

Not all epenthetic consonants are low-sonority

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1 Overview

- Epenthetic segments tend to fall low on markedness hierarchies (McCarthy and Prince, 1994; Lombardi, 2002; de Lacy, 2006, a.o.)
- While markedness hierarchies may conflict, the general prediction this makes is that epenthesis should tend towards less-sonorous, less-marked segments
- Accordingly, the attested typology of default epenthetic consonants is quite restricted:

(1) Inventory of attested epenthetic consonants (de Lacy, 2006: 81)

	Labial	Alveolar	Palatal	Velar	Glottal
stops		t			ʔ
affricates					
fricatives					h
nasals		n			N
laterals					
rhotics		r r̥ ɾ			
glides	w		j		

- The point of this talk: the typology of epenthetic consonants is a bit larger than this
- Secondary point: epenthetic consonants aren't just assimilatory or default, it's also possible for them to be some mixture of the two (cf. Culhane, 2018: 66)

1.1 Data

- I focus on two dialects of Uab Meto (Austronesian, West Timor)
 - In the Amarasi dialect, the epenthetic consonant has a fixed quality as /g/¹
 - In the Molo dialect, the epenthetic consonant alternates depending on the preceding vowel and is realized as /b, l, \widehat{jj} /

¹This is based on the Oekabiti variety. In other varieties of Amarasi, the epenthetic consonant surfaces as /g^w/ or /dʒ/ (Edwards 2016: 202; Edwards 2020: 215).

- What drives consonant epenthesis is the need for there to be no hiatus across a morpheme boundary (*V-V)
 - n.b. Edwards (2016: 52) and Culhane (2018: 59) analyze this as driven by CRISPEGE
- In the Molo dialect, round vowels condition /b/, front mid vowels condition /l/, and high vowels condition /j̥j̥/

(2) Molo consonant epenthesis

- | | | | |
|----|-------------|---------------------------|-------------------|
| a. | /ʔasu-e/ | → [ʔas <u>b</u> -e] | ‘the dog’ |
| b. | /fatu-es/ | → [fat <u>b</u> -es] | ‘a stone’ |
| c. | /belo-e/ | → [bel <u>b</u> -e] | ‘the monkey’ |
| d. | /mepo-e/ | → [mep <u>b</u> -e] | ‘work it’ |
| e. | /ʔanoʔe-e/ | → [ʔanoʔ <u>l</u> -e] | ‘the lontar palm’ |
| f. | /loli-es/ | → [lo <u>l̥j̥j̥</u> -es] | ‘a yam’ |
| g. | /nafnafi-e/ | → [nafnaf <u>j̥j̥</u> -e] | ‘the spider’ |
| h. | /tasi-e/ | → [tas <u>j̥j̥</u> -e] | ‘the sea’ |
| i. | /toti-e/ | → [tot <u>j̥j̥</u> -e] | ‘tell it’ |

- In the Amarasi (Oekabiti) dialect, the epenthetic consonant has a fixed quality as /g/
 - n.b. there is also a metathesis pattern here, we will return to this later

(3) Amarasi (Oekabiti) consonant epenthesis

- | | | | |
|----|---------------|---------------------------|---------------|
| a. | /ʔasu-e/ | → [ʔaus <u>g</u> -e] | ‘the dog’ |
| b. | /fatu-es/ | → [faut <u>g</u> -es] | ‘a stone’ |
| c. | /kero-e/ | → [keor <u>g</u> -e] | ‘the monkey’ |
| d. | /mepo-e/ | → [meop <u>g</u> -e] | ‘work it’ |
| e. | /raokkase-es/ | → [raokkaes <u>g</u> -es] | ‘a yam’ |
| f. | /raokneke-e/ | → [raoknek <u>g</u> -e] | ‘the cassava’ |
| g. | /nafnafi-e/ | → [nafnaf <u>g</u> -e] | ‘the spider’ |
| h. | /tasi-e/ | → [tais <u>g</u> -e] | ‘the sea’ |
| i. | /toti-e/ | → [tort <u>g</u> -e] | ‘tell it’ |

