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Alexis Michaud

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Tone in Yongning Na

Lexical tones and morphotonology

Alexis Michaud

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of February 17, 2016, 17:33

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À mon père

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Abbreviations and conventions

Interlinear glosses

Glosses follow the Leipzig Glossing Rules, with some additions.

A	agent marking (suffix)
ABILITIVE	abilitive (suffix)
ABL	ablative (suffix)
ADJ	adjective
ADV	adverb
ADVB	adverbializer (suffix)
AFFIRM	affirmative (particle)
ASSOCIATIVE	associative plural
CAUS	causative
CERTITUDE	a use of the copula described by Lidz (2010:497) as “an epistemic strategy that marks a high degree of certitude”
CLF	classifier
CNTR	contrastive
COMPLETION	completion (suffix)
COP	copula
DAT	dative
DEM	demonstrative
DESIDERATIVE	desiderative (suffix)
DISC.PTCL	discourse particle
DIST	distal
DU	dual
DUR	durative
EXCL	exclusive
EXIST	existential (verb)
FUT	future
IMM.FUT	immediate future
IMMINENCE	imminence (prefix): the event is imminent

Abbreviations and conventions

INCL	inclusive
INTERROGATIVE	interrogative (particle or pronoun)
INTJ	interjection
INTS	intensifier
NEG	negation
NMLZ	nominalizer
OBLIGATIVE	obligative (suffix)
PERMISSIVE	permissive
PFV	perfective
PL	plural
POSS	possessive
PROG	progressive
PROH	prohibitive
PROX	proximal
PST	past
REL	relativizer
REP	reported-speech particle
SG	singular
TOP	topic marker (suffix)
1	first person
2	second person
3	third person

Other abbreviations and symbols

F	focalization of the word that precedes (through local intonational modification of tone: see Chapter 9)
F ₀	fundamental frequency (a standard abbreviation in phonetics)
F1, F2...	Female language consultant number 1, 2... (this is a standard convention in phonetics; the numbering is chronological, referring to the set of Naish recordings that have been collected since 2002)
M1, M2...	Male language consultant number 1, 2...
=	clitic boundary
-	affix boundary

.	syllable boundary
σ	syllable (a standard convention in phonology)
	tone group boundary (see Chapter 8)
~	reduplication (example: /wɾ↓~wɾ↓/); distinguished from free variation by their different contexts of appearance, and by the absence of extra spacing before and after the tilde
~	free variation: variation that is not conditioned by phonological or morphosyntactic parameters (example: /la↓ma↓-ko↓tɕ ^h o↓/ ~ /la↓ma↓-ko↓tɕ ^h õ↓/)
↑	emphatic stress on syllable that follows (see Chapter 9)
#	word boundary (see Chapter 3); by extension: the boundary of the entire unit to which a tone pattern is associated (see Chapters 4-7)
\$	a symbol used in H\$, one of the lexical categories of H tones
°	morpheme break (used in the representation of tones)
//z̥wæ̥//	underlying phonological form (a vertical bar is more usual, but this symbol is used for tone group boundaries)
/z̥wæ̥↓/	surface-phonological form
[z̥wæ̥↓]	phonetic realization
*z̥wæ̥↓	a reconstructed form
†z̥wæ̥↓	a form that is predicted on the basis of linguistic reconstruction, but unattested
/*z̥wæ̥↓/	incorrect (ungrammatical) form; the use of strokes to the left and right distinguishes it from a diachronic reconstruction

References to online annotated recordings of Yongning Na

Examples from the online texts are referred to in the following format: text identifier followed by a dot followed by the sentence number. For instance, Wedding.27 refers to sentence 27 in the narrative referred to for short as ‘Wedding’. For some of the stories, several versions were recorded. In these cases, the version number is indicated after the text identifier, without a separator: thus, Dog2.35 refers to sentence 35 in the second version of the narrative ‘Dog’.

Here is a list of texts, providing the correspondences between identifiers and

Abbreviations and conventions

full titles.

Agriculture	Agriculture: Agricultural activities over the course of the year
BuriedAlive	Buried alive: how a young woman ran into great trouble because of her greed
Caravans	Caravans: about the trade which flourished in the area in the second quarter of the twentieth century
ComingOfAge	Coming of age: the ritual performed at age 13
Dog	Dog: How dog and man exchanged their lifespans
Elders	Elders: Elders and ancestors
Food shortage	Food shortage: how parents set out to sell children, and then changed their mind
Funeral	Funeral: How funeral rites used to be conducted
Healing	Healing: How diseases used to be treated through rituals
Housebuilding	Housebuilding: the process of building a house
Lake	Lake: How the Lake was created
Mountains	Mountains: some beliefs associated to the mountains around Yongning
Mushrooms	Mushrooms: which ones are collected for cooking and for medicine
Renaming	Renaming: how one used to change a child's name to give it a happier start in life
Reward	Reward: the reward of an honest man, or: The heavens are watching
Seeds	Seeds: How mankind obtained seeds and learnt to grow crops
Sister	Sister: The sister's wedding
Tiger	Tiger: How the tiger attacked a woman and her daughter
TraderAndHisSon	Trader and his son: how a trader taught his son how to handle the ups and downs of commerce

For elicited phonological and morphotonological data, the correspondences between identifiers and full titles are as follows.

AccompPfv	Verbs illustrating the various tone categories, in the frame ACCOMPLISHED+VERB+PERFECTIVE
CoordCompounds	Coordinative compounds, I
CoordCompounds2	Coordinative compounds, II: pairs of numerals in association with ‘year’, ‘month’ or ‘day’
DemClf	Demonstrative-plus-classifier phrases, I
DemClf2	Demonstrative-plus-classifier phrases, II
DemClf3	Demonstrative-plus-classifier phrases, III
DetermCompounds1to4	The tones of compound nouns: body parts of animals, documents 1 to 4
DetermCompounds5	The tones of compound nouns: body parts of animals, document 5 (verifications)
DetermCompounds6	The tones of compound nouns: body parts of animals, document 6 (verifications)
DetermCompounds7	The tones of compound nouns: body parts of animals, document 7 (extensive set)
DetermCompounds8to10	The tones of compound nouns: body parts of animals, documents 8 to 10 (complements).
DetermCompounds11	The tones of compound nouns: body parts of animals, document 11 (a few verifications)
DetermCompounds12	The tones of compound nouns: body parts of animals, document 12
DetermCompounds13	The tones of compound nouns: body parts of animals, document 13 (compounds with the noun ‘sheep’)
DetermCompounds14	The tones of compound nouns: body parts of animals, document 14
DetermCompounds15	The tones of compound nouns: body parts of animals, document 15 (a few compounds with the noun ‘cat’)

Abbreviations and conventions

DetermCompounds16	Tones of compound nouns: Cultural objects and peoples
NounsEven	Nouns followed by ‘even’
NounsInFrame	Disyllabic nouns placed in a carrier sentence: ‘This is (a/the) N’, in order to bring out their tone patterns
NumClf (41 documents)	The titles of all 41 documents follow the same format: “Numeral-plus-classifier phrases. Tone: <i>T</i> . Classifier: <i>C</i> . Range: 1 to <i>n</i> ”, where <i>T</i> is the lexical tone, <i>C</i> the class of objects to which this classifier applies, and <i>n</i> the end value of the range of numerals: either 30 or 100.
ObjectVerb	Data illustrating the tone patterns of object-plus-verb combinations, I
ObjectVerb2	Data illustrating the tone patterns of object-plus-verb combinations, II
ObjectVerb3	Data illustrating the tone patterns of object-plus-verb combinations, III
OnlyAnd	Nouns followed by the morpheme ‘only’ (homophone: ‘and’)
PalatalizedApicalized	Words illustrating the opposition between two apicalized high front vowels following alveolo-palatal initials
PossessPro	Possessive constructions with pronouns, without an intervening particle
SpatialOrientation	Spatial orientation: combinations between verbs and prefixes (or adverbials) indicating spatial orientation
SpatialPostp	Nouns followed by spatial postpositions: beside, behind, to the left, to the right
SubjectVerb	Data illustrating the tone patterns of subject-plus-verb combinations
VerbDurative	Verbs illustrating the various tone categories, in the following frame: durative+verb+progressive

VerbProhib	Verbs of all tone categories, preceded by the prohibitive, I
VerbProhib2	Verbs of all tone categories, preceded by the prohibitive, II
VerbReduplObj	Reduplicated verbs (tones: M, H, L and MH), preceded by an object
VerbReduplObj2	Reduplicated verbs of all tone categories, preceded by an object

Translation of citations

Unless a reference to a translated version is provided, English translations of citations are my own.

1 Introduction

The most important task in linguistics today – indeed, the only really important task – is to get out into the field and describe languages, while this can still be done.

(Dixon 1997: 144)

The aim of this book is to provide an in-depth description and analysis of the tone system of Yongning Na, a Sino-Tibetan language spoken in Southwest China.

The complexity of this system is immediately apparent when one examines a sentence in this language. Example (1a) is the first sentence that I transcribed: I had just arrived at my future teacher's house; my luggage had been left at someone's house along the main road, some fifty meters from the house. I asked my teacher's son, who can speak fluent Mandarin Chinese, to translate an explanation for me: "I have brought a lot of stuff; I have to go back [to the main road] and pick it up now". This yielded (1a). Later I elicited (1b) as a simpler form.

- (1) a. $nj\chi^+ \quad z\dot{i}\downarrow \quad -bi\downarrow \quad -zo\downarrow \quad -ho\downarrow$.
1SG to_take to_go OBLIGATIVE DESIDERATIVE
"I have to go and take [my luggage] now." (Field notes, 2006)
- b. $nj\chi^+ \quad bi^+ \quad -zo^+ \quad -ho\downarrow$.
1SG to_go OBLIGATIVE DESIDERATIVE
"I have to go. / I'm afraid I have to leave." (Field notes, 2006)

The difference in the lexical tone on the main verb (in 1a: / bi^+ / 'to go'; in 1b: / $z\dot{i}\downarrow$ / 'to take') is reflected in the tones of the following syllables, all the way to the end of the sentence.

The present volume reports on the result of the analysis of this type of phenomena, yielding (i) an analysis of the underlying lexical tone categories, and (ii) a description of the rules relating the lexical tone categories to the tone patterns

1 Introduction

observed in various types of phrases, and finally in entire sentences. As a preview of the results, (1a–1b) are provided below (as 2a–2b) with morpheme-level transcriptions indicating lexical tone by means of tone symbols, supplemented by subscript letters _{a b c} where necessary. The system will be explained in the following chapters.

- (2) a. njɣ¹ zi_a-bi_c-zo¹-ho₁.
njɣ¹ zi_a bi_c zo¹ ho₁
1SG to_take to_go OBLIGATIVE DESIDERATIVE
“I have to go and take [my luggage] now.”
- b. njɣ¹ bi¹-zo¹-ho₁.
njɣ¹ bi¹ zo¹ ho₁
1SG to_go OBLIGATIVE DESIDERATIVE
“I have to go. / I’m afraid I have to leave.”

To set the stage for these analyses, §1.1 of this introductory chapter presents the Na language, and Na society, through a review of earlier work. §1.2 sets out the research programme behind the present study. §1.3 presents the language consultants, the elicitation procedures, and the online documentation available on this language.

1.1 Presentation of the Na language and Na society

Yongning Na is a Sino-Tibetan language spoken in and around the plain of Yongning, located in Southwestern China, at the border between the provinces of Yunnan and Sichuan, at a latitude of 27°50’ N and a longitude of 100°41’ E. The Na have been referred to by various names, as shown in Table 1.1; the evolution of ethnonymy reflects the high degree of ethnic, cultural and linguistic complexity of the Sino-Tibetan borderlands (Gros 2014b). The most likely interpretation of the endonym /na/ to date is that it means ‘black’, perhaps by reference to clothing: the Na used to wear dyed hemp cloth, of a dark colour. The name ‘People of the Centre’, /ɣi¹-hɿ¹ʃ¹/, refers to the inhabitants of the plain of Yongning, itself called ‘the Centre’, /ɣi¹-di¹/.

1.1.1 The history of Yongning in outline

A historical outline sheds light on the “chains of societies” (*chaînes de sociétés*: Amselle 1990; see also Tryon 1998: 329–331) that shape ethnicity. The following paragraphs summarize the history of Yongning as presented by the Naxi scholars

Table 1.1: The names of the Na: endonyms and exonyms.

transcription	language	romanized equivalents	Chinese equivalents	meaning
naꞤꞤ	Na	Na (Cai 1997; Lidz 2010)	纳 (Yáng 2006)	'black'
ꞤꞤꞤꞤꞤꞤ	Na	Hli-khin (Rock 1963); Hli-hing (Shih 1993)	里新 (Shih 2008: 15)	'People of the Centre'
lyꞤꞤꞤꞤꞤꞤ	Naxi	Lü-khi (Rock 1963)	吕西 (Guō & Hé 1994: 8)	as above: 'People of the Centre'
<i>origin not established yet</i>	Chinese	Moso (Cordier 1908; Shih 1993; Luo 2008; McKhann 1998), Mo-So, Mosuo (Knödel 1995)	摩沙, 摩些, 麼些, 摩些, 摩娑, 末些, 磨荻, 莫荻, 摩梭	<i>not established yet</i>

1 Introduction

Guo Dalie 郭大烈 and He Zhiwu 和志武 in their 1994 monograph (page numbers are from the second edition of Guo and He's book, published in 1999), with some additions based on other publications such as (i) Chinese historical sources on Na and Naxi history as summarized by Chavannes (1912) (reprinted in Bacot 1913) and (ii) the historical outline presented by Gros (1996).

The present-day Na/Naxi area was included within the scope of the Chinese empire as united during the Qin and Han dynasties (221 BC–220 AD). While control over this peripheral area was relatively loose, ties with the heart of the Chinese empire were established, and never entirely cut off thereafter, even during periods when the Chinese central power was weakest. In 794 AD, the Nanzhao kingdom (南诏), with its centre on the fertile land around lake Erhai (洱海, currently a Bai-speaking area), conquered a broad area including Yongning as well as Lijiang (丽江). After the fall of Nanzhao in 902, the kingdom of Dali (大理国, 937–1253), likewise centered around lake Erhai, exercised control over Yongning, whereas the area of present-day Lijiang was ruled by an indigenous lord allied with Dali. At the outset of the Yuan dynasty, a new feudal lord (*tǔsī* 土司) was installed as lord of Yongning by the Mongolians when they passed through Yongning on their way to attack the kingdom of Dali. There is ethnological evidence to suggest that the new lord was “a Xifan [Pumi] officer in the Mongol troops left by Kublai Khan to rule Yongning” (Shih 2010: 51).

The introduction of Tibetan Buddhism dates back to about the same period, with the missionary efforts of monks from Muli from 1276 onward (p. 389); in 1356, a Kagyupa (*bka' brgyud pa*) monastery was established; in 1556, a large Gelugpa (*dge-lugs pa*) monastery was established in Yongning (Tibetan name: *dgra med dgon pa*). Earlier cults remained, with a division of labour between the Buddhist monks and Na /*da+pr+*/ ritual practitioners; but from that time, Buddhism became a dominant religion in Yongning. (At the time of Communist takeover in 1956, there were over 700 monks at the Yongning monastery.) This led to an increasing cultural distance between Yongning and the Lijiang plain. In Lijiang, no school of Tibetan Buddhism was able to establish and maintain a central role, as sudden turns followed one another in the course of an eventful religious history; the Naxi /*to+mba*/ tradition, essentially identical in origin with that of the Na /*da+pr+*/ (with Tibetan Bön religion likely to be a major influence), almost acquired the status of an official cult (Jackson 1979).

During the Yuan and Ming dynasties, incessant wars took place between the feudal lords of Yongning, Lijiang and Yanyuan (盐源) (pp. 430–431). In 1545, Yongning united with the neighbouring areas of the five *suǒ* 所 (Zuosuo 左所, Yousuo 右所, Qiansuo 前所, Housuo 后所, and Zhongsuo 中所). The Yangtze

river constituted the border between the territories of Yongning and Lijiang.

During the Qing dynasty (1644–1912), Lijiang came under direct Chinese administration, whereas the feudal lord system was continued in Yongning due to the failure of attempts at military conquest of the Liangshan (凉山) Yi area (p. 460), which constitutes the gateway to Yongning. This led to further cultural differentiation between increasingly sinicized Lijiang on the one hand and peripheral areas on the other, including the plain of Yongning. The Yongning feudal lords actively resisted Chinese migration into the area, for instance by prohibiting rice cultivation, and by establishing alliances with Yi chieftains. This resulted in Yi settlements in the Yanyuan and Yanbian areas, eventually replacing the earlier inhabitants – speakers of closely related language varieties, referred to as “Naxi dialects” by Guò and Hé (p. 461), which in this volume will be referred to as “Naish languages”, as explained further below. The Laze, a small group of some four hundred people who migrated from Yanbian to their current location in Muli, are apparently among the speakers of Naish languages who left Yanbian as it became a dominantly Yi area (about the Laze language: Huáng 2009; Michaud 2009).

Since Communist takeover in 1956, reforms have been applied essentially top-down, following the model whereby the majority group undertakes to lead minority groups along the path to modernity and assimilation. This arguably constitutes a fundamental change from the earlier relationships of vassalage between local powers and the state(s). Feudal lords paid tributes, and received titles in return; the balance of this exchange – how much tribute was paid, and how much recognition and autonomy was granted in return – was weighed by both parties. By contrast, top-down state policies do not partake in a logic of exchange – *don et contre-don*, as emphasized in the classic study by Marcel Mauss (1990). (On the case of state policies applied to the Drung, an ethnic group located in an even less accessible area of Yunnan, see Gros 2014a). There has been a steady influx of settlers. Recent demographic changes are recorded in the successive editions of the Annals regularly published for each county (*xiànzhi* 县志; the entire collection bears the name 《中华人民共和国地方志丛书》, “Collection of local chronicles of the People’s Republic of China”).

1.1.2 Dialect classification and issues of phylogeny

1.1.2.1 Dialect classification: the heritage of mid-20th century surveys

Yongning Na was investigated in 1979 by the linguists He Jiren 和即仁 and Jiang Zhuyi 姜竹仪, who classified it among Eastern Naxi dialects (Hé & Jiāng 1985:

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4, 104–116). The division of Naxi into Eastern and Western dialects was initially advanced cautiously, as a working hypothesis based on relatively short stays in the field in 1956 and 1957 as part of the national survey of the languages spoken within the borders of the People’s Republic of China.

From our analysis and comparison of the available linguistic and cultural materials, we propose a preliminary division between two dialects, Western and Eastern. But due to the very short amount of time [that could be devoted to this research] and the shortcomings of our experience, it is difficult to tell whether this division tallies with the actual language situation... (Hé & Hé 1988: 120)¹

The Western dialect area as proposed by He and Jiang by and large corresponds to the area ruled by the Naxi lords of Lijiang from the 14th to the 18th century. The Eastern dialect area is located to its east and north-east, across the Yangtze river, in the present-day counties of Ninglang 宁蒗, Yanyuan 盐源, Muli 木里, and Yanbian 盐边. Within the Eastern dialect area, three sub-dialects were distinguished by He and Jiang: Yongning 永宁, Guabie 瓜别 and Beiquba 北藁坝.

This classification came to be used as the standard in Chinese scholarship. It was also taken up in the inventory of languages maintained by the Summer Institute of Linguistics: *Ethnologue: Languages of the World* (Gordon 2005). Naxi used to appear in *Ethnologue* under the language code NBF, which covered all the dialects, i.e. giving the name “Naxi” the same extension as in Chinese scholarship. As from 2010, “Eastern” dialects of Naxi were granted an entry of their own in this inventory, under the romanized name “Narua” (code: NRU). The former language code NBF is now split into (i) Naxi proper (new code: NXQ), corresponding to “Western Naxi” in Chinese terminology; and (ii) “Narua” (code: NRU), corresponding to “Eastern Naxi” in Chinese terminology. In detail, however, the division into dialects proposed for “Narua” is identical with that proposed by He and Jiang for “Eastern Naxi”. The total number of speakers was estimated at about 40,000 on the basis of early surveys (Hé & Jiāng 1985: 107); the same figure is taken up by Yang (2009). The *Ethnologue* entry mentions a figure of 47,000 as of 2012.

No large-scale dialectal comparison was conducted in the half-century that followed the first dialect survey. The list of “subfamilies” (支系) of the “Naxi nationality” (纳西族) provided by Guō & Hé (1994: 5–9) could serve as a useful

¹ *Original text*: 我们从现有的语言和人文材料来加以分析和比较，将纳西语初步分划为西部和东部两个方言。不过时间短促，经验不足，这样分划不知是否符合客观现实情况……

reference for such a survey, keeping in mind that this list was essentially based on anthropological criteria, rather than on linguistic data. Reliable descriptions of the language varieties grouped under the label “Naxi” are required for fine-grained dialectological and comparative research. The present volume aims to contribute to this long-term endeavour by offering an in-depth synchronic description of one specific language variety.

