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Preaspiration in Northern Otomi: A relic of an old fortis/lenis contrast

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1. Introduction.¹

In this paper I show what can happen to the aspiration feature of a preaspirated series of stops /^hp,^ht,^hk/ once such stops are reanalyzed as simple stops /p,t,k/. More specifically, the case study is on the phonetics-phonology interface of Northern Otomi, a Mesoamerican language of the Otomi family (Oto-Pamean, Oto-Manguean). In this respect, I focus on the distribution of an intersyllabic aspiration [h] which occurs in coda of a word-internal syllable, such as for example in the words [ʔbɛ^h.po] ‘sister-in-law’ or [mɔ^h.k^hɔ̃] ‘priest’. One of the goals of the paper is to provide the possible constraints and rules that determine when this aspiration is phonetic and when it is better characterized as phonological, because as innocuous as it may be, it provides important clues as to how to characterize the phonology of the nucleus of a Northern Otomi syllable. It further represents a backing phenomenon that serves as a keystone to understand the history and development of the consonantal system of Otomi. In this way, I interpret intersyllabic aspiration as the only remnant of the aspirated feature of preaspirated plosives in Old Otomi, which got otherwise lost in initial position, so that a word such as [tɪ^h.ti] ‘encourage someone’ comes from Old Otomi *^htɪ.^hti.

1.1. Introduction to Otomi.

Otomi is a group of very closely related languages spoken in Mexico which has emerged as a small linguistic family in recent times. While its internal diversity is uncontroversial (summarized in Lastra 2001), there is no established consensus as to which of the different linguistic subsystems identified so far as Otomi should be treated as independent languages and which as dialects of those languages. This is why Otomi has traditionally been talked about as forming a dialectal continuum rather than a family and why authors in Mexico avoid using terms such as “language” and “dialect” and instead use “variety” as a cover term.

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Against this inertia, the official stance by the National Institute of Indigenous Languages (INALI) in the CLIN (2008) is to treat Otomi innovatively as forming a “linguistic group” with nine different “linguistic varieties”. INALI’s linguistic varieties are treated as genuine languages for official purposes. This is the stance I take in this paper although with my own understanding of the current dialectal situation.

In this respect, based on previous proposals in Soustelle (1937), Lastra (2001, 2010), Andrews *et al.* (1983[1978]) and on my own field observations, the different Otomi varieties spoken nowadays could be seen as grouped in four geographical areas representing six different languages: Northern Otomi, Eastern Otomi, Western Otomi and three Southern languages (Ixtenco Otomi, Ocoyoacac Otomi and Tilapa Otomi). While the Southern languages are spoken in small communities with relative uniformity, the other first three constitute dialectal continua which include different linguistic varieties as dialects. Northern Otomi comprises, in this view, the varieties spoken in the central part of Hidalgo, Querétaro, and the north of the State of Mexico, including thus Mezquital Otomi, Santiago Mexquititlán Otomi, Tolimán Otomi, Tierra Blanca Otomi, Guanajuato Otomi, Acambay Otomi and San Ildefonso Tultepec Otomi. The present paper is based on the variety of San Ildefonso Tultepec Otomi.

The consonant chart of phonemes existing in Northern Otomi from the variety of San Ildefonso Tultepec is given in Table 1.² This is a large inventory consisting of 39 units (excluding allophones).

	Lab.		Den.		Alv.		Pal-Alv.		Pal.		Vel.		Glott.	
Stop	p	b	t	d							k	g		ʔ
Ejective		'b	t'								k'			
Aspirated	p ^h		t ^h								k ^h			
Labial											k ^w			
Aspirated-Labial											k ^{hw}			
Affricates			\overline{ts}					$\overline{tʃ}$						
Ejective			$\overline{ts'}$					$\overline{tʃ'}$						
Fricatives					s	z		ʃ						h
Flap						r								
Ejective						'r								
Trill						r								
Liquid						l								
Nasals	\underline{m}^3	m			\underline{n}	n								
Ejective		'm				'n								
Approximants	\underline{w}	w							j	j				
Ejective		'w								'j				

Table 1. Consonant phonemes in San Ildefonso Tultepec Otomi, Northern Otomi.

² The language has three tones. Two level tones (high, represented by an acute accent and low, not indicated) and an ascending tone.

³ For the notation of voiceless nasals and approximants in Northern Otomi, I follow here Knapp's (2008) treatment of similar segments in Mazahua, which is closely related to Otomi. This treatment follows Maddieson's (1984) typology of sounds in the world's languages. For Otomi, the segments are often articulated as preaspirated nasals, but not always.

For the simple stops, there is a contrast based on sonority, i.e. /p,t,k/ vs. /b,d,g/. The different examples in (1) give instances of contrastive structures, sometimes with minimal pairs when they exist, which may additionally include loanwords from Spanish.