- For both dialects, words with no illicit hiatus have no consonant epenthesis

(4) No consonant epenthesis when no *V-V (both dialects)

- | | | | |
|----|------------|--------------|----------------|
| a. | /noah-es/ | → [noah-es] | ‘a coconut’ |
| b. | /tai-s-e/ | → [tai-s-e] | ‘the sarong’ |
| c. | /loi-t-e/ | → [loi-t-e] | ‘the money’ |
| d. | /kokis-e/ | → [kokis-e] | ‘the bread’ |
| e. | /manus-es/ | → [mauns-es] | ‘a betel vine’ |

- We know that these consonants are epenthetic for a couple reasons:

1. Allomorphy.

- The plural allomorph has three forms in Molo:
 - *-nuk* after VV# e.g. [meo] ‘cat’ [m^heo-nuk] ‘cats’
 - *-n* after CV# e.g. [belo] ‘monkey’ [belo-n] ‘monkeys’
 - *-in* after C# e.g. [ʔamepot] ‘worker’ [ʔame^hopt-in] ‘workers’
- If these forms were underlyingly consonant-final (e.g. */fatub/ ‘stone’, instead of /fatu/), we’d expect to see the *-in* allomorph (e.g. *[fautb-in], instead of [fatu-n])

2. Other phonological alternations.

- CVCVC words undergo metathesis in these contexts (e.g. /kokis-e/ → [koiks-e] ‘the bread’)
- Words undergoing consonant epenthesis do not metathesize (e.g. */fatub-e/ → *[fautb-e] ‘the stone’, instead of [fatb-e])

1.2 Background

- Uab Meto is a dialect cluster spoken in West Timor, Indonesia
- The consonant inventory is given in (5)

(5) Uab Meto consonant inventory

(Consonants only in Amarasi in gray; consonants that are epenthetic in parentheses)

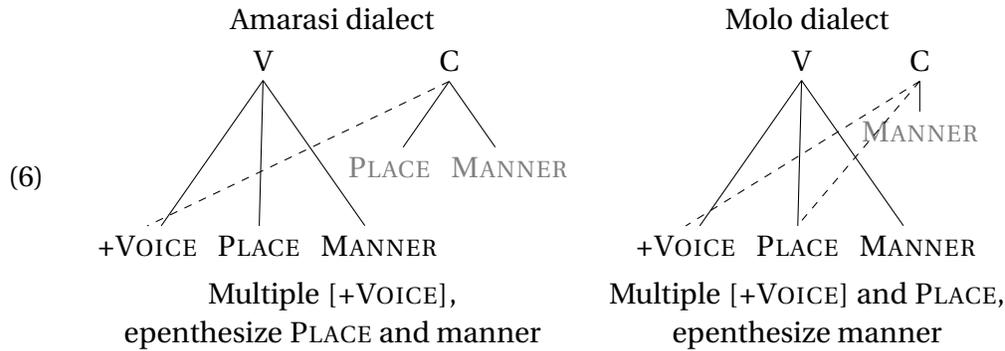
	Labial	Alveolar	Palatal	Velar	Glottal
Plosive	b p	t		k (g)	ʔ
Nasal	m	n			
Fricative	f	s			h
Affricate			(tʃ)		
Liquid		l /r			

- There are seven vowels /a i ɪ e o ɔ u/, with a possible length distinction
- Uab Meto also has a robust metathesis pattern, which I analyze as gestural overlap (Mooney 2021, contra Edwards 2016, 2018, 2020)
- Data, unless otherwise cited, comes from my own fieldwork in Indonesia in 2018 and 2019

1.3 Proposal

- Following the insights of Culhane (2018) and Edwards (2016, 2020), I analyze these patterns as *partially* assimilatory
- Some, but not all, features spread from the vowel to the consonant

- My contribution is to argue that manner features are truly epenthesized in this pattern (and in Amarasī, place features too)