1.1.2.2 **Issues of phylogeny: the position of Na and Naxi within Sino-Tibetan**

The position of Naxi and Na within Sino-Tibetan is a topical issue in Sino-Tibetan historical linguistics. Naxi was classified as a member of the “Lolo branch” (Yi) by Shafer (1955); however, Shafer clarified that this language, to which he referred as “Mosso”, was among those for which there was “Too little data or too irregularly recorded” (p. 103, note 37). His classificatory proposal for Naxi, as for the other languages placed in the “Unclassified” set within the “Lolo branch”, was thus tentative. Bradley (1975) took up the issue on the basis of advances in the comparative study of Lolo (Yi) languages. He noted that “[w]hile a large proportion of Naxi vocabulary is plausibly cognate to Proto-Burmese-Lolo (*BL) and Proto-Loloish (*L) forms reconstructed in Bradley (1975), there is only limited systematic regularity of correspondence. Moreover, the tonal and other developments postulated for *BL and *L by Matisoff are not reflected in Naxi”. The lack of regular correspondences, and the absence in Naxi of shared innovations deemed characteristic of Loloish and Lolo-Burmese, led Bradley to conclude that Naxi is “certainly not a Loloish language, and probably not a Burmish language either” (p. 6).

Some scholars, especially in mainland China, nonetheless maintain the classification of Naxi as a member of the Yi/Lolo group. Gài & Jiāng (1990) base this renewed claim on the high percentage of phonetically similar words between Naxi and Yi/Lolo, though without verifying the regularity of sound correspondences. Lama (2012) includes Naxi among the set of 37 Lolo-Burmese languages among which he proposes subgroupings by two methods, (i) searching for candidates for the status of shared innovations and (ii) conducting automated computation, using the software packages MrBayes (which performs Bayesian inference of phylogeny) and SplitsTree (for computing phylogenetic networks) to a 300-word list from the 37 languages. No judgments of cognacy are passed on the 300 word sets fed as input to the computational procedure, which apparently assumes cognacy in all cases as a default hypothesis. By definition, these methods lead to proposals for subgrouping without questioning the premise that the languages at issue all belong to the same subgroup of the larger language family to which

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they belong.

If, in light of the conclusion reached by Bradley (1975), one looks outside Lolo-Burmese for languages most closely related to Naxi and Na, suggestive evidence comes from comparison with the neighbouring languages Shixing (about which see Chirkova 2009 and references therein) and Namuyi (Lāmă 1994; see also Sūn 2001 and Yáng 2006), but full-fledged comparison has not been carried out yet, and the state of phonological erosion of these languages is a major impediment to comparative studies.

Sun Hongkai, who included Shixing and Namuyi within a “Qiangic” language group which he defined on the basis of typological similarities, proposed that Naxi (understood as encompassing Naxi and Na) is an “intermediate language” (“*línjiè yǔyán* 临界语言”) between Loloish and Qiangic (Sūn 1984). This compromise view acknowledges typological similarities without contradicting headlong the earlier classification of Naxi within Yi (Loloish) languages.² This amounts to projecting the presence of Yi-like and Qiangic-like typological features into the indefinite past of Naxi. By a similar reasoning, the presence of words of Chinese, Tai-Kadai and Mon-Khmer origin in Vietnamese could lead to its classification as an intermediate language straddling the divide between these three language families. Historical linguists, however, tend to favour an approach in which borrowings and other changes in the language are gradually identified, one layer after another, eventually resulting in a detailed account of the language’s evolution that includes the influences to which the language was subjected through the ages. Thus Maspero, in his study on Vietnamese, identified Chinese as belonging to a later layer than the other two:

Pre-Annamite was born out of the fusion of a Mon-Khmer dialect with a Tai dialect; the fusion may even have involved a third language, which remains unidentified. At a later period, the Annamite language borrowed a huge number of Chinese words. (Maspero 1912: 118)³

² The original statement is the following: “纳西语经常被认为是彝语支的语言，大家知道，纳西语在彝语支中是不太合套的一种语言 [David Bradley, Proto-Loloish, 1978: 14], 纳西语动词的互动范畴和羌语支完全一致。此外纳西语方言中还有一些语音、词汇和语法现象，与羌语支语言相一致。纳西语示羌语支和彝语支之间的“临界”语言。即在语言谱系分类上兼有两种语言集团的不同特征。也就是说，纳西语同时兼有彝语支和羌语支所特有的某些特征，而动词互动范畴，则是纳西语兼有羌语支的一种重要的语法特征。” (Sūn 1984: 14)

³ *Original text*: Le préannamite est né de la fusion d’un dialecte mon-khmer, d’un dialecte thai et peut-être même d’une troisième langue encore inconnue, et postérieurement, l’annamite a emprunté une masse énorme de mots chinois.

A few decades later, Haudricourt further attempted to tease apart the Tai and Mon-Khmer components, emphasizing that the notion of “language fusion” can be misleading.

If we admit that there is no such thing as “fusion” between languages, and that genealogical relatedness must be assessed on the basis of core vocabulary and grammatical structure, we are led to consider that the modern form of a language is not determined by its genealogical origin, but by the influences to which it is subjected in the course of its history. (Haudricourt 1953: 121–122)⁴

Haudricourt identified a greater proportion of Mon-Khmer words in basic vocabulary as opposed to words of Tai stock, and came to the conclusion that Vietnamese is a Mon-Khmer language. Importantly, this proposed phylogenetic affiliation by no means constitutes a denial of the considerable influence of language contact in the course of history. There is no hard-and-fast dividing line between cases of contact that are considered to result in language replacement – where the vocabulary inherited from an earlier language is considered as a substratum: piece-meal vestiges of a language that has been replaced by another, e.g. Basque or Celtic elements in Romance languages – and cases where the earlier component still appears substantial enough to motivate classification of the modern language as belonging to that earlier component’s language family, e.g. the Mon-Khmer component in Vietnamese.

Returning to Yongning Na, the traditional tools of comparative-historical phonology appear as the most reliable to unravel this language’s history and clarify its relationship to other languages within the Sino-Tibetan family. There is widespread agreement about the method: “... it is only by searching for lexical and morphological parallels on all sides and by establishing the phonetic equations for such parallels that we can finally decide the genetic relationship of a doubtful group (...)” (Shafer 1955: 98). To what extent this endeavour can succeed depends, as Shafer was keenly aware, on the empirical basis: the abundance and reliability of available data.

A tentative family tree was proposed in a preliminary comparative study (Jacques & Michaud 2011) based on Yongning Na, Lijiang Naxi, and Laze – a variety

⁴ *Original text*: Si l’on admet qu’il n’y a pas de « fusion » de langues, et que l’apparementent généalogique doit être fondé sur le vocabulaire de base et la structure grammaticale, on sera conduit à penser que ce qui donne sa forme moderne à une langue n’est pas son origine généalogique, mais les influences qui s’exercent sur elle au cours de son histoire.

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spoken in Muli County. This by no means amounts to downplaying the importance of phenomena of language contact and areal diffusion, or to claim that genetic inheritance is somehow more essential to a language than features gained through contact. The tree model is one of the tools in the historical linguist's toolbox. It is useful as a means to set out one's working hypotheses about degrees of phylogenetic closeness between languages – hypotheses which serve as the basis for attempting comparisons and proposing reconstructions for various (hypothetical) layers of historical depth. In a context of continuing debates about models and methods (see e.g. Kalyan and François to appear), it appears necessary to place relentless emphasis on the fact that the researcher's aim when proposing a tree model is not to float new proposals about classification for classification's sake, but to clarify assumptions made in historical comparison. The real aim is to document the evolution from the hypothesized common ancestor of a language group to the attested language varieties.

The proposal is that Yongning Na, Lijiang Naxi, and Laze join into a Naish lower-level subgroup. This is supported by shared innovations (Michaud 2011). It is further proposed that the Naish subgroup joins with Shixing and Namuyi into a Naic subgroup. At a third, more speculative level, Naic joins with Ersuish (also called Ersuic: Yu 2012) and Qiangic, to form a Na-Qiangic node. Na-Qiangic further joins with Lolo-Burmese, to form a Burmo-Qiangic higher-level grouping, provisionally placed on a par with Bodic, Sinitic, and other primary branches. This is shown in Figure 1.1.

This working hypothesis encourages the search for cognates between Naic languages, Ersuish, and Qiangic. Needless to say, in this research programme, comparison with Lolo-Burmese languages is also essential to progress in the historical study of Naish languages: all the languages listed in Figure 1.1 are uncontroversially related, as members of the Sino-Tibetan family, so that comparative analysis of data from all these languages makes sense. The names set in bold type in Figure 1.1 are those of languages from which data were adduced in the comparative study in which I participated (Jacques & Michaud 2011); the set includes three Lolo-Burmese languages. This clarifies that Lolo-Burmese languages were by no means overlooked in the study. Systematic comparison between Naic and Lolo-Burmese (conducted e.g. by Li 2015) holds potential for clarifying to what extent typological similarities between Naish and Loloish are due to (i) inheritance, (ii) parallel changes (unrelated developments, from a typologically similar starting-point: e.g. the development of retroflex consonants from initial consonant clusters), and (iii) language contact. There remains considerable room for progress in the reconstruction of the various lower-level subgroups within Sino-

1.1 Presentation of the Na language and Na society

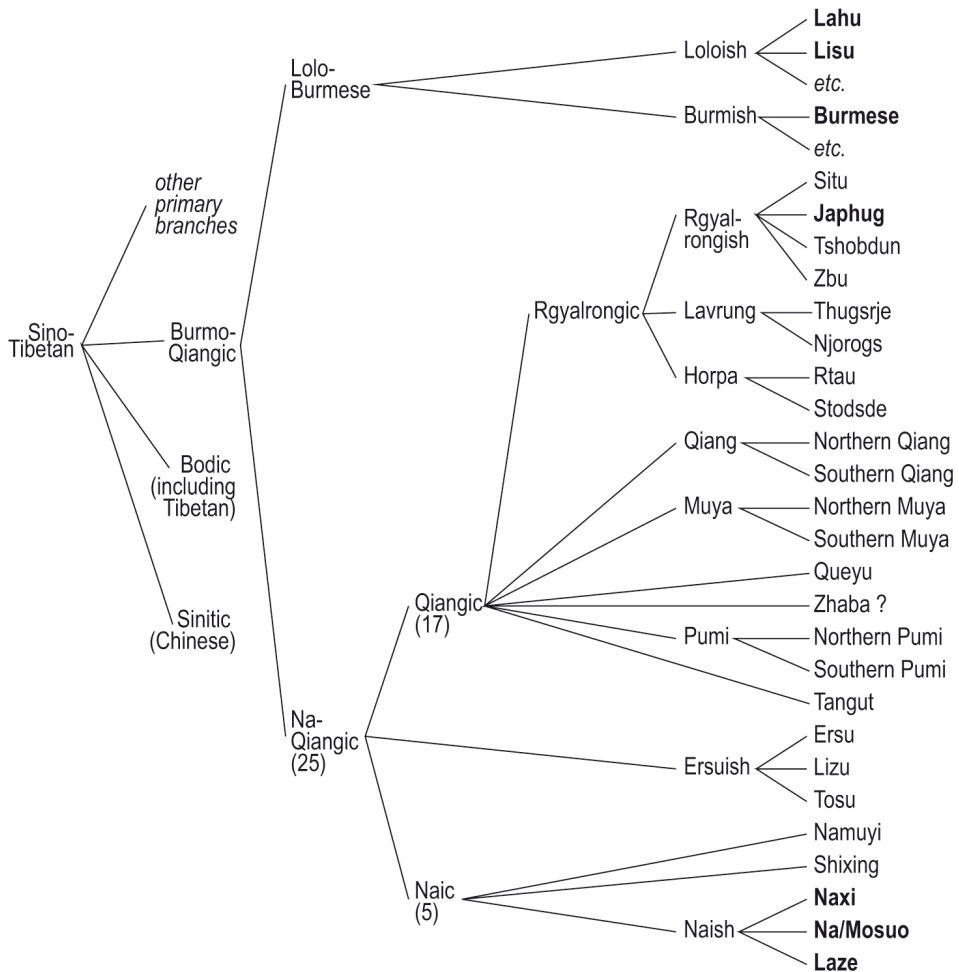


Figure 1.1: A tentative family tree showing the position of Yongning Na within a Burmo-Qiangic branch of Sino-Tibetan.

Tibetan, including Naish; in turn, progress in documentation and lower-level reconstruction arguably holds great potential for a refined understanding of the broader picture of Sino-Tibetan historical linguistics.

1.1.3 Anthropological research: the fascination of Na family structure

The tonal morphology of Na, which forms the central topic of this book, apparently went unnoticed until the early 21st century. On the other hand, peculiarities of the Na family structure have long been famous well beyond the circles of specialized ethnologists. Peter Goullart, a Russian-born traveller, explorer and author who lived among the Naxi in Lijiang from 1942 to 1949, reports on Yungning Na customs as seen through Naxi eyes:

The arrival of the members of a certain matriarchic tribe, living about seven days by caravan north of Likiang, always created a furore in Likiang. Whenever these men and women passed through the market or Main Street on their shopping expeditions, there was indignant whispering, giggling and squeals of outraged modesty on the part of Likiang women and girls, and salacious remarks from men. They were the inhabitants of the Yungning duchies across the Yangtze at the apex of the great bend. The Nakhi called them Liukhi and they called themselves Hlihin. The structure of their society was entirely matriarchal. The property passed from mother to daughter. Each woman had several husbands and the children always cried, 'We have mama but no papa.' The mother's husbands were addressed as uncles and a husband was allowed to stay on only as long as he pleased the woman, and if he didn't, could be thrown out without much ceremony. The Yungning country was a land of free love, and all efforts of the Liukhi women were concentrated on enticing more lovers in addition to their husbands. Whenever a Tibetan caravan or other strangers were passing Yungning, these ladies went into a huddle and secretly decided where each man should stay. The lady then commanded her husbands to disappear and not to reappear until called. She and her daughters prepared a feast and danced for the guest. Afterwards the older lady bade him to make a choice between ripe experience and foolish youth. (...)

With their lips heavily rouged and eyes painted, they walked slowly, or rather undulated, through the streets, swaying their hips, smiling and casting an amorous eye on this man or that. That alone was enough to incense the less sophisticated Nakhi women. But when they walked slowly along hanging on the neck of a husband or a lover, and being held by the waist, this was too much for even the brazen Nakhi women, who spat or giggled nervously.

The Liukhi men appeared to be vain creatures, always preening and examining themselves in the mirror. They put rouge on their lips and pow-

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dered their cheeks and sometimes called at my place not so often for medical treatment as to inquire if I could give them some perfume, powder or cheap ornament. Turning around in front of me they would inquire whether they looked attractive enough. This was not so much a sign of effeminacy as of vanity and a desire to keep themselves spruce and smart-looking in a luxurious way that appealed to their womenfolk.

The Nakhi men were on the whole impervious to the charms of the Liukhi women. They were not insensitive to their wives or beauty, but they knew well enough that most of the Liukhi tribe was infected with venereal disease, and it was only this dread of almost certain infection that made the Nakhi and other sensible men give a wide berth to the Liukhi enchantresses. (Goullart 1955: Chapter 3)

This sample of travellers' reports of the splendours and miseries of "a land of free love" suffices to clarify why the Na exert an enduring fascination on anthropologists, sociologists, and the general public. The present review does not attempt extensive coverage of the considerable anthropological, ethno-historical and sociological literature about the Na. Its aim is to convey a sense of the development of the field, of the historical evolution of approaches and viewpoints, and of the consequences in terms of local people's perception of social scientists who come to Yongning for fieldwork.

1.1.3.1 **The main source of information on Na family structure: surveys conducted in the 1960s**

The in-depth research report (in Chinese) based on sociological surveys conducted in the 1960s (Yúnnánshěng biānjízǔ 1986) constitutes a fundamental resource for the study of Na society. The results of the survey are organized by village, and bring out subtle differences between villages and between individual households. Most later scholarship builds on the data reported in the three volumes of this report – close to one thousand pages in total.

The survey clarifies that, until the 1950s, the typical family structure in the Yongning Plain was as follows: brothers and sisters lived all their lives in their mother's house, together with their relatives on the mother's side: cousins, aunts and uncles, and grandmother and her brothers and sisters. Lovers met discreetly at the woman's home. Fathers did not have a prominent social role; the male figure of authority was the mother's eldest brother. A Na saying explains that "As the Eagle is greatest of all that fly in the sky, so the Uncle is greatest of all that walk the earth."

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The method of data collection bears the stamp of the historical context: a time when the young People's Republic of China took stock of its new Western possessions. Clearly, unconditional obedience to instructions was expected from the surveyed human subjects. It seems that the objective was reached, and that, for the sake of the sociological survey, the subjects provided candid, detailed statements about their family history and sentimental life course. The fact that all the data were eventually published (and reprinted in 2009), including the real names of the people who entrusted information on their private lives to the visiting ethnographers, is at variance with present-day concerns about the privacy of personal information (as set out in anthropology handbooks, e.g. Fluehr-Lobban 2014, which contains a reproduction of the Code of Ethics of the American Anthropological Association). On the other hand, the social structures described in the survey have undergone such changes since then that the survey report is simply irreplaceable.⁵ To venture a comparison with the history of exploratory techniques used in experimental phonetics, the results of the 1960s survey can be likened to the X-ray data collected from the 1930s to the 1970s, i.e. during the window of time between the technical advances that made it possible to carry out cineradiography and the realization that exposure to the high doses of radiation involved carried serious health risks for the person being filmed. These heritage data still constitute precious resources to study the sounds of the world's languages (Fant 1960; Leroy & Paris 1974; Bothorel et al. 1986).

1.1.3.2 Marxist interpretation: Na family structure as a confirmation of Morgan's theory

In the early 1980s, several researchers involved in the survey published books based on these materials, before the publication of the original report (Zhān et al.

⁵ A consultant told me in 2008 that during the Cultural Revolution, cereal rations in Yongning were made conditional to the possession of a marriage certificate. Beyond this report, indicative of a perception of a historical divide, an anthropologist would want to obtain fuller details, verify this information with other consultants, and investigate how the policies were implemented in the various villages and how the local society responded. "The Cultural Revolution" is sometimes used as a cover term, because the ruling party "allows overt (though limited) criticism of the Cultural Revolution; not so the Great Leap Forward (or the Anti-Rightist Campaign). The Party has never denounced the Great Leap Forward as a mistake (...). The Cultural Revolution has its villains (the Gang of Four); so do the Civil War (the Guomindang) and the Second World War (the Japanese). Discussion of the Cultural Revolution is not easy, but it is possible. When Nusu elders allude to their suffering as occurring under the 'Cultural Revolution' (even if it took place in 1959), they lay claim to a permitted register of complaints" (Mazard 2011).

1980; Yán & Sòng 1984). These authors adhered to an evolutionary perspective, which led them to the conclusion that Na society was a “living fossil” (*huóhuà shí* 活化石), a remnant of a matriarcal society that existed prior to patriarchy, constituting decisive proof of the reality of Lewis Henry Morgan’s theory (1877), as embraced by Marx: that family structure evolved from the consanguine family via the matrilineal clan to the patrilineal nuclear family.

From the point of view of anthropological theory, Na family structure was taken as confirmation of established theories, so that, in effect, the fresh data did not make a significant contribution to progress in the field. This may be likened to interpretations given of sunspots (black patches on the surface of the Sun): in the 9th century AD, they were interpreted as planetary transits obscuring part of the Sun (Wilson 1917: 93); in the 17th century, they were taken as evidence of the Sun’s decay, confirming the pessimistic vision (found in the works of Walter Raleigh and Thomas Browne) of the world’s gradual decadence: “scientific evidence can only answer the questions that scientists think fit to ask” (Hampson 1968: 21).

To preview a topic which will be taken up below, the view of Na society as a “living fossil”, popularized by advertisements for the Na area as a tourist destination, created no small amount of resentment on the part of the Na (as reported e.g. by Shih 2010: 132).

1.1.3.3 Bringing Na family structure to the attention of Western anthropologists: Cai Hua’s (1997; 2001) “A society without fathers or husbands”

While Na society got straightforwardly pigeonholed into one of the evolutionary stages postulated by Marxist-Leninist anthropology (as the earliest stage: matriarchy), it did not conform to postwar Western models of the anthropology of kinship. Browsing through the first pages of Murdock’s classic study of family structure (1949: 1–3), it is clear that the Na family does not fit within the typology. Murdock’s typology considers the “first and most basic” type of family organization to be the nuclear family (“a married man and woman with their offspring”), of which the other two types of families acknowledged in his typology constitute “combinations”: the polygamous family “consists of two or more nuclear families affiliated by plural marriages”, and the extended family “consists of two or more nuclear families affiliated through an extension of the parent-child relationship rather than of the husband-wife relationship, i.e., by joining the nuclear family of a married adult to that of his parents” (p. 2). One can imagine the excitement with which a researcher working in Western anthropological circles would pursue the theoretical implications of the observations made in Yongning, which are

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in headlong contradiction with Murdock's model.

