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THE TWO LEVEL TONAL SYSTEM OF LATADDI NARUA*

Roselle Dobbs and Lǎ Míngqīng 喇明清

Abstract: Lataddi Narua is the first reported variety of a Naish language having only two tonal levels; all other Naish languages described to date have three. The language uses a system in which level tones are primary, and tones are associated to lexical items rather than to individual syllables. Four tone categories are identified for nouns and adjectives, and six for verbs. Processes of tonal interaction across word boundaries are discussed, from tonal morphology to observations about syntactic and semantic factors influencing the placement of tone group boundaries within a sentence.

Keywords: tone; level tone; tonal morphology; Narua; Mosuo; Yongning Na; Naish languages.

1. INTRODUCTION

While the study of Naish languages is well underway, all of those described to date are reported to have three tonal levels. These include several dialects of Naxi (Hé & Jiāng 1985; Michaud 2006; Michaud & He Xueguang 2007; Michaud and He Likun 2015; Pinson 1997), three varieties of Narua (Lidz 2010; Michaud 2008, 2015; Yang 2006, 2009), and Laze¹, a language spoken in Muli County (Michaud 2009, 2013). This study aims to contribute to the study of tone in Naish languages by presenting a system that makes use of only two tonal levels. It also adds to the growing body of data pertaining to Sino-Tibetan languages in which level, rather than contour, tones are primary, a typological feature once considered to occur predominantly in African languages (Hyman & VanBik 2002; Hyman 2007 on Kuki-Chin; Evans 2008 on Qiang; Sun 1997 on Tibetan).

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Glossing of grammatical items in this paper follows the Leipzig conventions found at <http://grammar.ucsd.edu/courses/lign120/leipziggloss.pdf>

¹ Sìchuān shěng, Mùlǐ Zàngzú zìzhìxiàn, Xiàngjiǎo xiāng 四川木里藏族自治县项脚乡.

Lataddi Narua [la^hla^hdi^h na^hzwa^h] (hereafter LTD Narua) is a variety of the language recently given Ethnologue status as Narua [nru].² Also known as Eastern Naxi, Mosuo or Na, this language classification coincides with the three eastern dialects of Naxi identified by Chinese linguists in the late 1970's (Hé & Jiāng 1985:104-116). Regarding the position of Narua within Sino-Tibetan, Jacques and Michaud (2011) propose Narua (labelled "Na/Mosuo") as one of three "Naish" languages in the "Naic" sub-group of the "Na-Qiangic" branch of Burmo-Qiangic. The other two Naish languages are Naxi and Laze (see Figure 1).

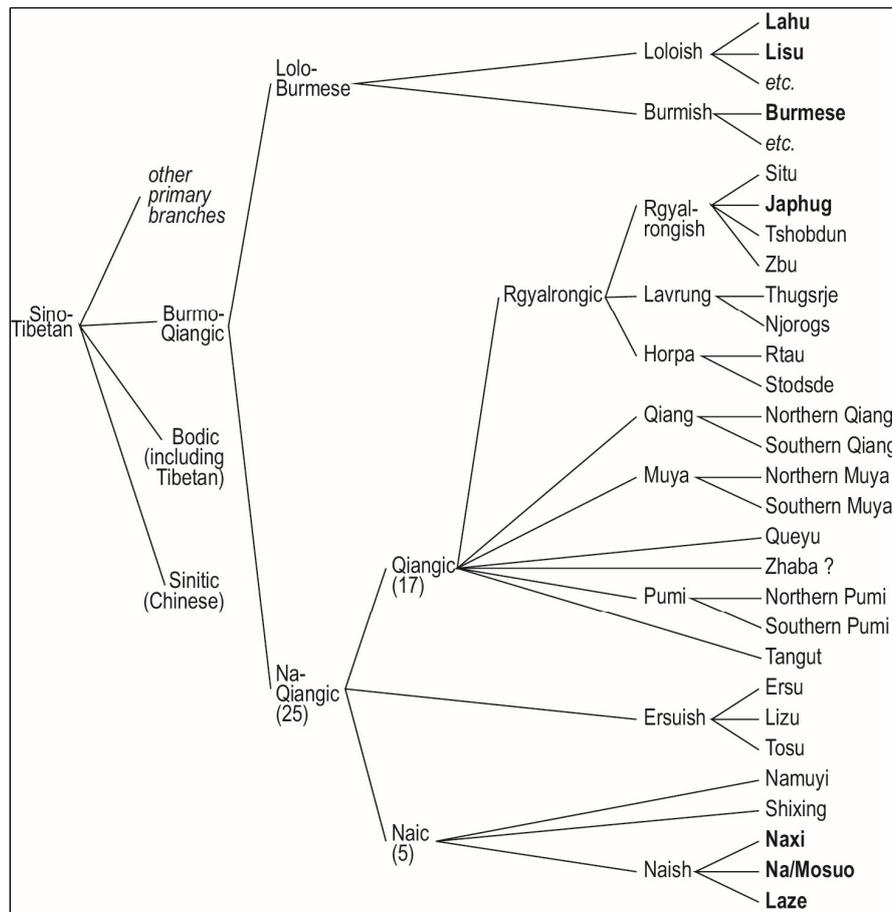


Figure 1. Tentative family tree showing the position of Narua (Na/Mosuo) within the Na-Qiangic sub-branch of Sino-Tibetan. (Jacques & Michaud 2011, used with permission.)

Within Na-Qiangic, but outside of the Naish sub-group, two tonal levels are reported in several dialects of Pumi (Ding 2001; Jacques 2011; Daudey 2014). Within the Naic sub-branch, Shǐxīng (史兴), also known as Xùmǐ (旭米), a

² The former ethnologue code for Naxi [nbf] has been retired. It has been split into Naxi [nxq] (previously categorised as the western dialects of Naxi), and Narua [nru] (previously categorised as the eastern dialects of Naxi). See <http://www.ethnologue.com/language/nru>

language spoken in Muli Tibetan Autonomous County of Sichuan Province,³ is also reported to make use of two tonal levels (Chirkova & Michaud 2009).

Early studies on Naish languages by Hé & Jiāng (1985) describe six "Naxi dialects" - three "western" and three "eastern" - all having three tonal levels and with tone assigned to individual syllables. It has since been confirmed that (western) Naxi makes use of three tonal levels and that it tends towards the omnisyllabic type (one tone per syllable). Processes of tonal reassociation are few (Michaud 2006; Michaud & He Xueguang 2007; Pinson 1997). More recent research, however, has revealed that the tones of some dialects of Naish languages are not associated to syllables at all. Rather, they are associated to lexical items (Michaud 2008).

Three varieties of Narua have been described to date. These all fall within the geographic area of the central (Yongning) dialect of "eastern Naxi". Material already published includes descriptions of Narua as it is spoken in:

1. Pingjing Village,⁴ on the northern edge of Yongning Township in Ninglang Yi Autonomous County, Yunnan Province (see Michaud 2008, 2015). Data is also available online in the Pangloss Collection⁵ (Michailovsky et al. 2014). Pingjing Narua (hereafter PJ Narua) makes use of three tonal levels. Tones are associated, not to syllables, but to lexical items, and each lexical item belongs in a tonal class. Five tonal classes have been identified for monosyllabic nouns and eleven for disyllabic nouns.

2. Luoshui Village⁶ on the southwestern edge of Lugu Lake in Ninglang Yi Autonomous County (see Lidz 2010). The tonal system of Luoshui Narua calls for further analysis. Surface phonological tones are transcribed employing three tonal levels, but a reanalysis in terms of two levels would seem possible in many cases. Mention is made of prolific tone sandhi processes, but tantalisingly, these processes are not elaborated on.

3. Abuwa Village⁷ on the south edge of Yongning Township, by native speaker Yáng Zhènghóng 杨振洪 (2006, 2009). This description employs three tonal levels and is syllable-based, but notational inconsistencies suggest that there is room for further analysis.

The following description of the LTD Narua tonal system introduces further diversity.

³ Sichuān shěng, Mùlǐ Zàngzú zìzhìxiàn, Shuǐluò xiāng 四川省木里藏族自治县水洛乡.

⁴ Yúnnán shěng, Lǐjiāng shì, Nínglàng Yí zìzhìxiàn, Yǒngníng xiāng, Píngjìng cūn 云南省丽江市宁蒗彝族自治县永宁乡平静村.

⁵ YN Na recordings of a speaker from Pingjing Village and transcripts can be found online at http://lacito.vjf.cnrs.fr/pangloss/languages/Na_en.htm.

⁶ Yúnnán shěng, Lǐjiāng shì, Nínglàng Yí zìzhìxiàn, Yǒngníng xiāng, Luòshuǐ cūn 云南省丽江市宁蒗彝族自治县永宁乡落水村.

⁷ Yúnnán shěng, Lǐjiāng shì, Nínglàng Yí zìzhìxiàn, Yǒngníng xiāng, Ābùwǎ cūn 云南省丽江市宁蒗彝族自治县永宁乡阿布瓦村.

2. BACKGROUND AND METHOD

The variety of Narua under study here - LTD Narua - also falls within the geographic area of the Yongning dialect of "eastern Naxi". Rather than being found in Yunnan Province, though, it is spoken in and around the swamp area known as the Grass Sea (cǎo hǎi 草海), which forms the eastern end of Lugu Lake (Lúgūhū 泸沽湖) in Yanyuan County, Liangshan Yi Autonomous Prefecture, Sichuan Province (see map below). Its speakers are classified as Mongolian (Měngzú 蒙族); their autonym is Na [na/]. The word Lataddi [la^haldɪ̀] is a compound meaning 'Lata land', i.e. the land of the Lata clan.

Data was collected primarily during 2008-2010 with native speakers from Wuzhiluo,⁸ a sub-village of Boshu Village on the northern edge of the swamp. Data collection and elicitation were conducted both in Wuzhiluo itself and in Chengdu, the capital city of Sichuan Province.