(1) /p/		/b/	
pa	‘day’	bá	{3.PST.HITHER}
pála	‘shovel’ (Sp. <i>pala</i>)	bála	‘bullet’ (Sp. <i>bala</i>)
páda	‘vulture’	bātsi	‘child’
pǒntʔi	‘blessing’	bəhɔi	‘mud’
/t/		/d/	
tó	‘mother-in-law’	dǒ	‘stone’
téhé	‘cough’	déhe	‘water’
tahtá	‘father’	dada	‘old man’
toi	‘market’	dó	‘eye’
/k/		/g/	
ka	‘in, on, at’	ga	{1.PRES.IRREALIS}
kūi	‘chase’	góné	‘dumb’
kítʔa	‘5’	gǒ	‘twin’
kódo	‘turkey’	góhó	‘4’

For the purpose of the present study, it is important to elaborate a little on syllabic structure and coda position in Otomi. While it is relatively common that Oto-Manguean languages have a syllabic structure CV, as for Otomi, this is not the only existing structure. The old syllabic structure CV is still recognizable in historical lexical roots in Otomi -an aspect which is only available for language specialist. Word internally, however, open syllables, such as (2a) alternate with close syllables in the making of the sound structure of a word. Close syllables in Otomi can be simple, as in (2b), or they can be complex, as in (2c). These codae emerge from morphotactic adjustments at morpheme boundaries, but for many of the simple codae at least, the morphemes giving rise to them are now unavailable to the common speaker for both segmentation and semantic accessibility, i.e. they have become part of the phonology of the word. In all examples, syllable boundary is indicated by a dot.

(2) a.		CV.X	
	/beni/	[be.ni]	‘remember’
	/boʃi/	[bo.ʃi]	‘rooster’
	/dese/	[de.se]	‘grasshopper’
b.		CVC.X	
	/nsabdo/	[nsab.do]	‘Saturday’
	/zeʃkʰo/	[zeʃ.kʰo]	‘trousers’
	/mʔepʰte/	[m.ʔepʰ.te]	(a community role)
c.		CVCC.X	
	/handgi/	[hand.gi]	‘see me’
	/toʔmhe/	[toʔm.he]	‘we wait’

Finally, most lexical words in Northern Otomi are disyllabic in prosodic structure. For this type of words, there is a default stress rule by which stress falls on the first syllable, as in (3). In these examples, as elsewhere, stress is indicated with underlining.

- (3) pǒ.nt'i 'blessing'
bə.hɔi 'mud'
dé.he 'water'
da.da 'old man'
kí.t'a '5'
kó.do 'turkey'
gó.hó '4'
 etc.

As the rule has a default application across the lexicon, deviating patterns like the one illustrated by the words in (4), should be accounted for as being lexically specified.

- (4) pá.da 'vulture'
 bā.tsi 'child'
 gó.né 'dumb'

Most of the words with more than one syllable which are still morphologically simple are loanwords, and as such they commonly receive the stress of Spanish, like in (5), whose stress pattern is coherent with the native one in (3).

- (5) á.bwé.lí.tá 'granny'

1.2. The problem.

The main object of study in this paper is the distribution of an [h] that commonly occurs at coda of a word internal syllable in the neighbourhood of the voiceless stops in (6). The distribution is at times puzzling, and it constitutes a problem for the linguistic treatment of such segments. For example, this [h] typically occurs before another syllable which has a simple voiceless plosive as its onset, as in the words in (1). In words like these, the presence of [h] is obligatory; its absence is indicated by an underscore. However, it never appears before voiced plosives, as shown in (7).

- (6) [ʔb^éh.po] / * [ʔb^é .po] 'sister-in-law'
 [dúh.tu] / * [dú .tu] 'clothes'
 [dá.t^{sə}h.ká] / * [dá.t^{sə} .ká] 'I arrived (there) myself'

- (7) * [háh.bi] / [há .bi] 'where'
 * [k^háh.di] / [k^há .di] 'finish'
 * [n.ʔáh.gi] / [n.ʔá .gi] 'once'

However, in some words like in (8a), the [h] cannot occur, and in some others, like in (8b), it may or may not occur; a phenomenon commonly found in the pronunciation of loanwords. Alternating pronunciations are indicated by the tilde.

- (8) a. * $[\widehat{tsih.tá}]$ / $[\widehat{tsi}.tá]$ ‘saint, god’
 b. $[sóh.pa]$ ~ $[só_.pa]$ ‘soup’ (Sp. *sopa*)
 $[kóh.ka]$ ~ $[kó_.ka]$ ‘coke’ (Sp. *coca*)

In some cases, the [h] appears before the simple plosive at a complex coda within the same syllable, as in (9).

- (9) $[gá.t^h\tilde{o}ht.ki]$ ‘you tied me up’
 $[\widehat{tj\ddot{u}hk.dó}]$ ‘(female) turkey’

Finally, this [h] does not occur before aspirated consonants, as shown in (10). However, while its absence is expected in morphologically complex sequences like (11a), in a number of them it is puzzlingly obligatory, as shown in (11b).