Such was the perspective adopted by Cai Hua 蔡华, a Yunnan-born anthropologist who wrote a Ph.D. at *École des hautes études en sciences sociales* in Paris with Kristofer Schipper, Françoise Héritier and Olivier Herrenschmidt as advisors. Cai Hua's *Une société sans père ni mari: les Na de Chine / A society without fathers or husbands: the Na of China* (Cai 1997) was the first book to present a study of Na family structure to a non-Chinese-reading audience. The title announces the author's vantage point: presenting the Na as a counterexample to generalizations that previously seemed obvious. Cai Hua's book aims to draw the attention of the international community of anthropologists to a social structure that calls into question tenets of the anthropology of kinship, such as the presumed universality of marriage. Its diffusion was facilitated by an English translation (Cai 2001). As a sample of the enthusiastic response to the dizzying blend of theoretical challenges and juicy stories contained in the book, an article in the *New York Review of Books* (Geertz 2001) points out challenges to Lévi-Strauss's views on kinship (Lévi-Strauss 1949), and also provides a racy summary of the titillating part of the story:

Sexual intercourse takes place between casual, opportunistic lovers, who develop no broader, more enduring relations to one another. The man "visits," usually furtively, the woman at her home in the middle of the night as impulse and opportunity appear, which they do with great regularity. Almost everyone of either sex has multiple partners, serially or simultaneously; simultaneously usually two or three, serially as many as a hundred or two. There are no nuclear families, no in-laws, no stepchildren. (Geertz 2001)⁶

From the vantage point of a Western audience, an additional bonus is that the study's author is Chinese. The workings of a society "without fathers or husbands" are all the more fascinating as they are narrated by an anthropologist whose background is a patriarchal and marriage-centered culture that takes a disparaging view of Na culture as "backward". In examining Na society, Cai Hua is careful to distance himself from his former colleagues such as Yan Ruxian,

⁶ The same two aspects – scientific implications and sexual fascination – recur in reviews of the book. Here is another example: "le propos a de quoi mettre sens dessus dessous la théorie anthropologique qui fait reposer le principe même des sociétés humaines sur l'alliance de mariage. Mais la lecture de ce livre à la fois savant et ingénu est aussi recommandée à ceux que ce problème laisse froids : le tableau des moeurs libertines des Na est digne des plus joyeux fantasmes qui circulaient en Europe dans les années 70" (Journet 1998).

denouncing the evolutionary bias in their writings. This earns him the (somewhat patronizing) praise of colleagues who emphasize the author's scientific achievement: freeing himself from two preconceptions that could have biased his research, namely Marxist ideology and Chinese preconceptions about forms of kinship and sexuality that are remote from Chinese culture (e.g. Cartier & Elisseeff 1998: 57–58).⁷ The book earned international echo for the sensational revelations that it contained, including a response by Claude Lévi-Strauss (Lévi-Strauss 2004).

The less positive side of the success story is that, in his desire to emphasize the scoop – that Na society presents radical challenges to the anthropology of kinship –, Cai Hua stretches the evidence. One of the Western readers who had access to the Chinese literature examined Cai's argument in detail and concluded that, “in setting out to make certain points, Cai picks his unpreferred cases rather selectively and ignores the cases which do not fit his argument” (Wellens 2003). The book is somewhat selective in its presentation of the data, in order to bring out forcefully the uniqueness of this society, represented as “the ‘other’ of the Han Chinese: a society free of the constrictions of Confucian morality” (ibid.). Interestingly, Cai Hua became a professor in anthropology at Peking University, where he continued to focus on the anthropology of kinship, but he did not publish a Chinese version of his book, of which he only translated the title (《无父无夫的社会——中国的纳人》). One possible reason for this choice is that the author was aware that the book, tailored for a Western audience, would encounter a more critical reception on the part of scholars who have access to the full ethnographic reports, and now to fuller linguistic data as well. In particular, to call Yongning Na society “a society without fathers or husbands” is clearly to stretch the point. The notion of ‘father’ is by no means absent from the language: the word /ə̃tɔ̃lɕ/ unambiguously means ‘father’. If one wishes to formulate the key observations by contrast with Chinese marriage customs, a more adequate description (communicated to us by He Xueguang, p.c.) is *bù qǔ bù jià* 不娶不嫁: men do not *take* a wife into their family (*qǔ* 娶), and women do not *leave* their family to join their partner's (*jià* 嫁).

In his later foreign-language publications, Cai Hua continued to lend Na so-

⁷ “Relater (...) les transformations imposées à la société Na représentait en soi une contribution fort honorable de la part d'un ethnologue Han, surtout s'il se montrait capable de prendre ses distances par rapport à l'idéologie marxiste et aux préjugés proprement chinois relatifs à des formes de parenté et de sexualité très éloignées de sa culture. On saura donc tout particulièrement gré à Cai Hua, un jeune chercheur yunnanais venu à Paris compléter sa formation (...), d'avoir réussi ce difficile exercice en faisant littéralement table rase de la plupart des préjugés qui auraient pu handicaper sa recherche.”

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ciety a prominent position in the typology of kinship structures. For instance, in a book published in French in 2008 (Cai 2008), the author discusses four family structures: Chinese (Han); Na; French; and Samo (Burkina Faso), studied by Cai's Ph.D. advisor Françoise Héritier. These four societies are neatly arranged by binary oppositions. The first two are described as monolateral, and the latter two as bilateral; the Chinese family as masculine, and Na as feminine. French is bilateral-symmetrical, and Samo bilateral-asymmetrical. The publisher's blurb emphasizes that the author advances "new epistemological proposals which call into question a certain Western rationalism and would also be useful, it seems, to other human and social sciences" ("de nouvelles propositions épistémologiques qui remettent en question un certain rationalisme occidental et seraient utiles, selon toute apparence, aux autres sciences humaines et sociales"). The different orientations of the author's anthropological publications in Chinese and in French provide an illuminating example of the enduring divide between 'Western' and 'Chinese' scholarship, the former apparently encouraging epistemological boldness – sometimes at the expense of breadth and depth of typological surveys, and of precision in detail.

1.1.3.4 Beyond the initial scoop: studies of Na society in comparative perspective

The initial scoop – encountering a society with uncommon family structure – opens into a wealth of issues for anthropologists to explore. Two important Ph.D. dissertations about the Na were completed in 1993: those of Shih Chuan-Kang (1993) and Weng Naiqun (1993). These were followed in 1995 by Emily Chao's, which has a stronger focus on the Naxi. A Chinese translation of Shih's dissertation was published in 2008, and an enlarged English edition, with additional fieldwork results, in 2010. These studies provide an in-depth analysis of Na society, on the basis of new fieldwork data.

To venture a critical note about the former author (Shih Chuan-Kang), his conclusions on linguistic issues are sometimes hasty, as when accepting the folk etymology of the place name 'Yongning', /**hi+di**/, as 'the peaceful land' (2010: 23). This folk etymology fits nicely with the author's representation of the Na: the title of the volume is *Quest for harmony: the Moso traditions of sexual union and family life*. But phonetic correspondences with Naxi support the analysis of the name /**hi+di**/ as 'the central land, the heartland' (Naxi: /**ly+dy**/; /**ly**/ means 'centre' in Naxi, as does /**hi**/ in Na). One may likewise entertain reasonable doubt about the author's interpretation of the exonym 'Mosuo' and its variants found in Chinese chronicles. He believes that its origin is the same as that of English

‘kangaroo’, from an aboriginal word which Captain Cook assumed to refer to the animal when it actually meant something along the lines of ‘I don’t understand’. Shih Chuan-Kang relates ‘Mosuo’ to /mɿ+suɿ/ ‘[I] don’t know’ (2010, 25–26). But etymological research at such historical depth should be based on reconstructed forms, not on a comparison of present-day Mandarin pronunciations with present-day Na. The earliest Chinese term, 摩沙, goes back to the Jin dynasty (265–420 AD); reconstructions of Old Chinese suggest that its realization may have been close to /*ma srae/ (Baxter 2000). This does not match up well with the (tentative) reconstructions proposed to date for the proto-Naish stage: ‘to know’ is reconstructed as *si (Jacques & Michaud 2011).

To the linguist, these slight shortcomings in linguistic aspects of an anthropologist’s publications serve as a word to the wise: great care must be exercised to avoid oversimplifications in areas other than one’s own. In the same way as a lack of precision in linguistic analyses on the part of anthropologists casts the shadow of a doubt on their anthropological conclusions, linguists run a risk of missing linguistic insights by taking a simplistic view of social phenomena, and paying insufficient attention to the social nature of language.

On historical topics, a salient aspect of Shih’s study is the author’s relentless insistence that the Naxi and Na are distinct peoples. He proposes a distinct ancestry for the two groups, tracing the one back to the barbarians referred to as *Máoniúzhǒng* 牦牛种 (‘Yak species/kind’) in Han-dynasty Chinese chronicles, and the other to the *Rǎnmáng* 冉駹 of Chinese chronicles. Identifications between present-day ethnic minorities and names given to “barbarian” tribes in early Chinese writings are the subject of intense debate in Chinese scholarship. These identifications are highly speculative, however. Shih’s statement that “patrilineal descent has been the norm for thousand of years” among the Naxi’s forebears is not supported by convincing evidence. One may have an impression that the author, who expresses great sympathy for Na society throughout his study (witness the 2010 title *Quest for Harmony*), adopts his consultants’ viewpoint that they are clearly distinct from the Naxi, reifies this perceived difference as a binary opposition between Na and Naxi as ethnic categories, and projects this opposition into the indefinite past.

An unfortunate consequence of Shih Chuan-Kang’s entrenched belief in the great historical depth of the Na-vs.-Naxi divide is that it leads him to reject outright the studies of other researchers who hypothesize that the Na and Naxi share a common ancestry, and who put forward a historical synopsis of their gradual divergence. An extreme version of this hypothesis is explored by Jackson (1979: 33–46), who points out “strong resemblances with regard to their kinship pat-

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terns in particular”, and suggests that the main differences between Naxi and Na society only have a time depth of about three centuries: they would mostly originate in the in-depth sinicization of Naxi culture since the 18th century. Shih vigorously rejects Jackson’s theses, and the 2010 edition of his book does not mention Christine Mathieu’s (2003) study, *A history and anthropological study of the ancient kingdoms of the Sino-Tibetan borderland – Naxi and Mosuo*, which explicitly sets out to explore the historical relationship between the Na and Naxi.

Admittedly, some aspects of Jackson’s study call for revision in light of more recent documentation. It must be remembered that much larger amounts of material are now available than at the time of Jackson’s study; this goes a long way towards explaining occasional mistakes, such as the interpretation of the Naxi name of the Na, /ly-ɬ-ɕi-/ (romanized as *Lü-khi*), as “the people of Lü, the Chinese name for the area” (p. 36), when it actually means ‘the people of the Centre’, and is an exact parallel (cognate) to the Na endonym /ɬi-ɬi#1/. Also, some formulations are deliberately provocative: Jackson likes to sketch Naxi history in broad strokes, emphasizing decisive junctures such as the year “1723 A.D. when the Mu family was ignominiously dismissed and the area was ‘nationalized’ by the Chinese” (p. 35). During that year, Li-jiang was placed under direct Chinese rule and the Mu 木 family of feudal lords who had ruled the area since the Yuan dynasty ceased to exercise real control. This is undoubtedly a major landmark in Naxi history. However, one may want to emphasize that the deliberate introduction of Chinese culture and Confucian ideology had begun much earlier: the Mu feudal lords’ unswerving allegiance to China dates back to the beginning of their rule, in the 14th century. Viewed in this light, the integration of Lijiang into Chinese territory in the 18th century is not without links with decisions that were made by the ruling family several centuries earlier.

Several of the ethno-historic hypotheses put forward in Jackson’s and Mathieu’s thought-provoking studies appear well worth pursuing, however. Again adopting the linguist’s (admittedly narrow) perspective, a careful examination of kinship terms in Naxi suggests that terms for relatives on the father’s side are mostly borrowings or recent coinages. The same holds true of terms relating to marriage, such as ‘husband’, ‘wife’, and ‘daughter-in-law’. By contrast, the terms for relatives on the mother’s side are of greater antiquity. Viewed in this light, the hypothesis of a gradual divergence in terms of family structure as the Naxi underwent growing Chinese (Confucian) influence should not be lightly dismissed. Jackson’s phrasing (p. 37) is: “This is the missing key to the confusion on Naxi kinship: legal patrilinearity yet traditional matrilinearity”.

1.1.3.5 Present-day sociological studies: the impact of tourism since the 1990s

Since the 1990s, tourism has developed at a staggering pace in the Yongning Na area. A number of books, both in Chinese and in Western languages, cater for the tourist industry by presenting idealized pictures of Na society against its beautiful background: Lugu Lake and the Yongning plain (e.g. Refflet 2006; Lāmù 1998). There also exists abundant literature on the effects of tourism on Na society. Foreign sociologists and anthropologists often take a critical stance, pointing out that “official representations of China’s ethnic minorities have created an image of minority people as dangerous, feminine, and erotic”, and that, in the case of the Na/Mosuo, “early state categorizations of Mosuo gender practices have led to representations of Mosuo ethnicity built around notions of women freely available for sex, to whom present lovers have no future commitments, or of a land where women rule. Matriarchy and sexual availability are central in tourists’ desire to visit the Mosuo” (Walsh 2005: 449–450). These authors bring to light the ironic reversal whereby “the cultural characteristics the Maoist government tried to change became celebrated as markers of Mosuo cultural uniqueness and value” (ibid., 457).⁸ Another constant is the pressure towards assimilation.

Today, on the mere surface, “leisure culture” represents market reasoning rather than a statist logic. This is, after all, what hegemony is all about: naturalization of ruling technologies. (Sigley 2013: 242)

An especially striking contrast could be observed in the early 2010s between rituals and songs as practised by villagers among themselves in the village of Lijiazui (利家嘴) and the performances staged for tourists on the shores of lake Lugu (Milan 2013).

For obvious reasons, publications by scholars in mainland China refrain from such criticisms, and typically formulate proposals for striking a reasonable bal-

⁸ The detailed analyses proposed by Stéphane Gros (2001) in his study of the Drung/Dulong ethnic group also apply to other groups in Yunnan and in China at large: images of “minority” identities are constructed to suit the country’s projects. Assimilationist policies, which culminated during the Great Proletarian Cultural Revolution (1966–1976), translate into dual visions of pre-Liberation and post-Liberation societies. Relative toleration during the 1980s, China’s “Reforms and opening up” decade (Zhu 2014), led to the recognition of acceptable cultural features that need not be eliminated along with “bad” inheritance from the past, e.g. granting cultural value to “religion” (宗教) as (precariously) distinguished from “superstition” (迷信). After 1989, the conservative backlash was accompanied by folklorization of ethnic minorities: providing timeless and monolithic representations of the officially defined ethnic minorities, marketed to cater for the tourist industry and contribute to the country’s GDP. A constant is that images of the “minorities” serve as a means to assert by contrast the homogeneity and modernity of the Han “majority” (Gros 2001: 31).

ance between the competing demands of economic development and the “protection of tradition” (*wénhuà bǎohù* 文化保护). Their perspective is in line with the national mottoes of economic development, on the one hand, and preservation of social harmony, on the other. Nonetheless, these publications contain a wealth of information: see, for example, the 2007 collection of articles by Mosuo scholar 拉木·嘎吐萨 (Lamu Gatusa). In addition, articles in Chinese about the Na published from 1960 to 2005 have been collected in a two volume set (Lātāmī 2006), organized by themes (Vol. I: ethnology and anthropology; Vol. II: language, customs, religion, culture, music, and book reviews), which contains a bibliography. This edition has some minor limitations, such as incomplete information about the original publication references of work reprinted in the collection, and typographical errors for Latin characters and International Phonetic Alphabet transcriptions. For critical overviews of Chinese scholarship, see Knödel (1995) and Hé (2008).

1.1.4 A review of Na language studies

1.1.4.1 Information about Na reported in the *Brief description of the Naxi language*

He Jiren and Jiang Zhuyi’s 1985 *Brief description of the Naxi language* mainly focuses on the dialects spoken in the Lijiang plain, but the volume includes a word list of Yongning Na, as well as some observations on phonology, syntax, and dialectal diversity (pp. 107–116; see also Jiāng 1993).

The transcription is not phonemicized, and may not be fully consistent. Only four tones are transcribed over monosyllables: LM (˩), M (˨), ML (˨), and H (˧), whereas the analysis presented in this volume brings out six categories (see Chapter 3). He and Jiang based their linguistic research on an analogy with Naxi, a language which both of them could speak: He Jiren as a native speaker, Jiang Zhuyi as a gifted second-language learner. Naxi has a four-way tonal opposition over monosyllables: High, Mid, Low (realized phonetically as low-falling, and transcribed as ˨ by He and Jiang), and Rising. When listening to Yongning Na, they failed to distinguish the two types of rising tones, LH and MH. Moreover, they listened for a difference between M and H tones, which in fact does not exist. Of course, it may also be that the dialect that they investigated differs considerably from that spoken by the consultants who collaborated with me, but this is unlikely in view of the great phonetic proximity between their word list and the data reported here. On the other hand, it is not uncommon for phonemic and tonal analyses based on data collected during short field trips to differ greatly

from one author due to incomplete phonemicization of the data (as pointed out by Matisoff 2004: 329). For example, for Shixing, Sūn (1983) reports 58 initials, whereas Huáng & Rénzēng-Wàngmǔ (1991) report 43, for two subvarieties which are mutually intelligible (Chirkova 2009).

Returning to tones M and H in Yongning Na, in the language variety described here, these two tones are neutralized to M in isolation. Phonetic realizations of this tone (which, under a Praguian approach, can be referred to as an archi-toneme) vary freely in the upper half of the speaker's tonal space, so that an investigator who starts out from the hypothesis that there exist H-tone monosyllables and M-tone monosyllables can readily hear differences in pitch that seem to support the hypothesis. The same process of pre-existing assumptions affecting linguistic observation happened to me in the early stages of fieldwork: in my initial transcriptions, there were H-tone words and M-tone words. I later discovered that there was no such opposition in isolation. The phonological M and H tones of Yongning Na can only be brought out by placing the words in context, e.g. adding the copula (as explained in Chapter 3). The distinction between H and M tones made by He and Jiang on the basis of citation forms is thus spurious (unless, as mentioned above, there is a considerable gap between the tone systems of the dialects at issue). 'Field', glossed as 'earth' (*dì* 地), is transcribed with a High tone: /ɿ̃/, when in fact it carries Mid tone: //ɿ̃// (the double slashes are used in this volume to distinguish lexical forms from surface-phonological ones). 'Man' is transcribed as /xĩ/, with M tone; this is indeed the tone that the word carries in isolation, but its behaviour in context reveals that its lexical tone is H (my transcription: //hĩ//).

The distribution of Low(-falling) and Low-rising tones in He and Jiang's data is a puzzle to me, since no monosyllables are pronounced with Low tone in isolation in the language variety that I investigated. Examples include 'plain, flatlands', 'water' and 'goose', transcribed as /ɗỹ/, /ɗzĩ/ and /õ/; these three items have different tones in my data: LH tone for 'plain', L tone for 'water', and LM for 'goose'. My best guess at present is that, in the speech of He and Jiang's consultants, L was a (relatively infrequent) free variant of LH in citation form. It is also possible that the word list combines data from several speakers, and is not dialectally homogeneous. The Naxi data in the same volume are a case in point: the authors present the data as coming from the dialect of the township of Qinglong 青龙 (present-day Changshui 长水), the home of Jiang Zhuyi's teacher He Zhiwu 和志武; but some data were contributed by He Jiren on the basis of his native dialect, Yangxi 漾西. In the absence of indications about the origin of individual pieces of data, it is extremely difficult to determine which data come

from which dialect.

There are also some issues with He and Jiang's transcription of vowels and consonants, as is to be expected of initial field notes. Nasality is transcribed only in two syllables, /xĩ/ (as in 'man', transcribed /xĩ/; my data: //hĩ//) and /yõr/ (the only example is 'bone', transcribed /sã+yõr/; my transcription: //sæɹ̃/), whereas the investigation reported in the present volume brings out eight nasal rhymes. Another point of difference is that He and Jiang do not transcribe the uvular consonants reported in Chapter 2 of this volume. Such discrepancies may be due to the fact that the variety described by He and Jiang had fewer phonemes than that described here; but it is not implausible that they failed to distinguish some sounds that were in fact contrastive.

Conversely, some vowel differences transcribed by He and Jiang may be spurious. The word list contains examples of /li/ (as in /li/ 'to look') and /lie/ (such as /lie/ 'tea'). In my data 'tea' and 'to look' have the same initial and rhyme; the vowel /i/ is slightly diphthongized towards [e], and thus close to [ie], which explains why it could be sometimes transcribed as [i] and sometimes as [ie] before the investigator's ear attunes to the vowel system of Yongning Na. Once again, it is also theoretically possible that these two words did not have the same phonemes in the dialect investigated by He and Jiang.