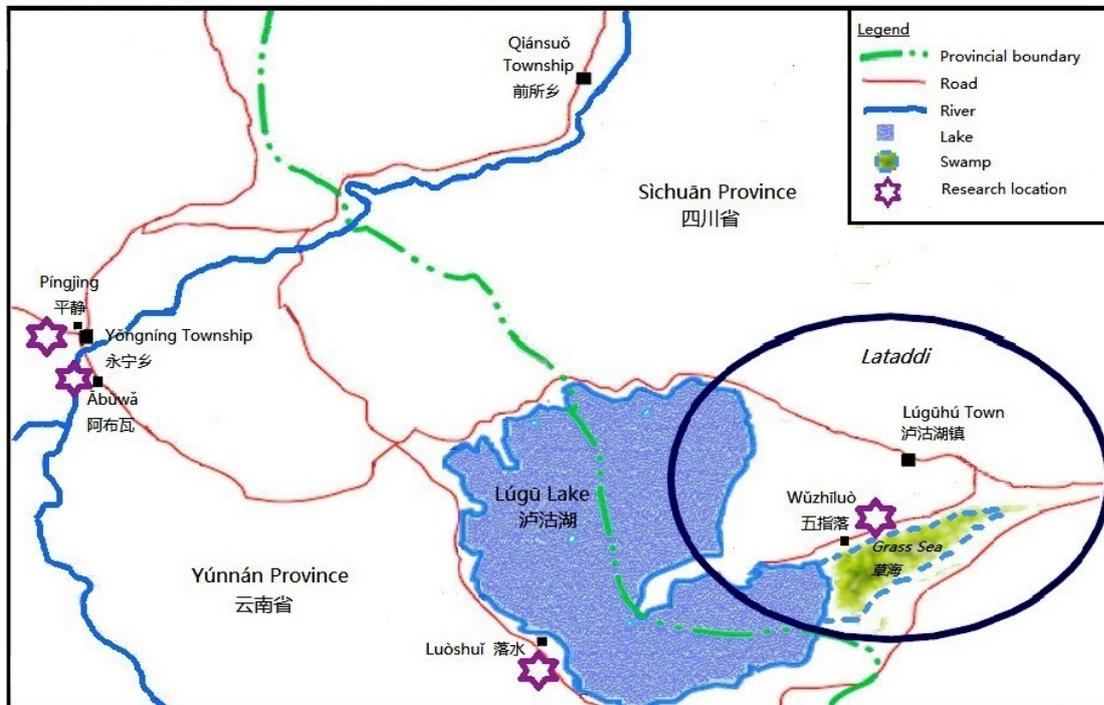


Figure 2. Map showing locations of Lataddi and of Narua research

The choice to study this particular variety of the language was nothing more or less profound than the availability of a native speaker who was willing to be a language consultant: the second author, Lǎ Míngqīng 喇明清.⁹ Research initially began in 2008 with weekly language learning and recording sessions in Chengdu, during which both elicited data and natural text were recorded electronically and transcribed using IPA. The second author's niece, Lǎ Qiǎoyuè 喇巧月, and sister, Lǎ Míngyīng 喇明英, provided additional data. Several field trips to the area were

⁸ Sìchuān shěng, Liángshān Yí zìzhìzhōu, Yányuán xiàn, Bóshù cūn, Wǔzhǐluò 四川省凉山彝族自治州盐源县泸沽湖镇博树村五指落。

⁹ Lǎ Míngqīng 喇明清 is a professor of ethnic culture and tourism at Southwest University for Nationalities (Xīnán Mínzú Dàxué 西南民族大学) in Chengdu.

made, including two trips by the first author in 2009 and 2010 with the express purpose of verifying the existence of certain phonemes and tonal contrasts. During the course of these and other trips, a number of other native speakers also provided data. Contact has been maintained with several of these people and their families. A wordlist containing some 2000 items has been compiled, along with texts of various lengths, using the SIL FLE_x software package. Three short LTD Narua texts are given in the appendix.

3. OUTLINE OF FINDINGS

3.1. Two tonal levels

LTD Narua is described in terms of two phonological tonal levels: [H] (high) and [L] (low). This is significant in that it differs from all other Naish languages, dialects, and varieties documented to date. Research currently being carried out by Ji Xī 季惜 and Ā Huì 阿慧 (two MA students at Yunnan University) also suggests a two-level tonal system. This variety of Narua is spoken in Shankua,¹⁰ a village also identified as being located in Lataddi, directly south of Wuzhiluo on the southeastern side of Lugu Lake and just inside the Yunnan border.

The tonal system of LTD Narua is one of level tones. While surface tonal contours exist, there is phonological evidence for a decomposition into levels. For example, evidence exists that a rising contour is made up of a combination of a L tone and a H tone. Tone spreading patterns are presented in Section 8.

Four tone categories have been identified for LTD Narua nouns and adjectives: /H/, /HL/, /LH/, and /L/. These are summarised in the tables below. Throughout this paper, tonal categories are indicated with an upper case letter inside slashes, e.g. /H/. Following Michaud (2008), superscript letters indicate the tonal categories of lexical items. Tonal categories of nouns and adjectives are discussed in more detail in Sections 4 and 5 respectively.

<i>Tone category</i>	<i>Monosyllabic noun example</i>	<i>Disyllabic noun example</i>
/H/	^H ji 'cow'	^H bæ.mi 'duck'
/HL/	^{HL} jo 'sheep'	^{HL} ɬo.kɾ 'rib'
/LH/	^{LH} tʂ ^h æ 'deer'	^{LH} hwɾ.li 'cat'
/L/	^L zu 'monkey'	^L bi.mi 'axe'

Table 1. Tonal categories of nouns

¹⁰ Yúnnán shěng, Lìjiāng shì, Nínglàng Yí zìzhìxiàn, Yǒngníng xiāng, Luòshuǐ cūn, Shānkua xiǎozǔ 云南省丽江市宁蒗彝族自治县永宁乡落水村山垮小组.

<i>Tone</i>	<i>Monosyllabic</i>		<i>Disyllabic</i>	
<i>category</i>	<i>adjective example</i>		<i>adjective example</i>	
/H/	^H fɿ	'wide'	^H mɤ.næ	'soft'
/HL/	^{HL} du	'big'	^{HL} gɤ.dzu	'angry'
/LH/	^{LH} ɿu	'new'	^{LH} kwæ.tɿwæ	'crooked'
/L/	^L tei	'small'	^L la.gɤ	'bent'

Table 2. Tonal categories of adjectives

The tonal categories of verbs are more elusive than those of nouns and adjectives, and are not yet fully understood. Verbs are usually monosyllabic and their tonal realisations tend to be influenced by the preceding phonological environment. Six tonal categories have been identified, also employing two tonal levels, but not yet given descriptive labels. These are summarised below. The tonal behaviour of verbs as understood at this point is discussed in more detail in Section 9.

<i>Tone</i>	<i>Verb</i>	
<i>category</i>	<i>example</i>	
1	¹ dzu ¹¹	'eat'
2	² dzi	'sit'
3	³ tɕ ^h i	'sell'
4	⁴ gɤ	'make'
5	⁵ q ^h wæ	'smash'
6	⁶ la	'hit'

Table 3. Tonal categories of verbs

3.2. Tones associated to lexical items

Unlike (western) Naxi dialects, LTD Narua tonal categories are associated to lexical items rather than to individual syllables. This has also been reported in PJ Narua (Michaud 2008). The first indication that this may be the case in LTD Narua emerged at the outset of the research when it was observed, for example, that [ɿeʌ] 'meat' is pronounced with a high-falling tone in isolation, but that in compound with various 'animal' morphemes, its surface tone varies, as seen in Table 4 below. Note that in the words 'beef' and 'venison', the surface tone on 'meat' is high-falling, while in 'mutton' and 'monkey meat' it is low-rising. (Tonal behaviour of compounds is discussed in more detail in Section 6.) As in the table below, Chao letters in tables and examples throughout this paper show surface phonological tone. Surface tones of lexical items are given in isolation form in all tables, unless otherwise stated.

¹¹ There are two apicalised vowels that occur after the alveolar fricatives and affricates /s, z, ts^h, ts, dz/ in LTD Narua. For the purposes of consistency with previous research on Narua, these are transcribed phonemically as /u/ and /i/. However, it should be noted that, in this phonological environment, the vowel that Michaud (2008) transcribes as /i/ for PJ Narua corresponds to /u/ in Lidz' (2010) description of Luoshui Narua, and vice versa.

Component 1		Component 2		Compound		
isolation tone		isolation tone		surface tones		
jiʋ	'cow'	+	ʂeʋ	'meat'	→ jiʋʂeʋ	'beef'
joʋ	'sheep'	+	ʂeʋ	'meat'	→ joʋʂeʋ	'mutton'
tʂʰæʋ	'deer'	+	ʂeʋ	'meat'	→ tʂʰæʋʂeʋ	'venison'
zuʋ	'monkey'	+	ʂeʋ	'meat'	→ zuʋʂeʋ	'monkey meat'

Table 4. Examples showing surface tones of 'meat' morpheme in various 'animal-meat' compounds

In many cases in LTD Narua, such as those in the compounds shown in Table 4, it is the tonal category of the first morpheme of a word that determines the tonal output of the lexical item. A similar system is seen in Wadu Pumi where "tonal behaviour in compounding is often based on the tone of the first element, but is not always predictable" and where "(t)ones can spread rightwards as the tonal domain is extended by toneless clitics or when two tonal domains merge" (Daudey 2014:64).

3.3. Tone groups and tone group boundaries

A tone group in LTD Narua is headed by a lexical item. However, it is not necessarily restricted to that item, but may extend across more than one word within a clause. The break between one tone group and the next is referred to as a tone group break. The lexical item which determines the tonal category of the tone group is said to head the tone group.

In example sentences, tone groups breaks are indicated by vertical lines: pecked lines show mid-clause tone group breaks; solid lines indicate clause boundaries (which are also tone group breaks). Surface phonological tone is shown in the first row, and the tonal category for each tone group in the sentence is indicated in the second row, as exemplified below.

(1)	hĩʋ	soʋ-kʋʌ	dzoʋ	ŋʂʌ-bʋʌ	tʂʰʋʌmiʋ
	/H/	/HL/		/H/	/H/
	person	three-CLF	EXIST ¹²	1SG-POSS	wife
	zoʋ	duʋ-luʋ	ŋʂʌ	soʋ-kʋʌ	
	/H/		/H/	/HL/	
	son	one-CLF	1SG	three-CLF	
	'There are three people: my wife, a son, me, three (of us).'				

A tone group may be as short as one monosyllabic word, such as those comprised of [hĩʋ] 'person' and [ŋʂʌ] '1SG' in sentence (1) above. Conversely, it may extend over a number of syllables, such as in sentence (2) below, where the second tone group covers six syllables comprised of a number-classifier combination, a locative, and a verb phrase.

¹² EXIST: Existential verb

demonstrative pronoun surfaces with a [H] tone. However, this is not part of the tone group being investigated; as the noun phrase forming the grammatical subject, it constitutes a separate tone group of its own, so has been excluded from the examples.

<i>N+COP</i> <i>surface tones</i>	<i>N+COP</i> <i>examples</i>
1 1 + V	bæ mi niV 'is duck'
1 1 + A	to kɾ niA 'is rib'
1 1 + V	hwɿ li niV 'is cat'
1 1 + A	bi mi niA 'is axe'

Table 6. Disyllabic nouns in *N+COP* frame

Tonal categories of disyllabic nouns are given the labels /H/, /HL/, /LH/ and /L/ according to their tonal realisations when appearing before the copular verb. Having determined the tonal category of a word, it may be transcribed phonemically using a superscript tone letter, e.g. /^Hbæ.mi/ 'duck'. The following table presents examples.

