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# A description of endangered phonemic oppositions in Yongning Na (Mosuo)

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## Abstract

Several phonemic oppositions (including tonal oppositions) are under a severe danger of disappearing from the Na language spoken in the plain of Yongning (Ninglang prefecture, Lijiang municipality, Yunnan province, China). The overall tendency is, unsurprisingly, that the oppositions found in Na but not in Mandarin Chinese tend to become lost by the speakers who are most proficient in Chinese. Na contrasts /l/, /l̥/, /ɸ/ and /ɬ/; this set is fully preserved in the speech of a 55-year-old speaker, whereas in the speech of a schoolgirl (in senior high school at the time of fieldwork) the four have simplified to /l/: /li<sup>M</sup>/ “to look” and /li<sup>M</sup>/ “ear; moon” have merged to /li<sup>M</sup>/; the syllables /ɸæ/ and /ɬæ/ in /ɸæ.mi<sup>M</sup>/ “sword” and /k<sup>h</sup>wæ.ɬæ<sup>#H</sup>/ “satin” simplified to /æ/. (Superscript letters indicate tones.) In-between these two extremes, in the speech of a speaker aged 35, these oppositions are still present but their lexical distribution is imperfectly preserved. For instance, she pronounces the word “sword”, /ɸæ.mi<sup>M</sup>/, which is not in common use anymore, as /ɬæ.mi<sup>M</sup>/. As far as tones are concerned, the differences between the oldest generation and the speakers under 60 years set in sharp relief the complexities of the tonal system of Na: the oppositions that are neutralized in citation form tend to be overlooked by the less proficient speakers, leading to a major transformation of the architecture of the tone system.

**Keywords: Yongning Na, Mosuo, tones, phonemic oppositions, loss of oppositions, sporadic loss of oppositions, age groups**

## Introduction

The present study concerns the Na language (a.k.a. “Mosuo”, “Eastern dialect of Naxi”) as spoken in the plain of Yongning, Ninglang County, Lijiang Municipality, Yunnan, China.

There already exist relatively abundant ethnological writings about the Na/Mosuo people, including an outline of the history of the Yongning area by Guo Dalie et al. (1994 [2nd ed. 1999]:426–430) and a two-volume collection of articles (Latami Dashi 2006). From a linguistic point of view, elements of description of this Sino-Tibetan language are available in the presentation of the Naxi language by He Jiren et al. 1985:104, where Na is classified as part of the “Eastern Naxi dialects”. Research about this language includes a Ph. D. dissertation (Lidz 2010), a phonemic and tonal inventory (Michaud 2008), and a study of the historical phonology of the language subgroup to which Na belongs (Jacques et al. 2011).

Speakers of various languages, including Prinmi (a.k.a. Pumi), Lisu, Naxi, Nosu (a.k.a. Nuosu) and Chinese, have been in continuous contact in Yongning for centuries. Its market-place used to play an important role for neighboring mountain villages – indeed, Yongning still preserves this role to a certain extent, for instance for the Yi and Pumi/Prinmi people from small villages around Yongning (Wellens 2006:85). However, the feudal lord of Yongning being Na (Mosuo), the Na language had a dominant situation in the plain of Yongning up until the mid-20<sup>th</sup> century. While there can be no doubt that the language received various influences in the course of its development, bilingualism was not widespread: speakers of other languages were bilingual in Na, rather than the other way round. Numerous Na speakers had little or no command of other languages. This is a somewhat exceptional situation in this area, at the border between Sichuan and Yunnan: for instance, the small community of Na speakers in the neighboring county of Muli (Shuiluo township) are bilingual in Shixing and have some command of Tibetan; and the variety of Na/Naxi spoken in Guabie has long been influenced by other languages, in particular Prinmi and Nosu.

Today, language shift from Na to Chinese is under way in Yongning. The present study investigates specifically the situation in a hamlet of the Yongning plain (Pingjing Village; in Chinese: 平静村), tracing the effects of growing proficiency in Mandarin on the speakers of Na. Examples of endangered phonemic oppositions are provided: oppositions which have a low functional yield and which have no counterparts in Chinese (Standard Mandarin and Southwestern Mandarin, the two varieties learned by Na speakers).

The data were collected during four stays in the field, from 2006 to 2009. Data from five language consultants are reported here, spanning three generations for women – a speaker born in 1950, who will be referred to below as F4; her daughter-in-law, F5; and the latter's niece, F6, aged 19 – and two generations for men: a man born in 1942, M21, and his youngest son, M23, born in 1974. (The labels F1, F2..., M1, M2... are assigned to language consultants in the database of Na, Naxi and related languages collected over several field trips; they allow for unambiguous reference.) The second author of the article is himself a native speaker, who exemplifies the situation of bilingual speakers with an excellent command of Chinese (in his case, both Southwestern Mandarin and Standard Mandarin).