1.1.4.2 Fù (1980): A study of kinship terms, with notes about phonetic notation

The linguist Fu Maoji visited Yongning in May and June 1979 with He Jiren and Jiang Zhuyi. He collected data in the village of /dzɿɹ̃|bv+ɿwɿ/ (Jiabowa 甲波瓦) for a study about kinship terms, presented at the 12th International Conference on Sino-Tibetan Languages and Linguistics (Paris, 1979), then published in Chinese and in French translation (Fù 1980; 1983). The paper is a further testimony to the appeal of Na family structure beyond the circle of professional anthropologists. The article has an appendix containing notes about phonetic transcription. It is not uninteresting to examine these notes in light of a full-fledged phonemic analysis, picking up in retrospect some groundbreaking observations, such as the recognition of uvular /q/, /q^b/ and /ɣ/. Fu Maoji also recorded the approximant /ɹ̃/, noting that it can appear in front of a vowel (i.e. as an initial consonant) or constitute a syllable on its own; this is no different from the analysis proposed in Chapter 2 of this volume, where the notation chosen is as a retroflex, /ɹ̃/. However, Fu Maoji's notes do not offer a reliable basis for transcribing Yongning Na: his felicitous insights come together with more puzzling proposals, with the overall result of discouraging adoption of his notation. For instance, his proposed set

of uvular consonants includes the fricative /χ/, which closer analysis of the target dialect would probably show never to contrast with velar realizations, as in all the Naxi and Na dialects recorded to date. Supposing that, during their joint field trip, He Jiren and Jiang Zhuyi examined Fu Maoji's notations, they could rightly be skeptical of inclusion of /χ/ in the inventory, and their doubts could then extend to Fu Maoji's (correct) proposal of uvular /q/ and /q^h/ as distinct phonemes. A further possible reason for disbelief on their part is that the uvular sounds [q] and [q^h] are also found in Naxi, where the scope of allophonic variation of velar stops extends well into the uvular region, which can unwittingly lead speakers of Naxi to the default assumption that uvulars in all Naish varieties are allophones of velars. Other aspects of Fu Maoji's notation that can look worrying to colleagues (and that certainly seem suspicious to the present author) include (i) a distinction between plain and laryngeally constricted /u/, /ɤ/ and /z/ rhymes; (ii) a proposed set of no less than three rhotic vowels in addition to the approximant rhyme [ɹ]; and (iii) an analysis whereby /i/ contrasts with /e/ but /i/ is realized as [e] after apical and apical-dental consonants. There is a long way to go from these notes to a working phonemic notation. As for tone, Fu Maoji's classification into three patterns, mid-rising, high-flat, and mid-falling, demonstrates that he commendably chose to start fresh and establish the language's tonal categories on their own terms instead of interpreting them in terms of the Naxi tone categories; but again, he did not reach the stage at which the relevant categories would have emerged. Conducting fieldwork in Yongning in 1979 was admittedly an achievement in itself, given the circumstances; still, the author's observations would have deserved another round of verification before publication. The piecemeal nature of the report probably explains why He Jiren and Jiang Zhuyi did not make use of Fu Maoji's data in their 1985 book.

1.1.4.3 An outline of Yongning Na by Yang Zhenhong (2009)

An outline of Yongning Na was published by Yang Zhenhong 杨振洪, a speaker of this language from /ə-ɪbv-ɪ-ɪwɪ-ɪ/ village (*Ābùwǎ cūn* 阿布瓦村), close to the current location of the Yongning high school (original publication in Chinese: Yang Zhenhong 2006; English translation by Liberty Lidz published as Yang 2009). This outline by and large follows the structure of He and Jiang's description of Naxi. Some parts of the discussion of phonetics and phonology may require further analysis: among consonants, uvular and retroflex stops are not granted phonemic status; concerning tone, the analysis is based on the four tones attested in Naxi, which entails some shortcomings. Informal exchanges with the author (in 2011) suggest that there are in fact more tone categories in the dialect

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at issue. Like many other researchers, Yang Zhenhong uses descriptive tools developed for syllable-tone systems such as those of Sinitic languages, which do not constitute an adequate means to describe tone in Na. (A similar problem was encountered in studies of Prinmi/Pumi, where advances were finally realized by researchers with a knowledge of other types of tone systems, such as those of Japanese dialects: see Ding 2001; 2006; Jacques & Michaud 2011.)

1.1.4.4 Liberty Lidz (2010), *A descriptive grammar of Yongning Na (Mosuo)*

By far the most thorough description and analysis of Yongning Na to date is Liberty Lidz's Ph.D. dissertation (Lidz 2010), *A descriptive grammar of Yongning Na (Mosuo)*. It concerns the variety of Yongning Na spoken in the village of Luoshui 落水, on the shore of Lugu lake. The dissertation, based on in-depth fieldwork, contains 250 pages of transcribed and annotated narratives and includes an in-depth description of the morphosyntax of the language. Many of the glosses that I use are adopted from this dissertation.

Concerning tone, it has been noted that “[t]he 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” (Dobbs & La 2016). It is not unusual for reference grammars to leave open some points of prosody, such as the status of tone, or of stress (Zeitoun 2007: 26). This encouraged me to focus on the tone system of Yongning Na.

1.1.4.5 Collections of oral literature: Na ritual texts

In the Yongning plain, Tibetan Buddhism (of the Gelugpa school) co-exists with a local tradition of ritual practitioners, called /**da-lpɿ**/. The rituals are not written, unlike those of the Naxi – although some written characters are used by the Na for computing days in divination: see Yáng (1985). The absence of a written form explains in part why these rituals have attracted less attention than the Naxi rituals; the much smaller size and socio-political weight of Yongning as compared with Lijiang, and the difficulty of access to the area until the late 20th century, also go a long way towards explaining why there were few efforts towards collection of this aspect of the Na oral tradition. A bilingual collection published by a native speaker of the languages (Āzémíng 2013) contains (i) a phonetic approximation of each syllable by means of a Chinese character, (ii) a transcription of each syllable in IPA, (iii) a Chinese gloss for each syllable, and (iv) a translation

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into Chinese for each line. (Most lines contain five, seven, or eight syllables.) This volume were best reserved for readers already familiar with the language, who will be able to identify part of the glosses by making allowance for transcription habits influenced by the *Pinyin* system for the romanization of Chinese. For instance, /p/, /t/ and /k/ are apparently used to transcribe aspirated /p^h/, /t^h/ and /k^h/, respectively, like *p*, *t*, *k* in *Pinyin*: ‘white’, transcribed as /puə/ in this book (p. 4), has an aspirated initial in Na. Tone is not indicated.

During the 2010s, Latami Dashi and Yang Liquan started an ambitious documentation programme aiming at the publication of an extensive collection of translated and annotated rituals with accompanying video.

In-depth study of these rituals, and comparison with Naxi rituals, holds great promise for an improved understanding of Na cultural dynamics. This study would require a good command of Tibetan traditions, and other skills way beyond my field of expertise. A piecemeal observation can be offered to suggest the type of issues of cultural contact related to Na religion: twentieth-century reports suggest that monks and /da+pr+/-/ cohabited peacefully, with an established division of labour. One would call the /da+pr+/-/ to perform a ritual when killing pigs; the monks on prescribed days of the calendar; and both monks and /da+pr+/-/ for the most important events, such as funerals. This peaceful coexistence, and the occasions for contact offered by the rites where both participated, apparently resulted in a measure of convergence. The Na /da+pr+/-/ seem to show influence from the highly ritualized behaviour of Buddhist monks. They prepare their rituals with an attention to detail that approaches that of Buddhist monks, asking for all the necessary paraphernalia in advance, such as butter, candles, water, and different types of flour. By contrast, the Yi ritual specialists (called ‘Bimo’ 毕摩 in Chinese) have a habit of requesting objects and accessories suddenly, in the midst of the ritual, as if acting on their inspiration, on the spur of the moment. The gestures of the /da+pr+/-/ also come to resemble those of monks. Conversely, some monks are reported to learn the Na horoscope – one of the fields of competence of the /da+pr+/-/.

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The complexity of Yongning Na tone is reported in the linguistic literature about Yongning Na: it has been observed that the language 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 (2009). Tantalizingly, these

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authors did not elaborate on these observations.

Tonal changes permeate numerous aspects of the morphosyntax of Yongning Na. Importantly, they are not the product of a small set of phonological rules, but of a host of rules that are restricted to specific morphosyntactic contexts. Guillaume Jacques (p.c.) notes that irregular morphology in Na, as also in other Naish languages (and in Pumi), mostly consists of irregular morphotonology. The complexity of this aspect of the language calls for a book-length description, applying “the old philological virtue of exactitude” (Scherer 1885: 152) to this hitherto little-described system, in order to arrive at a reasonably comprehensive account.

A search for fullfledged, book-length descriptions of similar systems in other languages suggests that such reference works remain relatively scarce, even concerning the extensive Bantu branch of the Niger-Congo family of languages, famous for the richness of its morphotonology.

Theoretical linguistics is primarily concerned with advancing the theoretical enterprise, and tends to produce short pieces – chapters, articles, squibs. It does not have the writing of grammars as a priority, and few of the theoretical grammars of African languages written during the heyday of transformational theory during the 1960s and 1970s have stood the test of time. (...) Are there enough grammars of sub-Saharan African, especially Bantu, languages? The answer is no. (...) The overwhelming impression is that of the small number of real grammars, and the number is not increasing. (Nurse 2011: xxiii–xxiv)

In addition to quantitative scarcity, there is also an issue of breadth and depth of coverage for those languages that have been the object of book-length descriptions. Linguistic fieldwork consists in “going into a community where a language is spoken, collecting data from fluent native speakers, analysing the data, and providing a comprehensive description, consisting of grammar, texts and dictionary” (Dixon 2007: 12); this all-out endeavour entails decisive advantages for understanding the language as a whole, in its social setting, but breadth of scope can occasionally conflict with depth of investigation of individual topics, such as tone. “Even the ‘well described’ languages often suffer from a lack of examples, by which to test the descriptive or theoretical claims” (Nurse 2011: xxiii). The need for in-depth descriptions is likewise emphasized by other Africanists: “No variety of Bambara has heretofore been the object of a systematic tonological description aiming at full coverage”⁹ (Creissels (1992: 199); see also Clements 2000;

⁹ *Original text*: ... aucun parler bambara (...) n’a jusqu’ici fait l’objet de ce qui mériterait d’être considéré comme une description tonologique systématique visant à l’exhaustivité.

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Hyman 2005).

In the field of Sino-Tibetan studies, occasional misrepresentation of the (highly complex) tone systems is not unheard of, as noted e.g. by Sun (2003) for Tibetan and Post (2015: 188) for Tani and languages of Northeast India in general. One may reasonably hope to see a rapid increase in extensive descriptions of languages with level-tone systems and a rich morphotonological system. Recent additions include a grammar of Pumi (Daudey 2014), a language that uses two tonal levels. The present account of Yongning Na tone is intended as a contribution to this development in Sino-Tibetan studies.

The aim of this study is not to bring cherry-picked data to bear on topical issues in phonological or morphological debates, but to provide an in-depth description of a language as it functions. This goal is common to all linguists, and matters more than theoretical differences. The overarching guiding principles are: to exercise the greatest vigilance to steer clear of Procrustean models; and to keep in mind the ultimate aim – to approach the actual processes taking place in the speaker’s brain. When formulating generalizations over the data, i.e. bringing out phonological and morphological rules, efforts were made to keep in mind issues of psychological (cognitive) plausibility. The theoretical backdrop to the present research is intended to be as unobtrusive as possible, as befits language description and analysis. Linguistic models will be mentioned as the necessity for it arises: Chapter 1 uses autosegmental models of tone (models in which tones are AUTOnomous from the SEGMENTS); and Chapter 10 contains some reflections about synchronic typology, diachronic typology, and the panchronic programme in linguistics. In a nutshell, the method used here essentially rests on the basic principles of classical functional phonology, as set out in handbooks of phonological description (for instance Martinet 1956: 15, 34–47). This book is intended as an application of the method advocated by Martinet under the name of “dynamic synchrony” (Martinet 1990): the focus is on synchronic description; flatly synchronic description is enriched by observations about current tensions within the system, assessing which of the competing variants are innovative and which are conservative.

It is difficult to select, among Martinet’s various writings, a quote that would neatly summarize the main tenets of this approach. Martinet devoted an entire volume to setting out *A functional view of language* (Martinet 1962). The excerpt below is from another English-language volume, entitled *The internal conditioning of phonological systems*.

A dynamic conception of language presupposes that we do not deal with it as we would with a dead body in the morgue, but try to look at it as

a means of satisfying some of the human needs, and essentially that of communication. In other terms, it derives from a functional view of language (...). (...) experience has shown that even if language is often used for the satisfaction of other needs as, for instance, that of communion, it is, in the last analysis, mutual understanding that determines the choices of the speakers. (...) At every point in time, with every speaker, what is said and how it is said will show a balance between the desire to communicate, and inertia, be it individual, i.e. reduction of energy, or social, i.e. preservation of traditional forms at the expense of personal comfort and communicative efficiency. (Martinet 1996: 2–3)

1.3 Chronology of the study, elicitation methods, and online materials

The present results are based on data collected since 2006.

Four field trips to Yongning were conducted from 2006 to 2009. Excluding the time spent on travel and on organizational tasks, the duration of these stays was: 50 days in 2006; 35 days in 2007; 58 days in 2008; and 40 days in 2009. From July 2011 to October 2012, I had the wonderful opportunity of staying in China for long-term fieldwork. As my main consultant had by that time moved to the town of Lijiang to take care of a granddaughter, I was based in this town too, working with her for an average two hours a day. In 2013, 2014 and 2015, short field trips to Lijiang and Yongning were made, still working mainly with the same consultant.

1.3.1 Collaboration with consultants

Currently standard procedures for data collection, as reflected in the ‘Method’ section of papers in phonetics journals, tend to avoid any mention of personal contacts between the investigator and the subjects. Such mentions would be worse than irrelevant, they would be suspicious, since exchanges with consultants beyond providing explicit instructions are viewed as a contaminagen: a threat to the objectivity of the experiment. However, to linguists who have an experience of working in collaboration with consultants, whether in a language lab or in the field, it is clear how deeply the relationship established with the consultant influences research. A close look at data collection in language laboratories suggests that important dimensions in the selection of speakers and the formulation of instructions are often overlooked. Worries are seldom voiced about the

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bias introduced by the use of professional linguists, or multilingual students, as subjects. “The subjects were unaware of the purpose of the experiment” is considered a commendable state of affairs. Of course, different research purposes call for different data collection methods, and it would be thoroughly unreasonable to expect all investigators to develop strong personal familiarity with subjects who participate in their research. Nevertheless, it is clear that, in the process of describing a language, mutual understanding between the investigator and consultants is of the essence. In this light, the personal details presented below are not simply fieldwork anecdotes: in my view they represent relevant information on data collection. (Further thoughts about data collection are set out in some detail in Niebuhr & Michaud 2015.)

1.3.1.1 First steps in the search for consultants

On the first field trip, Mr. Latami Dashi, a native speaker of Na and a researcher in ethnology based in the Ninglang county seat who had been introduced to me by Picus Ding, accompanied me to his family’s house, where I was invited to reside during all my stays in Yongning. He volunteered to work as consultant. (His code in the database of Naish speakers is M18.) Mr. Latami has near-native command of both Southwestern Mandarin and Standard Mandarin; it was immediately obvious to both of us, when we began an elicitation session, that long years of daily practice of Mandarin had taken their toll on his proficiency in Na. He proposed to find a speaker who had a relatively homogeneous linguistic experience, having lived continuously in Yongning since childhood. For my part, I wanted to work with a male speaker, for a technical reason: spectrogram reading and electroglottographic analysis, two techniques in which I had some experience, are easier to perform on data from male speakers. Also, we agreed to look for a speaker whose age ranged between 35 and 65. Younger speakers have limited command of the language; the oldest speakers are often the most proficient speakers of Na, but at a certain age speech becomes less audible and communication with strangers more difficult.

Mr. Latami therefore set out to look for a suitable consultant in the neighbourhood. The procedure as he narrated it to me was the following. He invited a candidate over to his place after dinner, treated him to wine and sunflower seeds, and launched a conversation about how the language was being lost by the younger generation. Then he explained that there was currently a foreigner staying in the house, who wanted to study and record the everyday language; and he asked if the person would agree to work as language consultant.

Several persons were thus invited, said they would consider the proposal, and

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eventually declined. There may have been a number of reasons for this. Mr. Latami's point of view is that, for want of knowing the ins and outs of linguistic fieldwork, they were suspicious of potential misuses of the information that they would provide, and wary of the blows that their reputation would suffer if their name became associated with debatable materials about Na language and Na culture. There are enough examples of ludicrously simplified portraits of Na culture produced to cater for the tourist industry (as reviewed in §1.1.3.5) to justify their cautious stand.

On the other hand, these people have known Mr. Latami since he was a child, and they would have reasons to trust that he would not collaborate in a research project that may harm the image of the community. In his own research on Na/Mosuo culture, Mr. Latami takes care to gather viewpoints from a number of community members before one of his books goes to press. After he has finalized a draft of one of his books (e.g. Lātāmī 2009), he will circulate copies to Na people who are literate in Chinese and ask for their comments. Only after he has received their criticisms, corrections and comments, and worked them into the final version, does the book go to press. This offers no absolute guarantee against resentment on the part of other community members concerning the contents of the book in its final form; but it could go some way towards allaying suspicions.

These Na speakers' negative answer can be considered as providing an insight into traditional Na society, as a highly conservative agricultural society where deviant behaviour meets with sharp reproach. This has a strong bearing on language: according to linguists specializing in the study of relationships between society and language, conservative societies favour not only archaism, but also the development of innovations that tend to complexify morphology – a process opposite to what happens in cases of creolization. For instance, reflecting on the case of the development of person agreement marking on complementizers in Bavarian German (reported by Bayer 1984), Peter Trudgill speculates that this only happens in tightly-knit, rural communities. The example given is the following:

- (3) ... *obst* *du* *noch* *Minga* *kummst*
 whether you-SG to Munich come
 ‘whether you are coming to Munich’

where *ob* ‘whether’ receives second-person agreement *-st* (Trudgill 2011: 82, 112–113). To return to Yongning Na, the development of the flamboyant tonal morphology described in the present volume may have been favoured by the same social factors that initially led potential consultants to decline sharing their knowl-

edge of Na with me.

Mr. Latami Dashi's mother seconded her son's efforts to convince potential consultants that they should not be intimidated by the tasks proposed to them, explaining that the purpose was not to collect folklore, but to study the everyday language; and that the initial stage of the work was as simple as saying the words for 'head', 'hand', and so on. While she did not succeed in convincing others, she apparently convinced herself, and volunteered as consultant.

1.3.1.2 Main language consultant: Mrs. $la+t^h a+mi$ [æ-|su-|la]mv]

My Na language teacher, whose code in the database of speakers of Naish languages is F4, was born in 1950 in the hamlet called /ə-|la-|ɣwɣ#|/ in Na, close to the monastery of Yongning, called *dgra med dgon pa* in Tibetan, a name rendered in Chinese as Zhāměisi 扎美寺. The administrative coordinates of this village are: Yúnnán province, Lìjiāng municipality, Nínglàng Yí autonomous county, Yǒngníng district, Ālāwǎ village (云南省丽江市宁蒗彝族自治县永宁乡阿拉瓦村). The founding of this village is narrated in the online narrative *Elders3* (about online resources: see §1.3.3.1 below). My teacher later established a home of her own in a neighbouring hamlet, slightly closer to the road leading to the Yongning marketplace.

My teacher is attached to traditions, closely associated with the teachings of her grandmother, whom she remembers as an outstanding character who tactfully managed a large household. In narratives, she refers to her grandmother as /ə-|si|/, 'greatgrandmother; ancestor of the third generation', the term of address used by her own children – a way to point her out to the next generation as a living model. My teacher is considered locally as a connoisseur of Na customs: in recent years, when someone in the village had doubts about how a certain ceremony should be performed, they would come to ask her for instructions.

On the other hand, she is well aware of how deeply the staggering pace of change since her birth has transformed Na society, and she does not cling to a bygone past. She is an open-minded character, gaily deriding in retrospect the prejudices that used to prevail in Na communities. Among the anecdotes not committed to digital memory in audio form is one about the introduction of vegetables such as courgettes and eggplant in Yongning: distrustful and indignant villagers would warn one another, "Don't eat those: they are grown in shit!" But these new crops were eventually adopted, along with traditional Chinese methods for fertilizing soil. In her childhood, she was one of the actors in a documentary film about the Na and their unusual family structure ('*A-zhu*' marriage among the Naxi of Yongning, a film realized as part of a series of scien-

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tific documentaries about “ethnic minorities” initiated in 1957: 少数民族社会历史科学纪录片).¹⁰ Later, one of her sons became an anthropologist, specializing in Na society, and she was visited by a number of his colleagues. She thus witnessed how the Na of Yongning became an object of curiosity and fantasy, and how Na culture became folklorized for the promotion of the tourist industry with its pleasant sides and its less lovely ones.¹¹ Her experiences and reflections gradually shook some of the traditional beliefs that had been passed on to her by her grandmother, such as Buddhist beliefs. While conscientiously going through the prescribed rituals on a day-to-day basis, her own belief in Buddhist teachings such as reincarnation was faltering, although without affecting her commitment to the ideals of benevolence and respect of others. The narratives recorded show her awareness of the cultural relativity of the waning customs and traditions of the Na, to which she nonetheless remains attached.