<i>Tone</i> <i>category</i>	<i>Example</i>
/H/	^H bæ.mi 'duck'
/HL/	^{HL} to.kɾ 'rib'
/LH/	^{LH} hwɿ.li 'cat'
/L/	^L bi.mi 'axe'

Table 7. Tonal categories of disyllabic nouns

Monosyllabic nouns spoken in isolation have only two possible surface realisations: high-falling or low-rising. Native speaker intuitions confirm these two possibilities, e.g. the nouns [jiV] 'cow' and [joV] 'sheep' have the same high-falling isolation tone, while [tʂ^hæA] 'deer' and [zɯA] 'monkey' are both realised with a low-rising tone in isolation. This is not to suggest, though, that there are only two tonal categories for monosyllabic nouns in LTD Narua. Using the same frame as for disyllabic nouns, four distinct categories also emerge for monosyllabic nouns, as exemplified in the table below.

<i>Isolation tone</i>	<i>Example</i>	<i>N+COP surface tones</i>	<i>N+COP examples</i>
∨	ji∨ 'cow'	∩ + ∨	ji∩ ni∨ 'is cow'
∨	jo∨ 'sheep'	∩ + ∩	jo∩ ni∩ 'is sheep'
∩	tʂ ^h æ∩ 'deer'	∩ + ∨	tʂ^hæ∩ ni∨ 'is deer'
∩	zu∩ 'monkey'	∩ + ∩	zu∩ ni∩ 'is monkey'

Table 8. Monosyllabic nouns in isolation and in *N+COP* frame

As illustrated in Table 8, when spoken in isolation the tone of a monosyllabic noun appears as a contour: either a fall or a rise. When in the frame *N+COP*, however, the noun surfaces with a level tone, while a contour appears on the copula. Fundamental frequency (F_0) graphs of the four sentences from which the data in Table 8 is extracted are shown below, with COP highlighted.

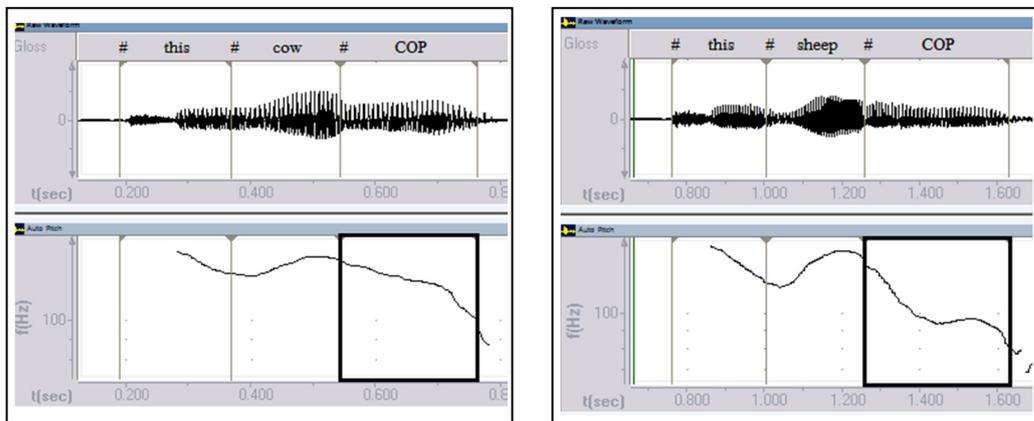


Figure 3. F_0 graphs of '*DEM + cow + COP*' and '*DEM + sheep + COP*'

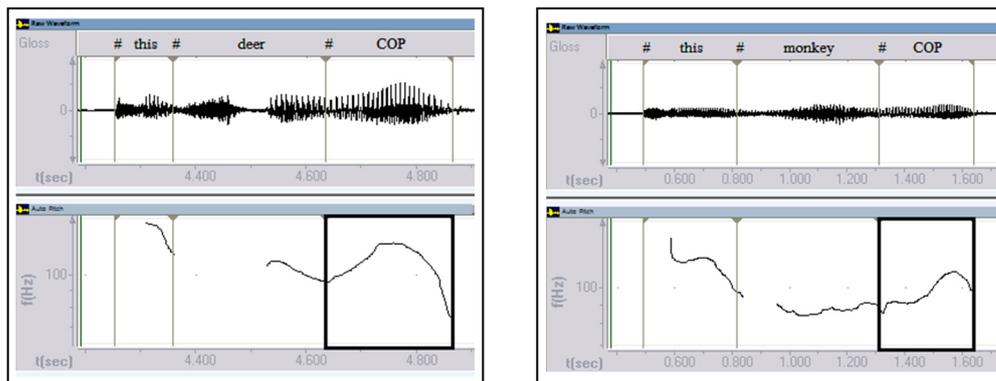


Figure 4. F_0 graphs of '*DEM + deer + COP*' and '*DEM + monkey + COP*'

Appropriate labels for the four categories of monosyllabic nouns was not as immediately obvious as those for disyllabic nouns. Given that the phonetic rise on the copula after 'sheep' is not as pronounced as that after 'monkey', an analysis on three tonal levels, with a contrast between [LM] and [LH], would have been possible. However, no contrast between mid and high level tones was observed, so for reasons of economy, an analysis on two tonal levels was adopted and the

four categories were given the same labels as those of disyllabic nouns: /H/, /HL/, /LH/ and /L/ respectively.

Given that there are only two tonal realisations of monosyllabic nouns in isolation, it can be stated that the contrast between /H/ and /HL/ tonal categories is neutralised in isolation, as is that of /L/ and /LH/. It is worth noting that in two dialects of Pumi - Wadu and Niuwozi - high-level and high-falling tones are also reported as being not easily distinguishable in isolation or at the end of an intonation unit, as the high level tone is often realised as high-falling in these environments (Ding 2001:63-65, 2014:50; Daudey 2014:71). Tonal categories for LTD Narua monosyllabic nouns are summarised in the table below.

<i>Tone category</i>	<i>Example</i>
/H/	^H ji 'cow'
/HL/	^{HL} jo 'sheep'
/LH/	^{LH} tʂ ^h æ 'deer'
/L/	^L zuu 'monkey'

Table 9. Tonal categories of monosyllabic nouns

Having established tonal categories for nouns, those of adjectives were comparatively straightforward to ascertain.

5. ADJECTIVES

LTD Narua adjectives function both as noun modifiers (attributives) and as intransitive stative verbs. As verbs they appear as predicates and, like other verbs, they may take prefixes¹⁴ such as the accomplished marker /lə-/ or the negative marker /mə-/, in which case the surface tone of the lexical item may differ from its isolation form (see Section 9). In the present section, the tonal behaviour of adjectives as attributives is presented. As attributives, their tonal behaviour is very similar to that of nouns. The majority of LTD Narua adjectives are monosyllables, so these are discussed first.

5.1. Monosyllabic adjectives

As an attributive, the default position for an adjective is after the noun, although it may appear in focus position before the noun for semantic reasons. Like nouns, monosyllabic adjectives appear as either high-falling or low-rising in isolation. Examples are given in the table below.

¹⁴ In the case of a number of disyllabic stative verbs, /lə-/ or /mə-/ may occur as infixes, eg. [ɣ]vu\] 'good looking' cf. [ɣ]-mə]-vu\] 'not good looking'. Many, but not all, of these cases can be analysed as N-infix-V.

contour appears on the attributive particle to complete the tone group of all tonal categories. In non-final position, however, the underlying phonological tone surfaces; no contour appears on the attributive particle except following an /L/ category adjective, where it has a low-rising tone. (See Section 8 for further discussion.)

<i>Tone category</i>	<i>Isolation tone</i>	<i>Adjective example</i>	<i>ADJ-ATTR tones in isolation</i>	<i>ADJ-ATTR isolation example</i>	<i>ADJ-ATTR tones in non-final position</i>	<i>ADJ-ATTR non-final position example</i>
/H/	∇	fɾ∇ 'wide'	∇∇	fɾ∇-hĩ∇	∇∇	fɾ∇-hĩ∇
/HL/	∇	du∇ 'big'	∇∇	du∇-hĩ∇	∇∇	du∇-hĩ∇
/LH/	∇	ʂu∇ 'new'	∇∇	ʂu∇-hĩ∇	∇∇	ʂu∇-hĩ∇
/L/	∇	tɛi∇ 'small'	∇∇	tɛi∇-hĩ∇	∇∇	tɛi∇-hĩ∇

Table 11. Tonal categories of monosyllabic adjectives

5.2. Polysyllabic adjectives

Disyllabic adjectives occur less frequently, but their tonal categories are the same as those of monosyllables. The table below presents the four tonal categories and examples. Like disyllabic nouns, the tonal categories of disyllabic adjectives are apparent in isolation. Once again, the attributive particle in /L/ category tone groups surfaces with rising tone in non-final position, while it appears with level tone in all the other categories.

<i>Tone cat.</i>	<i>Isolation tones</i>	<i>Adjective example</i>	<i>ADJ-ATTR tones in isolation</i>	<i>ADJ-ATTR isolation example</i>	<i>ADJ-ATTR tones in non-final position</i>	<i>ADJ-ATTR non-final position example</i>
/H/	∇∇	mʊ∇næ∇ 'soft'	∇∇+∇	mʊ∇næ∇-hĩ∇	∇∇+∇	mʊ∇næ∇-hĩ∇
/HL/	∇∇	gʊ∇dzɯ∇ 'angry'	∇∇+∇	gʊ∇dzɯ∇-hĩ∇	∇∇+∇	gʊ∇dzɯ∇-hĩ∇
/LH/	∇∇	kwæ∇tʂwæ∇ 'crooked'	∇∇+∇	kwæ∇tʂwæ∇-hĩ∇	∇∇+∇	kwæ∇tʂwæ∇-hĩ∇
/L/	∇∇	la∇gʊ∇ 'bent'	∇∇+∇	la∇gʊ∇-hĩ∇	∇∇+∇	la∇gʊ∇-hĩ∇

Table 12. Tonal categories of disyllabic adjectives

Reduplicated adjectives of ABB pattern also occur in LTD Narua. These are analysed using the same tonal categories as nouns and mono- or disyllabic adjectives. Examples are given in the table below.