## 1. Consonants and vowels

Yongning Na has a simple syllabic structure, (C)(G)V, where C is an initial consonant, G a glide – with a severely restricted distribution – and V a vocalic element. The overall tendency is, unsurprisingly, that the phonemic oppositions found in Na but not in Mandarin Chinese tend to become lost by the speakers who are most proficient in Chinese.

### 1.1. Endangered consonantal oppositions: laterals and rhotics

The consonantal inventory of Yongning Na is recapitulated below.

	bilabial	dental	retroflex	velar	uvular	glottal
plosive	p <sup>h</sup> p b	t <sup>h</sup> t d	t <sup>h</sup> t̚ d̚	k <sup>h</sup> k g	q <sup>h</sup> q	
<i>affricate</i>		ts <sup>h</sup> ts dz tɕ <sup>h</sup> tɕ dz	tʂ <sup>h</sup> tʂ dz̥			
nasal	m	n	ɳ	ŋ		
fricative		s z ɕ ʐ	ʂ ʐ̥		ɣ	h
lateral		ɬ l				
approximant			ɻ			

The approximant /ɻ/ can appear on its own, as a syllable: /ɻ/, for instance in /pɻ.ɻ/ 襪襪 (a type of Tibetan garment). It can also appear in the syllables /ɻæ/ and /ɻwæ/. This set is fully preserved in the speech of proficient speakers (exemplified by speaker F4). On the other hand, a variety of simplifications is observed in the speech of younger (and less proficient) language consultants.

Syllabic /ɻ/ is not strongly integrated within the phonemic system; it is therefore a likely candidate for confusion with other syllables in the speech of bilingual speakers. For instance, it has become confused with the syllable /lu/ in the speech of M23 (aged 35): in his pronunciation, the plural pronouns for the first, second and third persons are not /njɣ<sup>M</sup>ɻ<sup>L</sup>/, /nu<sup>M</sup>ɻ<sup>L</sup>/ and /tʂ<sup>h</sup>w<sup>M</sup>ɻ<sup>L</sup>/ (as in the speech of F4, our reference speaker), but /njɣ<sup>M</sup>lu<sup>L</sup>/, /nu<sup>M</sup>lu<sup>L</sup>/, and /tʂ<sup>h</sup>w<sup>M</sup>lu<sup>L</sup>/. In the speech of F5 (same age group), sporadic confusion of /ɻ/ is taking place with /ɻ/: for instance, she pronounces the adjective ‘square’, /zɻ<sup>M</sup>ɻ<sup>H</sup>/, as /zɻ<sup>M</sup>ɻ<sup>H</sup>/.

Initial /ɻ/ is also threatened. In the speech of less proficient speakers of the younger generations, the initial /ɻ/ in the combination /ɻwæ/ appears to be in danger of confusion with /l/: speaker M23, and the second author of this paper, realize ‘to call out, to shout’, /ɻwæ<sup>H</sup>/, as /lwæ<sup>H</sup>/ (this change does not result in lexical confusions, since /lwæ/ is an otherwise unattested combination in the lexicon of Yongning Na). As for /ɻæ/, it gets simplified to /ɻ/ or to /læ/ by this same generation of speakers, e.g. the second author of this article realizes the plural marker /ɻæ/ as /ɻ/ and the second syllable of the disyllabic words /su.ɻæ<sup>M</sup>/ ‘table’, /t<sup>h</sup>ɻæ.ɻæ<sup>ML</sup>/ ‘book, scripture’ and /k<sup>h</sup>wæ.ɻæ<sup>MH</sup>/ ‘felt; mat’ as /læ/. These changes amount to the complete loss of the initial /ɻ/ in the speech of these speakers.

As for speaker F5, who belongs to the intermediate age group (age: 35), she preserves the sound /ɻ/ as an initial consonant, but its lexical distribution is becoming somewhat confused. For instance, she pronounces the word ‘sword’, /ɣæ.mi<sup>M</sup>/, as /ɻæ.mi<sup>M</sup>/; this is clearly an effect of the low frequency of this word, due to the disappearance of swords as an object of Na/Mosuo material life. The language consultant has few opportunities of hearing the word pronounced by more proficient speakers – which would allow her to revert to the “correct” form – or of pronouncing it in a linguistic context where her pronunciation would be likely to be corrected by more proficient speakers. The opposition between /ɣ/ and /ɻ/ thus shows signs of weakening even in the speech of those speakers who still contrast these two phonemes. In other items, /ɻæ/ is simplified to /læ/: for instance, speaker F5 pronounces /ɻæ<sup>LM</sup>/ ‘flat’ as /læ<sup>LM</sup>/.

Lastly, in the speech of F6 (a 19-year-old high school student) the four sounds /l/, /ɻ/, /ɣ/, and /ɻ/ have all simplified to /l/, which is the closest approximation found in the Chinese language for these sounds. Thus, in F6’s speech, /li<sup>M</sup>/ ‘to look’ and /li<sup>M</sup>/ ‘ear; moon’ have become homophonous, simplifying to /li/; and the syllables /ɣæ/ and /ɻæ/ in /ɣæ.mi<sup>M</sup>/ ‘sword’ and /k<sup>h</sup>wæ.ɻæ<sup>MH</sup>/ ‘satin’ both simplified to /læ/.

