trommer, 2011; Bermúdez-Otero, in preparation) or in Harmonic Serialism (McCarthy, 2010). An intermediate optimization step would then assign μ's to all underlyingly μ-less V's.

Long epenthetic V's and a new layer of opaqueness The long epenthetic V's in SSM, however, add another layer of opacity since a non-underlying V is dominated by a μ on its own and this

V is only inserted at a point in the derivation where the affix μ is already present. This is most striking in the context where long epenthesis is the exponent of a morpheme (2): the epenthetic V is not phonologically motivated but apparently only inserted to realize the affix μ. A serial solution in stratal OT is hence impossible: there is no intermediate base form where epenthesis already applied but the affix μ is not yet in the derivation. On the other hand, a HS account needs to assume that *a.)* epenthesis is the insertion of a V that is already dominated by a μ and that *b.)* epenthesis and association of a floating μ is one step in order to correctly predict the long epenthetic V's. Especially this first assumption is deeply problematic since it has been argued that epenthetic V's in some languages are ignored by phonological processes and best analysed as generally μ-less (Piggott, 1995; van Oostendorp, 1995; Hall, 2011).

My proposal I argue that opaque μ projection follows from the constraint (3) demanding that every V must be dominated by at least one μ that is not affiliated with another morpheme. It is defined with reference to the concept of morphological 'colours' (=affiliation) stating that all elements belonging to one morpheme can be identified by a morph-unique colour and that epenthetic elements lack any colour (van Oostendorp, 2006).

(3) $\mu_{i/\emptyset}$ ↑ V_i — Assign a violation mark for every segment V_i that does not project a morph-unique μ (=a μ that bears the same morphological colour $_i$ or no morphological colour at all).

This constraint is in fact very similar to the constraint V-Wt ('All vowels must project their own mora') that Goldrick (2000) assumes in his analysis for opaque μ assignment in the context of CL. It's effect for the pre-lengthening suffixes in SSM is illustrated in tableau (4): the bleeding candidate (4-b) where the epenthetic V is only dominated by the affix μ is excluded by $V_i \longrightarrow \mu_{i/\emptyset}$ and (4-c) wins that also inserts an epenthetic μ for the epenthetic V. The apparently templatic effects in SSM where a morpheme must be preceded/followed by a long V can hence easily accounted for in a standard mora affix analysis, strengthening the claim that nonconcatenative morphology is an epiphenomenon and arises from affixation of independently motivated primitives of the phonological theory (Lieber, 1992; Bye and Svenonius, 2012; Bermúdez-Otero, 2012).

(4) *Morph-unique μ-projection and long epenthesis*

	*Float	$\mu_{i/\emptyset}$ ↑ V_i	*CVVC	Dep S	Dep μ
μ_1 $\mu_1\mu_1$ μ_3 μ_3 / ʔ₁ o₁ p₁ a₁ + t₂ +m₃e₃ ʔ₃					
a. μ_1 $\mu_1\mu_1$ μ_3 μ_3 / ʔ₁ o₁ p₁ a₁ t₂ m₃ e₃ ʔ₃	*!		*		
b. μ_1 $\mu_1\mu_1$ μ_3 μ_3 / ʔ₁ o₁ p₁ a₁ t₂ i m₃e₃ ʔ₃		*!		*	
☞ c. μ_1 $\mu_1\mu_1$ μ μ_3 μ_3 / ʔ₁ o₁ p₁ a₁ t₂ i m₃e₃ ʔ₃				*	*

Further predictions The assumption of $V_i \longrightarrow \mu_{i/\emptyset}$ predicts that in a language where it is ranked low, only certain morphemes are subject to morphological lengthening (=those with an underlying μ dominating the vowel in the scope of the morphological lengthening) while others never undergo morphological lengthening (=those with no underlying μ on the 'to-be-lengthened' vowel). I argue that this prediction is borne out and that various languages exist where only certain (lexical) classes of words undergo morphological lengthening while others realize their underlying length faithfully (e.g. in Zuni (Newman, 1965), Tzutujil (Dayley, 1985), Hausa (Newman, 2000), Diegueño (Walker, 1970), or Algonquian (Costa, 1996)).