Tone	Isolation	Adjective	ADJ-ATTR	ADJ-ATTR	ADJ-ATTR	ADJ-ATTR	
cat.	tion	example	tones in	isolation	tones in	non-final	
	tones		isolation	example	non-final	position	
					position	example	
/H/	11V	p ^h ɿlfɿlfɿV	'spongy'	111+V	p ^h ɿlfɿlfɿl-hĩl	111+1	p ^h ɿlfɿlfɿl-hĩl
/HL/	11A	hũldzældzæA	'deep red'	111+A	hũldzældzæJ-hĩJ	111+1	hũldzældzæJ-hĩJ
/LH/	11V	ɕuJhælhæV	'very fresh'	111+V	ɕuJhælhæl-hĩl	111+1	ɕuJhælhæl-hĩl
/L/	11A	naJgɣJgɣA	'dark'	111+A	naJgɣJgɣJ-hĩA	111+A	naJgɣJgɣJ-hĩA

Table 13. Tonal categories of ABB adjectives

Analyses of /H/, /LH/ and /L/ categories are unambiguous: surface tones on the adjective in ADJ-ATTR appear as [H.H.H], [L.H.H] and [L.L.L] respectively. Analysis of category /HL/ is less transparent in that the surface tones of the adjective appear as [L.H.L], rather than the expected [H.L.L]. The label /HL/ has been adopted because, where the tonal categories of monosyllabic form of these adjectives (i.e. the first syllable in ABB) is known, its tonal category is /HL/. For instance, 'red' as a monosyllable is /^{HL}hũ/, while its ABB counterpart is [hũldzældzæJ] 'deep red'. Note, though, that an alternative pronunciation of 'spongy' was recorded - and later discarded as an error - in which the surface tones were [H.L.L]. If it is later discovered that adjectives of [H.L.L] pattern exist, a fifth tonal category for ABB adjectives will need to be added.

6. COMPOUNDS AND CONUNDRUMS

Given what has been seen thus far regarding tone groupings in LTD Narua, one might expect the tonal categories of compound nouns to be determined by the first component of the compound. In fact, this is often the case: /A/+B/→/A/. Compare, for example, the surface realisations of 'bracelet' in the following two compounds, where isolation forms are given:

[joV]	+	[loJdzoV]	→	[jo ^H lloJdzoV]
'jade'		'bracelet'		'jade bracelet'
/H/	+	/LH/	→	/H/

[ɲɿV]	+	[loJdzoV]	→	[ɲɿ ^{HL} lloJdzoA]
'silver'		'bracelet'		'silver bracelet'
/HL/	+	/LH/	→	/HL/

In [jo^HlloJdzoV] 'jade bracelet', the /H/ tone of /^Hjo/ 'jade' determines the tonal category of the entire compound. 'Jade' surfaces with a simple level high tone; the high tone then spreads right to the two syllables of 'bracelet' which surface as [H.HL] when the compound is in isolation, or as [H.H] in non-clause-final position. In [ɲɿ^{HL}lloJdzoA] 'silver bracelet', it is the /HL/ tonal category of /^{HL}ɲɿ/

'silver' that determines the tonal category of the compound. In this case, 'silver' receives a high tone, followed by a low tone which appears on the first syllable of 'bracelet' and spreads to the right. In isolation form, a final rise is added to the last syllable of the tone group, resulting in 'bracelet' surfacing as [L.LH].

Further examples of tonal categories of compound nouns being determined by that of the first element are presented in Table 14 below. In these examples, as in those seen above, the entire compound takes the tonal category of the first element. These compounds also provide examples of tri- and quadri-syllabic nouns in isolation form.

<i>Tone cat 1</i>	<i>Tone cat 2</i>	<i>Isolation tones of components</i>	<i>Tone cat. of compound</i>	<i>Isolation tones of compound</i>		
	/H/	jiV + ʂeV	'cow' + 'meat'	jiV ʂeV	'beef'	
		poVlgvV + haV	'corn' + 'food'	poVlgvV haV	'corn porridge'	
	/HL/	mɤVl ¹⁷ + gɣVllaV	'sky' + 'god'	mɤVlgɣVllaV	'sky god'	
		laVt ^h aV + diV	'Lata (clan) + 'land'	laVt ^h aV diV	'Lataddi (place)'	
/H/	/LH/	jiV + q ^h vV	'cow' + 'horn'	/H/	jiVq ^h vV	'cow horn'
		niVzoV + kvV	'fish' + 'rind'		niVzoVkvV	'fish scales'
	/L/	bɣV + moV	'Pumi' + 'old'		bɣVmoV	'old Pumi person'
		jiV + ɣuV	'cow' + 'skin'		jiVɣuV	'cow skin'
	/H/	joV + hūV	'sheep' + 'hair'		joVhūV	'wool'
		dzuVlboV + ʂeV	'wild pig' + 'meat'		dzuVlboVʂeV	'wild pork'
/HL/	/HL/	koV + gɣVllaV	'mountain' + 'god'	/HL/	koVgɣVllaV	'mountain god'
	/LH/	joV + q ^h vV	'sheep' + 'horn'		joVq ^h vV	'sheep horn'
		nɤV + loVldzoV	'silver' + 'bracelet'		nɤVloVldzoV	'silver bracelet'
	/L/	joV + ɣuV	'sheep' + 'skin'		joVɣuV	'sheepskin'
		bɤV + tʂwæVzɤV	'yak' + 'reins'		bɤVtʂwæVzɤV	'yak reins'
	/H/	tʂ ^h æV + ʂeV	'deer' + 'meat'		tʂ ^h æVʂeV	'venison'
		ɕuVtʂ ^h wæV + haV	'rice' + 'food'		ɕuVtʂ ^h wæVhaV	'rice (cooked)'
/LH/	/HL/	tʂ ^h æV + diV	'deer' + 'land'	/LH/	tʂ ^h æVdiV	'deer land'
	/LH/	tʂ ^h æV + q ^h vV	'deer' + 'horn'		tʂ ^h æVq ^h vV	'deer antler'
		zɤVlvV + zɤVlmiV	'grandson' + 'granddaughter'		zɤVlvVzɤVlmiV	'grandchildren'
	/L/	tʂ ^h æV + ɣuV	'deer' + 'skin'		tʂ ^h æVɣuV	'deer skin'
	/H/	mɤV + zoV	'female' + 'child'		mɤVzoV	'girl, daughter'
		vɤVldzeV + hɥV	'bird' + 'hair'		vɤVldzeVhɥV	'feather'
/L/	/HL/	ɕiV + dzuV	'lake' + 'water'	/L/	ɕiVdzuV	'lake water'
		vɤVldzeV + k ^h vV	'bird' + 'nest'		vɤVldzeV k ^h vV	'bird's nest'
	/LH/	liV + q ^h wɣV	'tea' + 'bowl'		liVq ^h wɣV	'tea bowl'
		ɕuVteiV + kvV	'plum' + 'rind'		ɕuVteiVkvV	'plum skin'
	/L/	naV + mɤV	'Na' + 'girl'		naVmɤV	'Na girl'

Table 14. Examples of tonal categories of compound nouns

However, as alluded to in the introduction, not all tonal categories of LTD Narua compound nouns are determined by that of the first component. In a small

¹⁷ The phoneme transcribed here as /ɤ/ is articulated with very close, very spread lips and appears to be similar to that described by Lidz (2010:40) in Luoshui Narua. Note that this phoneme is distinct from that transcribed as /v/ in LTD Narua.

number of compounds, the tones of both components are retained. For example: /^Hpo.kv/ 'corn' + /^Lts^hɣ.ts^hɣ/ 'leaf' → [po|kv|ts^hɣ|ts^hɣ] 'corn leaf'. Rather than create further tonal categories to accommodate such forms, these compounds are analysed as containing two tone groups: /A/+B/ → /A+B/.

A further permutation involves compounds in which, although the surface tone of the first component remains unchanged, the compound noun does not necessarily emerge as belonging to the same tonal category as the first component. Take, for example, compounds in which the first component is 'pig'. In isolation, this item is [bo|], and in the N+COP frame it emerges as /LH/ i.e. [bo|ni|] 'pig COP (is pig)'. Some compounds yield the expected /LH/ tone, as exemplified in Table 15.

<i>Component 1 isolation tone</i>	<i>Component 2 isolation tone</i>	<i>Compound isolation tones</i>	<i>Tone cat. of compound</i>
bo 'pig'	+ bɸ 'animal pen'	→ bo bɸ 'pig pen'	/LH/
bo 'deer'	+ ɣ̃ 'bone'	→ bo ɣ̃ 'pig bone'	/LH/
bo 'pig'	+ ɣu 'skin'	→ bo ɣu 'pig skin'	/LH/
bo 'pig'	+ dzwæ 'tusk'	→ bo dzwæ 'pig tusk'	/LH/

Table 15. Compounds with 'pig' where tonal category is /LH/

In these cases, /A/+B/ → /A/. Other compounds, however, emerge as tonal category /L/, such as those shown in Table 16.

<i>Component 1 isolation tone</i>	<i>Component 2 isolation tone</i>	<i>Compound isolation tones</i>	<i>Tone cat. of compound</i>
bo 'pig'	+ ɣe 'meat'	→ bo ɣe 'pork'	/L/
bo 'deer'	+ hɸ 'hair'	→ bo hɸ 'pig hair'	/L/
bo 'pig'	+ ha 'food'	→ bo ha 'pig food'	/L/

Table 16. Compounds with 'pig' where tonal category is /L/

That these compounds are not of the /A/+B/ → /A+B/ type is evidenced by the fact that /H/ category nouns /^Hɣe/ 'meat', /^Hhũ/ 'hair', and /^Hha/ 'food' all emerge with low-rising surface tones. In these cases, /A/+B/ → /C/. While the surface tone of the first syllable in these compounds is consistently [L] and the tones of the resulting compounds still fit into one of the four existing tonal categories for nouns, it is not clear why a variation between /LH/ and /L/ forms exists in compounds where the first morpheme is 'pig'. It is possible that the presence of these variants may necessitate the addition of a fifth tonal category for nouns such as these.

There remain a further number of compounds, again neither of the /A/+B/ → /A/ type nor the /A/+B/ → /A+B/ type, in which it is the surface tone of the first syllable that differs from its simple form. For instance, /^Hla/ 'tiger' and /^Hɣ̃/ 'bone' combine to form [la|ɣ̃|] 'tiger bone'. In this case, /H/+H/ → /LH/. The following table gives further examples.

Tone cat 1	Tone cat 2	Isolation tones of components	Tone cat. of compound	Isolation tones of compound		
/H/	/H/	k ^h iŋ + k ^h wɿŋ	'door' + 'mouth'	/L/	k ^h iŋk ^h wɿŋ	'doorway'
/H/	/H/	laŋ + ʔŋ	'tiger' + 'bone'	/LH/	laŋʔŋ	'tiger bone'
/H/	/H/	næŋ + woŋ	'milk' + 'hard'	/LH/	næŋwoŋ	'yoghurt'
/H/	/LH/	zɯŋ + q ^h wɿŋ	'alcohol' + 'bowl'	/LH/	zɯŋq ^h wɿŋ	'alcohol bowl'
/H/	/L/	jiŋ + miŋ	'cow' + 'female'	/L/	jiŋmiŋ	'cow (fem.)'