Unlike more traditional parents in whose view the monastery was the most prestigious prospect for boys, she encouraged her children – girls as well as boys – to study in the Chinese school system, which she felt was a better gateway to an existence free from daily toil in the fields. Her four children have all found employment outside Yongning, one of them in the county town of Ninglang, two in Lijiang, and one in far-away Shenzhen (Guangdong). Although she lived continuously in the village since her birth, and very rarely left the plain of Yongning (and, indeed, seldom left her village) until she came over to the city of Lijiang to look after a newborn granddaughter in 2010, she was always well aware of the world beyond Yongning.

Her experience that the human heart is the same everywhere, below the surface of local customs, surfaces in places in the narratives that she agreed to record in the course of our collaboration. She likes to point out similarities between the situations described in her narratives and present-day situations. For instance,

¹⁰ Chinese title: 《永宁纳西族的阿注婚姻》. Black and white. Duration: about 60 minutes (6 film portions of 10 minutes each). Production date: about 1966. Advisor: Qiū Pǔ 秋浦. Scenario: Zhān Chéngxù 詹承绪 and Yáng Guānghǎi 杨光海. Director: Yáng Guānghǎi 杨光海. Photography: Yuán Yáozhù 袁尧柱. Sound recording: Zhào Déwàng 赵德旺. Animations: Zhèng Chéngyáng 郑成杨. Narration: Zhōu Qìngyú 周庆瑜. Chinese summary: “在云南省宁蒗彝族自治县永宁公社的纳西族，解放前处于封建领主社会，但长期以来还保存着原始母系社会特征，保存着以母系为核心的母系家庭，保存着男不娶，女不嫁的“阿注婚姻”。男阿注到女阿注家过夜，晚上来白天走的“半同居”婚姻生活。本片对这种婚姻形式，特点和母系家庭作了如实的记录。”

¹¹ One example among many is a report done for the French tabloid Paris Match: its special issue “China is changing” (“La Chine change”, May 2001) contains no less than ten pages dedicated to the “Mosuo” (pp. 52–61), including an interview with Latami Dashi and his mother Latami Dashilame (p. 60).

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mentioning apprentice monks' hopes to find a good master, she brought out the analogy with my study of Na, for which I likewise needed attentive teachers, as did her grandson at a university in Kunming. Following her instruction, I have always called her /ə-**ma**/, and have been the grateful object of her affectionate care throughout my stays. She is a model of tact, masterfully fine-tuning relations within the family and beyond. She has been a patient and encouraging teacher, despite her declining health and her heavy workload as a mother and a grandmother. While conceivably proud of raising four children under harsh circumstances, she has a strong sense of humour and was never inclined to pose as guardian Angel, Muse, or Madonna (to cite Baudelaire's impassioned wording: "l'Ange gardien, la Muse et la Madone").

She was a stutterer during her adolescence. She later overcame this difficulty. I may not have noticed had I not been informed, but I now interpret the rare cases of stuttering that occur in recorded audio documents as remnants of this earlier difficulty. Also, she is known in the community as a person who talks quickly. Finally, although she has never suffered from any major otorhinolaryngological ailments, she has noticed changes in her voice over the years, and is no longer able to sing the high-pitched songs of the Na. The reason is partly social: according to local habits, singing is an activity for young people; the voices of singers past forty (fifty at a push) are considered unattractive, and it is unusual for a women past fifty to sing songs. On the occasion when my teacher accepted to sing a song (understanding that this may be a useful part of documenting the language, and that most members of the younger generations do not get to learn traditional songs anymore), it appeared that lack of practice over the years had made her unable to perform songs.

She occasionally conversed with Na speakers from other villages, but never travelled to Na villages outside the Yongning plain, such as Labai or the Na villages in Muli county. She can speak a little Southwestern Mandarin Chinese, and occasionally borrows common Chinese words when speaking Na, but her proficiency was very limited until she moved to Lijiang in 2010 and found herself in a predominantly Chinese-speaking environment. She does not know other languages of the area, such as Prinmi (Pumi), Lisu, Naxi, or Yi, although since she moved to Lijiang she has relatively frequent contacts with Naxi speakers.¹²

¹² The study of the subtle effects of language contact on her practise of Yongning Na would warrant a monograph by themselves. Here is an example. The Naxi are referred to by the Na as /**na**l**hĩ**#ɿ/, by a calque of the word structure of the Naxi word /**na**l**çi**/, made up of an endonym (/**na**/) which is segmentally identical in both languages, and of the word for 'person, human being': Naxi /**çi**/, Na /**hĩ**/. Accordingly, F4 used this Na pronunciation when discussing with Naxi people in Li-jiang, e.g. to explain to them that she was not 'Naxi' but 'Mosuo', from

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Apart from initial vocabulary elicitation, which was done in Chinese, fieldwork was conducted in Na, the consultant providing explanations in her own language, without translation into Chinese. This certainly made the elicitation process slower than it would have been with a bilingual consultant, but monolingual fieldwork also has its advantages, allowing the investigator to develop a better command of the language.

1.3.1.3 Other language consultants

During the first field trip (2006), as work with consultant F4 began, I reflected on possibilities to extend the work to other speakers. I had in mind the textbook arguments for working with several speakers.

Data from varied sources can guard against distortions resulting from dressage, the observer's paradox, faulty questioning, or pre-scriptive influences of one individual's idiolect. Working with several speakers will provide the researcher with points of comparison so that he or she can learn to distinguish between reliable and unreliable data. (Chelliah & de Reuse 2011: 180–181)

In the family where I stayed, two members were living in Yongning all the year round: F4, and a daughter-in-law: the wife of her second son. Her daughter-in-law (speaker code: F5), born in 1973, accepted to act as language consultant for basic elicitation, while declining to record any continuous texts: narratives, dialogues, explaining that she did not feel up to the task. Unlike F4, who after a couple of days eliciting vocabulary accepted to record a narrative, F5 maintained their initial decision not to record anything other than short responses to my questions, except for a few short songs recorded in 2007.

Both F4 and F5 had relatively little spare time, so I would work with one or the other depending on who could find the time. One day in December 2007 when both were busy, F5 asked a niece to “replace” her for a work session. This offered an opportunity to get insights into the speech of the younger generation. This speaker, F6, was born in 1987. As a high school student in the Ninglang county seat, she only came back home for holidays. Vocabulary elicitation showed that

Yongning. But to a Naxi listener, the realization /*na.lhi#l*/ does not sound right: the Naxi do not have nasalization in the syllable for ‘person, human being’. Whether at Naxi speakers’ suggestion, or through a spontaneous process of adjustment, F4 began to refer to the Naxi as /*na.lci-*/, denasalizing the second syllable. This amounts to borrowing the entire word from Naxi, instead of calquing it with Na morphemes.

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she knew few words, and that her Na phonological system was highly simplified. These observations are reported in a joint book chapter with Latami Dashi: “A description of endangered phonemic oppositions in Mosuo (Yongning Na)” (Michaud & Latami 2011; Chinese translation: Michaud & Lātāmī 2010).

In 2008, two more speakers were recorded. The first was Mr. /ho-dzɿ-tsh^heɪ/ (Chinese: 何甲 泽 He Jiaze), hereafter M21, born in 1942. He was a retired cadre (干部), and had lived two years in Kunming and three in Yongsheng. The opportunity to extend the investigation to a male speaker was welcome; and M21 was extremely encouraging and motivated. Elicitation tasks proved highly challenging for him due to some hearing difficulties, however: he reported full deafness of one ear, and highly reduced sensitivity of the other. His experience of various dialect areas also made him more more changeable in linguistic behaviour than the investigator would have wished. Specifically, it did not prove feasible to elicit consistent tone patterns for compound nouns, as some patterns that had been elicited in one session were dismissed in another, only to be reasserted with full confidence at a later point. Later, M21’s youngest son, /dʰuɪdʒuɪ/ (Chinese: 何独知 He Duzhi), born in 1974, kindly accepted to participate in the linguistic investigation. His knowledge of Na is comparable to that of F5. Like F5, M21 and M23 declined to record anything except vocabulary, phrases and sentences. This is in fact an indication that they received some exposure to the oral traditions, and still take them seriously enough to consider that they are not to be treated casually. The speakers who accept most readily to tell stories are not necessarily those who are most familiar with them. On the contrary: some speakers who have a strong footing in another language and culture (in the case of Naish: Chinese) can tell simplified versions of traditional stories all the more easily as they mean less to them.

1.3.2 Elicitation methods

1.3.2.1 Examination of transcribed texts and direct elicitation

“Texts are the lifeblood of linguistic fieldwork. The only way to understand the grammatical structure of a language is to analyse recorded texts in that language” (Dixon 2007: 22). Following classical methods in linguistic fieldwork, observations from continuous speech (in the case of the present study: mostly narratives) are verified and further investigated through elicitation. A fair amount of transcribed narratives has been collected: more than four hours; but a considerably greater amount would be necessary to be able to study the language’s tonal grammar on the basis of these texts alone. Not all possible tonal combinations in

1 Introduction

compound nouns are found in these texts; and no amount of continuous speech would be enough to obtain all the combinations of numerals from 1 to 100 with the various tonal categories of classifiers, as required for the study of numeral-plus-classifier phrases (Chapter 5). Systematic elicitation was therefore used to investigate one area after another of the tonal grammar of Yongning Na.

Larry Hyman, reflecting on his study of the tones of another Tibeto-Burman language (Thlangtlang Lai), makes the following observation:

Clearly the speaker had never heard or conceptualized noun phrases such as “pig’s friend’s grave’s price”, “chief’s beetle’s kidney basket” (...). It would not impress any psychologist, and it would definitely horrify an anthropologist (...). However, when I need to get $3 \times 3 \times 3 \times 3 = 81$ tonal combinations to test my rules, the available data may be limited, or the language may make it difficult to find certain tone combinations. I am personally thankful that speakers of Kuki-Chin languages are willing to entertain such imaginary notions. It is most significant that the novel utterances are produced with the appropriate application of tone rules. (Hyman 2007a: 34)

Using this method, L. Hyman completed elicitation of data on Thlangtlang Lai tone within six hours (Hyman 2007a: 9). Such swift progress is possible when the linguist is fortunate to work with consultants possessing high metalinguistic abilities, who enter into the linguistic reasoning, and collaborate with the linguist as colleagues. Famous cases include François Mandeville, a speaker of Chipewyan who “possessed the extraordinary ability to dictate texts and to explain forms with lucidity and patience” (Li 1964: 132).

In the case of Yongning Na, the relationship with the consultants was somewhat different. In the course of our collaboration, they developed an understanding of a linguist’s interests and aims; in particular, tens of hours of work together made consultant F4 familiar with the investigator’s body language, so she would understand a repetition-beseeching glance upward from the laptop screen, or volunteer an explanation when a long pause suggested that the investigator was experiencing a doubt. On the other hand, the consultants did not develop metalinguistic intuitions beyond the notion of full homophony between two words. They did not develop any particular interest in linguistic forms, and would only provide linguistic forms corresponding to a precise context. This meant that the elicitation of each desired combination required a great deal of care. To take the example of compound nouns, compounds that were not sufficiently contextualised were produced either as possessive constructions – an English equivalent

would be ‘skin of the horse’, as opposed to the desired ‘horse(’s) skin’ – or as an ungrammatical expression consisting in the mere juxtaposition of the citation forms of the two words. To elicit the compound ‘woman(’s) blood’, for instance, the consultant and the investigator took the time to look for a possible context: imagining that a man-eating demon feels an urge to drink *woman’s blood*. Each combination was then double-checked – or rather ‘multiple-checked’ – by using different example words for the same tonal combination, and eliciting tokens several times during different elicitation sessions. As a result, the elicitation of data from four speakers about this particular point of the tonal grammar extended over the first three field trips, from 2006 to 2008.

1.3.2.2 The issue of cross-speaker differences

One of the findings from the systematic study of compound nouns (reported in Chapter 4) was the high degree of cross-speaker differences.

It is a general observation that tone is highly susceptible to dialectal variation; and in view of existing reports, it seems clear that the greater Yongning area is the part of the Naish-speaking area that has the most complex tone systems, and the greatest dialectal diversity. In this light, differences observed within the same village, and even within the same family, did not come as a huge surprise.

Another factor of diversity is the gap between age groups created by ongoing language shift to Chinese. F4’s four children are more proficient in Chinese than in Na. All four left Yongning to work; two married Han Chinese spouses without any command of Na; one married a Na spouse from a different dialect area and difficulties of mutual comprehension led the wedded pair to communicate in Chinese instead; one married a Na spouse (F5) but works in faraway Shenzhen and seldom returns home. The generation of her four grandsons and granddaughters has even less command of Na, even though it was F4 who took charge of them in their early years. But there are also notable differences in tonal terms between the speech of F4 (my main language consultant) and F5 (her daughter-in-law), despite their living under the same roof. Documenting the tone system of several speakers is therefore not simply a matter of verifying data: the description is to be conducted separately for each speaker, only comparing the results as a second step. Another difficulty was that transcribed texts are necessary in order to confirm at least part of the patterns obtained through systematic elicitation, but speakers F5, M21 and M23 declined to record narratives, and even if they agreed, arriving at a sizeable collection of texts for each of the four speakers would represent a formidable amount of work – not to mention the difficulty, for the investigator, of keeping the four systems distinct: avoiding unwarranted

carry-over of transcription habits developed when working on data from one speaker.

1.3.2.3 A dilemma: breadth of coverage of the tone system vs. breadth of sociolinguistic coverage

Clearly, it did not appear feasible to explore all areas of the tone system with the same degree of detail for four speakers. This led to the following dilemma: either limiting the extent of investigation – for instance, focusing on compound nouns, or numeral-plus-classifier phrases –, but eliciting data from a broad sample of speakers, to arrive at adequate sociolinguistic coverage; or extending the investigation to more parts of the linguistic system, working towards a complete picture of the tonal grammar of a speaker chosen as main consultant, with occasional extension of the investigation to other speakers.

The second option was preferred: attempting as complete a description as possible of the entire linguistic system. Work with consultant F4 appeared more promising because of her much stronger proficiency in Na than the two younger consultants (F5 and M23), and of her relatively homogeneous linguistic lifecourse, as opposed to M21's long years of practice of various dialects of Na and of Chinese. Basing the work primarily on data carefully verified with F4 appeared as a reliable starting-point for later comparative work, including cross-speaker and cross-dialect studies.

The ultimate research goal – viewed as a collective endeavour – consists in documenting in great detail the synchronic tone system of a number of research spots in the Na-speaking area, and, on this solid empirical basis, conducting comparisons and gradually reconstructing the history of the evolution of tone systems. Ideally, this will lead to a complete account of the origin and development of tone systems in Naish, shedding light on all the stages that led from a non-tonal stage to each of the present-day varieties. This is clearly a long-term endeavour; the first task to be addressed is to attempt a description of the tonal system of one dialect in its full synchronic complexity.

The analyses of Yongning Na tone reported in the present volume are therefore based on data from consultant F4, unless otherwise mentioned.

1.3.3 Online materials

1.3.3.1 Transcribed and translated narratives and phonological materials

A guiding principle in the present research is that a close association between documentation and research is highly profitable to both. Abundant recordings were conducted, and made freely available online, document after document, as their annotation was completed. The recordings are mostly narratives and lexical or phonological elicitation sessions. They are accompanied by metadata (information about the recordings), and, to the greatest extent possible, by full transcriptions, and translations.

The data are hosted by the Pangloss Collection (Michailovsky et al. 2014), a language archive developed at the research centre *Oral Tradition: Languages and Civilizations* (LACITO) of the French National Centre for Scientific Research (CNRS) since 1994. The goal of this archive is to preserve and disseminate recorded and transcribed oral literature and other linguistic materials in (mainly) endangered or poorly documented languages, giving simultaneous access to sound recordings and text annotation.

The necessity to document the world's languages is now well-known to linguists and the general public. Fewer people are aware of the dismal current state of multimedia linguistic documentation. Looking back at a century of speech recording, the legacy is not as extensive – and nowhere near as tidy – as the layman would think. If it is true, as Whalen (2004) puts it, that “the study of endangered languages has the potential to revolutionize linguistics”, and that “the vanguard of the revolution will be those who study endangered languages”, then it is all the more unfortunate that “enormous amounts of data – often the only information we have on disappearing languages – remain inaccessible both to the language community itself, and to ongoing linguistic research” (Thieberger & Nordlinger 2006; see also Woodbury 2003; 2011). The Pangloss Collection (etymologically “all languages”) intends to address this major need of the linguistic community by sharing annotated spoken texts of lesser-studied languages, while contributing to the collective effort of preserving the memory of endangered languages.

For some of the Yongning Na recordings, an electroglottographic signal was collected simultaneously with the audio from the head-mounted microphone. The electroglottographic signal allows for a high-precision measurement of the voice's fundamental frequency, as well as of other glottal parameters.¹³ Docu-

¹³ About electroglottography, see the initial report of the invention: Fabre 1957; a synthesis: Baken 1992; some caveats: Orlikoff 1998; discussions about parameters that can be measured:

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H1 category of classifiers				
classifier for...	recordings WITH electroglottographic component	recordings WITHOUT electroglottographic component		
	30 to 100	1 to 100	1 to 10	1 to 30
chunks	AUDIO + EGG	AUDIO + EGG		AUDIO
handspan		AUDIO + EGG		

H2 category of classifiers			
classifier for...	recordings WITH electroglottographic component	recordings WITHOUT electroglottographic component	
	30 to 100	1 to 100	1 to 30
days	AUDIO + EGG	AUDIO + EGG	AUDIO

M1 category of classifiers			
classifier for...	recordings WITH electroglottographic component	recordings WITHOUT electroglottographic component	
	30 to 100	1 to 100	1 to 30
knives	AUDIO + EGG	AUDIO + EGG	AUDIO
handfuls		AUDIO + EGG	
heaps		AUDIO + EGG	

M2 category of classifiers		
classifier for...	recordings WITH electroglottographic component	recordings WITHOUT electroglottographic component
	1 to 100	1 to 30
months		AUDIO
pairs	AUDIO + EGG	
round objects	AUDIO + EGG	

Figure 1.2: Screen shot showing a fragment of the static HTML page presenting the list of resources in Yongning Na in the Pangloss Collection.

ments that comprise an electroglottographic signal are accompanied by a special icon in the list of resources, and also on the (static) web page presenting the Yongning Na data: see Figure 1.2 for a screen shot. Figure 1.3 shows a passage from one of the documents as displayed on the web interface.

The Na documents are perennially archived and will continue to be accessible despite future changes that may take place in the Uniform Resource Locator of the Pangloss Collection’s web interface. Stable internet links to access directly a specific location within a text are currently under development at the archive; the aim is “to offer readers the means to interact instantly with digital versions of the primary data, indexed by transcripts” (Thieberger 2009). Seamless navigation

Henrich et al. 2004, Michaud 2004; and applications to the study of specific linguistic issues, e.g. Brunelle, Nguyễn & Nguyễn 2010; Kuang & Keating 2014.

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W1		ɖwɪ-naɪ	1 +工具的量词	1 +classifier for tools
W2		ɲiɪ-naɪ	2 +工具的量词	2 +classifier for tools
W3		soɪ-naɪ	3 +工具的量词	3 +classifier for tools
W4		zɣɪ-naɪ	4 +工具的量词	4 +classifier for tools
W5		ɲwɣɪ-naɪ	5 +工具的量词	5 +classifier for tools
W6		q ^h ɣɪ-naɪ	6 +工具的量词	6 +classifier for tools
W7		ʂwɪ-naɪ	7 +工具的量词	7 +classifier for tools
W8		hōɪ-naɪ	8 +工具的量词	8 +classifier for tools
W9		gɣɪ-naɪ	9 +工具的量词	9 +classifier for tools
W10		ts ^h eɪ-naɪ	10 +工具的量词	10 +classifier for tools
W11		ts ^h eɪɖwɪ-naɪ	11 +工具的量词	11 +classifier for tools
W12		ts ^h eɪɲiɪ-naɪ	12 +工具的量词	12 +classifier for tools
W13		ts ^h eɪsoɪ-naɪ	13 +工具的量词	13 +classifier for tools

Figure 1.3: A passage from one of the documents as displayed on the web interface.

between grammars and data is clearly the way to go: providing a direct link to the texts where cited examples are taken from. It is hoped that by the time of the next edition of this volume, tools to resolve a multimedia document's identifier will be all set up and working, allowing for links from the digital book that will direct the user straight to the relevant passage in the online data. In the meantime, it did not appear advisable to provide hyperlinks to the archive's current interface, because URLs are likely to change in the near future.

Embedding audio excerpts of the cited examples in the PDF file of this volume would have been a technical possibility, but this would not have reached the goal of connecting the analyses to the data: allowing the reader to navigate between the book and the online documentation where the examples can be examined in context.

At present, it remains necessary for users to go to the Pangloss Collection's online interface, and to locate the document at issue either on the internet page presenting the Na documents (http://lacito.vjf.cnrs.fr/pangloss/languages/Na_en.php) or in the automatically generated list of documents, arranged by date of deposit in

the archive (http://lacito.vjf.cnrs.fr/pangloss/tools/list_rsc_en.php?lg=Na&aff=Na).