- I implement this with two families of constraints:
 - DEP-F: a constraint family against featural epenthesis (Krämer, 1998; Archangeli, 2000, a.o.)
 - *MULTIPLE: a constraint family against spreading (Uffmann, 2006)
- Languages with *default* epenthesis have dominated DEP-F
- Languages with *assimilatory* epenthesis have dominated *MULTIPLE
- Uab Meto has both dominated DEP-F and *MULTIPLE – it uses different strategies for different features
- Marked features are more difficult to insert or spread
 - Marked PLACE (*PHAR >> *LAB >> *DORS >> *COR) (Uffmann 2006: 1097)
 - Marked via sonority (*[+NAS] >> *[+VOI, +CONT] >> *[-VOI, +CONT] >> *[-CONT]) (e.g. Gnanadesikan 1997, Parker 2002 for nasals > fricatives > stops)
- I implement these hierarchies with constraint conjunction (Smolensky, 1995; Crowhurst and Hewitt, 1997; Moreton and Smolensky, 2002)
- DEP-F conjoins with PLACE and sonority-based markedness hierarchies
 - Conjunction with PLACE hierarchies:
DEP∧*PHAR >> DEP∧*LAB >> DEP∧*DORS >> DEP∧*COR
 - Conjunction with sonority hierarchies:
DEP[+VOI,+CONT,+NAS] >> DEP[-VOI,-NAS] >> DEP[-CONT]
- In both dialects, [±VOICE] can only be spread, not inserted
- What this means is that selecting an epenthetic consonant is an elimination procedure: spread [+VOICE], and then select the least-marked place/manner

Amarasi dialect

		PHAR	LAB	DOR	COR
(7)	+NAS	-CONT	<u>m</u>		<u>n</u>
	-NAS	+CONT	h	f	s <u>r</u>
		-CONT	?	p <u>b</u>	k <u>g</u>

Molo dialect

		PHAR	LAB	DOR	COR	
(8)	+NAS	-CONT	<u>m</u>		<u>n</u>	
	-NAS	+CONT	h	f	s	
		-CONT, +STR			<u>ʃ</u>	
		-CONT	?	p <u>b</u>	k	t <u>l</u>

- Intuitively, the reason why the typology of epenthetic consonants is so restricted is because epenthetic consonants want to minimally perturb the existing gestural dynamics
- What counts as minimal perturbation can be evaluated along two dimensions:
 - Acoustically: low-sonority, low-displacement gestures (DEP-F)
 - Articulatorily: low displacement away from existing gestures (*MULTIPLE)

2 Default epenthesis: Amarasi dialect

- In Amarasi, we have default epenthesis of /g/
- Epenthesis prevents vowel hiatus across a morpheme boundary

(9)	Default epenthetic consonant			Amarasi dialect, Oekabiti speaker
a.	meo <u>g</u> -e	‘the cat’	cf. meo	‘cat’
b.	fa <u>u</u> t <u>g</u> -e	‘the stone’	cf. fatu	‘stone’
c.	ke <u>o</u> r <u>g</u> -e	‘the monkey’	cf. kero	‘monkey’
d.	ta <u>i</u> s <u>g</u> -e	‘the sea’	cf. tasi	‘sea’
e.	ro <u>i</u> t <u>g</u> -e	‘the bread’	cf. roti	‘bread’

- I treat Amarasi as having dominated DEP-F
- I assume that DEP-F conjoins with sonority and place-based markedness hierarchies:

(10) DEP[+NAS, +VOICE] ≫ DEP[+CONT] ≫ DEP[-NAS, -VOICE] ≫ DEP[-CONT]

(11) DEP∧*PHAR ≫ DEP∧*LAB ≫ DEP∧*DORS ≫ DEP∧*COR

- In Amarasi, only [-CONT] and [DORS]/[COR] features may be inserted – all other DEP-F varieties are undominated
- I adopt a cover constraint HAVEFEATURES, which forces an epenthetic segment to be specified for voice, place, and manner (modeled after Padgett (1995)’s HAVEPLACE)

- In deriving /meo-e/ → [meog-e], voice spreads because DEP[±VOICE] is undominated

	/ 'meo-e/	HAVEFEATURES	DEP[±VOICE]	*V-V	*MULT[±VOICE]	DEP-C
	a. 'meo-e			*!		
(12)	b. 'meoC-e	*!				*
	☞ c. meog-e				*	*
	d. meok-e		*!			*

- Similarly, the epenthetic consonant must be [-CONT], since epenthesis of a low-sonority feature is easier than a high-sonority one

	/ 'meo-e/	*V-V	*MULTIPLEΛ[±CONT]	DEP[+CONT]	DEP[-CONT]
	a. 'meo ₁ y ₁ -e		*!		
(13)	☞ b. 'meog-e				*
	c. meoy-e			*!	
	d. meor-e			*!	