Table 17. Examples of compound nouns where surface tone of first component changes

Although the above table is not an exhaustive list, the trend indicated by the examples is accurate. That is, the majority of instances in which the tone of the first component surfaces differently in compound form than in simple form involve [H] surfacing as [L] rather than the other way around. These compounds which are irregular with respect to the currently productive compound patterns may, in fact, turn out to be indicative of earlier forms. As noted above, the resulting compounds still fit into the four existing tonal categories for nouns.

7. TONE GROUPS AND TONE GROUP BOUNDARIES

Having examined the tonal behaviour of nouns and adjectives both in isolation and in frames, and before discussing that of verbs, the subject of tone groups and tone group boundaries is now considered. Thus far, it has been seen that the surface tone of the copula and the possessive particle are determined by the preceding noun, the surface tone of the attributive particle depends on the preceding adjective, and the tonal category of many compounds is determined by that of the first element. These are all examples of tone groups.

7.1. Longer noun phrases

Longer tone groups headed by a noun occur in phrases containing N+DEM+CLF 'this (noun)' or N+one-CLF 'a (noun)'. The following sentences give examples of such phrases in each of the four tonal categories. Note that in sentences (6) and (7), the tone group also incorporates the verb.

- (5) t^hɯŋ | toŋdziŋ | t^hɯŋ-dziŋ | laŋgɿŋ |
 /H/ | /H/ | | /L/ |
 DEM pine tree DEM-CLF be crooked
 'This tree is crooked'

- (6) ŋɿŋ | joŋ | duŋ-poŋ | əŋ |
 /H/ | /HL/ | | |
 1SG sheep one-CLF look at
 'I look at a sheep.'

- (7) t^hɯŋ | dzɯŋʃɯŋ | duŋ-tsoŋ | giŋ |

/H/ | /LH/ |
 3SG chopstick one-CLF.PAIR give
 'He gave (me) a pair of chopsticks.'

(8) t^hu^l | m^v | z^o | t^hu^l | l^a | d^zo | t^hu^l | b^v | m^v | ni |
 /H/ | /L/ | /H/ | /H/ | /L/ |
 DEM girl DEM-CLF TOP 3SG-POSS daughter COP
 'This girl is her daughter.'

A noun may also head the tonal category of a phrase in which a number appears, as exemplified in the following elicited sentences. Once again, in these sentences the tone group headed by the noun also incorporates the verb.

(9) hⁱ | s^o | k^v | t^hu^l | d^zo |
 /H/ |
 person three-CLF DUR-EXIST
 'There are three people.'

(10) s^a | l^a | t^o | p^hy | b^v | s^o | b^a | t^hu^l | d^zo |
 /HL/ | /HL/ |
 table on gift three-CLF DUR-EXIST
 'On the table there are three gifts.'

(11) ŋ^x | t^hu^l | h^o | p^ho | ə |
 /H/ | /LH/ |
 1SG goat eight-CLF look at
 'I look at eight goats.'

(12) a | k^o | p^ha | t^si | mⁱ | q^hy | k^v | t^hu^l | d^zo |
 /HL/ | /L/ |
 home middle-aged man six-CLF DUR-EXIST
 'At home there are six middle-aged men.'

The placement of tone group breaks is often syntactically motivated, at least in part. Data presented so far demonstrates that, in a sentence with both subject and object, a tone group break occurs between the two. Where there is no grammatical object, a tone group break often occurs after the subject. There are, however, exceptions to this, such as when the sentence has an existential verb, e.g. sentence (9) above. A verb may also be included in a tone group headed by an object noun (see Section 9). Conversely, a noun phrase is not necessarily comprised of only one tone group:

- the demonstrative pronoun occurring before a noun forms a tone group on its own (e.g. sentence (5));
- a tone group break occurs after the possessive particle (e.g. sentence (1));

- and if the noun is modified with ADJ-ATTR, there is a tone group break between the noun and the adjective (e.g. sentence (3)).

On the other hand, semantic motivations for the placement of tone group boundaries also exist. This is also the case in PJ Narua, where it is reported that there is often more than one option for the placement of tone group boundaries within an utterance; choice of boundary placement depends on factors pertaining to information structure, such as phrasing and prominence (Michaud 2015:1). Although this phenomenon has yet to be studied in detailed for LTD Narua, the following section illustrates a case of semantically motivated tone group boundary placement.

7.2. Tone group break before emphasised number

While noun+number-classifier (N+NUM-CLF) may form a single tone group, as seen in sentences (9)-(12) in Section 7.1 above, this is often not the case. If a speaker wishes to emphasise the number rather than the noun in a noun phrase, a tone group break occurs after the noun. A new tone group headed by the number then follows. In this case, where prominence is given to the number, the placement of the tone group break is semantically motivated. Such NUM-CLF tone groups may be described using the same four tonal categories as nouns and adjectives. Consider the following example:

(13)	hĩl	sọl-ḳṿl	dzol	ŋɣl-ḅṿl	tɕ ^h ṿlmịl
	/H/	/HL/		/H/	/H/
	person	three-CLF	EXIST	1SG-POSS	wife
	zọl	dụl-lụl	ŋɣl	sọl-ḳṿl	
	/H/		/H/	/HL/	
	son	one-CLF	1 _S	three-CLF	
			G		

'There are *three* people: my wife, a son, me, three (of us).'

In the first clause of sentence (13), N+NUM-CLF comprises two distinct tone groups. Here, /^Hhĩ/ 'person' forms a tone group on its own, followed by a break. A new tone group of category /HL/ headed by the number 'three' then appears: [sọl-ḳṿl dzol] 'three-CLF EXIST'. The speaker is emphasising the fact that there are *three* people in his family. This contrasts with the tonal realisations of the same N+NUM-CLF seen in sentence (9), where the number is not being emphasised and the entire phrase, including the verb, is one /H/ category tone group: [hĩl sọl-ḳṿl t^hụl-dzọl] 'person three-CLF DUR-EXIST'. The following sentence provides another example of a noun phrase in which a tone group break occurs between the noun and the number.

- (14) k^hu|tɕɿ| du|p^ho| bi| k^hu|tɕɿ^h|kɸ|tɕu| | **ŋwɿ|-lu|** **t^hu|di|** |
 /LH/ /H/ /LH/ /L/ |
 foot one-CLF on toenail five-CLF DUR-EXIST
 'There are *five* toenails on a foot.'

In sentence (14), [k^hu|tɕɿ| du|p^ho|] 'foot one-CLF (a foot)' occurs as one tone group of category /LH/, while the compound noun [k^hu|tɕɿ^h|kɸ|tɕu|] 'toenail' comprises a /LH/ tone group on its own. A break occurs before the number [ŋwɿ|] 'five' which heads a /L/ category tone group: [ŋwɿ|-lu| t^hu|di|] 'five-clf DUR-EXIST (there are *five*)'. In this case, the number five is given prominence.

8. TONE SPREADING

In the tone groups that have been analysed to date, where the group is headed by a noun, an adjective, or a number, it is the left-most lexical item that determines the category of the tone group, and any tone spreading occurs to the right. Sentences (5)-(12), seen in Section 7, provided examples of tone spreading in longer noun phrases of each of the four tonal categories. Observations for tone groups headed by a noun, adjective or number (in NUM-CLF constructions) are summarised as follows.

For tone groups whose leftmost lexical item is /H/ category, [H] is spread across the entire group. In clause final position, a falling contour appears on the final syllable. In all other environments, however, there is no contour and a level [H] tone appears throughout the tone group. For this reason, the falling tone, although part of the surface phonology, is not considered part of the underlying tonal makeup of /H/ category tone groups. Tone groups comprised of only [H] occur frequently in LTD Narua. Tone spreading for /H/ category tone groups of one, two and three syllables is depicted in Figure 5, where σ represents a syllable and a pecked line represents tone spreading.

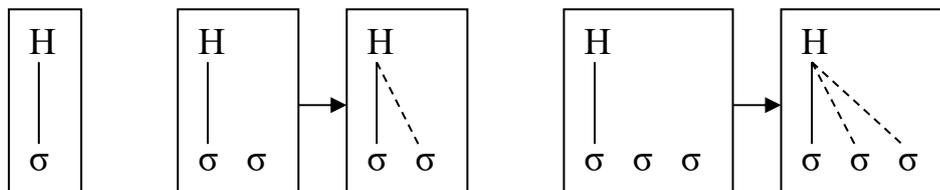


Figure 5. Tone spreading in /H/ category tone groups of one, two and three syllables

Nouns and adjectives of tonal category /HL/ surface as a high-falling tone on monosyllables. In tone groups of two syllables or more, the first syllable is realised with a level [H] tone, then [L] surfaces on the second syllable and spreads to the right across the remainder of the tone group. In clause final position, a rising contour may appear on the final syllable. Otherwise there is no contour; the clause final contour is not part of the underlying tonal makeup of /HL/ tone groups. At an underlying level, /HL/ monosyllables are analysed as two level

tones - [L] and [H] - appearing on a single tone-bearing unit. Tone spreading for /HL/ tone groups of one, two and three syllables is depicted in Figure 6.

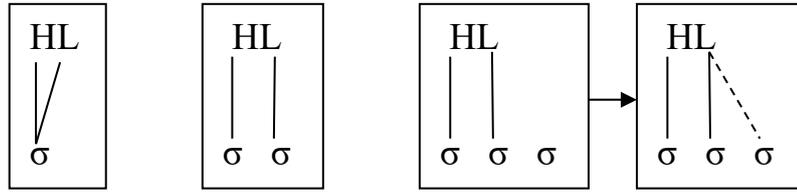


Figure 6. Tone spreading in /HL/ category tone groups of one, two and three syllables

In tonal groups of category /LH/, monosyllabic nouns and adjectives surface with a rising tone. In polysyllabic tone groups, however, a level [L] tone appears on the first syllable and [H] surfaces on the second syllable and spreads to the right across any remaining syllables. The final syllable in a clause surfaces as a fall, but mid-clause appears as a level high tone. /LH/ monosyllables are analysed, not as contours, but as two level tones - [L] and [H] - appearing on a single tone bearing unit. Tone spreading in /LH/ category tone groups is represented in Figure 7.

