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A description of endangered phonemic contrasts in Yongning Na (Mosuo)

Alexis MICHAUD*

LATAMI Dashi**

*LACITO-CNRS, France alexis.michaud@vjf.cnrs.fr

**Ninglang Research Centre in Ethnology, Lijiang Municipality, Yunnan, China latami32@gmail.com

Abstract:

The investigation concerns phonemic contrasts (including tonal contrasts) that are under a severe danger of disappearing from the Na language spoken in the plain of Yongning (Ninglang prefecture, Lijiang municipality, Yunnan province, China). This language belongs to the Sino-Tibetan family; it is also known as “Mosuo” and “Yongning dialect of Eastern Naxi”. The overall tendency is, unsurprisingly, that the phonemic contrasts found in Mosuo but not in Mandarin Chinese tend to become lost by the speakers who are most proficient in Chinese. We discuss several examples in detail. Among other consonants, Na contrasts /l/, /ɬ/, /ɸ/, and /ɕ/; this set is fully preserved in the speech of a 55-year-old speaker, whereas in the speech of a schoolgirl (currently in senior high school) the four have simplified to /l/: /^Mli/ “to look” and /^Mli/ “ear; moon” have both simplified to /li/; the syllables /ɸæ/ and /ɕæ/ in /^Mɸæ.mi/ “sword” and /^{#H}k^hwæ.ɰæ/ “satin” all simplified to /læ/. In-between these two extremes, in the speech of a speaker aged 35, these phonemic contrasts are preserved but their lexical distribution is becoming somewhat imperfect. For instance, she pronounces the word “sword”, /^Mɸæ.mi/, which is not in common use anymore, as /^Mlæ.mi/; this example arguably constitutes an indication that the opposition between /ɸ/ and /ɕ/ is weakening. As far as tones are concerned, the differences between the oldest generations and the speakers under 60 years set in sharp relief the complexities of the tonal system of Na: the contrasts 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 tonal system.

Key words: Yongning Na, Mosuo, tones, phonemic contrasts, loss of contrasts, sporadic loss of contrasts, 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: a brief outline of the history of the Yongning area is presented by Guo Dalie and He Zhiwu 1994 [2nd ed. 1999]:426-430; a two-volume collection of articles was recently published (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 and Jiang Zhuyi 1985:104, where Na is classified as part of the “Eastern Naxi dialects”. Recent analyses of the language include a Ph. D. dissertation (Lidz to appear) and a phonemic and tonal inventory (Michaud 2008).

Speakers of various languages, including Pumi/Prinmi, Lisu, Nosu, Naxi, 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 Pumi people from the small villages of Yiji township, which borders on 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-20th 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 builds on general observations about the endangerment of Na (Lidz and Michaud 2008). It 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 contrasts are provided: contrasts 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 around 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 around 1945, M21, and his youngest son, M23, aged 35.¹ The second author of the article is himself a native speaker, who illustrates the situation of bilingual speakers with an excellent command of Chinese (in his case, both Southwestern Mandarin and Standard Mandarin).

¹ Labels are assigned to language consultants in the database of Na, Naxi and related languages collected over several field trips; they allow for unambiguous reference.

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 contrasts 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 contrasts: /l/, /ʎ/, /ɣ/, and /ɻ/

The consonantal inventory of Yongning Na is recapitulated below.

	bilabial	dental	retroflex	velar	uvular	glottal
plosive	p ^h p b	t ^h t d	t̪ ^h t̪ d̪	k ^h k g	q ^h q	
affricate		ts ^h ts dz tɕ ^h tɕ dʒ	tʂ ^h tʂ dʐ			
nasal	m	n	ɳ	ŋ		
fricative		s z ɕ ʑ	ʂ ʐ		ʁ	h
lateral		ɬ l				
approximant			ɻ			

The approximant /ɻ/ can appear on its own, for instance in the plural suffix /ɻ/; 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 /njɣɻɻ/, /nuɻɻ/ and /tʂ^huɻɻ/ (as in the speech of F4, our reference speaker), but /njɣɻlu/, /nuɻlu/, and /tʂ^huɻlu/. In the speech of F5 (same age group), sporadic confusion of /ɻ/ is taking place with /lɻ/: for instance, she pronounces the adjective ‘square’, /zɻɻɻ/, as /zɻɻlɻɻ/.

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’, /^hɻwæ/, as /^hlwæ/ (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 /ɿ/ or to /læ/ by this same generation of speakers, e.g. the second author of this article realizes the plural marker /ɿæ/ as /ɿ/ and the second syllable of the disyllabic words /^Msu.ɿæ/ ‘table’, /^{ML}ɿ^hæ.ɿæ/ ‘book, scripture’ and /^{MH}k^hwæ.ɿæ/ ‘felt; mat’ as /læ/. These changes amount to the complete loss of the initial /ɿ/ in the idiolect of these speakers.