## 1.2. Endangered syllable structures: the case of nasality

In Yongning Na, there exist the following nasal vowels: /ĩ/, /ĩ̃/, /ã/, /ã̃/, /w̃ɹ/, /ũ/, and /ũ̃/. The first five are found exclusively after /h/, where they contrast neatly with their non-nasal counterparts. Phonetically, /h/ in front of oral rhymes is realized with a friction source at a point in the vocal tract determined by the following vowel, e.g. palatal before /i/ and labial-dental before /y/ (hence [çi] and [fɥ]). In front of nasal rhymes, /h/ is nasalized.

This syllable type is relatively marginal in Yongning Na, and unlike anything found in the varieties of Chinese that are being learnt by Na speakers. As a consequence, it is among the most likely candidates for merger with other syllable types. In the speech of bilingual speakers, sporadic changes were observed: for instance, /dʒi.hĩ̃<sup>#H</sup>/ ‘clothes’ has become /dʒi.ɲĩ̃<sup>#H</sup>/ in the speech of M23 – nasality being carried only by the initial – whereas other items (such as /hĩ̃.hĩ̃<sup>M</sup>/ ‘to stir-fry’) retain their /h/-plus-nasal-vowel structure.

## 1.3. Loss of an acoustically fragile opposition: the case of apicalization

Yongning Na has apical vowels [ɿ] (apico-alveolar) and [ɿ̃] (apico-retroflex) as allophones of the high unrounded back vowel /u/ after fricatives and affricates of like place of articulation, e.g. /su<sup>H</sup>/ ‘to know’ is realized [sɿ], and /sũ<sup>MH</sup>/ ‘to peel’ is realized [sɿ̃]. The syllables composed of a dental fricative or affricate followed by /u/, namely /zu/, /su/, /dzu/, /tsu/ and /ts<sup>h</sup>u/, contrast with syllables containing the rhyme /i/: /zi/, /si/, /dzi/, /tsi/ and /ts<sup>h</sup>i/. The latter are well-advanced on the path towards apicalization: strong fricative noise is present throughout the syllable. Acoustically, the opposition between pairs such as /su/ and /si/ is difficult to perceive – so much so that this opposition escaped the linguist’s notice at first, and was not reported in Michaud 2008. Thus, /si<sup>#H</sup>/ ‘wood’ (realized [si<sup>M</sup>]) is to be distinguished from /su<sup>H</sup>/ ‘to know’ (realized [sɿ<sup>M</sup>]). It appears that bilingual speakers of Na are also experiencing some trouble with these syllable oppositions: bilingual speakers still maintain the opposition, but its lexical distribution is becoming fuzzy. When it was realized that these two sets needed to be distinguished, the first author went through the entire vocabulary to tease apart instances of /su/ and /si/, /tsu/ and /tsi/, and so on (which had all been transcribed originally with the vowel /u/), asking consultants questions such as: “Is ‘to sharpen’ pronounced like ‘wood’ [that is, /si/] or like ‘to know’ [that is, /su/]?” Language consultants other than F4 (our reference speaker) experienced some difficulties in this task, despite the care taken to make it as easy as possible (making short sessions to avoid fatigue, for instance). It appears that, among the less conservative speakers, F5 maintains the distinction consistently, whereas M23 does not usually realize it anymore. Speaker M23 does preserve an awareness of the distinction, but this distinction is endangered: having lost (or having never acquired) the habit of distinguishing them in his own speech, he is hard put to indicate into which set a given word belongs. For instance, being asked whether the initial syllable in ‘table’ (/su.ɿæ<sup>M</sup>/) is like in ‘wood’ or in ‘to know’, he chose the former, substituting the form /si.ɿæ<sup>M</sup>/ for /su.ɿæ<sup>M</sup>/ ‘table’. This amounts to a folk etymology whereby the first syllable is considered identical with the word for ‘wood’, /si<sup>#H</sup>/.

While the consonants and vowels discussed above constitute salient examples of endangered oppositions, tone is no less revealing of the current tensions in the phonological system of Yongning Na. This topic is discussed at some length in section 2.

## 2. Tones

The tones of Yongning Na are phonetically simple. The tone-bearing unit is the syllable; in continuous speech, each syllable carries one of three level tones, H(igh), M(id) or L(ow). Tonal systems thus based on levels (tone heights) are relatively unusual in Sino-Tibetan, but not unheard of: examples include Pumi (Ding 2006, Jacques 2011), Mianchi Qiang (Evans 2008), Shixing (Chirkova et al. 2009), Hakha Lai (Hyman et al. 2002) and Kuki-Thaadow (Hyman 2010). In Na, the last syllable of a phonological phrase can carry either a level tone, H, M or L, or one of two contours: LM or MH. There is no distinction in terms of syllable weight: any syllable can function as tone-bearing unit for one or two tonal levels.