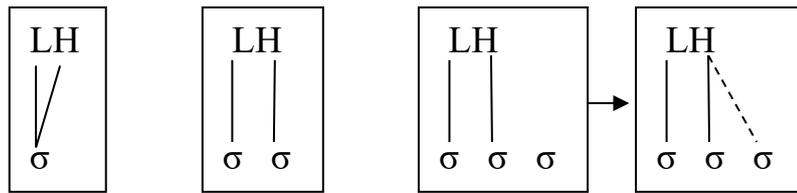


Figure 7. Tone spreading in /LH/ category tone groups of one, two and three syllables

8.1. /L/ category tone spreading

Tonal category /L/ is more complex. In isolation, /L/ category monosyllables surface with low-rising tone, i.e. [LH]. In the case of polysyllabic nouns and adjectives, and in ADJ-ATTR and O+V constructions (to be seen in Section 9), the low tone spreads to the right, with an obligatory rise appearing on the last syllable. The rise in /L/ tone groups is the only contour that appears in the middle of a clause; it is analysed as being part of the underlying tonal system of LTD Narua. Its presence normally signals the end of a tone group. Figure 8 depicts /L/ category tone spreading for one, two and three syllable tone groups.

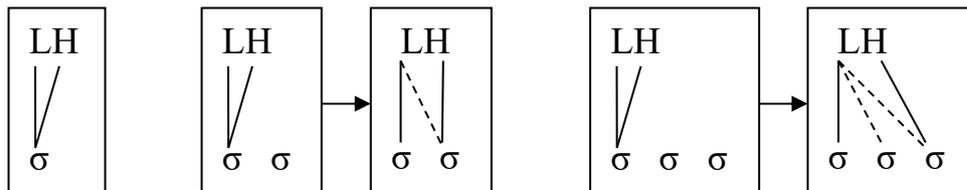


Figure 8. Tone spreading in /L/ category tone groups of one, two and three syllables

In longer /L/ category tone groups, [L] is pushed out to all but the final syllable or, in certain syntactic constructions, to the penultimate syllable, after which a high tone surfaces. The following sentences give examples of surface [H]

often determines that of the entire phrase. Compare, for example, the surface tones of the verb in these two phrases:

[zɯŋ tʰuŋ] 'alcohol drink (drink alcohol)'

[li tʰuŋ] 'tea drink (drink tea)'

In the first case, /^Hzɯŋ/ 'alcohol' is a /H/ category noun, and the tone on [tʰuŋ] 'drink' surfaces with a high-falling tone in isolation form. In the second, /^Lli/ 'tea' is a /L/ category noun, and the verb surfaces with a low-rising tone.

The sentences below, extracted from the text *Daily Life* (see appendix), present examples of the surface tone of the verbs 'cook' - which appears in isolation form as [gɸ] - and 'eat' - which appears in isolation form as [dzɯŋ] - being determined by the tonal category of the preceding noun.

(18)	tʰuŋgiŋ	nuŋ	dzoŋ	tʂʰɸ	gɸ
	/H/		/H/	/LH/	
	next	ABL ¹⁸	TOP	breakfast	cook
	tʂʰɸ	gɸ	soŋ	dzɯŋ	
	/LH/			(?)	
	breakfast	cook	in order to	eat	

'Next (we) cook breakfast, cook breakfast to eat.'

(19)	tʂʰɸŋ	nuŋ	dzoŋ	zoŋ	gɸ	soŋ	zoŋ	dzɯŋ
	/H/		/H/	/L/			/L/	
	there	ABL	TOP	lunch	cook	in order to	lunch	eat

'Next (we) cook lunch to eat lunch.'

(20)	mɸ.lkɸ	naŋ	dzoŋ	tʂʰwɸŋ	gɸ	tʂʰwɸŋ	dzɯŋ
	/L/	/H/	/H/	/HL/		/HL/	
	evening	when	TOP	dinner	cook	dinner	eat

'When it's evening, (we) cook dinner (and) eat dinner.'

In the /LH/ tone groups headed by 'breakfast', the verb 'cook' surfaces as [H] or [HL]. Where /^Lzo/ 'lunch' heads the tone groups, the verbs 'cook' and 'eat' surface as [L] or [LH], depending on their position in the sentence. The same verbs surface as [L] when the tone group is headed by /^{HL}tʂʰwɸŋ/ 'dinner'.

Further examples showing surface tones of O+V constructions being determined by the tonal category of the noun are given in the table below. Note that in the leftmost column, it is the isolation forms of the verbs that are given, i.e. ɸ or ɸ. This is, however, by no means to suggest that there are only two tonal categories for verbs in LTD Narua.

¹⁸ ABL: Ablative marker

Verb isolation form	Object noun with tonal category		Object+Verb surface tones
dzuʋ 'eat'	^H ha	'food, grain'	haʋ dzuʋ 'eat food'
	^{LH} mo	'mushroom'	moʋ dzuʋ 'eat mushroom'
	^L zɔ	'midday meal'	zɔʋ dzuʋ 'eat lunch'
dziʋ 'sit'	^H tɕ ^h e.tsuu	'car'	tɕ ^h eʋtsuuʋ dziʋ 'go by car'
	^{HL} k ^h ɸ	'nest'	k ^h ɸʋʋ dziʋ 'rest for a month after childbirth'
	^L zɸ.gɸ	'boat'	zɸʋgɸʋʋ dziʋ 'go by boat'
nɸʋ 'bury'	^H mo	'corpse'	moʋ nɸʋ 'bury corpse'
	^{HL} jo	'sheep'	joʋ nɸʋ 'bury sheep'
ɕeʋ 'look for'	^H bæ.mi	'duck'	bæʋmiʋ ɕeʋ 'look for duck'
	^{LH} mo	'mushroom'	moʋ ɕeʋ 'look for mushroom'
t ^h uʋ 'drink'	^H zuu	'alcohol'	zuuʋ t^huʋ 'drink alcohol'
	^L li	'tea'	liʋ t^huʋ 'drink tea'
te ^h iʋ 'sell'	^H ha	'food, grain'	haʋ te^hiʋ 'sell grain'
	^{HL} k ^h u	'string, thread'	k ^h uʋʋ te^hiʋ 'sell thread'
zɕʋ 'raise (livestock)'	^H ji	'cow, ox'	jiʋʋ zɕʋ 'raise cows'
	^{HL} jo	'sheep'	joʋʋ zɕʋ 'raise sheep'
	^{LH} ts ^h u	'goat'	ts ^h uʋʋ zɕʋ 'raise goats'
gɸʋ 'make'	^H ha	'food, grain'	haʋ gɸʋ 'cook food'
	^{HL} tɕ ^h wɕ	'evening meal'	tɕ ^h wɕʋʋ gɸʋ 'cook dinner'
	^L zɔ	'midday meal'	zɔʋʋ gɸʋ 'cook lunch'
laʋ 'hit'	^H ba.la	'upper garment'	baʋlaʋʋ laʋ 'knit garment'
	^{LH} hwɕ	'decorative pattern'	hwɕʋʋ laʋ 'embroider'
	^L te ^h oʋ	'ball'	te ^h oʋʋ laʋ 'play ball'
p ^h ɸʋ 'pour'	^H zuu	'alcohol'	zuuʋʋ p^hɸʋ 'pour alcohol'
	^{HL} dzi	'water'	dziʋʋʋ p^hɸʋ 'pour water'
tɕeʋ 'stitch'	^H ba.la	'upper garment'	baʋlaʋʋ tɕeʋ 'sew garment'
	^{HL} jo.ɸu.ba.la	'sheepskin garment'	joʋɸuʋbaʋlaʋʋ tɕeʋ 'sew sheepskin garment'

Table 18. Examples showing tonal realisations on verbs in O+V tone groups.

As the examples in Table 18 suggest, O+V tone groups are often determined by the tone of the noun. However, in the same way that exceptions occur to compound rules, there are also some unexpected tonal outputs in O+V constructions. Sentence (18) above contains examples of this. The tone of [tɕ^hɸʋʋ] 'breakfast' is high-falling in isolation and, in combination with the copula, appears as a /H/ category noun. However, when paired with the verb [gɸʋʋ] 'to cook', the tonal category of O+V becomes /LH/; the noun surfaces with a low tone and the verb with a high tone. A similar variant occurs for 'pour alcohol'. The noun 'alcohol' [zuuʋʋ] presents as a /H/ category noun in the N+COP frame, and when in

combination with the verbs [t^hu\] and [p^hv\], the O+V tone groups surface as /H/. However, /LH/ is also given as an acceptable alternative for 'pour alcohol': /z\w\ p^hv\/. This alternative form, along with the existence of the /LH/ category compound noun /z\w\lq^hw\ 'alcohol bowl', shown in Table 17, is worthy of future investigation, as it may give clues as to earlier forms and historical developments pertaining to LTD Narua.

Tone groups comprised of O+V are not restricted to simple nouns and verbs. Examples of tone groups comprised of longer noun phrases and a verb were seen in sentences (6)-(12) in Section 7.

Further, in clauses where no verb prefix is present but a post-verbal element such as the progressive marker [dzo] or a modal verb such as [k\] 'can' appears, the surface tone of the entire verb phrase is determined by the preceding object noun. In the following two phrases, the tonal realisation of the progressive particle is determined by the tonal category of the noun /^Hba.la/ or /^{HL}b\/, i.e. [H] and [L] respectively.

- [ba.la] m\l-dzo] 'upper.garment wear-PROG (wearing clothes)'
 [b\ dzæ.l-dzo] 'yak ride- PROG (riding a yak)'

There are also cases where the noun is not the object of a transitive verb, but the verb is still included in the noun-headed tone group. In the following sentence from the text *Almost Late for School* (see appendix), the verb in the second clause, pronounced [gi\] in isolation, is part of the tone group headed by the /HL/ category noun /^{HL}ei/ 'rain'. In this context, its surface tone is the same as in isolation.

- (22) m\ze\ | na\ | k^hi\ | so\ | ei\ | gi\ |
 /H/ | | /H/ | | /HL/ |
 hot season when go.1.PST because rain fall
 '(We) went in summer, so it was raining.'

However, when the same verb collocates with /^Hbi/ 'snow', its surface tone changes according to the tonal category of the noun, viz. [bi\ gi\] 'snow falls'. In these cases the noun, while it may be considered the grammatical subject of the clause, is neither agent nor patient.

9.2. Number-classifier + verb constructions

Similarly, where the tone group preceding a verb is comprised of a number-classifier construction, the surface tone of the verb is determined by the tonal category of NUM-CLF. Compare the surface tone of the existential verb in the following two sentences which have previously been presented. In these sentences, NUM-CLASS+V form tone groups.