- (10) * $[\widehat{jóh.p}^ho]$ / $[\widehat{jó}.p^ho]$ ‘harvest maize’
 * $[d\epsilon h.t^h\tilde{o}]$ / $[d\epsilon_.t^h\tilde{o}]$ ‘maize’
 * $[\widehat{bóh.k}^h\tilde{o}]$ / $[\widehat{bó}.k^h\tilde{o}]$ ‘money’
- (11) a. * $[gá.t^h\widehat{óh.k}^h\acute{e}]$ / $[gá.t^h\acute{o}_.k^h\acute{e}]$ ‘you let us in’
 * $[gá.t^h\tilde{o}h.t^h\acute{í}]$ / $[gá.t^h\tilde{o}_.t^h\acute{í}]$ ‘you (pl) tied him up’
- b. $[dá.t^h\widehat{óh.k}^h\acute{e}]$ / * $[dá.t^h\acute{o}_.k^h\acute{e}]$ ‘we let him in’
 $[gá.t^h\tilde{o}h.t^h\acute{í}]$ / * $[gá.t^h\tilde{o}_.t^h\acute{í}]$ ‘you (pl) answered him’

This data are challenging for a phonological account of the rise of aspiration at syllabic boundary, and accounting for them is important at least for the study of Otomi. In this paper, I advance a number of proposals for their analysis, but a comprehensive formal account for them is still needed. The paper is structured as follows. First, in the next section I introduce those cases where I take [h] to be of a phonetic origin, to be contrasted in section 3 with those instances of [h] which I take to be a phonic constituent part of a complex nucleus. In section 4, I study a number of cases where the distribution of [h] proves a little more complex because it involves the morphotactic involvement of object and plural affixation. Section 5 concludes with a brief excursion on the origin of preaspiration.

2. Preaspiration: context where [h] is phonetic

One very simple (and quick) way to account for the distribution of [h] in such a dataset is to state that [h] in such a dataset is just another instantiation of the same phoneme /h/ we find elsewhere in the lexicon, such as for example in the word in (12), but in coda position. Under such a treatment, the words in (13) would have a phonological /h/.

- (12) $[\widehat{h\check{a}.ho}]$ / $[\widehat{h\check{a}.ho}]$ ‘vixen’
- (13) $[k^h\tilde{o}h.pi]$ / $[\widehat{k^h\tilde{o}h.pi}]$ ‘bless’
 $[dúh.tu]$ / $[\widehat{dúh.tu}]$ ‘clothes’
 $[\widehat{tíh.ki}]$ / $[\widehat{tíh.ki}]$ ‘pluck’

Nevertheless, the type of phonological treatment in (13), no matter how simple it may be, overlooks entirely an important factor, that is, that the occurrence of [h] is predictable at least

for most of the cases. To such an extent is this predictability expected, that in 1999 the Commission for the Indigenous Peoples of Querétaro –a body in charge of designing a popular orthography for the varieties of Northern Otomi spoken in Querétaro– ruled against giving a written representation to the instances of [h] for such words, under the assumption that its occurrence is predictable from the phonetics of syllabic structure. This is shown, for example in the spelling of the words in (14).

(14)	<i>ʔbepo</i>	[ʔb ^h é.po]	‘sister-in-law’
	<i>dutu</i>	[dú ^h .tu]	‘clothes’
	<i>dá tsoka</i>	[dá.tsə ^h .ká]	‘I arrived (there) myself’

Treating [h] as a phonetic insertion yields a more complicated account, but a simpler phonology. Let us for the sake of argument, pursue the phonetic analysis here. Under this analysis, I will treat many of the instances of [h] as the outcome of a phonetic rule I call “preaspiration”, which involves the insertion of the glottal fricative [h] before a voiceless simple stop. There are two contextual rules for preaspiration, which can account for most of the instances for the occurrence of [h] in Northern Otomi. These two rules are stress dependent, very much in the fashion of Verner's law for the stops in Indo-European, which cancelled out the application of Grimm's law, accounting thus for its exceptions.⁴

The first contextual rule for preaspiration, which has a very wide application throughout the lexicon, is spelled out in (15).

(15) Preaspiration rule 1: When /p,t,k/ occur as the onset of the weak syllable of a trochaic word, the strong syllable obligatorily receives an aspiration in its coda in the form of an [h]. As an epiphenomenal effect, the inserted glottal fricative [h] precedes the voiceless obstruent, hence the term ‘preaspiration’.

The contextual rule in (15) accounts for similar data to the ones given in (16).

(16)	/CV.p,t,kV/	[CV ^h .p,t,kV]	/*[CV .p,t,kV]	
/p/	/k ^h ō.pi/	[k ^h ō ^h .pi]	/	*[k ^h ō.pi] ‘bless’
	/ʔb ^h é.po/	[ʔb ^h é ^h .po]	/	*[ʔb ^h é.po] ‘sister-in-law’
/t/	/dú ^h .tu/	[dú ^h .tu]	/	*[dú.tu] ‘clothes’
	/n ^h ó ^h .to/	[n ^h ó ^h .to]	/	*[n ^h ó.to] ‘8’
	/m ^h š.te/	[m ^h š.te]	/	*[m ^h š.te] ‘behind’
/k/	/t ^h .ki/	[t ^h .ki]	/	*[t.ki] ‘pluck’
	/ʔo.ki/	[ʔoh.ki]	/	*[ʔo.ki] ‘hole’

With loanwords like in (17), there are two possibilities: speakers may either filter them through their native phonology and hence, the words receive preaspiration, or they may not, and thus they surface without it, like in Spanish.