As for speaker F5, who belongs to the intermediate age group (age: 35), she preserves the sound /ɿ/ as an initial consonant, but its lexical distribution is becoming somewhat confused. For instance, she pronounces the word ‘sword’, /^Mɿæ.mi/, as /^Mɿæ.mi/; this is clearly an effect of the low frequency of this word, and of 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 “faulty” pronunciation would be likely to be corrected by more proficient speakers. The fact that the “mistake” concerns the initial consonant arguably constitutes an indication that the opposition between /ɿ/ and /l/ is weakening even in the speech of those speakers who still contrast these two phonemes. In other items, /ɿæ/ is simplified to /læ/: for instance, speaker F5 pronounces /ɿæ/ ‘flat’ as /læ/.

Lastly, in the speech of F6 (a 19-year-old high school student) the four sounds /l/, /ɿ/, /ɿ/, and /ɿ/ have all simplified to /l/, i.e. the closest approximation found in the Chinese language for these sounds. Thus, in F6’s speech, /^Mli/ ‘to look’ and /^Mɿi/ ‘ear; moon’ have become homophonous, simplifying to /li/; and the syllables /ɿæ/ and /ɿæ/ in /^Mɿæ.mi/ ‘sword’ and /^{MH}k^hwæ.ɿæ/ ‘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/, /ũ/, /ũ̃/, /ũ̃ɣ/, /ũ̃/, and /ĩ̃/. 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 [fɿ]). In front of nasal rhymes, /h/ is nasalized.

This syllable type is relatively marginal in Yongning Na, and definitely very much 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 confusion with other syllable types. In the speech of bilingual speakers, sporadic changes were observed: for instance, /^{MH}dzi.hĩ̃/ ‘clothes’ has become /^{MH}dzi.ɿ̃/ in the speech of M23 – nasality being carried

only by the initial – whereas other items (such as /^Mh[̃].h[̃]/ ‘to stir-fry’) retain their “conservative” /h/-plus-nasal-vowel structure.

1.3. Loss of an acoustically fragile contrast: the case of apicalization

Yongning Na has apical vowels [ɿ] (apico-alveolar) and [ɿ̣] (apico-retroflex) as allophones of the high unrounded back vowel /ɯ/ after fricatives and affricates of like place of articulation, e.g. /^Hsu/ ‘to know’ is realized [sɿ], and /^{MH}ʂu/ ‘to peel’ is realized [ʂɿ̣]. The syllables composed of a dental fricative or affricate followed by /ɯ/, namely /zu/, /su/, /dzu/, /tsu/ and /ts^hu/, contrast with syllables containing the rhyme /i/: /zi/, /si/, /dzi/, /tsi/ and /ts^hi/. The latter are well-advanced on the path towards apicalization: strong fricative noise is present throughout the syllable. Acoustically, the contrast between pairs such as /su/ and /si/ is difficult to perceive – so much so that this contrast escaped the linguist’s notice at first, and was not reported in the phonemic inventory published in 2008 (Michaud 2008). Thus, /^{#H}si/ ‘wood’ (realized [sị]) is to be distinguished from /^Hsu/ ‘to know’ (realized [sɿ̣]). It appears that bilingual speakers of Na are also experiencing some trouble with these syllable contrasts: bilingual speakers still maintain the contrast, but its lexical distribution is becoming fuzzy. At the stage of fieldwork where 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/, etc. (which had all been transcribed originally with the vowel /ɯ/), asking speakers questions such as: “Is ‘to sharpen’ pronounced like ‘wood’ [i.e. /si/] or like ‘to know’ [i.e. /su/]?” Language consultants other than F4 (our reference speaker) experienced some difficulties – and indeed made some “mistakes” – in this task, despite the care taken to make the task as easy as possible (making short sessions to avoid fatigue, etc). It appears that, among the “bilingual”/“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’ (/^Msu.ɿæ/) sounds like ‘wood’ or ‘to know’, he chose the former, substituting the form /^Msi.ɿæ/ for the “correct” form /^Msu.ɿæ/ ‘table’. This amounts to a folk etymology whereby the first syllable is considered identical with the word for ‘wood’, /^{#H}si/.

While the consonants and vowels discussed above constitute salient examples of endangered contrasts, 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). 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 2006. 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 contrasts 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^L], in frame (1).