From a phonological point of view, tones are an especially complex part of the language. It has been observed that Yongning Na has tone sandhi “which seems to be at least partly morphologically motivated” (Lidz 2006:4); the presence of tonal changes is also mentioned by Yang Zhenhong 2009. An inventory of distinctive tones for monosyllables and disyllables is proposed in Michaud 2008; the essentials are recapitulated in Table 1 (monosyllables) and Table 2 (disyllables).

Table 1 provides a summary of the tonal classes of Yongning Na nouns. The oppositions between these classes being partly neutralized in citation form, the table indicates, along with citation forms, the tonal pattern which obtains when a one-syllable grammatical word is added after the target word: (i) the possessive particle [bɿ], which is toneless, or (ii) the copula, [ŋi<sup>L</sup>], in frame (1).

- (1) [tʂ<sup>h</sup>u<sup>M</sup>                      \_\_\_\_\_                      ŋi ]                      ‘This is (a/the) \_\_\_\_\_.’  
           Deictic                      target item                      Copula                      (*note: the unmarked word order is SOV*)

The tonal patterns are indicated in superscript at the end of the tone-bearing syllable, e.g. [bu<sup>LM</sup>] ‘pig’ is strictly equivalent to [bu<sup>L</sup>] in tone-letters (Chao Yuen-ren 1930) or [bũ] in Africanist notation. In frame (1), no tone is indicated for the copula [ŋi], because its tone changes as a function of the pattern of the target-word, as set out in table 1. In the column that indicates the tonal pattern after addition of the copula or the possessive particle, the ‘+’ sign demarcates the noun from the added morpheme. For instance, the information provided in table 1 for the tonal class LM is: LM in isolation, L+M with copula and with possessive particle. As an example, the word ‘pig’ is [bu<sup>LM</sup>] in isolation, yielding [bu<sup>L</sup> ŋi<sup>M</sup>] ‘...is (a) pig’ and [bu<sup>L</sup> bɿ<sup>M</sup>] ‘...of (a) pig’. The tone of the deictic in (1) is M, [tʂ<sup>h</sup>u<sup>M</sup>], regardless of the tonal class of the following item; as a consequence, only the tonal pattern of the rest of the sentence is indicated in table 1.

Table 1. The tones of monosyllables: underlying phonological category; realization in isolation; when the possessive is added after the noun; and when the copula is added after the noun.

example		tone	in isolation	+POSS	+COP
la <sup>M</sup>	‘tiger’	M	M	M+M	M+L
k <sup>h</sup> y <sup>L</sup>	‘dog’	L	M	L+M	L+LM
zwa <sup>#H</sup>	‘horse’	#H	M	M+M	M+H
hwɿ <sup>MH</sup>	‘cat’	MH	MH	M+H	M+H
bu <sup>LM</sup>	‘pig’	LM	LM	L+M	L+M

The tone system of Yongning Na includes some oppositions that do not surface in the citation form of the words. A Yongning Na word that carries a Mid tone when it is said in isolation may have one of three underlying tones: M, L, or #H, the latter being a High tone that can only attach to a following syllable within the phonological word. A hint to the diversity of the

underlying tonal classes can be gleaned from variants: a LM variant (instead of M) is acceptable for the L tone in isolation – e.g. /ŋy<sup>L</sup>/ ‘silver’ can be pronounced [ŋy<sup>LM</sup>], as well as [ŋy<sup>M</sup>] – whereas this variant is not acceptable for tones M and #H. However, this piece of evidence is nowhere as compelling as that drawn from combinatorial properties of the tonal classes, such as their behavior when followed by the possessive or the copula – and in compound nouns, about which more below.

When they learn Mandarin Chinese, Na speakers come to terms with a differently structured tone system: one in which (leaving aside marginal phenomena of toneless syllables and tone sandhi) each syllable has its own tone, which surfaces as such in isolation. The discrepancy between the underlying forms and the surface forms of Yongning Na tones makes them relatively difficult to handle for less proficient speakers. This complexity is even greater on disyllables, presented in Table 2.