(17)		Native ph.		Spanish ph.	
	/CV.p,t,kV/	[CV ^h .p,t,kV]		[CV .p,t,kV]	
/p/	/só.pa/	[só ^h .pa]	~	[só.pa]	‘soup’ (Sp. <i>sopa</i>)

⁴ I want to thank Jean-Léo Léonard for this observation.

/t/	/á.bwé.lí.tá/	[á.bwé.líh.tá]	~	[á.bwé.lí.tá]	‘granny’ (Sp. <i>abuelita</i>)
/k/	/kó.ka/	[kóh.ka]	~	[kó.ka]	‘coke’ (Sp. <i>coca</i>)

When the prosodic structure of the word is different and does not serve as an input for the rule, there is no preaspiration. This accounts for most exceptions, as for example (18).

(18)	/CV. <u>p,t,k</u> V/	*[CVh. <u>p,t,k</u> V]	[CV. <u>p,t,k</u> V]	
	/tsi.tá/	*[tsih.tá]	/ [tsi.tá]	‘saint, god’
	/nó.tí.sjá/	*[nóh.tí.sjá]	/ [nó.tí.sjá]	‘news’ (Sp. <i>noticia</i>)

Similarly, as expected by rule 1 no preaspiration occurs when the target word is preceded by a proclitic of TAM and person of the subject, like in (19). This is because the stress falls in the first syllable of the verbal stem, which for most cases corresponds to the lexical root.⁵

(19) a.	/ga.tí.ki/	b.	/bi.ká.di/
	[ga.tíh.ki] / *[gah.tíh.ki]		[bi.ká.di] / *[bih.ká.di]
	ga = tík-i		bi = kád-i
	1.PRS.IRR=pluck.plant[3OBJ]-F		3.PST=deceive[3OBJ]-F
	‘I’ll pluck it.’		‘He deceived him.’

The second contextual rule for preaspiration has scope over a few structures and it is spelled out in (20).

(20) Preaspiration rule 2: When /p,t,k/ occur as the coda of the closed syllable bearing the stress, that syllable receives [h] after the nucleus.

The contextual rule in (20) is illustrated in (21) with the surface form of the nominal compound *tũ+kódó* {female+turkey}, which bears the stress on the first syllable and surfaces as /tũk.dó/ by the reduction of the tonic nucleus of the second member with subsequent resyllabification.

(21)	/CV <u>p,t,k</u> .CV/	[CVh <u>p,t,k</u> .CV]	*[CV <u>p,t,k</u> .CV]	
	/tũk.dó/	[tũhk.dó]	/ *[tũk.dó]	‘(female) turkey’

3. Phonetic [h] vs. phonological H.

In contrast to the phonetic [h] as an outcome of the preaspiration rules presented in the previous section, in Northern Otomi there are also instances of [h] which I take to be realizations of a phonological a ‘phonological H’. There are two types of phonological H. A first one is a phonemic /h/, as in the words in (22), where it works as a consonantal segment.

(22)	[hǒ.ts’i]	/hǒ.ts’i/	‘carry’
	[ɲhó]	/nhó/	‘be good’

The other type of phonological H is when phonetic [h] is a constituent phone of a complex nucleus of the structure /vhV/ (alternatively also as /vh/ at a morphological boundary), as in (23).

⁵ Abbreviations: B bound stem; EMPH emphatic; EXCL exclusive; F free stem (a pausal form or pausal shape); IMPF imperfect; IRR irrealis; OBJ object; PL plural; PREP preposition; PRS present; PST past.

(23)	[ʔó.hó]	/ʔóhV/	‘sleep’
	[ntʃá.há]	/ntʃáhV/	‘bathe’
	[dé.hé]	/déhV/	‘water’
	[’mú.hú]	/’múhV/	‘wolf’
	[tĩ.hí]	/tĩhV/	‘run’

When the complex nuclei in (23) are syllabified, they surface like words with a phonemic /h/ in internal position, like the ones in (24), and could thus be confused with them. The difference between these two types of phonemic H lies in the phonological structure of the word, i.e. complex nuclei always involve a rearticulated vowel, so that the value of ‘V’ in the structure /vhV/ [v.hV] is always the value of ‘v’. This is not the case of words like in (24).

(24)	[nkǎ.hi]	/nkǎ.hi/	‘be flavourful’
	[há.ho]	/há.ho/	‘vixen’

Phonetic /h/ occurs at times in the same contexts as phonological H, and I provide here ways to distinguish them. In principle, a word-internal [h] in coda position should be taken to be a realization of a phonological H if it cannot be accounted for as an outcome of a preaspiration rule.

Phonological H of the phonemic /h/ subtype only occurs in a handful of cases: so far, I have been able to identify only two lexemes. Consider for this purpose the word [táh.tá] ‘father’ in (25a). Due to its stress, if the word had the phonological structure /tá.tá/, its phonetic outcome would be *[tá.tá] like [tsi.tá] ‘saint’ in (25b) with no [h], for /tá.tá/ like /tsi.tá/ are no inputs to preaspiration rule 1, like for example /dú.tu/ ‘clothes’ in (25c) is. Instead, the word is pronounced as [táh.tá], so the [h] represents a phonemic /h/.