- (1) [tʂ^huɿ _____ 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 beginning of the tone-bearing syllable, e.g. [^LMbu] ‘pig’ is strictly equivalent to [buɿ] 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, i.e., taking the word ‘pig’ as an example, [^LMbu] in isolation, yielding [^Lbu^Mŋi] ‘...is (a) pig’ and [^Lbu^Mbɿ] ‘...of (a) pig’. The tone of the deictic in (1) is M, [^Mtʂ^huɿ], 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: 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	
^M la	‘tiger’	M	M	M+M	M+L
^L k ^h ɣ	‘dog’	L	M	L+M	L+LM
^{#H} zwæ	‘horse’	#H	M	M+M	M+H
^{MH} hwɣ	‘cat’	MH	MH	M+H	M+H
^{LM} bu	‘pig’	LM	LM	L+M	L+M

The tone system of Yongning Na includes some contrasts that do not surface in the citation form of the words. A Yongning Na word that carries a Mid tone 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. /^Lɲɣ/ ‘silver’ can be pronounced [ɲɣl], as well as [ɲɣ-], whereas this variant is not acceptable for tones M and #H. However, this 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.

The existence of contrasts that are neutralized in isolation (in “citation form”) is not uncommon typologically: a famous case is Tokyo Japanese. 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 underlying forms and 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		
				phonology	phonetics in isolation	meaning
[M.M]	M	M.M+M	M.M+L	/ ^M ɬi.mi/	[ɬi+ mi+]	‘moon’
[L.LM]	L	L.L+M	L.L+M	/ ^L k ^h ɣ.mi/	[k ^h ɣ+ mi+]	‘she-dog, bitch’
[M.M]	#H	M.M+M	M.M+H	/ ^{#H} ŋi.mi/	[ŋi+ mi+]	‘sun’
[M.MH]	MH#	M.M+H	M.M+H	/ ^{MH#} hwɣ.li/	[hwɣ+ li+]	‘cat’
[L.M]	LM	L.M+M	L.M+L	/ ^{LM} bu.mi/	[bu+ mi+]	‘sow, female pig’
[L.M]	LML	L.M+L	L.M+L	/ ^{LML} bu.ɬa/	[bu+ ɬa+]	‘boar, male pig’
[M.H]	H\$	M.M+M	M.M+H	/ ^{HS} hwɣ.mi/	[hwɣ+ mi+]	‘she-cat’
[L.M]	LM+#H	L.M+M	L.M+H	/ ^{LM+#H} na.hĩ/	[na+ hĩ+]	‘Naxi’
[L.MH]	L+MH	L.M+H	L.M+H	/ ^{L+MH} i.tʂæ/	[i+ tʂæ+]	‘waist’
[M.L]	ML / L#	M.L+L	M.L+L	/ ^{ML} ku.dzu/	[ku+ dzu+]	‘Tibetan’
[M.H]	MH / H#	M.H+L	M.H+L	/ ^{MH} kɛ.tɣ/	[kɛ+ tɣ+]	‘neck’

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

- (i) The #H class possesses a High tone that remains unassociated when the word is pronounced in isolation. For instance, the #H word [gi^M zu^M] ‘little brother’ and the M word [gu^M mi^M] ‘little sister’ have the same tonal pattern in isolation (M on both syllables), but the former yields [gi^M zu^M ŋi^H] ‘...is little brother’ (tone sequence: M.M+H), the latter [gu^M mi^M ŋi^L] ‘...is little sister’ (tone sequence: M.M+L). The analysis proposed is that [gi^M zu^M] has a final H tone which remains unassociated unless it can associate to a following syllable. This type of H tone will be described as ‘floating 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^M li^{MH}] ‘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’ – which could be transcribed as M*H – 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 it also surfaces in the citation form, as a simple H

tone, not a contour: e.g. [hwɤ^M mi^H] ‘she-cat’, [hwɤ^M mi^M ŋi^H] ‘...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^M zu^M] ‘little brother’ (#H), [hwɤ^M li^{MH}] ‘cat’ (MH#) and [hwɤ^M mi^H] ‘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. [ɬæ^M tɥ^H ŋi^L] ‘...is (the) neck’ (H#), vs. [kɥ^M ʂi^M ŋi^H] ‘...is (a/the) flea’ (H\$). Class H# could be described as having a H tone attached to its last syllable.¹

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 particular 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-t^ha-mi]. 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 /ɥ/, 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-t^ha-miɥ^L/, a tone pattern which is actually attested in the speech of one of the

¹ Alternatively, its M.H pattern might be the manifestation of a M*H tonal accent associated to the first syllable, i.e. the same tonal accent as MH# but associated to the first syllable and not the second.

bilingual speakers. However, the correct (conservative) tone pattern is /la.t^ha.mi.t̩/ : it reveals that the final H tone in the name /la.t^ha.mi/ is in fact phonologically specified as attaching to the last syllable of the phonological word. Using the notation proposed in Michaud 2008, the name should be transcribed as /^{Hs}la.t^ha.mi/ (H tone at the end of the phonological phrase); under the reinterpretation made by less proficient speakers, it becomes /^{H#}la.t^ha.mi/ (H tone at the end of the lexical word).