Table 2. The tonal classes of disyllabic nouns in Na. The thick horizontal line separates the five tonal classes that correspond to those of monosyllables (above the line) from the other six. The ‘dollar’ sign, \$, stands for the end of the phonological phrase. The ‘plus’ sign, +, demarcates the disyllabic noun from following morphemes.

tone: phonetics in isolation	tone: phono- logical category	tone: +POSS	tone: +COP	example		
				phonemes	phonetics in isolation	meaning
[M.M]	M	M.M+M	M.M+L	/ʔi.mi <sup>M</sup> /	[ʔi <sup>M</sup> mi <sup>M</sup> ]	‘moon’
[L.LM]	L	L.L+M	L.L+M	/k <sup>h</sup> v.mi <sup>L</sup> /	[k <sup>h</sup> v <sup>L</sup> mi <sup>LM</sup> ]	‘she-dog, bitch’
[M.M]	#H	M.M+M	M.M+H	/ŋi.mi <sup>#H</sup> /	[ŋi <sup>M</sup> mi <sup>M</sup> ]	‘sun’
[M.MH]	MH#	M.M+H	M.M+H	/hwɣ.li <sup>MH#</sup> /	[hwɣ <sup>M</sup> li <sup>MH</sup> ]	‘cat’
[L.M]	LM	L.M+M	L.M+L	/bu.mi <sup>LM</sup> /	[bu <sup>L</sup> mi <sup>M</sup> ]	‘sow, female pig’
[L.M]	LML	L.M+L	L.M+L	/bu.ʔa <sup>LML</sup> /	[bu <sup>L</sup> ʔa <sup>M</sup> ]	‘boar, male pig’
[M.H]	H\$	M.M+M	M.M+H	/hwɣ.mi <sup>HS</sup> /	[hwɣ <sup>M</sup> mi <sup>H</sup> ]	‘she-cat’
[L.M]	LM+#H	L.M+M	L.M+H	/na.hi <sup>LM+#H</sup> /	[na <sup>L</sup> hi <sup>M</sup> ]	‘Naxi’
[L.MH]	L+MH	L.M+H	L.M+H	/i.tʂæ <sup>L+MH</sup> /	[i <sup>L</sup> tʂæ <sup>MH</sup> ]	‘waist’
[M.L]	ML / L#	M.L+L	M.L+L	/ku.dzu <sup>ML</sup> /	[ku <sup>M</sup> dzu <sup>L</sup> ]	‘Tibetan’
[M.H]	MH / H#	M.H+L	M.H+L	/kæ.tʃ <sup>MH</sup> /	[kæ <sup>M</sup> tʃ <sup>H</sup> ]	‘neck’

The H tones in Table 2 illustrate no less than four types of association between tones and syllables, corresponding to tones #H, MH#, H\$ and H#.

- (i) The #H class possesses a High tone that remains unassociated when the word is pronounced in isolation. For instance, the #H word ‘little brother’ and the M word ‘little sister’ have the same tonal pattern in isolation (M on both syllables: [gi<sup>M</sup> zu<sup>M</sup>] ‘little brother’, [gu<sup>M</sup> mi<sup>M</sup>] ‘little sister’), but the former yields [gi<sup>M</sup> zu<sup>M</sup> ŋi<sup>H</sup>] ‘...is little brother’ (tone sequence: M.M+H), the latter [gu<sup>M</sup> mi<sup>M</sup> ŋi<sup>L</sup>] ‘...is little sister’ (tone sequence: M.M+L). The analysis proposed is that [gi<sup>M</sup> zu<sup>M</sup>] has a final H tone which remains unassociated unless it can associate to a following syllable. This type of H tone is described here as ‘floating H’, and transcribed as #H.
- (ii) The MH# class yields the same tonal string as #H in frame (1), namely M.M+H, but its citation tone is M.MH – e.g. [hwɣ<sup>M</sup> li<sup>MH</sup>] ‘cat’ –, suggesting that the final H in

the MH# pattern is part of a MH contour. This suggests that MH# may be characterised by a M-to-H ‘tonal accent’ associated to the last syllable of the lexical item.

- (iii) As for H\$, in frame (1) its final H tone manifests itself exactly as in the previous two cases, but unlike #H it surfaces in the citation form, as a simple H tone: e.g. [hwɤ<sup>M</sup> mi<sup>H</sup>] ‘she-cat’, [hwɤ<sup>M</sup> mi<sup>M</sup> ŋi<sup>H</sup>] ‘...is (a/the) she-cat’. Class H\$ can be said to be characterised by a prosodic-phrase-final H tone. Thus, all three items, [gi<sup>M</sup> zu<sup>M</sup>] ‘little brother’ (#H), [hwɤ<sup>M</sup> li<sup>MH</sup>] ‘cat’ (MH#) and [hwɤ<sup>M</sup> mi<sup>H</sup>] ‘she-cat’ (H\$), yield a M.M+H tonal sequence when followed by the copula.
- (iv) Lastly, the tonal class H# has a M.H pattern in isolation, like H\$, but its H tone does not undergo reassociation when in context: e.g. [ɛæ<sup>M</sup> tɥ<sup>H</sup> ŋi<sup>L</sup>] ‘...is (a/the) neck’ (H#), vs. [kɥ<sup>M</sup> ʂi<sup>M</sup> ŋi<sup>H</sup>] ‘...is (a/the) flea’ (H\$). Class H# could be described as having a H tone attached to its last syllable. Alternatively, its M.H pattern might be analyzed as consisting in the same tone pattern (tonal accent) as MH# but associated to the first syllable and not the second.