(25)	a.	/táh.tá/ ⁶	[táh.tá]	/	*[tá_.tá]	‘father’
	b.	/tsi.tá/	*[tsih.tá]	/	[tsi_.tá]	‘saint’
	c.	/dú.tu/	[dúh.tu]	/	*[dú_.tu]	‘clothes’

The other word is the lexeme for ‘priest’ [móh.khǒ]. This word also bears a phonological /h/ because its occurrence as a phonetic [h] is not expected because aspirated consonants do not trigger preaspiration. This was already shown in (10) above, more examples appear in (22).

(26)						
/p ^h /	/pé.p ^h i/	*[péh.p ^h i]	[pé.p ^h i]			‘work’
	/jé.p ^h o/	*[jéh.p ^h o]	[jé.p ^h o]			‘guts’
/t ^h /	/ʔə.t ^h e/	*[ʔəh.t ^h e]	[ʔə.t ^h e]			‘heal’
	/dɛ.t ^h õ/	*[dɛh.t ^h õ]	[dɛ.t ^h õ]			‘maize grain’
	/gwa.t ^h õ/	*[gwah.t ^h õ]	[gwa.t ^h õ]			‘on foot’
	/jɪ.t ^h a/	*[jih.t ^h a]	[jɪ.t ^h a]			‘shoulders’
/k ^h /	/ni.k ^h õ/	*[nih.k ^h õ]	[ni.k ^h õ]			‘church’
	/nde.k ^h õ/	*[ndeh.k ^h õ]	[nde.k ^h õ]			‘good afternoon!’

⁶ The word for ‘father’ in Northern Otomi comes from the Old Otomi word for ‘sir, old man’ ^htá.tá; itself a reduplication of the old word for ‘father’ ^htá, still present in more conservative languages.

In this way, the word for ‘priest’ should have been *[mɔ.k^hó] had its phonological structure been */mɔ.k^hó/, but instead it is [mɔh.k^hó] with a phonemic /h/: (i) as the word has the wrong stress, it should have not received a phonetic [h]; and (ii) even with the right stress, [h] should not have occurred before an aspirated stop.⁷

Other instances of a phonological H involve instances of stems with complex nuclei at morphological boundaries, like in (27), illustrating the verb for ‘arriving here’ /tsóhV/, whose bound stem is /tsóh-/.

- (27) [dá.tsóh.ká] / *[dá.tsó.ká]
 dá = tsóh = ká
 1.PST=arrive.there=1.EMPH
 ‘I arrived (there) myself.’

In principle, the occurrence of [h] in instances like (27) could be taken to be the expected and uncontroversial outcome of preaspiration rule 1, so that a structure such as /CV.kV/ is naturally rendered by the phonetics as [CVh.kV] and not as *[CV.kV]. This is the analysis I adopted in Palancar (2009), but I propose here that this previous analysis can be improved in the form of a phonological H. This new analysis superior in that is able to accommodate for a number of exceptions spelled out in Palancar (2009: 44 ff).⁸ Under this analysis, verbs with complex nuclei like ‘arriving here’ in (27) are taken to have two stems, one free and another bound, like in (28).⁹

- | | | | |
|------|-----------|------------|----------------|
| (28) | FREE STEM | BOUND STEM | |
| | tsó.hə | tsóh- | ‘arrive there’ |
| | tǒ.hǒ | tǒh- | ‘win, beat’ |
| | ʃá.ha | ʃáh- | ‘bathe’ |
| | hé.he | héh- | ‘sneeze’ |

To the verbs in (28) one can add verbs like the ones in (29), whose free stem does not have a complex nucleus.

- | | | | |
|------|---------------------|------------|--------------|
| (29) | FREE STEM | BOUND STEM | |
| | pǒ.di | pǒh- | ‘know’ |
| | mǒ.di | mǒh- | ‘love’ |
| | tsó.gi | tóh- | ‘pass by’ |
| | ?ũ.gi | ?ũh- | ‘sweeten’ |
| | ʃó.p ^h o | ʃóh- | ‘pick maize’ |
| | pɛ.p ^h i | pɛh- | ‘work at’ |
| | ?bói | ?bóh- | ‘stand’ |
| | ?bǎi | ?bǎh- | ‘live’ |

⁷ The word for ‘priest’ in Northern Otomi appears to be a lexicalization of an old compound consisting of a particular bound stem for the verb ‘to sell’ /mɔh-/ (with a complex nucleus) plus the noun for ‘god’ /k^hó/. As the first morpheme in the compound is no longer accessible, the original phonic [h] of the complex nucleus was reanalysed as an instance of a phonemic /h/ in coda position.

⁸ I also thank Jean-Léo Léonard for suggesting to me the complex nucleus hypothesis, which makes much sense to me now.

