

## Spontaneous nasalization in Wichi'

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## Introduction

- Vowel nasalization: An allophonic assimilation process, whereby vowels are targeted by specific triggers.
- Two types of triggers:
  1. Nasal consonants (regular nasalization)
  2. Glottal fricative (spontaneous nasalization)

Consequence:

Phonetic: nasal vowel allophones

## Wichi' nasalization

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

(1) Nasalization triggered by a nasal consonant

a. /asnam/	[asnām]	'blind'
b. /noway/	[nōway]	'be.afraid'
c. /maw'o/	[māwo]	'fox'
d. /niyak/	[niyak]	'rope'
e. /yomet/	[yomēt]	'turn off'
f. /tsinuk/	[tsinūk]	'duraznillo'
f. /hiwen-hi?a/	[hiwenḥi?a]	'not give'

## Wichi' nasalization

Linear nasalization rule

$V \rightarrow \tilde{V} / [+nasal] \_$

SPREAD[nasal] >> \*NASALVOWEL (WALKER 1998)

- Vowel nasalization is triggered by a nasal onset
- [+nasal] means contrastive lowering of the velopharyngeal port  
/t/ vs. /n/

**Regular nasalization**

## Wichi' nasalization

(2) Nasalization triggered by the glottal fricative

/-amehen'/	[-amēhēn']	'with you all'
/ahatey/	[ahātey]	'outsider'
/ahayuk/	[ahāyuk]	'mistol'
/aʔohoʔ/	[aʔohōʔ]	'outside'
/ĕahuʔ/	[ĕahūʔ]	'arrow'
/hanex/	[hānēx]	'to know, learn'
/haʔlaʔ/	[hāʔlaʔ]	'tree'
/hiw'en/	[hiw'ēn]	'give'
/tahaʔ/	[tahāʔ]	'here'
/weĕehiʔ/	[weĕehiʔ]	'behind'
/yehaʔ/	[yehāʔ]	negative imperative
/ts'unah-e/	[ts'unah-ē]	'humming bird-DIR.OBJ.'
/ĕaweħ-ax/	[ĕaweħ-āx]	'carry-AGT.'

## Wichi' nasalization

Linear nasalization rule

$V \rightarrow \tilde{V} / [+ʔ] \_$

- Vowel nasalization is triggered by an /h/ onset
- It is not immediately clear that /h/ is [+nasal] contrastively

**Spontaneous nasalization**  
Rhinoglottophilia (Matisoff 1975)

### Wichi' phonological properties

	Bilabial	Alveolar	Affricate	Palatal	Labiodental	Velar	Glottal
Plain	p	t	ts	k'	k <sup>w</sup>	k	ʔ
Ejective	p'	t'	ts'	k'	k <sup>w</sup>	k'	
Fricative		s			x <sup>w</sup>	x	h
Nasal	m	n					
Approximant	w	l, lʔ		y			

- /h/ contrasts with /ʔ/ at the same place of articulation = [+continuant]
- /h/ contrasts with /s/, /x<sup>w</sup>/ and /x/ at the same manner of articulation = [glottal]

### Spontaneous nasalization

Language	Trigger	Target	Source
Aguaruna	h	N/A	Payne (1974)
Arabella	h	All vowels	Rich (1963: 197)
Lahu	h, #Ø	strongest on ə, a	Sprigg (1987)
Lao	ʔ, h	low vowels, /a/	Matisoff (1975): 267
Lisu	h, #Ø	strongest on ə, a	Sprigg (1987)
Miri	h	/a/	Blust (1998)
Rennelrese	h	All vowels, but most salient on /a/	Blust (1998)
Seimat	h	All vowels	Blust (1998)
Thai	ʔ, h	low vowels, /a/	Matisoff (1975): 267
Wichi'	h, (w)	All vowels	Fieldwork

### Wichi' phonological properties

(3) Absence of nasalization with non-glottal fricatives

/čux <sup>w</sup> iyex/	[čux <sup>w</sup> iyex]	'eat'
/asus/	[asus]	'bat'
/-amexen'/	[-amexen']	'with you all (close by)'
/-amehen'/	[-amehẽn']	'with you all (far away)'

### Wichi' phonological properties

(4) Sonorant devoicing in Wichi'

/-amhoʔ/	[am̥oʔ]	2 <sup>nd</sup> direct object
/anhalaʔ/	[an̥alaʔ]	'vizcacha'
/hnus/	[n̥us]	'nose'
/-k'uhwiʔ/	[-k'uh̥wiʔ]	'under'
/asnam/	[asnam]	'blind'
/punx <sup>w</sup> as/	[punx <sup>w</sup> as]	'family'
/taxna/	[taxna]	'this (close by)'
/wexwet/	[wexwet]	'chair'
/čẽn+ hiʔa/	→ [čẽn̥iʔa]	'not send'
/t'isan+hiʔ/	→ [t'isan̥iʔ]	'container for meat'

[+son] → [-voice] / \_\_\_ [glottal][-voice][+cont]

### Discussion

There are two options to represent spontaneous nasalization in Wichi' phonologically.

1. Assume /h̃/: Ladefoged and Maddieson (1996), Rich (1963), Blust (1998), and Walker and Pullum (1999)

perceptibility and acquisition

### Discussion

Blust (1998: 313)

"Because m, n, ŋ are commonplace in the world's languages, vowel nasality plays little role in the recognition [i.e., perception] of these segments as nasal consonants. Rather the consonants themselves are immediately perceived as the locus of nasality. By contrast, [glottal nasal fricatives] are rare, and here it is not the nasality of the consonants, but the nasality of the vowels that is perceptually prominent".

### Discussion

Seimat (Austronesian)

$v \rightarrow v // /h/ \_$

$v \rightarrow \tilde{v} // /h/ \_$

articulation > phonological generalization

### Discussion

2. Articulatory mechanisms of /h/: Ohala (1975), Matisoff (1975), and Ohala and Busa (1995)

Ohala (1975) says that a segment with the attribute of having an open glottis, or breathy voice, causes similar effects in the spectra of adjacent vowels as caused by nasal consonants

$v \rightarrow \tilde{v} / [+spread\ glottis] \_$

### Discussion

Ohala and Busa (1995) most noticeable with glottal fricatives rather than all fricatives.

*perceptual assimilation* and not *articulatory assimilation*.

### Options

(7) Linear representation of Wichí' nasalization  
 $v \rightarrow \tilde{v} / [+nasal] \_$

[+nasal] = /m, n, ŋ, h/

(8) Autosegmental representation of Wichí' spontaneous nasalization



### Conclusions

There are two types of nasalization processes:  
 regular vs. spontaneous

There are possibly two assimilation types:  
 articulatory vs. perceptual

Seimat vs. Wichí'

Future: spontaneous nasalization implies regular nasalization

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