The description in terms of levels thus needs to be supplemented by a specification concerning the syllabic anchoring of tones. A H tone on the last syllable of a disyllable or a polysyllable may have different origins. It may be the realization of the tone pattern transcribed as H\$, where \$ stands for the end of the phonological phrase: a High tone that is anchored to the end of the phonological phrase. Alternatively, it may be a High tone anchored to the last syllable of the lexical word: there is no way to tell, since in isolation both positions coincide. In order to learn the tone pattern of these words, they have to be heard in various contexts: in phrase-final position; in phrase-internal position; and when followed by a toneless clitic such as the possessive. Their behavior in these contexts disambiguates between the different tonal classes.

Sections 2.1 and 2.2 examine the loss of some of these categories in the speech of less proficient speakers (bilingual speakers) and the consequences of these losses on the tone system as a whole.

### 2.1. The loss of tone categories not reflected in surface forms in isolation

Among the less proficient speakers, there is a tendency to overlook the differences that are neutralized in isolation. The surface tone pattern of a word is reinterpreted as its underlying pattern, leading to a major transformation of the architecture of the tonal system. For instance, the family name of the second author of this article is pronounced [la<sup>M</sup> t<sup>h</sup>a<sup>M</sup> mi<sup>H</sup>]. If the surface pattern, M.M.H, is taken at face value, the derivation of the plural form (‘the Latamis, the Latami family’), by addition of the plural /ɤæ/, should lead to the assignment of a L tone on the plural suffix, because a phonological word can have at most one H tone and all following syllables can carry no other tone than L. This would yield \*[la<sup>M</sup> t<sup>h</sup>a<sup>M</sup> mi<sup>H</sup>ɤæ<sup>L</sup>], a tone pattern which is actually attested in the speech of one of the bilingual speakers. However, the correct (conservative) tone pattern is [la<sup>M</sup> t<sup>h</sup>a<sup>M</sup> mi<sup>M</sup>ɤæ<sup>H</sup>]: it reveals that the final H tone in the name [la<sup>M</sup> t<sup>h</sup>a<sup>M</sup> mi<sup>H</sup>] is in fact phonologically specified as attaching to the last syllable of the phonological word. Using the notation presented above, the name is to be transcribed as /la.t<sup>h</sup>a.mi<sup>H\$</sup>/ (H tone at the end of the phonological phrase); under the reinterpretation made by less proficient speakers, it becomes /la.t<sup>h</sup>a.mi<sup>H#</sup>/ (H tone at the end of the lexical word).

Arguably the most difficult opposition to learn is that between the LM and LML patterns over disyllables, because it only surfaces when the word is followed by a toneless clitic. For instance,



[bu<sup>L</sup> mi<sup>M</sup>] ‘sow, female pig’ and [bu<sup>L</sup> ɬa<sup>M</sup>] ‘boar, male pig’ have the same tones not only in isolation but also when followed by the copula; the only contexts that can disambiguate their tone pattern are exemplified by [bu<sup>L</sup> mi<sup>M</sup> by<sup>M</sup>] ‘...of (a) sow’ vs. [bu<sup>L</sup> ɬa<sup>M</sup> by<sup>L</sup>] ‘...of (a) boar’, where the final L tone of the LML pattern associates to the following possessive particle. This opposition is well attested in the speech of the language consultant F4, our reference speaker: not only in elicited combinations, but also in a corpus of narratives.

Under such circumstances, it does not come as a surprise that the opposition between LM and LML should be lost by some speakers, such as F5 (aged 35, proficient in both Na and Chinese). In her speech, the tones of ‘sow’ and ‘boar’ are strictly identical: LM and LML have merged, into LM.

As an anecdote: this opposition proved challenging for the linguist; in the tonal inventory proposed by Michaud 2008, the differences across speakers had led to the provisional conclusion that the word for ‘boar’ may be an exception. The recognition of the LML tone pattern as distinct from LM came later, and required a reexamination of all the words which, on the basis of their tone in isolation, had been bunched together as ‘LM’.

## 2.2. Consequences of tonal losses for the architecture of the tone system

Simplifications such as the one reported in the previous section have major consequences for the tonal system, because the underlying tone of a lexical item determines the tone pattern of the higher-level combinations into which it enters, such as noun phrases and verb phrases.

The study of compounds is known to be highly revealing of prosodic systems. In Yongning Na, no tonal change takes place in possessive constructions, whereas tonal changes take place in compounds. In possessive constructions, the particle /by/ is added after the determiner, before the head, e.g. [hwɔ<sup>M</sup> li<sup>MH</sup>] ‘cat’, [ɬy<sup>MH</sup>] ‘brains’, [hwɔ<sup>M</sup> li<sup>M</sup> by<sup>H</sup> ɬy<sup>MH</sup>] ‘brains of the cat’. The first noun – the determiner – and the possessive particle form a single phonological phrase whose tonal pattern is determined in the way described in Tables 1 and 2; as for the second noun – the head –, its tonal pattern remains the same as in isolation. In determinative compounds, the order of constituents is, again, determiner plus head, but the tonal strings that result from compounding are not simply the concatenation of those found in isolation.