⁹ The bound stem is further responsible for the unvoicing of the onset of the enclitic. With other stems with simple nuclei, the enclitic =ká in (27) surfaces as =gá, as in dá=nú=gá {1.PST=see.3OBJ=1.EMPH} ‘I saw it myself’.

One further argument that the [h] in such bound stems is a phonological H comes from the fact that the segment is still present before other types of consonants in the onset of the following syllable, which would not trigger preaspiration, like in (30), if compared with (31).

(30) [mí.ʔbǎh.ní] / *[mí.ʔbǎ.ní]
 mí = ʔbǎh = ní
 3.IMPF=live.there.B=there
 ‘He was living there.’

(31) [mí.pa.ní] / *[mí.pah.ní]
 mí = pa = ní
 3.IMPF=go=there
 ‘He was going there.’

Furthermore, in the context of word boundary, the glottal component in the complex nuclei of the bound stems of the verbs in (28-29) is realized as [ʔ] by default, like in (32), and only as an [h] when the word following the verb has an onset simple stop, like in (33). In (32), the [h] of complex nucleus shares could be confused as an outcome of preaspiration rule 1, because of its context, when in reality it is not a phonetic [h].

(32) [mí.tsóʔ.nt^hi]
 mí = tsóh = nt^hi
 3.IMPF=pass.by.B=outside
 ‘He was passing by from outside.’

(33) [mí.tsóh.ka] [gǒt^hi]
 mí = tsóh = ka gǒ.t^hi
 3.IMPF=pass.by.B=PREP door
 ‘He was passing by the door.’

In this section, I have shown cases where a given word-internal [h] should be better analysed as instantiating a phonological H and not as the output of the phonetic rule of preaspiration. There remain, however, a number of puzzling forms with the same verb, which carry a semantic contrast and involve the presence or the absence of [h], like the examples in (34) and (35) with the transitive verb /t^hó.ki/ ‘let somebody in’, which is cognate to the intransitive verb /t^hó.gi/ ‘pass by’ in (29).

(34) [gá.t^hó.k^hé] / *[gá.t^hóh.k^hé]
 gá = t^hók^hé
 2.PST=let.in+1OBJ+PL.EXCL
 ‘You let us in.’

(35) [dá.t^hóh.k^hé] / *[dá.t^hó.k^hé]
 dá = t^hóh.k^hé
 1.PST=let.in[3OBJ]+PL.EXCL
 ‘We let him in.’

Examples like these result from the morphotactic adjustments involving the hosting of a number enclitic and they will be studied in further detail in the next section. Northern Otomi has two number enclitics, =hú for plural in general and =hé for plural exclusive. However,

as these markers can be equally used to have scope over the subject or over the object, they need to be treated separately, for the adjustments they trigger are different in each case.

4. Preaspiration and plural marking

4.1. Plural of subject.

Plural of subject in Northern Otomi is realized by means of the enclitics =*hú* or *hé*, like in (36). The latter marker is only used to express plural exclusive.

- (36) *tsǎn*- ‘tell somebody off’
 [gá.tsǎn.hí]
 gá = *tsǎn* = **hí**
 2.PST=tell.of[3.OBJ]=PL
 ‘You (pl) told him off.’

The bound stem of a given verb may undergo morphotactic adjustments when the verb hosts a plural enclitic. The adjustments involve its coda in contact with the onset consonant of the enclitic. There can be simplification of the glottal component of the complex nucleus in order to avoid gemination, as in (37), or there can be anticipatory assimilation of the coda of the stem, whose outcome is given in (38), and then this new outcome undergoes subsequent syllabification.

- (37) a. *tǒh*- ‘win/beat’ b. *pɛh*- ‘work at’
 [gá.tǒ.hí] [gá.pɛ.hí]
 gá = *tǒh* = **hí** gá = *pɛh* = **hí**
 2.PST=win=PL 2.PST=work[3OBJ]=PL
 ‘You (pl) won.’ ‘You (pl) worked at it.’

- (38) a. *hwáng*- ‘fall’ b. *hand*- ‘see’
 SYLL. [gá.hwá.nkʰí] [gá.ha.ntʰí]
 ASSIM. [gá.hwánk.hí] [gá.hant.hí]
 gá = *hwáng* = **hí** gá = *hand* = **hí**
 2.PST=fall=PL 2.PST=see[3OBJ]=PL
 ‘You (pl) fell.’ ‘You (pl) saw it.’

When the stem of the verb ends in a simple stop, it serves as input for the preaspiration rule 2 given in (20), as in (39). The outcome undergoes subsequent syllabification.

- (39) a. *tsík*- ‘get somebody down’ b. *tʰõt*- ‘respond to somebody’
 SYLL. [gá.tsík.kʰí] [gá.tʰõt.tʰí]
 PREASP. [gá.tsíhk.hí] [gá.tʰõht.hí]
 gá = *tsík* = **hí** gá = *tʰõt* = **hí**
 2.PST=get.down[3.OBJ]=PL 2.PST=respond[3.OBJ]=PL
 ‘You (pl) got him down.’ ‘You (pl) responded to him.’

4.2. Marking of object and plural of object

The encoding of first person object is relevant for the discussion. The default exponent for this person value is the suffix *-g*, as in (40).