- (23)

hĩl	soł-kvł	dzoł	ŋxł-bvł	tʂʰvłmił	
/H/	/HL/		/H/	/H/	
person	three-CLF	EXIST	1SG-POSS	wife	
zoł	duł-luł	ŋxł	soł-kvł		
/H/		/H/	/HL/		
son	one-CLF	1SG	three-CLF		

'There are three people: my wife, a son, me, three (of us).'

- (24)

ŋxłəł	zułdvł	qołloł	zołmvł	tɛił-hĩł	
/H/	/HL/		/H/	/L/	
1FAM	family	LOC	child	small-ATTR	
niłtsił-kvł	dzoł				
/H/					
twenty-CLF	EXIST				

'In our family there are twenty young children.'

The following excerpts from the appended text *Almost Late for School* demonstrate the surface tone of the verb [seł] 'walk' being determined by the preceding NUM-CL.

- (25)

tɛołkoł	tʰuł-kʰvł	kʰił	nał	zɣłmił	qołloł	
/LH/	/H/		/H/	/L/		
first	DEM-year	go.1.PST	when	road	in	
tʂʰełsoł-nił	seł	seł.				
/HL/						
thirteen-day	walk	PFV				

'The first year (I) went, (I) walked for thirteen days.'

(26)

zɣłmił	qołloł	hōł-nił	seł	tał	seł	jił	tɛałmvł.
/L/		/LH/			/H?/		
road	in	eight-day	walk	only	walk	FUT	reckon

'(I) reckoned (we'd) be walking on the road for only about eight days.'

9.3. Tonal categories of verbs

It has been observed that "verbs often present more complexity than nouns ... with respect to tone" (Hyman 2014:534). LTD Narua verbs are more complex than nouns and adjectives in that they may take prefixes, and with regard to their clause-final position in which their tonal realisations are prone to the influence of the preceding phonological environment. Despite this, it has proved possible to observe the tonal categories of verbs when they occur in the accomplished frame [lə-V se] 'ACCOM-V PFV'. The same is true for PJ Narua (Michaud 2008.) Even though it bears no structural resemblance to the N+COP frame for nouns, or the ADJ-ATTR frame for adjectives, particularly given the presence of the prefix of accomplishment /lə-/, this frame was chosen for analysing tone categories of LTD

Narua verbs because it brings out the maximum number of contrasts. Though not initially obvious, analysis on two tonal levels is also possible for verbs.

As previously stated, verbs - almost always monosyllables - appear as high-falling or low-rising in isolation. In other words, like monosyllabic nouns and adjectives, they appear with one of only two possible realisations. However, unlike nouns and adjectives, their isolation form does not predict their possible tonal output. In the perfective frame, there are three possible tonal realisations, regardless of whether the verb appears as high-falling or as low-rising in isolation. These are:

- [L.H.H] with a clause final fall on the last syllable;
- [H.H.H] with a clause final fall on the last syllable;
- [H.L.L] with no contour on the last syllable.

Given that there are two possible isolation tones for verbs, and three possible tonal patterns in the perfective frame, a total of six tonal categories for verbs emerge (2x3=6).

<i>Tone category number</i>	<i>Isolation tone of verb</i>	<i>Surface tones in perfective frame</i>
1	∨	∨ ∨ ∨
2	∨	∨ ∨ ∨
3	∨	∨ ∨ ∨
4	∧	∨ ∨ ∨
5	∧	∨ ∨ ∨
6	∧	∨ ∨ ∨

Table 19. Tonal categories of verbs in perfective frame[lə-V se]

Verbs from each of the above categories are shown in the perfective frame in Table 20 below, taking the verbs from Table 18 as examples where tokens are available.

<i>Tone category number</i>	<i>Verb in isolation</i>		<i>Verb in perfective frame</i>	
1	dzu∨	'eat'	lə∨-dzu∨ se∨	'eaten'
	nʊ∨	'bury'	lə∨-nʊ∨ se∨	'buried'
2	dzi∨	'sit'	lə∨-dzi∨ se∨	'sat'
	t ^h u∨	'drink'	lə∨-t ^h u∨ se∨	'drunk'
3	tɛ ^h i∨	'sell'	lə∨-tɛ ^h i∨ se∨	'sold'
	zɤ∨	'raise (livestock)'	lə∨-zɤ∨ se∨	'raised'
4	gʋ∧	'make'	lə∨-gʋ∧ se∨	'made'
	tɕe∧	'stitch'	lə∨-tɕe∧ se∨	'stitched'
5	q ^h wæ∧	'smash'	lə∨-q ^h wæ∧ se∨	'smashed'
6	la∧	'hit'	lə∨-la∧ se∨	'hit'
	hæ∧	'slice'	lə∨-hæ∧ se∨	'sliced'

Table 20. Examples of verbs in perfective frame[lə-V se]

Assigning labels to the six verb tonal categories is more problematic than for nouns or adjectives. In this regard, examining tone patterns of stative verbs is perhaps helpful. Where its tonal category when functioning as an attributive is known, this may be compared with tone realisation of the stative verb in the perfective frame. Observations of available data are summarised in the table below.

<i>Tone category as adjective</i>	<i>Adjective example</i>	<i>Tone category number in perfective frame</i>	<i>Stative verb in [l̥-V se] frame</i>
/H/	^H tɛ ^h i 'happy'	1	l̥ɔ̄l-tɛ ^h īl-sēl 'become happy'
/HL/	^{HL} t ^h i 'tired'	2	lēl-t ^h īl-sēl 'become tired'
/L/	^L m̥v̄ 'ripe'	4	l̥ɔ̄l-m̥v̄l-sēl 'become ripe'
/LH/	^{LH} t ^h α 'sharp'	6	lēl-t ^h ᾱl-sēl 'become sharp'

Table 21. Examples of adjectives cf. stative verbs in perfective frame

Based on these observations, tone categories 1, 2, 4, and 6 could be analysed as /H/, /HL/, /L/, and /LH/ respectively. There are a number of problems with this, however. Firstly, although the above table is an accurate reflection of the available data, a fuller investigation would need to be carried out in order to be confident of correspondences between tonal categories of a lexical item as an adjective and the same item as a stative verb. Secondly, there exists at least one exception to the above findings: /^Hf̥v̄/ 'dry' emerges with a category 3 tone pattern in the perfective frame, not category 1. Thirdly, the problem remains of what to label categories 3 and 5, especially given that the other four labels bear little resemblance to their actual tonal realisations. In addition, it is not fully understood why the final tone of [H.L.L] in category 3 and 6 groups does not surface with a clause-final rise.

10. CONCLUSION

Analysis of the tonal system of LTD Narua is not yet complete. Further work needs to be done regarding tonal categories of verbs, apparent irregularities in the tone system need to be further investigated, and the placement of tone group boundaries also requires further study. In addition, the integration of Chinese loan words into the phonological system of LTD Narua would make fascinating research. Changes will no doubt be made to this description as data collection and analysis progress.

The authors are confident, however, that the basic thesis of this paper is accurate: that, unlike other Naish languages described to date, LTD Narua makes use of only two tonal levels. This is a significant finding in the ongoing study of these languages. This description also adds to the growing collection of data regarding Sino-Tibetan languages in which level tones are primary, and tones are associated to lexical items rather than to individual syllables.

ABBREVIATIONS

(?)	Tonal category as yet unknown
ABL	Ablative
ADJ	Adjective
ACCOM	Accomplished marker
ATTR	Attributive marker
CLF	Classifier
COP	Copula
DEM	Demonstrative pronoun
DUR	Durative marker
EXIST	Existential verb
FAM	Family suffix
FUT	Future
N	Noun
NEG	Negative
NMLZ	Nominaliser
NP	Noun phrase
NUM	Number
O	Object
PFV	Perfective marker
PL	Plural
POSS	Possessive
PROG	Progressive marker
PST	Past
Q	Question
SG	Singular
SOV	Subject-Object-Verb
TOP	Topic marker
V	Verb
VP	Verb phrase

APPENDIX: LATADDI NARUA TEXTS

Notes: Tone, transcribed using Chao letters, is shown at surface phonological level, i.e. as realised in context.

Chinese loanwords interspersed throughout the text are transcribed in italics using Hanyu pinyin, i.e. remaining non-committal about their integration into the Narua phonological system, including that of tone.

1. CHILDREN

(1) ɲɣləɭ zɯɪldɔɭ qoɭloɭ zoɭmɔɭ tɛiɭ-hĩɭ
 1FAM family in child small-ATTR
 niɭtsiɭ-kɔɭ dzoɭ.

twenty-CLF EXIST

'In our family there are twenty young children (i.e. children of the youngest generation).'

- (2) zʉʉʉ ʌlʌoʌ zoʌmʉʌ tɛiʌ-hĩʌ duʌlvʉʌ tʰʉʉʌ-məʌ- dzoʌ.
 now home child small-ATTR one-CLF DUR-NEG-EXIST
 'Now there is not one small child at home.'

2. DAILY LIFE

- (1) ʌ̃lʉʉʌ gʌʌtiʌ giʌ ɛʉʌ ləʌ-qæʌ dzoʌ
 dawn get up after incense ACCOM¹⁹-burn CONJ
 liʌ tʰʉʉʌ.
 tea drink

'At dawn, after getting up, having burnt incense, (we) drink tea.'

- (2) tʰʉʉʌgiʌ nuʌ dzoʌ tʂʰʉʌ gʉʌ tʂʰʉʌ gʉʌ
 next ABL TOP breakfast cook breakfast cook
 soʌ dzʉʉʌ.
 in order to eat

'Next (we) cook breakfast, cook breakfast to eat.'

- (3) tʂʰʉʌ ləʌ-dzʉʌ loʌtiʌ biʌ.
 breakfast ACCOM-eat manual labour go
 'Having eaten breakfast, (we) go to work.'

- (4) loʌtiʌ qoʌloʌ nuʌ tiʌdzaʌ duʌ-kʰwʉʌ dzʉʌʌ.
 manual labour in ABL snack one-CLF.bit eat
 'During work, (we) eat a snack.'

- (5) tiʌdzaʌ ləʌdzʉʌ giʌ loʌ duʌ-tʂʰæʌ iʌ.
 snack ACCOM-eat after work one-CLF.time do
 'After eating a snack, (we) do work for a while.'

- (6) tʂʰʉʌ nuʌ dzoʌ zoʌ gʉʌ soʌ zoʌ dzʉʌʌ.
 there ABL TOP lunch cook in order to lunch eat
 'Next (we) cook lunch to eat lunch.'

- (7) zoʌ dzʉʌ giʌ loʌ luʌ iʌ.
 lunch eat after work return do
 'After eating lunch, (we) go back to doing work.'

- (8) mʉʌkʉʌ naʌ dzoʌ tʂʰwʉʌ gʉʌ tʂʰwʉʌ dzʉʌʌ.
 evening when TOP dinner cook dinner eat
 'When it's evening, (we) cook dinner (and) eat dinner.'