- Lastly, the epenthetic consonant must also be dorsal because voiced coronals are independently marked in the language (*d, *z)

	/ 'meo-e/	*d, *z	*MULTIPLEΛPLACE	*V-V	DEPΛ*LAB	DEPΛ*DORS	DEPΛ*COR
	a. 'meo-e			*!			
(14)	☞ b. 'meog-e					*	
	c. meod-e	*!					*
	d. meob-e				*!		
	e. meo ₁ b ₁ -e		*!				

- The reason why dorsals are preferred over coronals in Amarasi is because they are the least-marked place for a [+VOICE, -CONTINUANT] consonant
- Main takeaway: the availability of certain epenthetic consonants is tightly connected to the inventory of a language
- The Amarasi pattern is complex, but is compatible with proposed universal markedness hierarchies

3 Multiple epenthesis: Molo dialect

- In Molo, PLACE features cannot be epenthized at all
- Instead, they must spread from adjacent vowels

(15)	Epenthetic consonants are voiced and match the vowel's PLACE	
	a. /fatu-es/	→ [fat <u>b</u> -es] 'a stone'
	b. /belo-e/	→ [bel <u>b</u> -e] 'the monkey'

Molo dialect

- c. /mepo-e/ → [mepb-e] ‘work it’
- d. /ʔanoʔe-e/ → [ʔanoʔl-e] ‘the lontar palm’
- e. /nafnafi-e/ → [nafnafjj-e] ‘the spider’
- f. /tasi-e/ → [tasjj-e] ‘the sea’
- g. /toti-e/ → [totjj-e] ‘tell it’

- I analyze this similarly to the Amarasi pattern: voice and [PLACE] spread, and manner features are inserted
- I assume that vowels and consonants bear similar place features (cf. Culhane, 2018: 51)
 - High vowels have a DORSAL feature
 - Front vowels have COR and round vowels have LAB

(16)

		DORSAL		
	LAB	LAB	COR	COR
Vowels	o, ɔ	u	i, I	e
Consonants	b		j̥j̥	l

- So, what’s happening here is that [+VOICE] and PLACE spread, but manner features are epenthesized

(17)

	/'meo-e/	*GLIDE	DEP[PLACE]	DEP[+CONT]	DEP[-CONT]	*MULTIPLE[PLACE]
a.	'meow-e	*!				*
b.	'meob-e				*	*
c.	meol-e		*!		*	
d.	meof-e			*!		*

4 Discussion

- I’ve proposed that languages may use a combination of DEP-F and *MULTIPLE to assign features
- DEP-F and *MULTIPLE undergo constraint conjunction with larger markedness hierarchies ⇒ typology has a tendency towards coronals and low-sonority segments

4.1 Alternatives

Alternative 1. Underspecification and spreading

- One criticism is that this type of constraint conjunction is clunky, and possibly offers too many degrees of freedom
- One alternative is to spread the vowel to the consonant, and let the phonetics handle the particular mapping (Culhane 2018: 51)

- This is surprising because non-local diphthongization is possible in (22)

(22) CVCVC words metathesize

- a. /'manus-e/ → ['maʊns-e] 'the betel'
- b. /'ʔenoʔ-e/ → ['ʔeʊnʔ-e] 'the door'
- c. /'kebaleʔ-e/ → ['kebaelʔ-e] 'the wardrobe'
- d. /'kokɪs-e/ → ['kɔiks-e] 'the bread'