- (40) a. \widehat{tsa} ‘bite’¹⁰ b. hand- ‘see’
 [$\widehat{gá.tsa.gi}$] [$\widehat{gá.hand.gi}$]
 $\widehat{gá} = \widehat{tsa-g-i}$ $\widehat{gá} = \widehat{hand-g-i}$
 2.PST=bite-1.OBJ-F 2.PST=see-1.OBJ-F
 ‘You (sg) bit me.’ ‘You (sg) saw me.’

With other verbs, such as for example verbs with complex nuclei, the suffix undergoes progressive assimilation in contact with the glottal component of the nucleus, as in (41). The phonetic outcome looks like an output of preaspiration rule 1, when in reality it is not.

- (41) $t\check{o}h$ - ‘win/beat’
 [$\widehat{gá.t\check{o}h.ki}$]
 $\widehat{gá} = t\check{o}h-g-i$
 2.PST=beat.B-1.OBJ-F
 ‘You beat me.’

On the other hand, the plural number of a first person can be realized by means of adding the appropriate number enclitic (for other encoding options see Palancar, 2009: 260ff). This triggers anticipatory assimilation on the part of suffix in contact with the onset of the enclitic, and both units surface as an aspirated stop in onset. This is shown in (42). Notice that aspirated stops do not serve as inputs for preaspiration, and hence this outcome does not get a phonetic [h].

- (42) *tsa* ‘bite’
 [$\widehat{gá.tsa.kh\acute{e}}$] / * [$\widehat{gá.tsah.kh\acute{e}}$]
 $\widehat{gá} = \widehat{tsa-g-h\acute{e}}$
 2.PST=bite-1.OBJ=PL.EXCL
 ‘You (sg) bit us.’

However, preaspiration occurs with the right input, as in (43), where we have the application of rule 2. For other apparently similar cases, where an [h] is present, this [h] realizes the glottal component of the complex nucleus of a bound stem, i.e. a phonological H, as in (44).

- (43) a. $t^h\check{o}t$ - ‘respond to somebody’ b. $t^h\check{o}t$ - ‘respond to somebody’
 PREASP. [$\widehat{gá.t^h\check{o}ht.ki}$] [$\widehat{gá.t^h\check{o}ht.kh\acute{e}}$]
 $\widehat{gá} = t^h\check{o}t-g-i$ $\widehat{gá} = t^h\check{o}t-g-h\acute{e}$
 2.PST=respond-1.OBJ-F 2.PST=respond-1.OBJ=PL.EXCL
 ‘You responded to me.’ ‘You responded to us.’

¹⁰ Verbs with monosyllabic /CV/ stems have a derived bound stem with a complex nucleus /CVh-/ serving as a ditransitive stem, i.e. [$\widehat{gá.tsah.ki}$] $\widehat{gá} = tsah-g-i$ {2.PST=bite.DITR-1.OBJ-FREE.SHAPE} ‘You bit him affecting me.’ For another instance of the voiceless assimilation of the object suffix, see example (41).

- (44) tǒh- ‘win/beat’
 SYLL. [gá.tǒh.k^hé]
 PREASP. [gá.tǒhk.hé]
 gá = tǒh-g = hé
 2.PST=beat.B-1.OBJ=PL.EXCL
 ‘You beat us.’

With verbs whose bound stem has a velar in coda, like in (45) there is again elision of one of the segments to avoid gemination.

- (45) a. t^hók- ‘let somebody in’ b. tsóg- ‘leave’
 [gá.t^hó .gi] [gá.tsó .gi]
 gá = t^hók-g-i gá = tsóg-g-i
 2.PST=let.in-1OBJ-F 2.PST=leave-1OBJ-F
 ‘You let me in.’ ‘You left me.’

When we add a plural enclitic, the outcome of elision and assimilation does not serve in turn as an input for the preaspiration rule because of the aspirated character of the consonant in the onset of the following syllable.

- (46) a. t^hók- ‘let somebody in’ b. tsóg- ‘leave’
 PREASP. _ / * [gá.t^hóh.k^hé] _ / * [gá.tsóh.k^hé]
 ASSIM. [gá.t^hó .khé] [gá.tsó .khé]
 ELIS. [gá.t^hó .ghé] [gá.tsó .ghé]
 gá = t^hók-g = hé gá = tsóg-g = hé
 2.PST=let.in-1OBJ=PL.EXCL 2.PST=leave-1OBJ=PL.EXCL
 ‘You let us in.’ ‘You left us.’

The outcomes in (46) contrasts neatly with those having plural of subject as presented above, where preaspiration from rule 2 precedes syllabification in the generation of surface structure.

- (47) t^hók- ‘let somebody in’
 SYLL. [dá.t^hóh.khé]
 PREASP. [dá.t^hóhk.hé] / * [dá.t^hók.hé]
 dá = t^hók = hé
 1.PST=let.in[3.OBJ]=PL.EXCL
 ‘We let him in.’