The availability of these audio and electroglottographic data with synchronized transcriptions makes it possible for interested persons to get a feel for the data; it also opens perspectives for further research into a broad range of phonetic topics. Given the amount of time that is necessary to produce a state-of-the-art experimental phonetic investigation, it is simply impossible for linguists who are working at the description of an entire language (or of several languages) to launch into a phonetic study to substantiate and refine each of their observations; on the other hand, it appears feasible to collect a sufficient amount of data for interested colleagues to conduct such a study. To take the example of recorded data about numeral-plus-classifier phrases (analyzed in Chapter 5), here are two examples of phonetic phenomena that can be studied in future on the basis of the recorded data Yongning Na data:

- (i) The implementation of tone. The electroglottographic signal has not been exploited so far, except for its occasional use in auditory verification (the pitch can be clearer when listening to the electroglotto-graphic signal than when listening to the audio). This signal could serve in future for a phonetic study of the implementation of tone in Yongning Na. There is a large gap between phonological representations in terms of sequences of level tones, on the one hand, and observed fundamental frequency curves, on the other: “both F_0 height and F_0 velocity are relevant parameters (...) even for the simplest level tone languages” (Yu 2010: 1). A study of the implementation of tone sequences in Na would be a useful addition to the existing literature on contextual tonal variation and segmental effects on tone, as studied e.g. by as studied e.g. by Abramson (1979), Gsell (1985) and Gandour & Potisuk (1992) for Thai, and Xu (1997; 1998) for Mandarin.
- (ii) The weakened (hypoarticulated) realization of repeated words. When a consultant pronounces a sequence of numeral-plus-classifier phrases, such as /**q**uɪt-k^hwɔ̃ʔ | **n**iɪt-k^hwɔ̃ʔ | **s**oɪ-k^hwɔ̃ʔ | **z**ɣɪt-k^hwɔ̃ʔ/ (‘one piece, two pieces, three pieces, four pieces ...’), the tone of the classifier changes (High, High, Low-to-High, Mid ...) but its consonants and vowels do not. As a result, the speaker’s attention focuses on the realization of the new information (essentially: the correct tone sequence for the phrase); in terms of the continuum from hyper-articulation to hypo-articulation (Lindblom 1990), the classifier is hypo-articulated. Specifically, the unvoiced lateral /**ʎ**/ in classifiers such as /**ʎ**iɪ/ ‘month’ and /**ʎ**iɪ/ ‘armspan’ is occasionally realized as voiced, despite the existence of a voicing opposition between /**ʎ**/ and /**l**/ in

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Na. Pursuing such observations would shed light on the field of allophonic dispersion of Na phonemes. Due to the nature of the corpus, numerous tokens of each numeral and classifier are available, offering a good basis for statistical treatments.

Importantly, the documents are also open to wholly different uses, including aesthetic enjoyment of a voice captured through the wonder of high-fidelity recording, and preserved unchanged through the magic of digital technology. I for one am not insensitive to the luxury of listening to the Yongning Na recordings at leisure. After a recording session is over, the qualms and concerns of fieldwork recede, leaving room for “the fecund miracle of communication within solitude”, to cite Proust’s eulogy of reading.¹⁴

1.3.3.2 Dictionary

A dictionary of Yongning Na is available online (i) as an online dictionary in HTML format, (ii) as PDF documents, and (iii) in database format (native Toolbox/MDF format, and LMF format). Entries and examples have translations into English, Chinese and French. There are two supplementary files in the version deposited in the HAL preprint archive:

- (i) the file NaDictionary.xml contains the entire database in XML format following the ISO standard LMF: this is a computer-readable format. For technical documentation on this format, see: <https://pypi.python.org/pypi/pylmflib/1.0>
- (ii) the file NaDictionary.txt contains the entire database in SIL’s Toolbox format (MDF); this is the source file on which the editing is done.

This dictionary is conceived of as work-in-progress: successive versions will be released, probably every two years or so. Hosting in the HAL preprint archive (at <https://halshs.archives-ouvertes.fr/halshs-01204638>) guarantees long-term preservation.

1.3.3.3 Bibliography

An online bibliography of Naish studies (studies about Naxi, Na, Laze and related languages) was started in 2015, as a Zotero group called ‘Naish languages’. This

¹⁴ *Original text*: ... la lecture, dans son essence originale, dans ce miracle fécond d’une communication au sein de la solitude (...) (*Journées de lecture*, in *Pastiches et mélanges*, Paris: Gallimard, 1919, p. 257).

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database is available at the following address: https://www.zotero.org/groups/naish_languages/ References will gradually be added, and enriched to provide multilingual information: for Chinese-language references, the author name will be provided in Chinese characters, as well as in romanized Chinese (*Pinyin* transcription); and titles and other relevant information will be translated into English. The emphasis is on linguistics, but we would also like to include ethnological/anthropological, historical, and sociological work. Any visitor can consult this bibliography; people interested to contribute to its enrichment and maintenance are welcome to get in touch.

2 Vowels and consonants

2.1 Introduction: no phonological alternations; rich coarticulatory phenomena

The vowels and consonants of Yongning Na are phonologically inert: they are not involved in synchronic phonological rules and processes. In this respect, Yongning Na is at the opposite end of the typological continuum from a language such as Kifuliiru (Bantu), which has (i) a range of phonological rules, such as the strengthening of /h/, /l/ and /r/ to a plosive when preceded by a nasal, and the total assimilation of a non-high, non-back vowel (/e/ or /a/) to a following vowel at morpheme boundaries within the word, e.g. /a/+/u/→/uu/, and (ii) morphological rules, such as the deletion of final consonants in resultative verb forms (Van Otterloo 2011: 37–96).

When examining vowels and consonants in Yongning Na, attention is attracted instead to phonetic properties of vowels and consonants within tightly coarticulated syllables. Due to dramatic phonological erosion since proto-Sino-Tibetan (Jacques & Michaud 2011), syllabic structure in Yongning Na collapsed down to (C)(G)V+T, where C is a consonant, G a glide – with a severely restricted distribution –, V a syllable nucleus, and T represents tone; the brackets indicate that C and G are optional. Coarticulation constitutes a salient part of a language's sound system. Structural approaches to phonological systems predict cross-linguistic differences in phenomena of coarticulation and articulatory reduction. To take an example, the extent to which the palatalizing influence of high, front vowels makes itself felt depends in part on the number, nature and functional yield of existing phonemic oppositions: in Na, which contrasts /ki/ and /tɕi/, the range of allophonic variation of /ki/ can safely be predicted to be narrower than in Naxi, which does not have this contrast.

Phonetic studies confirm the language-specific nature of coarticulation. A review of this topic (DiCano 2012: 162) recapitulates the following conclusions: “Language-specific factors which influence coarticulatory timing include lexical contrast (Scarborough 2004), phonological inventory size (Manuel 1999), and the phonological distribution of contrasts (Bird et al. 2008; Howe & Pulleyblank 2001;

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Manuel 1999; Miller 2007).” In the description that follows, special attention will be paid to coarticulation, allophonic variation, and phenomena of articulatory reduction. Given the (C)(G)V+T structure of Yongning Na syllables, it appears simplest to present the inventory in terms of initials, corresponding to consonants, and rhymes, corresponding to (G)V: see Table 2.1 and Figure 2.1.

Table 2.1: The initials of Yongning Na.

	bilabial	dental	alveolo- palatal	retroflex	velar	uvular	glottal
plosive	p^h p b	t^h t d		t^h t ɖ	k^h k g	q^h q	
affricate		ts^h ts dz	tɕ^h tɕ dz	tʂ^h tʂ dʒ			
nasal	m	n		ɳ	ŋ		
fricative		s z	ɕ ʐ	ʂ ʐ		ʁ	h
lateral		ʎ l					
approximant				ɻ			

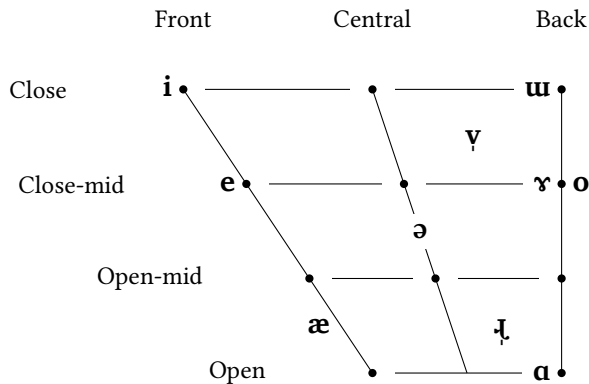


Figure 2.1: The rhymes of Yongning Na.

This chart of rhymes includes syllabic /ɻ/ and /ʉ/, discussed in the following section (§2.2.1). They are respectively placed in the lower right-hand and upper right-hand areas of the chart as a rough approximation of their articulatory characteristics. To the rhymes in the chart must be added rhymes that contain a semi-vowel: /wæ/, /wɑ/, /wʉ/, /jæ/, /jɻ/ and /jo/; the nasal vowels /ĩ/, /ĩʉ/, /ĩwʉ/, /ã/ and /ã/ appearing only after /h/; the syllables /ĩ/ and /ĩwæ/; and the nasal vowel /õ/

appearing after /h/ or on its own (/hõ/, /õ/).

The notation used throughout this book, and in the transcription of texts, is phonemic in orientation. In a few borderline cases, discussed in detail below, such as those of the syllables [ɲi], [ɽw] and [fɻ], pushing phonemicization to its extreme could obscure ongoing evolutions; in those cases, the choice made consists in keeping the transcriptions close to the surface forms.

2.2 Syllable nuclei: vowels and syllabic consonants

2.2.1 Consonantal nuclei

In Na, some consonantal sounds function as syllable nuclei. In the International Phonetic Alphabet such sounds are called ‘syllabic’, because they function as syllable nuclei. Fricative syllabics are an areal characteristic: in particular, they are common in neighbouring Yi languages, which belong to the Nasoid subgroup of Loloish (a.k.a. Ngwi; see Bradley 1979: 70). Local dialects of Chinese also have a fricative syllable nucleus, /fɻ/: ‘lake’, Standard Mandarin *hú* 湖, is pronounced [fɻ]. Since Na does not have coda consonants, ‘consonantal nuclei’ will also be referred to as ‘consonantal rhymes’. Yongning Na has the following consonantal rhymes: [ɻ], [ɽ], [ɽ], [ɽ] and [ɽ].

2.2.1.1 The voiced fricative /ɻ/

The voiced fricative /ɻ/ can only appear as a rhyme, not as an initial. On the whole, the friction for /ɻ/ is weaker than in Naxi. There is some amount of formant movement towards a central articulation: [və]. Since friction noise is small even at the beginning of the rhyme, this /ɻ/ could be described as close to an approximant, [v]. Martinet makes a distinction between fricatives proper, which have a firm articulation and are characterised by fricative noise, and spirants, which have a relaxed articulation, tending towards a vowel-like aperture (Martinet 1956: 24; Martinet 1981). In terms of this distinction, unfortunately not taken up in the International Phonetic Alphabet, the articulation of /ɻ/ in Yongning Na is spirant rather than fricative. After bilabial initials, /ɻ/ has a tendency towards trilling (though, again, less markedly so than in Naxi): /bɻ/ is realised close to [β], /pɻ/ close to [pβ], and /p^hɻ/ close to [p^hβ].

In the absence of strong friction, the rhyme /ɻ/ can be difficult to distinguish from the high back vowel /o/, especially after consonants that exert similar coarticulatory effects on the rhyme. Uvular stops result in a retracted (backed) articulation of both /ɻ/ and /o/, making the opposition between syllables such as /qɻ/

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and /qo/ difficult to hear at first. Minimal pairs are found, such as /mæ:qy/ ‘tail’ vs. /mæ:qo/ ‘end; back’.

2.2.1.2 Apicalized vowels

The vowel /u/ has fricative allophones after dental and retroflex fricatives and affricates. This situation is identical to that found in Naxi. For instance, /ts^hu/ ‘goat’ is realised [ts^hɿ], and /dzu/ ‘market, city’ is realised [dʒɿ]. It is customary to transcribe these sounds phonetically by means of the symbols coined by Chao Yuen-ren: [ɿ] and [ɿ̣], respectively. (The whole set proposed by Chao Yuen-ren consists of the plain apical vowel [ɿ], the retroflex apical vowel [ɿ̣], the rounded plain apical vowel [ɿ̤], and the rounded retroflex apical vowel [ɿ̤̣]: see Pullum & Ladusaw 1986.)

Additionally, there exists in Yongning Na an opposition between /i/ and another high front vowel after the alveolopalatal initials /dz/, /tɕ/ and /tɕ^h/.¹ Syllables /dzi/, /tɕi/ and /tɕ^hi/ have moderate friction during the initial, and the rhyme is not strongly apicalized. They contrast with syllables that have apicalized rhyme and a slightly more central vowel: those syllables are realized close to [dʒ̣], [tɕ̣] and [tɕ̣^h], respectively. If one were to abstract from the phonetic friction found on the rhymes of /dzu/, /tɕu/ and /tɕ^hu/, a possible phonetic notation would be as [dʒi], [tɕi] and [tɕ^hi]. The phonemic analysis adopted here is as allophones of /u/, hence /dzu/, /tɕu/ and /tɕ^hu/; this choice is based on structural considerations (complementary distribution), not on phonetics, and the real degree of validity of this choice remains to be tested experimentally, e.g. by investigating to what extent priming by canonical realizations of the vowel /u/ (as in /t^hu/ ‘to drink’) affects reaction times in perceptual tests.

Phonetically, the syllables /dzu/, /tɕu/ and /tɕ^hu/ are not easy to distinguish from /dzu/, /tsu/ and /ts^hu/, which are realized as [dʒi], [tsi] and [ts^hi] (standard International Phonetic Alphabet notation: [dʒ], [tsz] and [ts^hz]). An added complexity is related to Voice Onset Time oppositions among alveolopalatal initials. Syllables with an unvoiced or aspirated initial, /tɕ/ or /tɕ^h/, have stronger affrication than those with initial /dz/; this has coarticulatory consequences on the following vowel, so that both /i/ and /u/ are somewhat less open after /tɕ/ and /tɕ^h/ than after /dz/.

A recording was specifically conducted for words containing one of the following syllables: /dzi/, /dzu/, /tɕi/, /tɕu/, /tɕ^hi/ and /tɕ^hu/. The corresponding

¹ I overlooked this opposition until it was brought to my attention by Roselle Dobbs, who confirmed its presence in several locations in and around the plain of Yongning by means of a perception test (p.c.).

Table 2.2: Some examples illustrating the phonemic contrast between /ɟ/ and /ɟ̣/ after retroflex fricatives and affricates.

	ɟ	ɟ̣
tʂ ^h	/tʂ ^h ɟ-/ ‘breakfast’, /tʂ ^h ɟ̣lʂ/ ‘ant’, /bɟ̣tʂ ^h ɟ-/ ‘cymbals’	/tʂ ^h ɟ̣l/ ‘lungs’
tʂ	/mɟ̣tʂɟ̣l/ ‘wrinkles’	/tʂɟ̣l/ ‘to cough’
ɟ̣z	<i>no contrasts observed</i>	
t ^h ṭ ɟ̣ t ^h ṭ d	<i>no contrasts observed</i>	
ʂ	/ʂɟ̣dɟ̣-/ ‘to think’	/ʂɟ̣l/ ‘full’
ẓ	<i>no contrasts observed</i>	

recording is: PalatalizedApicalized.

2.2.1.3 Rhotic rhymes

Further consonantal rhymes are /ɟ̣/ and its nasalized counterpart /ɟ̣̃/. From a phonetic point of view, the rhyme /ɟ̣/ does not display the considerable lowering of the third formant which is the tell-tale characteristic of rhotic vowels (Ladefoged & Maddieson 1996: 313), such as Naxi [ɔ̣]. The diacritic indicating syllabic status distinguishes this rhyme from the consonant phoneme /ɟ̣/ described in §2.3.4. As a rhyme, /ɟ̣/ can appear on its own or preceded by a retroflex fricative or affricate. Examples of syllables containing a /ɟ̣/ rhyme preceded by a retroflex affricate are presented in Table 2.2, together with syllables made up of the same consonant followed by the rhyme /ɟ̣/.

Under the present analysis, the rhyme /ɟ̣/ has a nasal counter-part, /ɟ̣̃/. Only two items have been found so far: the highly frequent word ‘bone’, /ɟ̣̃l/, which also has the meaning of ‘stem’; and ‘helpless, impoverished, troubled’, /ɟ̣̃l/. Notation as a nasal rhotic vowel, /ɔ̣̃/ or /œ̣̃/, could also be acceptable; the symbol /ɟ̣̃/ was chosen because the rhymes transcribed as /ɟ̣/ and /ɟ̣̃/ have phonetic similarities and plausibly stand in a relation of structural opposition, the one oral, the other nasal.

The word for ‘bone’, here transcribed as /ɟ̣̃l/, is transcribed phonetically as

[ʔŋɿ] and analyzed phonemically as /ŋɿɿ/ by Fù (1983: 25). Concerning the phonetic transcription, the sequence of two symbols is not to be understood as a succession of two sounds: here as in his other publications, Fu Maoji uses the symbol /ɿ/ to indicate a rhotic quality of the preceding vowel symbol. Concerning the phonemic analysis, /ŋɿɿ/ is an attractive solution: nasality would be due to a nasal onset, and rhoticity to a rhotic, fricative rhyme, /ɿɿ/. However, in the attested syllable /ŋɿ/, coarticulation between the initial and rhyme does not go so far as to result in complete coalescence: the syllable retains two parts, first [ŋ], with complete oral closure, then [ɿ̃], which is nasalized but without oral closure. A syllable that is identical with /ŋɿ/ except for a feature of rhoticity would be expected to begin similarly by a nasal consonant (with complete oral closure). For this reason, this syllable is not analyzed here as a rhotic counterpart to /ŋɿ/ (with nasal onset and oral rhyme), but as a monophonemic syllable consisting simply of a nasal rhyme. As for its analysis as /ɿ̃/ or /ɿ̃/, both options are open, since there is no opposition between those on onsetless syllables. On the basis of phonetic considerations, I believe that notation as /ɿ̃/ is much more adequate synchronically.

2.2.1.4 Potential for the creation of new syllabic consonants and monophonemic syllables

In syllables of simple CV (consonant+vowel) segmental structure, the consonant and vowel paired together become strongly coarticulated; their features tend to be realized over the syllable as a whole. Numerous examples are found in the Yi (Lolo) branch of Sino-Tibetan languages: while the impetus for monosyllabification can safely be hypothesized to have come from Old Chinese, which influenced – directly or indirectly – languages of the Sino-Tibetan, Tai-Kadai, Hmông-Mièn and Austroasiatic families, segmental depletion has reached a more extreme point in Yi than within Chinese itself (as pointed out by Haudricourt 1991). In Naish as in Loloish, coarticulation in CV monosyllables tends to create compact units that become less and less tractable to a straightforward analysis into two distinct phonemes, until the syllable becomes monophonemic.

In addition to apicalized vowels, discussed above (§2.2.1.2), syllabic nasals can also be interpreted in this light. “In various Loloish languages some or all of the nasals occur as syllabics. In most such cases the diachronic source is syllables with a nasal initial and a high vowel; sometimes one dialect has nasal syllabics where others have nasals plus a high vowel. This could be called rhyme-gobbling” (Bradley 1989: 150; see also Björverud 1998: 8). Yongning Na reveals an intermediate stage: the syllable /mɿ/ is phonetically realized as [m̃] except in careful

(hyperarticulated) speech – whereas /**ny**/ and /**ɲy**/ are pronounced as [nɲ] and [ɲɲ] respectively, retaining an oral portion after the initial nasal. Other syllables that tend towards articulation as one single sound include /**k^hu**/, which is often devoiced when it carries a L tone: [k^hu̥]. The entire syllable is realized as a [k^h] that adopts the lip and tongue configuration of the vowel /**u**/. In the present state of the language, these are simply phonetic variants; they are mentioned to illustrate the potential for the further evolution of highly eroded syllables in Yongning Na.

2.2.2 Close vowels

The close vowels /i/ and /e/ contrast after dental fricatives and affricates, e.g. /**dzi**/ ‘to sit’ vs. /**dze**/ ‘to fly’, /**tɕi**/ ‘to boil’ vs. /**tɕe**/ ‘to lock’, /**ts^hi**/ ‘classifier for animal skins’ vs. /**ts^he**/ ‘salt’, and /**si**/ ‘wood’ vs. /**se**/ ‘to walk’. The syllable /**zi**/ was only found in /**ts^hi+zi#**/ ‘highland barley’ and /**la+zi**/ ‘painter’, as against about forty instances of /**zu**/.

In this context, both vowels are apicalized, which makes their phonetic difference a very fine one. Apicalization is stronger for /**u**/ than for /i/; another difference is that the lips are stretched for /**si**/, /**dzi**/, /**tɕi**/ and /**ts^hi**/. In the first transcriptions, the contrast between the two apicalized vowels /i/ and /**u**/ was overlooked, and the syllables above were mistakenly transcribed as /***su**/ (for ‘wood’), /***zu**/ (for ‘barley’), /***dzu**/ (for ‘to sit’), /***tsu**/ (for ‘to boil’) and /***ts^hu**/ (for the classifier for animal skins). In the many contexts where the opposition between /i/ and /e/ is neutralized, the transcription follows their phonetic realization, which is closer to [e] after retroflex fricatives and affricates, and to [i] in all other contexts (after bilabials, velars, retroflex stops and fricatives, laterals, nasals, alveopalatals, and the glottal /h/).