- If epenthetic segments can only inherit PLACE features by Host-Epenthetic correspondence, then there is no Host for epenthetic segment to match in (21)
- We need either IO faith or floating features to get the pattern in (21) (splitting or spreading should work, but not host-epenthetic correspondence)

Alternative 3. Splitting

- Another alternative is to analyze this pattern as splitting (Staroverov, 2014), where the epenthetic consonant violates INTEGRITY and IDENT(F) instead of DEP
- The analysis is very similar to a spreading one, except it predicts a slightly different typology of consonants
- In a splitting-based analysis of Meto, IDENT[-CONT] must be highly dominated
 - Prediction: mid-sonority consonant epenthesis systems should tend to occur in languages with consonant alternations (fortition, spirantization, etc.)
- By contrast, the DEP(F) approach does not predict there to be any relationship between spirantization/fortition and consonant epenthesis
 - Fortition/spirantization involves IDENT(F)
 - But consonant epenthesis involves DEP(F)
 - IDENT(F) and DEP(F) may be redundant, but let future typological work decide

5 Conclusion

- We've examined two patterns of epenthesis in Uab Meto (Amarasi /g/, Molo /b, l, \widehat{jj} /)
- Both these patterns are *partially* assimilatory, even though they vary on whether the epenthetic consonant has fixed or alternating quality
- What epenthetic consonants have in common:
 - They insert “minimal” features (DEP-F conjoined with markedness hierarchies)
 - They minimally modify existing gestures (*MULTIPLE)
 - or some combination of the two

References

- Archangeli, Diana. 2000. Evaluation in OT 17:219–230.
- Crowhurst, Megan, and Mark Hewitt. 1997. Boolean operations and constraint interactions in Optimality Theory. *ROA*-229.
- Culhane, Kirsten. 2018. Consonant Insertions: A synchronic and diachronic account of Amfo'an. Master's thesis, Australian National University.
- de Lacy, Paul. 2006. *Markedness: Reduction and Preservation in Phonology*. Cambridge University Press, 1st edition edition.
- Edwards, Owen. 2016. Metathesis and Unmetathesis: Parallelism and Complementarity in Amarasi, Timor. Doctoral Dissertation, Australian National University.
- Edwards, Owen. 2018. The morphology and phonology of metathesis in Amarasi. *Morphology* 28:25–69.
- Edwards, Owen. 2020. *Metathesis and unmetathesis in Amarasi*. Language Science Press.
- Gnanadesikan, Amalia Elisabeth. 1997. Phonology with ternary scales. PhD Thesis.
- Kitto, Catherine, and Paul de Lacy. 1999. Correspondence and epenthetic quality.
- Krämer, Martin. 1998. *A correspondence approach to vowel harmony and disharmony*. Sonderforschungsbereich 282.
- Lombardi, Linda. 2002. Coronal Epenthesis and Markedness. *Phonology* 19:219–251.
- McCarthy, John J., and Alan S. Prince. 1994. The emergence of the unmarked: Optimality in prosodic morphology.
- Mooney, Kate. 2021. Prosodic Metathesis is Deletion and Feature Spreading: Evidence from Uab Meto. URL <https://ling.auf.net/lingbuzz/005814>.
- Moreton, Elliot, and Paul Smolensky. 2002. Typological Consequences of Local Constraint Conjunction.
- Padgett, Jaye. 1995. Partial class behavior and nasal place assimilation.
- Parker, Stephen. 2002. Quantifying the sonority hierarchy. Doctoral Dissertation, University of Massachusetts Amherst.
- Smolensky, Paul. 1995. On the Structure of the Constraint Component Con of UG. In *Handout of Talk Presented at UCLA*.
- Stanton, Juliet, and Sam Zukoff. 2018. Prosodic identity in copy epenthesis. *Natural Language & Linguistic Theory* 36:637–684.
- Staroverov, Petr. 2014. Splitting Theory and Consonant Epenthesis. Doctoral Dissertation, Rutgers University.
- Uffmann, Christian. 2006. Epenthetic vowel quality in loanwords: Empirical and formal issues. *Lingua* 116:1079–1111.