3. ALMOST LATE FOR SCHOOL

- (1) ŋʉʌ xiaoxue soʌ naʌ tʰæʌləʌ-soʌ-ʌoʌ
 1SG primary school study when book-study-place
 soʌ-luʌ qoʌloʌ soʌ seʌ.
 three-CLF in study PFV

'When I was at primary school, (I) studied in three schools.'

¹⁹ ACCOM: Accomplished marker

(2) *du*l-lu¹l *dzo*l *la*l^ha¹di¹l *qu* *qo*llo¹l so¹l.
 one-CLF TOP Lataddi district in study
 'One (place) was in Lataddi district.'

(3) *tʂ*^hɣ¹l *k*^hv¹p^ho¹l *ta*l *so*l *zi*l *nu*l *dzo*l *ŋ*æ¹læ¹l ɛwɣ¹l
 there half year only study still ABL TOP 1PL village
*qo*llo¹l *b*v¹l *p*^hæ¹l^tɕ^hi¹l *du*l-v¹l *l*ə¹-t^hi¹l *so*l
 in POSS man one-CLF ACCOM-come in order to
 ɛwɣ¹l *qo*llo¹l *b*v¹l *t*^hæ¹lə¹-*so*l-*ko*l *b*v¹l ɣ¹l^dzɯ¹l ɿ¹l
 village in POSS book-study-place POSS teacher do
*l*ə¹-t^hi¹l.
 ACCOM-come

'After studying there for only half a year, a man from our village came back to be a teacher in the village school.'

(4) *t*^hu¹l *t*^hæ¹lə¹-*so*l-*ko*l *gu*l-t^hɯ¹l *nu*l *xuexiao* *m*ə¹-*ni*l.
 DEM book-study-place true-tell ABL school NEG-COP.
 'This school actually wasn't a school.'

(5) *ŋ*ɣ¹llɯ¹l ə¹v¹l *tʂ*^hv¹l^mi¹-*lu*l *b*v¹l *t*^hu¹-*tʂ*æ¹l *qo*llo¹l
 1FAM uncle wife-FAM POSS DEM-time in
*m*ə¹-*tse*l-*h*ɿ¹l *g*ɣ¹lla¹-*z*ɯ¹l *ni*l.
 NEG-use-ATTR god-room COP
 '(It) was one of our uncles' wife's family's god-room that wasn't being used at the time.'

(6) *tʂ*^hɣ¹l *ŋ*ɣ¹l *ni*l-*k*^hv¹l *l*ə¹-*so*l *li*l *dzo*l *ho*l^di¹l
 there 1SG two-year ACCOM-study CONJ TOP Hoddi
*so*l *k*^hi¹l *se*l.
 study go.1.PST PFV
 'After studying there for two years I went to study at Hoddi.'

(7) *ho*l^di¹l *dzo*l *Yanyuanxian* *b*v¹l *xiancheng* *ni*l.
 Hoddi TOP Yanyuan county POSS county seat COP
 'Hoddi is the county seat of Yanyuan county.'

(8) *t*ɕo¹-*ko*l *ho*l^di¹l *so*l *k*^hi¹l *t*^hu¹-*k*^hv¹l *dzo*l
 first Hoddi study go.1.PST DEM-year TOP
*ŋ*ɣ¹l *xiaoxue* *sannianji* *so*l-*h*ɿ¹l *ni*l.
 1SG primary school third year study-ATTR CERT
 'The first year (I) went to study at Hoddi, I was in primary school year three.'

(9) *ho*l^di¹l *k*^hi¹-*h*ɿ¹l *t*^hu¹-*t*ɕo¹l *ŋ*ɣ¹l *t*ɕo¹-*ko*l *z*ɣ¹-*ʂ*æ¹l
 Hoddi go.1.PST-ATTR DEM-time 1SG first road-long
k^hi¹-*h*ɿ¹l *du*l^tɕo¹l *ni*l.
 go.1.PST-NMLZ one-time CERT
 'This time going to Hoddi was the first time I'd been so far away.'

- (10) t^hu_l mə_l-ni_l dzo_l ɤo_lda_l ŋɣ_l ŋɣ_llæ_l ɤwa_l qo_llo_l
 DEM NEG-COP TOP before 1SG 1PL village in
 sa_l la^ht^ha_ldi_l b_u_l kɣ_lʃɣ_l qo_llo_l ta_l bi_l dzu_u_l.
 and Lataddi POSS street in only go EXP
 'Otherwise, I had only been to our village and Lataddi town before.'
- (11) tɕo_lɤo_l t^hu_l-k^hɸ_l k^hi_l ɲa_l zɣ_lmi_l qo_llo_l
 first DEM-year go.1.PST when road in
 ts^he_lso_l-ni_l se_l se_l.
 thirteen-day walk PFV
 'The first year (I) went, (we) walked for thirteen days.'
- (12) zu_u_l dzo_l ts^he_ltsu_l dzi_l ɲa_l d_u_lts^hu_l ni_l-lu_l mə_lza_l
 now TOP car sit when hour two-CLF NEG.limit
 ne_l ho_ldi_l t^hɸ_l.
 ABL Hoddi arrive
 'Nowadays, going by car, it takes two and a bit hours to get to Hoddi.'
- (13) ŋɣ_l tɕo_lɤo_l t^hu_l-tɕo_l ho_ldi_l k^hi_l ɲa_l
 1SG first DEM-time Hoddi go.1.PST when
 zɣ_lse_lh_l q_l tɕ^ho_l k^hi_l so_l zɣ_lmi_l
 horse-walk-person COM accompany go.1.PST because road
 qo_llo_l ts^he_lso_l-ni_l se_l se_l.
 in thirteen-day walk PFV
 'The first time I went to Hoddi, (I) went with horse couriers, so it took thirteen days to walk.'
- (14) æ_ltsu_l-i_l-so_l o_lni_l du_l-tɕæ_l se_l læ_l.
 what-do-for this way one-time walk Q
 'So why (did it take thirteen days) to walk this time?'
- (15) m_u_lze_l ɲa_l k^hi_l so_l ɕi_l gi_l.
 hot season when go.1.PST because rain fall
 '(We) went in summer, so it was raining.'
- (16) wɣ_l dzo_l zɣ_lse_lh_llæ_l q_l tɕ^ho_l k^hi_l
 also TOP horse-walk-person-PL COM accompany go.1.PST
 so_l du_l-ni_l qo_llo_l dzɣ_l nu_l ɕæ_l-lu_l se_l
 because one-day in much ABL far-CLF walk
 mə_l-ɤɸ_l.
 NEG-can
 'Also, (we) went with horse couriers, so (we) couldn't walk very far in a day.'
- (17) du_l-k^hwɣ_l du_l-k^hwɣ_l qo_llo_l t^hu_l-hã_l ɲa_l dzo_l
 one-place one-place in DUR-stay overnight when TOP
 zy_l tɕ^hi_l hu_l so_l zy_l ɕe_l bi_l
 horse run off go.3.PST because horse look for go
 tso_l t^hɸ_l.

have to go out

'At one place where (we) stayed overnight the horses ran off, so (we) had to go out and look for them.'

- (18) tʂʰɿ̄l̄ nūl̄ dzōl̄ tʰūl̄-gīl̄ dūl̄-nīl̄ bīl̄ mə̄l̄-ɕv̄l̄.
 then ABL TOP DEM-after one-day go NEG-can
 'Then the next day (we) couldn't go (on).'

- (19) sūl̄pʰōl̄ ɕōl̄tōl̄ z̄v̄l̄ ʂēl̄ sōl̄ dzōl̄
 Sipo mountain top horse look for because TOP
 sōl̄-nīl̄ tʰūl̄dʒēl̄.
 three-day DUR-delay
 '(We) looked for the horses on Sipo mountain, so were delayed for three days.'

- (20) z̄v̄l̄ lə̄l̄-ʂēl̄ lə̄l̄-dōl̄ gīl̄ v̄v̄l̄ lə̄l̄-tɕūl̄
 horse ACCOM-look for ACCOM-see after animal ACCOM-load
 kʰīl̄ dūl̄tāl̄ nūl̄ tsʰēl̄sōl̄-nīl̄ sēl̄ nūl̄ tāl̄ hōl̄dīl̄
 go.1.PST altogether ABL thirteen-day walk ABL only Hoddi
 tʰv̄l̄.
 arrive
 'After finding the horses (we) loaded the animals up, altogether (we) walked for thirteen days before arriving at Hoddi.'

- (21) tsʰēl̄sōl̄-nīl̄ sēl̄ sōl̄ ŋɿ̄l̄ nīl̄mīl̄ qōl̄lōl̄ tɕūl̄
 thirteen-day walk because 1SG heart in busy
 z̄wǣl̄ nīl̄ sēl̄.
 very CRS PFV
 'Because (we) walked for thirteen days, I was feeling very anxious.'

- (22) tʰǣl̄ə̄l̄-sōl̄hī̄l̄ dz̄ūl̄kʰūl̄ tʰūl̄-tʰv̄l̄.
 book-study-ATTR time DUR-arrive
 'The time for school to start had already arrived.'

- (23) ɕōl̄dāl̄ ʂv̄l̄d̄v̄l̄ ŋāl̄ dzōl̄ v̄v̄l̄ qāl̄ tɕʰōl̄
 before think when TOP animal COM accompany
 ŋāl̄ z̄ɿ̄l̄mīl̄ qōl̄lōl̄ hō̄l̄-nīl̄ sēl̄ tāl̄
 when road in eight-day walk only
 sēl̄ jīl̄ tɕāl̄m̄v̄l̄.
 walk FUT reckon
 'Previously, when (I'd) thought about travelling with the animals, (I) reckoned (we'd) be walking on the road for only about eight days.'

- (24) qʰāl̄nīl̄ n̄v̄l̄ lə̄l̄ tsʰēl̄sōl̄nīl̄ sēl̄ tʰūl̄-kwɿ̄l̄.
 how know Q thirteen-day walk DUR-take (time)
 'How (was I to) know (we) would walk for thirteen days?'

- (25) hōl̄dīl̄ tʰǣl̄ə̄l̄-sōl̄-hī̄l̄ qōl̄lōl̄ baoming-hī̄l̄ bīl̄
 Hoddi book-study-NMLZ in sign up-NMLZ go

gɣ̃ | dũ | -tsũ | ta | di | tʰũ | -mə̃ | -æ̃ | tsẽ | mə̃ | \.
 EMPH.time one-bit only NMLZ DEM-NEG-attain EMPH
 '(I) almost didn't make it in time to enrol for school in Hoddi.'

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