The tonal patterns of compound nouns in Yongning Na are set out in Table 3 as a function of the tones of their constituting elements. Table 3 includes both monosyllables and disyllables. It is based on data provided by our reference language consultant, F4; they were elicited systematically; the same tonal patterns are observed in the compounds found in a 2,000–entry glossary (deposited in 2011 in the Sino-Tibetan Etymological Dictionary and Thesaurus, STEDT) and in narratives recorded by the same consultant. Each line of Table 3 corresponds to one determiner and each column to a head. The tonal pattern indicated is that of the compound noun as realized in isolation. The mapping of tones to syllables is indicated by a dot separating tones attached to different syllables. For instance, LM+MH# yields ‘L.MH (L.M.H)’: an example is [bu<sup>L</sup> ɬy<sup>MH</sup>] ‘pig brains’, [bu<sup>L</sup> ɬy<sup>M</sup> ɲi<sup>H</sup>] ‘...is pig brains’. Taking [bu<sup>LM</sup>] ‘pig’ and [u<sup>LM</sup>] ‘skin’ as another example, their association yields L.M, that is L on the first syllable and M on the second: [bu<sup>L</sup> u<sup>M</sup>] ‘pig(s) skin’. When the tone received by the copula following the compound is other than L, the full pattern for compound+copula is indicated in brackets, with a ‘+’ sign indicating the juncture between the compound and the copula. The meaning of the symbols is as follows: #: last syllable of compound; \$: last syllable of phonological phrase (see table 1); °: last syllable of first member of compound. Some patterns are analytically

indeterminate, e.g. ‘pig’s back’, [bu<sup>L</sup> gy<sup>M</sup> dy<sup>M</sup>], could be analysed as having a simple L pattern (the M tones being added by default), as well as a LM pattern; in such cases, alternatives are given in brackets.

Table 3 (3a: monosyllabic second member of compound, 3b: disyllabic second member). The tonal patterns of compound nouns in Yongning Na. Each line corresponds to one determiner and each column to a head.

Table 3a:

tonal class		LM	M	L	#H	MH#	
	pattern with copula	L+M	M+L	L+LM	M+H	M+H	
LM	L+M	LM			LM+#H	LM+MH#	
M	M+L	°L	#H	L# (LM#)	#H	L# (LM#)	
L	L+LM	L	#LM (LM#)				
#H	M+H	H#	#H			°L	
zero	M.M+L	°L	#H	°L		°L	
#H	M.M+H	°H (H#)	°ML				
MH#	M.M+H		MH#			H#	
H\$	M.M+H		#H	H\$	#H	°H	
LM#	L.L+M	L°M	°LM				
L#	M.L+L	ML					
L+ MH#	L.M+H	L+ H#	L+ MH#	L+H\$			
L+ #H	L.M+H		L+ #H	L+ H#	L+ #H	L+H#	
L	L.M+L	LML	L	LML		L+MH#	
LML	L.M+L	LML					
H#	M.H+L	H°					

Table 3b:

tonal class	M	#H	MH#	H\$	LM#	L#	L+MH#	LML	H#
	M.M+L	M.M+H	M.M+H	M.M+H	L.L+M	M.L+L	L.M+H	L.M+L	M.H+L
LM	LM	LM+#H (L+#H)	LM+MH# (L+MH#)	LM+H\$ (L+H\$)	LML				LM+H#
M	zero	#H	MH#	H\$	#L	°ML	#L		H#
L	#LM	LM#		#LM	LM#	#LM	LML		#LM
#H	H#	#H	°H	H\$	°H	H#	°H		H#
zero	zero	#H	MH#	H\$	°L	°ML	°L		H#
#H	H#	MH#	M°H	H\$	°L	°ML	°L	°H	H#
MH#									
H\$									
LM#	°LM	#H	L°ML	°LM	L°ML	°LM	L°ML		°LM
L#	ML								
L+MH#	L+H#	L+#H	LMH		L+H#	LMH			L+H#
L+#H			L+MH#	L+H\$	LML	LM°ML	LML		
L	L								
LML	LML								
H#	H°								