However, the type of morphotactic adjustments of the stem to a suffix appears to operate at a lower level than those associated to an enclitic. The ones associated with a suffix may serve as inputs for preaspiration, as for example with the verbs whose stem has an ejective stop, as in (48). For such verbs, the ejective stop is first simplified to a simple stop. Then the suffix undergoes assimilation and then we have the application of preaspiration rule 2.

- (48) mīt'- 'grab'
 PREASP. [gá.mīht.ki] / *[gá.mīt.ki]
 ASSIM. [gá.mīt.ki]
 SIMPL. [gá.mīt.gi]
 gá = mīt'-g-i
 2.PST=grab-1.OBJ-F
 'You grabbed me.'

However, the same adjustment produced by the presence of an enclitic blocks the aspiration rule. This is shown in (49), where the outcome of simplification does not serve as input for preaspiration rule 2, whereas the assimilation output of (48) does. Notice that in (49) the structure should in principle serve as an input for the preaspiration rule, as the same sound structure is found in (50) (or 47, for that matter), where preaspiration occurs.

- (49) mīt'- 'grab'
 SYLL. [gá.mī.thí]
 PREASP. _ / *[gá.mīht.hí]
 SIMPL. [gá.mīt.hí]
 gá = mīt' = hí
 2.PST=grab[3.OBJ]=PL
 'You (pl) grabbed him.'

- (50) hét- 'dress'
 SYLL. [gá.héh.thí]
 PREASP. [gá.héh.hí] / *[gá.hét.hí]
 gá = hét = hí
 2.PST=dress[3.OBJ]=PL
 'You (pl) dressed him.'

5. Summary of the proposal and a brief excursion into the origins of preaspiration

In this paper, I have proposed that in Northern Otomi a phonetic [h] occurring in coda at word-internal level can be analysed in two ways depending on the structure at hand: it can be an output of a phonetic rule I have called 'preaspiration' or it can be the realization of a more abstract structure of phonological nature representing either a phonemic /h/ or the glottal component of a complex nucleus /vh(V)/.

I have also shown that a simplified treatment as either being phonetic or phonemic for all instances is not a convenient way to account for the complexities of the distribution of the segment in the sound system of Northern Otomi. Such an analysis has consequences for the writing system, because a phonological H should be represented in the orthography when in reality it never is. I have provided a number of important clues as to how to interpret the character of this internal [h], but I admit the distribution remains complex to receive a proper orthographic representation by the lay language user.

In the typology of language change, aspirations similar to the Otomi phenomenon commonly come from historical /s/, such as for example Spanish /kas.ko/ which is

pronounced [kah.ko] or even [kax.ko] in certain varieties of Spanish (see Ferguson 1990, for a discussion). The question thus remains, where does Otomi preaspiration come from?

In order to provide an answer to such a question, I suggest that it emerged as the result of the breakdown of the old phonological system still present in Old Otomi, which is still observable in the data of the Colonial grammar finished by Pedro de Cárceres in 1580, only to be published in 1907. In the old system, there was a contrast of preaspirated stops /^hp,^ht,^hk/ and simple stops /p,t,k/, in such a way that words such as *^hpa ‘day’, *^htói ‘buy’ and *^hkít’a ‘5’ contrasted with words such as *pi ‘3.PST’, *tó ‘eye’ and *kóhó ‘4’. The simple stops in the old system were realized by default by voiceless phones [p,t,k], but occasionally, especially in intervocalic context they could also be realized as voiced [b,d,g]. The preaspirated stops were always realized as voiceless. Such a system could in principle be analysed as instantiating a fortis/lenis contrast involving stops for Oto-Pamean, as it has been previously suggested in Gibson (1956), Bartholomew (1960) and Blight and Pike (1976), which has also been proposed for other groups within Oto-Manguean (see DiCanio 2008, for references and a discussion) and for Oto-Manguean itself in Kaufman (1983).

Through time, in the historical dialect that later gave rise to Northern Otomi, which is precisely the one on which the Colonial grammar was based, all simple stops became voiced, so that *pi ‘3.PST’ gave rise to *bi*, *tó ‘eye’ to *ǎ* or *dá* and *kóhó ‘4’ to *góhó*. In contrast, all preaspirated stops lost their preaspiration feature, so that as *^hpa ‘day’ gave rise to *pa*, *^htói ‘buy’ to *tói* or *tái* and *^hkít’a ‘5’ to *kít’a*.

Crucially for our purposes, the preaspiration feature was maintained word-internally, in such a way that this preservation gave rise to the synchronic phonetic phenomenon I have treated here under the rubric of ‘preaspiration’, e.g. for an old word such as *^hmí.^hti ‘lend’ we have now its reflex [ʰmíh.ti], which I have analysed here in phonological terms as /mĩ.ti/.

The old phonological system has partially survived in Tilapa Otomi, a conservative Southern Otomi language, and it is still at work in Santa Ana Hueytlalpan Otomi, a variety of Otomi which could be characterized as a phonologically conservative dialect of Eastern Otomi, but with reservations. Why the old system became unstable in some varieties of Otomi while it was retained in others remains a mystery, as most sound change still is, but it is undoubtedly connected with the general typological rarity of preaspirated stops cross-linguistically, as surveyed in Silverman (2003).

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