Perhaps the most difficult contrast 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.l mi.t̩/ ‘sow, female pig’ and /bu.l t̩a.t̩/ ‘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.l mi.t̩ by.t̩/ ‘...of (a) sow’ vs. /bu.l t̩a.t̩ by.t̩/ ‘...of (a) boar’, where the final L tone of the LML pattern associates to the following possessive particle. This contrast 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 contrast 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 contrast 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 relatively late, and required a reexamination of all the words which, on the basis of their tone in isolation, had been classified 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 (2.1) 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.t̩/ is added after the determiner, before the head, e.g. [hwɣ.t̩li.t̩] ‘cat’, [t̩ɣ.t̩] ‘brains’, [hwɣ.t̩li.t̩by.t̩t̩ɣ.t̩] ‘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 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: LM+MH# yields ‘L.MH (L.M.H)’, i.e. [buɬɣʌ] ‘pig brains’, [buɬɣʌŋiɿ] ‘...is pig brains’. For instance, [buɿ] ‘pig’ (tonal class: LM) and [uɿ] ‘skin’ (tonal class: LM) yield L.M, i.e. L on the first syllable, M on the second: /buɿuɿ/ ‘pig(’s) skin’.

Table 3. The tonal patterns of compound nouns in Yongning Na. Each line corresponds to one determiner and each column to a head. 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. Symbols: #: 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^L gɥ^M dy^M] 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.

tonal class		LM	M	L	#H	MH#	zero	#H	MH#	H\$	LM#	L#	L+MH#	LML	H#
	pattern with copula	L+M	M+L	L+LM	M+H	M+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	L+M	LM			LM+# H	LM +MH#	LM	LM+#H (L+#H)	LM+ MH# (L+MH#)	LM+H\$ (L+H\$)	LML			LM+H #	
M	M+L	°L	#H	L# (LM#)	#H	L# (LM#)	zero	#H	MH#	H\$	#L	°ML	#L	H#	
L	L+LM	L	#LM (LM#)			#LM	LM#			#LM	LM#	#LM	LML	#LM	
#H	M+H	H#	#H			°L	H#	#H	°H	H\$	°H	H#	°H	H#	
zero	M.M+L	°L	#H	°L		°L	zero	#H	MH#	H\$	°L	°ML	°L	H#	
#H	M.M+H	°H	°ML				H#					H#	°H		
MH#	M.M+H	(H#)	MH#			H#		MH#	M°H						
H\$	M.M+H		#H	H\$	#H	°H		#H							
LM#	L.L+M	L°M	°LM				°LM	#H	L°ML	°LM	L°ML	°LM	L°ML	°LM	
L#	M.L+L	ML					ML								
L+	L.M+H	L+	L+ MH#	L+H\$			L+ H#	L+ #H	LMH			L+ H#	LMH	L+H#	
MH#		H#													
L+	L.M+H		L+ #H	L+ H#	L+ #H	L+H#			L+H\$						
#H															
L	L.M+L	LML	L	LML		L+MH #	L		L+ MH#		LML	LM°M L	LML		
LML	L.M+L	LML					LML								
H#	M.H+L	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 /^Lju/ ‘sheep’ and /^Mŋi.gɣ/ ‘nose, muzzle’, as /ju+ŋi+gɣ+; this is because he reinterprets /^Lju/ ‘sheep’ as /^Mju/ 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, /^Lju/ ‘sheep’. This yields /^Lju.ŋi.gɣ/, ‘sheep’s muzzle’, realized phonetically as /juŋi.gɣ/ 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 [ŋi+gɣ+] in citation form to [ŋi.gɣ] 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 contrast, 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 /^Mtsa.bɣ/; according to the rules that govern the tone pattern of compound nouns, the combination of this word with /^Mlv.mi/, ‘stone’, should yield a simple M-tone

output, /^Mlv.mi.tsa.bɣ/. (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 /^Mtsa.bɣ/, ‘flour, powder’, are irregular. They carry a L tone on that morpheme, witness [lv+mi+tsa]bɣ] ‘fine sand’, [k^ha+dze+tsa]bɣ] ‘sweetcorn flour’, [dze+lu+tsa]bɣ] ‘wheat flour’, all with a M.M.L.L tone pattern, instead of the expected M.M.M.M (/^Mlv.mi/, /^Mk^ha.dze/, /^Mdze.lu/ all have a lexical M tone).

Conclusion

The above observations about “endangered phonemic contrasts” can be helpful in documentation and research. Having an eye on the degree of endangerment of given aspects of the language structure under description can help the investigator conduct his descriptive work: an awareness of which contrasts are more difficult for language consultants allows the investigator to devote extra attention to these fragile parts of the language under description.

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