While the number of combinations in Table 3 may look staggering, these combinations are not all that difficult to memorize and apply so long as one practises the language very regularly: these rules are productive, and are so frequent that they are not particularly difficult to memorize if one is steeped in a Na linguistic environment. On the other hand, from the point of view of a speaker with limited fluency, these combinations may prove problematic. Examples of hesitations and “mistakes” can be found in the speech of M23, a bilingual language consultant. He realized the combination ‘sheep’s muzzle’, made of /ju<sup>L</sup>/ ‘sheep’ and /ɲi.gɣ<sup>M</sup>/ ‘nose, muzzle’, as [ju<sup>M</sup>ɲi<sup>M</sup>gɣ<sup>M</sup>]; this is because he reinterprets /ju<sup>L</sup>/ ‘sheep’ as /ju<sup>M</sup>/ on the basis of its M-tone realization in isolation. The correct form is in fact quite different: the tone of the compound is simply the underlying L tone of the determiner of the compound, /ju<sup>L</sup>/ ‘sheep’. This yields /ju.ɲi.gɣ<sup>L</sup>/, ‘sheep’s muzzle’, realized phonetically as [ju<sup>L</sup>ɲi<sup>L</sup>gɣ<sup>LM</sup>] following the post-lexical addition of a final M tone (due to the fact that all-L-tone phonological phrases are not allowed in Na). A speaker needs a good command of the grammar of Na to implement this tonal rule, which thoroughly modifies the surface forms: the L tone of ‘sheep’, which does not even surface in isolation, has the effect of imposing itself onto no less than three syllables in succession in the compound, wiping out the lexical tone of the head of the compound in the process (from [ɲi<sup>M</sup>gɣ<sup>M</sup>] in citation form to [ɲi<sup>L</sup>gɣ<sup>LM</sup>] in this compound). Such a process is unheard of in Mandarin Chinese; in light of this discrepancy, it is understandable that some less proficient speakers who are exposed to Chinese on a day-to-day basis should come to have hesitations, and should (occasionally or regularly) go for a simple succession of “citation” tones, as is the case in their second language (Mandarin Chinese), instead of applying the complex rules of Yongning Na tonal grammar.

For this evolution to proceed further towards a complete loss of a given tonal opposition, a requirement is that listeners should tolerate the deviation: while a pool of variation is present at

every moment and for any language, linguistic change in the strict sense requires that the innovation be accepted within the community of speakers (see, for instance, Martinet 1955:203, *passim*). In the present state of Yongning Na, as far as we could observe, while elders do regret the fact that their language falls into gradual disuse, they rank proficiency in Chinese – one of the keys to success in society – far above proficiency in Na, and the attitude that we observed was one of great toleration, whereby phonemic confusions such as those reported above, and more generally phenomena of blending between Na and Chinese, were not stigmatized.

### 2.3. The loss of irregular tone patterns

In addition to losing some tone categories, less proficient speakers tend to regularize irregular patterns, for want of having memorized the exceptions. For instance, the word for ‘powder, flour’ is /tsa.bɣ<sup>M</sup>/; according to the rules that govern the tone pattern of compound nouns, the combination of this word with /lɥ.mi<sup>M</sup>/, ‘stone’, should yield a simple M-tone output, /lɥ.mi.tsa.bɣ<sup>M</sup>/. (The compound means ‘fine sand’.) This is a simple rule: in this case underlying tones and surface tones are identical. This rule is therefore applied productively even by the speakers with a less than full command of Yongning Na. However, the older generation of speakers have a different tone pattern for these words: compounds involving /tsa.bɣ<sup>M</sup>/, ‘flour, powder’, are irregular. They carry a L tone on that morpheme, witness [lv<sup>M</sup> mi<sup>M</sup> tsa<sup>L</sup> bɣ<sup>L</sup>] ‘fine sand’, [k<sup>h</sup>a<sup>M</sup> dze<sup>M</sup> tsa<sup>L</sup> bɣ<sup>L</sup>] ‘sweetcorn flour’, [dze<sup>M</sup> lu<sup>M</sup> tsa<sup>L</sup> bɣ<sup>L</sup>] ‘wheat flour’, all with a M.M.L.L tone pattern, instead of the expected M.M.M.M (/lɥ.mi<sup>M</sup>/, /k<sup>h</sup>a.dze<sup>M</sup>/, /dze.lu<sup>M</sup>/ all have a lexical M tone).

## Conclusion

There is at present a strong awareness, within the community of linguists and beyond, of the far-reaching consequences of the extinction of numerous languages worldwide: see in particular the contribution to the UNESCO encyclopedia of life support systems “Documenting endangered languages, and language maintenance” (available online from mercator-research.eu). The importance of producing high-quality documentation on the languages still spoken today cannot be overemphasised. It is difficult for linguists involved in documentation efforts not to feel that they have come too late, as they work with bilingual speakers who are keenly aware that a large part of the language and the oral tradition have not been passed down to them. The striking differences in degrees of proficiency across speakers is another ominous observation. It may come as a (partial) consolation to the linguist that these conspicuous differences across speakers provide exceptional insights into the language structure under description, bringing attention to the more fragile parts of the system (in the spirit of “dynamic synchrony” as advocated by Martinet 1990). This was illustrated above by the tonal difference between ‘sheep’s muzzle’ as spoken by two speakers with different degrees of proficiency, which brought out the headlong conflict between the complex mechanism of tone assignment in Yongning Na and the syllable-based system of Chinese, where – apart from a highly restricted set of phenomena – tone is phonologically inert. Information on how language shift affects the various aspects of the language’s structure can thus help the investigators in their urgent descriptive work.

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