After the dental nasal /**n**/ and the dental lateral /**l**/, the close vowels /i/ and /e/ are marginally contrastive. The syllable /**ne**/ is only found in a grammatical morpheme, /-**ne**/ ‘as, like’, which appears in the interrogative /**q^ha.ɲe**/ ‘how’, the manner demonstratives /**ʈʂ^hu+ne+ji**/ (proximal) and /**t^hɸ+ne+ji**/ (distal), and constructions such as /**tɕ^hɲi+ne+ji**/ ‘every day; repeatedly, all the time’. The recognition of the morpheme /**ne**/ was delayed by the fact that the highly frequent expression /**ʈʂ^hu+ne+ji**/ ‘thus, in this way’ is pronounced very close to [ʈʂ^hu+ni], and hence was initially transcribed as /***ʈʂ^hu+ni**/. It gradually appeared that there was an issue with this transcription, however, as the manner demonstrative cannot project a H tone onto a following syllable, as would be expected if it carried tone MH#. For instance, it came as a puzzle that the passage initially transcribed as /**ʈʂ^hu+ni | gwɣ.ɲi-mæ**/ ‘This is how [people] sing’

(Caravans.53) did not allow a variant /***ʦ^hu-ni-ɬ gwɤɾ-ɲi-l-mæɬ***/, with integration in a single tone group and reassociation of the H part of the MH contour to the verb /**gwɤɾ**/ ‘to sing’. This state of affairs becomes self-evident once it is understood that ‘thus, in this way’ remains trisyllabic, /**ʦ^hu-ne-ɬ-ɲi**/, despite the strong phonetic coarticulation between its last two syllables. (This is a highly frequent morpheme, occurring over 500 times in 25 texts; this goes some way towards explaining its phonetic erosion.)

Another marginal case where it appears reasonable to posit a /e/ vowel distinct from /i/ is in combination with initial /l/. The syllable /li/ is common, appearing in about thirty words. A [**le**] syllable appears in the ACCOMPLISHED, /**le-ɬ-**/, and in derived items, such as [**ɲjɤ-ɬe-ɬgv#**] ‘daytime’, which is perceived by consultant F4 as ‘the day is flowing/going by’: ‘day’, /**ɲi**/, followed by the ACCOMPLISHED, /**le-ɬ-**/, and the verb ‘to flow, to go by, to fly (time); to take place, to occur (event)’, /**gv**/. (The change of the first syllable from /**ɲi**/ to /**ɲjɤ**/, which testifies to the advanced stage of lexicalization of this phrase, cannot be accounted for at present.) Should its etymology cease to be clear to speakers, the word [**ɲjɤ-ɬe-ɬgv#**] ‘day-time’ would introduce /le/ as an attested syllable in nouns.

To sum up, the opposition between /e/ and /i/ is restricted to dental sounds, and within this order, it is mostly restricted to fricatives and affricates. This is one of the many cases where a phonemic opposition is found in highly restricted contexts; in Praguian terms, these constitute extreme cases of neutralization. This issue will be taken up in the discussion of the inventory of syllables, in §2.4.

As for close back vowels, [**o**] and [**u**] are contrastive in a single context: after the glottal initial, /h/, i.e. in the syllables /**hu**/ and /**ho**/. Phonetically, there is stronger friction in the initial for the latter: this could be approximated phonetically as [**hu**] vs. [**χo**]. Examples of /**ho**/ include /**ta-ɬho-ɬ**/ ‘together’, /**ho#**ɬ/ ‘porridge, gruel’, /**qo-ɬho**ɬ/ ‘wicker box’, /**ho**ɬ/ ‘to sip’, /**ho**ɬa/ ‘correct’, /**ho#**ɬ/ ‘partridge’, and /-**ho**ɬ/ DESIDERATIVE. Examples of /**hu**/ are fewer; they include /**hu-mi**ɬ\$/ ‘stomach’, /**hu**ɬ/ ‘to wait’, and /**hu**ɬ/ ‘to miss, to long for’.

In all other contexts, there is no opposition between close and close-mid rounded back vowels, [**o**] and [**u**]. Phonetic realizations are very close to [**o**] after dentals and uvulars; auditory impression suggests that realizations are often close to [**u**] after the other consonants: bilabials, alveopalatals, and retroflexes. Unlike the front close vowel, which is more open after retroflex fricatives and affricates (making it sound more like [e]), the back close vowel is less open in this context.

In the speech of consultant F4, the sounds that I hear as [**o**] and [**u**] could be treated as allophones (except after /h/); the archiphoneme could be transcribed as /**O**/ or /**U**/. For the sake of visual simplicity, and in view of the contrastive

status of /o/ and /u/ after /h/, these two vowel sounds are distinguished in the notations, following the auditory impression reported above: that phonetic realizations are very close to [o] after dentals and uvulars, and often closer to [u] after the other consonants: bilabials, alveolopalatals, retroflexes, and the labial-velar approximant /w/. Finally, the rhyme made up of this vowel preceded by a palatal approximant is transcribed as /ju/.

The two sounds [o] and [u] may have stronger phone-mic status in the speech of younger speakers, whose increasing proficiency in Standard Mandarin makes them familiar with a phonemic /u/ (contrasting with /o^w/ and /^wo/; the Pinyin transcription of these three vowels is: *u, ou, uo*). Southwestern Mandarin does not exert direct pressure in this direction, since /u/ is fricativized in this dialect of Mandarin. For instance, the word /ts^hu/ ‘vinegar’ is pronounced [ts^hv]. This word, which is in common use in Yongning, is accordingly pronounced as [ts^hvʌ] in the speech of the older speaker F4.

Finally, the vowel transcribed as /u/ is articulated less to the back than the Naxi vowel transcribed with the same symbol. From a phonetic perspective, one could argue in favour of using the symbol /i/.

2.2.3 A neutral vowel: /ə/

The symbol /ə/ is used only to transcribe the vowel of some grammatical words, which undergoes harmony with the vowel of the following syllable, and the first syllable of some lexical words, where it can plausibly be analyzed as a prefix. It is present in kinship terms, such as /ə+mi+ / ‘mother’, realized as [e+mi+]; /ə+ma+ / ‘mother (VOCATIVE)’, [a+ma+]; and /ə+v+ / ‘uncle’, [ɣ+v+]. The NEGATION, /mə/, likewise undergoes harmony with the vowel of the syllable that follows. Realizations are close to [æ] before /æ/ and apicalized allophones of /u/; to [ɛ] before /i/, /i/ and /e/; to [a] before /a/ and /wɣ/; and to [ɣ] before /ɣ/, /o/, /u/, /jɣ/, /jo/ and /ɿ/. Before /v/, the neutral vowel /ə/ harmonizes differently depending on whether there is an intervening consonant or not: it is realized close to [ɣ] when immediately followed by /v/, as in /ə+v+ / ‘uncle’ (phonetic approximation: [ɣ+v+]); and it is close to [æ] when the /v/ is preceded by a consonant, as in /ə+p^hv+ / ‘mother’s uncle; male ancestor of the second generation’ and /ə+m^vJ/ ‘older sibling’ (phonetic approximation: [æ+p^hv+] and [æ+m^vJ]). (This analysis was suggested by Roselle Dobbs.)

Note, however, that phonetic (incomplete) vowel harmony is not restricted to the vowel transcribed as /ə/. This topic is taken up in §2.2.7.

No phonetic difference could be identified with the [a] realization of /ə/ before /a/, on the one hand, and the realization of the /a/ vowel phoneme; for instance,

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Table 2.3: Examples of /h/-initial syllables that are part of a correlation of nasality.

oral rhyme	nasal rhyme
/hiŋ/ ‘tooth’	/hĩŋ/ ‘man’; /hĩŋ/ ‘to stand’
/hɣŋ/ ([fɣŋ]) ‘to like’	/hỹŋ/ ‘red’; /hỹŋ/ ‘hair’; /nɣŋhỹŋ/ ‘kidney bean’; /dziŋhỹŋ/ ‘clothes’; /hỹŋ~hỹŋ/ ‘to stir-fry’
/hoŋ/ ‘to sip’; /hoŋ/ ‘to wait’	/hõŋ/ ‘eight’; /hõŋ/ ‘to go (IMPERATIVE)’
/hwɣŋ/ ‘to pass over, to hand over’	/hũɣŋ/ ‘late’
/hæŋ/ ‘Chinese’; /hæŋ/ ‘lime’; /hæŋpɣŋ/ ‘plait’	/hãŋ/ ‘wind’; /hãŋ/ ‘gold’
/haŋ/ ‘food’	/hãŋ/ ‘night’

the clan name [aŋlaŋ] is phonemicized as /əŋlaŋ/, but an interpretation as /aŋlaŋ/ cannot be ruled out. Some more details about the realization [æ] are provided in the following section, since this issue intersects with the phonemic analysis of the vowel /æ/.

2.2.4 Nasal rhymes

2.2.4.1 Nasal rhymes after the glottal /h/

Yongning Na has a relatively large inventory of nasal rhymes: it comprises /ĩ/, /ỹ/, /õ/, /ũɣ/, /ã/ and /ã/, and the syllables /ĩ/ and /wã/. The first six are found after /h/, where they contrast neatly with their non-nasal counterparts: /hiŋ-/ /hĩŋ/, /hɣŋ-/ /hỹŋ/, /hoŋ-/ /hõŋ/, /hwɣŋ-/ /hũɣŋ/, /hæŋ-/ /hãŋ/, and /haŋ-/ /hãŋ/. Examples are provided in Table 2.3.

Diachronically, these syllables illustrate a process of transfer of nasality from a syllable-initial consonant cluster to a following vowel. This process is attested in several languages of Asia. In Kam-Sui (Tai-Kadai family), Sandong Sui lost the stop part of the original cluster: the stop+nasal clusters *km-, *kn-, *tn- and *kɲ- merged with the preglottalized *²m-, *²n- and *²ɲ- initials. The latter are preserved in Sui, e.g. /²ma¹/ ‘vegetables’, /²ma³/ ‘flexible’, both corresponding

Table 2.4: Comparative data pointing to the development of nasality in Naish from earlier /*rN-/ onsets.

	Japhug	Fengke Naxi	Yongning Na	Laze
red	yurni	hỹ ↓	hỹ ↓	–
to stand	rma	hỹ ↓	hĩ ↓	hĩẽ ↓
person	tu-rme	hĩ ↓	hĩ ↓	hĩ ↓
body hair	tx-rme	hỹ ↓	hỹ ↓	hỹ ↓
to stir-fry	rɲu	–	hỹ ↓~ hỹ ↓	–
two	ɣnuus	ɲi ↓	ɲi ↓	ɲi ↓

to a proto-Kam-Sui ***m** initial (Ferlus 1996: 251–252). Lakkia preserved the initial stop, while the nasal underwent lenition, nasalizing the following vowel in the process. Northern Sui dialects (Pandong 潘洞 and Yang’an 阳安) illustrate a possibility for the later evolution of glottal+nasal onsets: distinctive nasality is transferred onto the following vowel, and only the glottal remains, yielding [ʔ \tilde{V}] or [h \tilde{V}]; the entire syllable is nasal, including the initial glottal sound (Haudricourt 1967: 176). This is exactly parallel to the facts of Yongning Na and other Naish languages, as brought out in Table 2.4, taken up from a cross-linguistic (panchronic) analysis of historical transfers of nasality between consonantal onset and vowel (Michaud, Jacques & Rankin 2012). Note that the glosses provided are those of the Naish words, and are not intended as faithful translations of the Japhug cognates: in particular, Japhug **rma** means ‘to stay at someone’s place’, not ‘to stand’.

As seen in Table 2.4, Japhug has some initial clusters; indeed, Rgyalrongic languages constitute the only group in this part of Sino-Tibetan that preserves a broad range of initial clusters. Rgyalrong provides more relevant evidence than Written Tibetan: taking the third word in Table 2.4 as an example, Written Tibetan does not have an initial cluster in the word for ‘person’ (*mi*), whereas Japhug has /**rme**/.

Table 2.4 brings out a correspondence between the /h \tilde{V} / syllables of Naxi, Na and Laze and etyma with initial /**rm**-/ or /**rn**-/ in Japhug. (The meaning of Japhug /**rma**/, ‘to stay at someone’s place’, must be considered to be a development from the meaning ‘to stand’.) On the analogy of the cases described above, we conclude that these /h \tilde{V} / syllables do not simply result from rhinoglottophilia (a term coined by Matisoff 1975 to refer to “an affinity between the feature of nasality and

the articulatory involvement of the glottis”), but that they originate in earlier *CNV syllables. This analysis seems almost trivial in view of the wealth of examples from various languages set out above; it nonetheless constitutes a less than trivial contribution to the study of nasal vowels in Sino-Tibetan. The hypothesis that the nasal vowels found in some Sino-Tibetan languages could be attributed to the influence of syllable-initial nasals was already expressed by Huáng 1991; on the other hand, no hypotheses had been proposed heretofore as to which specific sequences of phonemes were involved in the change.

The last example in Table 2.4, ‘two’, illustrates the preservation in Naxi, Na and Laze of nasals that originate in onsets other than /*rN-/. It appears reasonable to hypothesize that the *CN- onsets that led to vowel nasalization all went through a /*sN-/ stage; indeed, sN-initial cognates are observed in Tibetan for some of these items. (For general phonetic reflections on this topic see Ohala & Ohala 1993: 233: “children learning English sometimes pronounce target *sm* and *sn* clusters as voiceless nasals”.)

In front of nasal rhymes, /h/ is nasalised; the lowered velum prevents the buildup of intra-oral pressure required for a strong friction noise. Since the entire syllable is nasalized, another option for phonemic analysis would be to posit an initial nasal glottal fricative, /h̥/; the decision made here to interpret nasality as a characteristic of the vowel rather than the consonant is based on the observation that nasal vowels are also found in a small set of syllables that do not have an initial glottal fricative.

2.2.4.2 Onset-less nasal syllables: /õ/, /ǣ/ and /ĩ/

Among onset-less nasal syllables, /õ/ contrasts with /o/, /ǣ/ with /æ/, and /ĩ/ with /i/. Examples of /o/ (realized with a glide onset, [wo]) include /woŋ/ ‘hard’; examples of /õ/ include /õŋ/ ‘(one)self’, /õŋtʃswɣ/ ‘mosquito’ and /õŋdɣ/ ‘wolf’. Synchronically, initial glottalization contributes to a clear phonetic contrast between /o/, realized [wo], and /õ/, realized [ʔõ]. Examples of /ĩ/ and /i/ were presented above (§2.2.1.3). The syllable /ǣ/ always has a glottalized onset: [ʔǣ]. A non-nasalized syllable [ʔæ] is also found in the system, and is analyzed as /æ/, i.e. recognizing the phonemic status of both /æ/ and /ǣ/. Examples of /ǣ/ are relatively numerous: it is found in words such as ‘chicken’, ‘bronze’, ‘plow’ and ‘soul’. Among disyllables, examples include /ǣŋzɯ/ ‘agate’ vs. /æŋgv/ ‘ard’; /ǣŋmi/ ‘hen’ and /æŋmi-ɣwɣ#ŋ/ ‘the village of A-Mi’ form a quasi-minimal pair.

From an evolutionary point of view, the glottal onset of [ʔõ] and [ʔǣ] may be due to the same phenomenon of hardening of empty onsets which results in

the presence of an initial [ɣ] in words such as /ɣwɣŋ/ ‘village’, corresponding to Naxi /wɣŋ/ (more about this phenomenon below, §2.3.1). Still on a speculative note, it may be that the nasality accompanying the glottal initial is an instance of rhinoglottophilia (Matisoff 1975).

2.2.4.3 Phonemic analysis of the onset-less nasal syllable [w̃æ]

As mentioned above, the syllable realized as [ʔw̃æ] appears in a single word: ‘to swell, to inflate (e.g. the belly is swollen)’, [ʔw̃æŋ]. It does not have a non-nasal counterpart. In the absence of an opposition with an oral syllable [wæ], nasality and initial glottalization might be considered the product of implementation rules, rather than as part of the phoneme’s definition. In this perspective, phonemic analysis could be simply /wæ/. However, the Chinese syllables *wa*, *wan* and *wang* (as in 王 *wáng*, a common family name) are pronounced as [ɣwæ] by consultant F4, rather than as [w̃æ]. If the underlying, phonemic form of syllables such as ‘to swell’ were simply /wæ/, one would expect these Chinese forms to fall into the /wæ/ category (phonetically [ʔw̃æ]), not into the /ɣwæ/ category. The transcription used here is therefore /w̃æ/, granting phonological status to nasality, which plays a role in the vowel system of Yongning Na, but not to initial glottalization, which does not. To sum up the analysis: the syllable /w̃æ/, realized as [ʔw̃æ], contrasts with /wæ/, realized as [ɣwæ] (see §2.3.1.3).

In the syllable /w̃æ/ as in the syllable /h̃w̃ŋ/, the diacritic for nasality is placed on the glide rather than on the final vowel because the degree of phonetic nasalization decreases in the course of the rhyme.

2.2.4.4 The syllable /ĩ/

The syllable /ĩ/ appears in one single word, the interjection ‘Yes!’, ‘Okay!’, used as a response to an instruction given by a person having authority (either one’s elder, or another person detaining authority): /ĩ/ (phonetically: [ʔĩ]). This item is described as having a mid tone, but could also be analyzed as a toneless interjection generally realized on a level pitch.

2.2.4.5 The nasal rhyme /õ/ appears as a variant on two Tibetan loanwords

Some Tibetan loanwords preserve a nasal rhyme /õ/ in Na, alternating with oral realizations: /o/. Only two examples have been found so far: /ts^hoŋpa#ŋ/ ~ /ts^hõŋpa#ŋ/ ‘head of caravan’ (compare Written Tibetan *tshong pa* ‘merchant’), and /laŋmaŋkoŋts^hõŋ/ ~ /laŋmaŋkoŋts^hõŋ/ ‘name of deity’ (see the narrative Lake4). On the

other hand, the word for ‘monastery’, /gɔ-ɪɣ/ (compare Written Tibetan *dgon pa*), does not have a nasalized variant /*gɔ̃-ɪɣ/.

2.2.5 The open vowels /a/ and /æ/, and the vowel /ɣ/

Na, Naxi and Laze all have an opposition between two open vowels. For Naxi, some authors transcribe them as /a/ vs. /æ/ (for instance Hé & Jiāng 1985), others as /ɑ/ vs. /æ/, others still as /ɑ/ vs. /a/. The use of the symbol /ɑ/ can therefore cause some confusion for linguists juggling with data from several sources and several languages. This leads me to adopt a notation as /a/ vs. /æ/ for all Naish languages. Phonetically, the vowel transcribed as /ɑ/ is clearly a back vowel in Naxi, close to cardinal /ɑ/, whereas in Na and Laze it is closer to /a/. I do not hear any cross-language difference in the pronunciation of the vowel transcribed as /æ/.

The sounds [a] and [ɣ] are contrastive in some contexts; although it is clear from their present-day distribution that the opposition used to be neutralized in most contexts, it is now becoming stronger through processes of structural gap-filling.

After labials, only [ɣ] and not [a] is found, but the combination /ma/ (contrasting with /mɣ/) has been introduced by Tibetan borrowings, as in the names /ɬuɪma#ɿ/, /ɲiɪma#ɿ/ and /gɣ-ɪmaɪ/, and in /laɪmaɪ/ ‘priest, lama’, /maɪŋuɪdoɪbɣ/ ‘pile of stones with sacred inscriptions, chorten’, and /maɪpʰvɪ/ ‘butter’ (the second syllable is a Na adjective meaning ‘white’). Somewhat paradoxically, the first syllable of this word is perceived as semantically and phonemically different from /mɣ/ ‘animal fat’, even though ‘butter tea’ is /mɣɪiɪ/. The combination /ma/ is also found in the term of address /əɪmaɪ/, ‘Mum, mother’. Finally, there exists a clan name, /laɪmaɪ/, which also contains this syllable; it may be Tibetan in origin, but this could not be verified. In the remaining two items, the syllable /ma/ may result from vowel harmony: /maɪdzaɪ/ ‘solid ink’, and /maɪtsaɿ/ ‘origin, cause’.

On the other hand, /a/ and /ɣ/ are contrastive after affricates and fricatives, e.g. /tsaɪ/ ‘busy’ vs. /tsɣɪ/ ‘greedy’ and /saɿ/ ‘hemp, *Cannabis sativa*’ vs. /sɣɿ/ ‘blood’.

Only [ɣ] is found after velars, and only [a] after uvulars.

After the glottal, /h/, there is an opposition between /a/ and /ɣ/: /haɪ/ ‘to open (one’s eyes)’ vs. /hɣɪ/ ‘to dry beside or over a fire’.

2.2.6 Marginal vowels and sequences

2.2.6.1 Dental stop plus /ɾ/

Few words contain a dental stop plus /ɾ/; the only two attested syllables are /dɾ/ and /tɾ/ (no /tʰɾ/). There exists an extra-distal demonstrative: ‘way over there’, realized as /dɾʰ-ɬo/ or /dɾʰ-ɬo/, with the locative /ɬo/ as its second syllable (like in /tʂʰu-ɬo/ ‘here’ and /tʰɿ-ɬo/ ‘there’). The pitch of the first syllable depends on the intended distance: a realization with a mild rise, transcribed as /dɾʰ-ɬo/, points to a less distant place than a realization with a super-high, decreasing pitch, transcribed as /dɾʰ-ɬo/. The same phenomena are observed for /dɾʰtʰv-ɬo/ ~ /dɾʰtʰv-ɬo/ (same meaning, with added distal demonstrative) and /dɾʰtʰv-ɬi#/ ~ /dɾʰtʰv-ɬi#/ ‘that side, way over there’. The expressive load of these phrases goes a great distance towards explaining oddities in the phonemes and tone of their first syllable, where the expressivity is at its strongest.

All the other examples of syllables /dɾ/ and /tɾ/ are found with a following /ɿ/, in stative verbs: /hʷ-ɬi#/ ‘clumsy’, /o-ɬi/ ‘fundamentally’ (from /o-ɬi/ ‘(one)self’), /ʂu-ɬi/ ‘smooth (e.g. carefully planed wood)’, and /dzɯ-ɬi/ ‘humid, moist’ (from /dzɯ/ ‘water’).

These words contain a phonetic sequence which sounds like a trilled rhyme. They were initially transcribed as /dɾ/ and /tɾ/, adding another unit to the inventory of rhotic rhymes. This analysis appears correct for the phonological system of speaker F5 (F4’s daughter-in-law): when repeating the phrase [hʷ-ɬi hʷ-ɬi-ɬo] ‘clumsily’ very slowly, she clearly syllabifies the phonetic sequence [dɾ] as one single syllable. In the speech of F4, phonetic realization is slightly less packed together, ranging between [dɛɾ] and [dɛɿ], and there exists a phonological argument demonstrating that there are two syllables, not one: /tɾ.ɿ/. This argument comes from the noun /ho-ɬi-ɬi/ ‘paste, starch’, literally ‘watery gruel’, derived from /ho/ ‘porridge’ and /dzɯ-ɬi/ ‘humid, moist’. The noun carries H tone on its penultimate syllable and L tone on its final syllable. No HL falling tone (or any other falling tone, HM or ML) is ever observed on a single syllable in Yongning Na, so one is led to conclude that there are two syllables here.

Interestingly, the two tokens containing /tɾ/ have a variant with /dɾ/: /ʂu-ɬi-ɬi/ for ‘smooth’, and /dzɯ-ɬi-ɬi/ for ‘humid, moist’. The reverse is not true: the two tokens containing /dɾ/ do not have a variant with /tɾ/; it is not acceptable to say /*hʷ-ɬi-ɬi#y!/ for ‘clumsy’, or /*o-ɬi-ɬi/ for ‘fundamentally’. This suggests that /-ɬi.ɿ/ was, at one stage, a suffix used to derive adjectives (also used adverbially). This suffix must have ceased to be productive quite some time

ago, since two of the four examples underwent a separate phonetic evolution. It may, in fact, never have been highly productive.

2.2.7 A note on vowel harmony

Anticipatory vowel harmony ('right-to-left' harmony) is a salient phonetic tendency in connected speech in all the Naish languages studied so far. For instance, in Laze, /**ji**-**dy**-/ 'family' is sometimes realised close to [**jy**-**dy**]. This is not a phonological phenomenon: vowel oppositions on the first syllable of disyllables are not neutralized. But this phonetic tendency becomes lexicalized on some disyllables: for instance, 'pigswill' is /**bu**-**ha**-/ (from /**bu**-/ 'pig' and /**ha**-/ 'food') in some Naxi dialects, including A-she; in other dialects, including Ndale, it has become /**ba**-**ha**-/. (This phenomenon is reported by Hé 1985: 11 but without mention of the dialects concerned.)

In detail, this phenomenon is highly language- and dialect-specific. Among the three Naish languages studied so far (Laze, Na and Naxi), Naxi is least prone to the lexicalization of such phenomena, and Laze most prone to it. The lexicalization of vowel harmony sometimes goes hand in hand with other processes such as the voicing of intervocalic voiceless consonants. A typical example in Laze is /**sie**-**lie**-**mie**-/ 'seventh month', from /**su**-/ 'seven' and /**lie**-**mie**-/ 'month': in addition to the change in the vowel of the first syllable, note the voicing of /**ʃ**/ to /**l**/.

In Na, the phonetic tendency towards regressive vowel harmony is especially strong for the vowel /**æ**-. For instance, /**ŋwɿ**-/ 'five' plus the monetary unit /**mæ**-/ is pronounced [**ŋwæ**-**mæ**] 'five yuan', although in careful (hyperarticulated) speech the pronunciation is [**ŋwɿ**-**mæ**]. Also, function words are more susceptible to vowel harmony – this is one of the manifestations of their overall weaker realization. Here are two examples. (i) The ACCOMPLISHED, /**le**-/, is realized close to [**læ**] when the vowel of the following verb is /**æ**/ or an apical vowel; vowel harmony for this morpheme is so strong that it was initially transcribed as /**lɚ**-/, with a neutral vowel. (ii) The NEGATION, /**mɿ**-/, is realized close to [**ma**] when the vowel of the following verb is an apical vowel; at one point (2009–2011), this morpheme was analyzed as /**mɚ**-/, with a neutral vowel, until it was realized that vowel harmony was not exceptionally strong on this morpheme, and that its vowel did not require special phonemic status.

The sporadic lexicalization of vowel harmony sometimes create new phonotactic combinations. For instance, syllables containing a dental stop followed by /**æ**-, such as /**læ**-, /**tæ**- and /**tʰæ**-, are scarce in Na, and most of them appear to originate in vowel harmony (see §2.3.3).

2.3 Initial consonants

2.3.1 On-glides

This section discusses on-glides. In addition to synchronic observations, a hypothesis is proposed about a historical process of hardening of initial glides.

2.3.1.1 Smooth phonetic onsets

The high vowels /i/, /**ɯ**/ and /o/ have a phonetic on-glide: they are realized as [ji], [y**ɯ**] and [wo]. The phonetic realization of the syllable /**ɯ**/ could also be transcribed with an approximant initial: [y**ɯ**]; this is the choice made in a dictionary of Naxi (Pinson 2012), a language where the phonemic analysis is the same and the phonetic realization does not sound any different to me.

The phonetic on-glide in [ji], [y**ɯ**] and [wo] appeared salient enough to be indicated in transcriptions, departing slightly from considerations of notational economy. However, it does not involve the noticeable change in vowel quality (formant movement) associated with the phonemic on-glide found in the complex rhymes, /jo/, /jɣ/, /jæ/, /wɣ/, /wæ/, /wa/ and /wɣ/. There is a potential for phonetic coalescence of onset-less syllables with the preceding syllable in polysyllabic words or tightly-knit polysyllabic expressions. For instance, I mistakenly believed for several years that the manner adverbials ‘in this way, thus’ and ‘in that way’ were /tʂ^hɯ-tɳi/ and /t^hv-tɳi/, respectively; these are in fact /tʂ^hɯ-tɳe-ji/ and /t^hv-tɳe-ji/, made up of a manner adverbial (/tʂ^hɯ-tɳe/, /t^hv-tɳe/) followed by the verb ‘to do’, /ji/. Realization of the trisyllabic structure of these phrases did not come from phonetic evidence, but from their tonal behaviour. Consider example (1), shown here as initially transcribed:

- (1) tʂ^hɯ-tɳi | gwɣ-ɳi-mæ ! |
 tʂ^hɯ-tɳi gwɣ ɳi mæ
 in_this_way to_sing CERTITUDE AFFIRM
 ‘This is how [they] used to sing!’ (Caravans.51, 53, 57)

If the notation /tʂ^hɯ-tɳi/ were correct, it should be possible to link up the adverbial together with the following verb phrase into a single tone group, as /*tʂ^hɯ-tɳi gwɣ-ɳi-mæ/ (about tone groups, see Chapter 8). But this stylistic option is not open, which shows that there is a problem with the analysis. The solution is that the correct notation of (1) is /tʂ^hɯ-tɳe-ji | gwɣ-ɳi-mæ/, where a H tone is moored on the verb ‘to do’, /ji/.

2 Vowels and consonants

Unlike in Naxi, where /ɣ/ is realized as /ɣɣ/, in Na the vowel /ɣ/ never constitutes a syllable on its own. As will be seen in §2.2.5, the opposition between /ɣ/ and /ɑ/ is restricted to a few contexts; synchronically, it may be considered to be neutralized in onset-less syllables.

No distinct onset portion is found for /ɣ/, realized simply as [ɣ].

Vowels /æ/ and /ɑ/ may begin either with a glottal stop or with soft phonation: [fiæ] ~ [ʔæ], [fiɑ] ~ [ʔɑ]. As for the rhyme /ɿ/, it is not separated from the preceding rhyme by a glide or glottal stop: for instance, in /bɣɿɿ#ɿ/ ‘fly’ the /ɣ/ and /ɿ/ follow each other: [bɣɿɿ].

2.3.1.2 Hard phonetic onsets

The rhymes /ə/ and /ĩ/ begin with a phonetic glottal stop when said in isolation, and also word-medially in hyperarticulated realizations: e.g. /sɿæɿĩ/ ‘bone’ is realized as [sɿæɿʔĩ] in careful speech, and as [sɿæɿĩ] in casual speech.

2.3.1.3 Initial /ɸ/ as a phonemicized empty-onset filler

The situation of /wɣ/, /wæ/, /o/, /ɑ/ and /æ/ is especially interesting. These rhymes can combine with an initial voiced uvular fricative, /ɸ/. (Phonetically, this /ɸ/ is weakly articulated, and can be mistaken for /w/ in some hypoarticulated tokens.) Some of the words at issue appear to derive diachronically from onset-less syllables, such as ‘village’, /ɸwɣɿ/, corresponding to /wɣɿ/ in Naxi and Laze, and its homophone ‘mountain’, /ɸwɣɿ/, likewise corresponding to /wɣɿ/ in Naxi (where it means ‘hill, hillock’); others from syllables with an initial velar (or uvular) cluster, such as ‘sword’, /ɸæɿmi/, corresponding to Naxi /ŋgæɿ/. (A process of hardening of initial glides has been reported in Zeluó Ersu, where “w- is sometimes pronounced with frication, as [ɸ^w-]”: Yu 2012: 11.)

The hardening of soft onsets should in principle result in the absence of any syllable realized as [wɣ], [wæ], [o], [ɑ] or [æ], since these became [ɸwɣ], [ɸwæ], [ɸo], [ɸɑ] and [ɸæ]. This is true for /wæ/: only [ɸwæ] is attested, not [wæ] (e.g. /ɸwæɿ/ ‘left, leftward’, corresponding to Naxi /wæɿ/ and Laze /væɿ/). For the other syllables, however, there exist oppositions between syllables with and without a /ɸ/ onset: a process of structural gap-filling has taken place. Progress in the etymological study of individual examples will be necessary to understand the various processes whereby onsetless syllables were reintroduced into the system. The hardening of empty-onset fillers must date back a relatively long way, judging from the number of onsetless syllables that currently exist: e.g., for /wɣ/, the classifier for loads, /wɣɿ/; the classifier for generations, /wɣɿ/; ‘slave’, /wɣɿ/;

‘again, anew’, /wɣʌ/; ‘to detour past, to bypass’, /wɣʌ wɣʌ/; and the final exclamative particle /wɣ/ (currently analyzed as toneless).²

The change from proto-Naish *j to Na /z/ may be part of the same process of hardening. ‘To sleep’, Na /zi/, corresponds to Naxi /ji/ (phonemically a simple /i/, to which an empty-onset-filler gets added) and Laze /zi/; the reconstruction proposed by Guillaume Jacques and myself is *jip.

2.3.2 Velar and uvular stops

Velar and uvular stops are in complementary distribution, except in front of /ɥ/, /wɣ/, and /o/, where they are contrastive. Examples of the syllables /kɥ/, /qɥ/, /kʰɥ/, /qʰɥ/, /ko/, /qo/, /kʰo/ and /qʰo/ are provided in (2). A single instance of /qi/ (contrasting with /ki/) has also been found.

(2)	a.	/qɥ/		/kɥ/	
		qɥʌ	handle	kɥʌ	garlic
		qɥʌ	to frighten	kɥʌ	to be able to
		qɥʌt͡sɛʌʌ	throat	kɥʌt͡suʌʌ	nail
		mæʌqɥʌ	tail	kɥʌdzuʌʌ	tent
	b.	/qʰɥ/		/kʰɥ/	
		qʰɥʌ	six	mɥʌkʰɥʌ	smoke
		qʰɥʌ	horn	kʰɥʌ	to cut (grass)
		qʰɥʌ	hole	kʰɥʌ	dog
		bɥʌqʰɥʌ	conch shell	kʰɥʌ	year
	c.	/qo/		/ko/	
		qoʌ	to love	koʌ	hill
		qoʌhoʌ	bamboo box	koʌ	to bask
		qoʌqaʌ	mountain pass	koʌdzoʌ	flail
		qo	Locative: inside	mæʌkoʌ	harness

² The voiced uvular fricative /ʁ/ is not uncommon in this linguistic area, but with a widely different phonemic status from one language to another. For instance, in Lizu (Chirkova & Chen 2012), it is an allophone of the voiced velar fricative /ɣ/ in front of /ɐ/ and /wɛ/, e.g. /ɣɛ/ [ʁɛ] ‘needle’, /ɣwɛ/ [ʁwɛ] ‘to thunder’. Note that tone is not indicated in the Lizu words; providing explanations about the transcription system used in this source would require developments that are not relevant to the discussion in the present chapter.

d.	/q ^h o/		/k ^h o/	
	q ^h oʔ	to kill	k ^h oŋ	to spread (e.g. a sheet)
	q ^h oʔloʔ	wheel	k ^h oʔloʔ	prayer wheel
	q ^h oʔtvʔ	tree stump	tseʔk ^h oʔ	sanctuary
	q ^h oʔmɣʔ	straw hat	hæʔk ^h oʔ	princess, young lady
e.	/qi/		/ki/	
	qiʔqiʔ	originally, at first	kiʔ	to give

This situation is unsurprising in areal context. In Lizu, velar and uvular stops only contrast before /o/, e.g. /ko/ ‘to beg’ vs. /qo/ ‘hole, pit’ (Chirkova & Chen 2012).

2.3.3 Retroflex stops and affricates

Yongning Na has (i) an opposition between dental and retroflex affricates, with a high functional load, and (ii) an opposition between dental and retroflex stops and nasals, but only in front of /i/, /æ/, /ɣ/ and /o/. Examples include: /t^hiʔ/ ‘tired’ vs. /t^hiʔ/ ‘to plane (wood)’; /t^hiʔ/ ‘to get up’ vs. /tiʔ/ ‘to knock, to tap (lightly)’; /tæʔbɣʔ/ ‘Buddhist priest’ vs. /tæʔpɣʔ/ ‘thin, skinny’; /dɔʔ/ ‘to allow, to permit’ vs. /doʔ/ ‘to climb’. After retroflex consonants, /o/ is realized close to [u].

The consonants transcribed as retroflex are articulated much less to the back than canonical retroflex sounds such as those of Indian languages; a palatographic study may reveal that they are postalveolars rather than retroflexes. In the absence of distinct International Phonetic Alphabet symbols for postalveolar stops, the simplest solution is to use retroflex symbols and retain the label ‘retroflex’.

2.3.4 Laterals /l/ and /ɭ/, and the retroflex approximant /ɻ/

The laterals /l/ and /ɭ/ are contrastive in Yongning Na, as demonstrated by pairs such as /liʔ/ ‘to look’ vs. /ɭiʔ/ ‘month’ and /loʔ/ ‘thick’ vs. /ɭoʔ/ ‘deep’. Phonetically, the voiced lateral /l/ has a broad perimeter of allophonic variation. It is realized as retroflex in front of /ɯ/, e.g. in the classifier for round objects such as bowls and grains (also serving as generic classifier). The phonemic analysis /lɯ/ for this syllable was only arrived at after the greatest of hesitations: a broad range of options was considered, including [ɻɯ], [ɭɯ], [lɣ], [ly], [l y] and syllabic [l] or [ɻ]. The entire syllable is articulated loosely: the initial is close to an approximant, and the vowel quality is not precise, so that the syllable often resembles a monophonemic [l].

In front of /ɤ/, the voiced lateral /l/ is slightly retroflex. In all contexts, /l/ is accompanied by some friction. This characteristic is at its clearest before the high front vowel /i/, but it is also observed before open vowels, including /a/ and /æ/. Phonetically, it may therefore be more adequate to transcribe this allophone as [ɭ] rather than [l]. Phonologically, it would be economical to consider that the two laterals are distinguished solely by the feature of voicing; this also argues in favour of a notation as /ɭ/.

The compromise choice made here for the sake of simplicity consists in using a notation as /l/ rather than /ɭ/. On the other hand, a retroflex initial is used in the transcription of the syllable [ɭu] (phonemically: /ɭu/) to reflect what I perceive as a great phonetic distance between the realization of /l/ in this context and in all others. As in the case of the syllable [ɲi], which can be phonemicized as /ɲi/, it appeared better to keep the transcriptions close to the surface forms (note that a similar choice is made by Yu 2012: 8).

These observations on the allophonic variation of /l/ shed indirect light on the distribution of the retroflex approximant /ɻ/: this may well have originated as an allophone of /l/ which drifted to such a phonetic distance that it opened a structural gap that was later filled through borrowings and processes of vowel harmony. The present-day /ɻ/ initial of Yongning Na appears only in the syllables /ɻæ/ and /ɻwæ/, which correspond to the syllables /læ/ and /lwæ/ in Laze, e.g. ‘to shout, to cry’: Na /ɻwæ/, Laze /lwæ/, and ‘seed’: Na /ɻæ/, Laze /læ/. (Roselle Dobbs [p.c.] indicates that in villages that belong to the area referred to in Na as /la-t^ha-di/, to the east of lake Lugu, these items retain the lateral initial.) Synchronically, /ɻæ/ contrasts with /læ/, but the latter only appears (i) in borrowings, such as /læ-tsu/ ‘chili peppers’, from Southwestern Mandarin 辣子 [la.tsɿ], (ii) in the ACCOMPLISHED particle /le-/, whose phonetic realizations, determined by the vowel of the following verb, include [læ], and (iii) in words where the /æ/ could have resulted from vowel harmony, e. g. /læ-ɻæ/ ‘raven’. (Regressive vowel harmony, which becomes sporadically lexicalized, is a salient phonetic tendency in Na: see §2.2.7.) As for the syllable /ɻwæ/, there exists no lateral counterpart /lwæ/. It can therefore be hypothesized that present-day /ɻæ/ and /ɻwæ/ originated in earlier /læ/ and /lwæ/, which became phonetically closer to [ɻæ] and [ɻwæ], thus leaving empty these phonetic slots; the [læ] slot was then occupied by other syllables. Needless to say, these diachronic reflections do not detract from the synchronic phonemic status of /ɻ/.

A tantalizingly similar situation is found in Lizu, where the /ɻ/ phoneme only occurs before /æ/, /ə/, and /wæ/, e.g. /ɻæ/ ‘yak’, /ɻə/ ‘to laugh’, and /ɻwæ/ ‘chicken’ (Chirkova & Chen 2012). This is not due to language contact but to similarities

in cross-linguistic (panchronic) regularities in phonological erosion, a domain which clearly warrants more research.

2.3.5 The glottal fricative /h/, and the sound [f]

Na has a glottal fricative /h/. At an earlier stage of the language, the sound [f] can be hypothesized to have been entirely absent, since early Chinese borrowings with initial [f] in the donor language were reinterpreted as having initial /h/: ‘method, solution’, 办法 (Standard Mandarin: *bànfǎ*) was borrowed as /pæ^hhwɔ^h/.

The sound [f] appears in more recent layers of borrowings, however. A plausible scenario is that /h/ in front of oral rhymes came to be realized in Na 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 /v/, hence [çi] and [fv]. Once the sound [f] had thus set foot in Na (on a phonetic level), the way was paved for the introduction of [f]-initial loanwords. In the present state of the language, Na speakers do not have any problems pronouncing a [f] sound in front of rhymes other than /v/, as in the commonly used Chinese borrowing [fa] (e.g. for Chinese *fā* 发, as in *fājiào* 发酵 ‘to ferment’).

This can be taken as evidence that the sound [f] is no longer perceived by the speakers as an allophone of /h/. It is well-known that allophones that have drifted far apart may acquire psychophonetic independence from one another, witness the much-studied cases of German [ç] and [x], and Standard Mandarin [ç] and [x]. As the psychological reality of the underlying unity between allophones wanes, the resistance against structural gap-filling decreases.

In view of this situation, and also in order to keep the transcriptions close to the surface forms, the syllable [fv] is transcribed as such, rather than as /hv/. Under a flatly synchronic analysis that includes Chinese borrowings, the sound [f] would need to be granted phonemic status. Since a clear evolutionary scenario can be proposed explaining its relatively recent introduction, it may be misleading to include it among the list of consonants, however. It was therefore deliberately omitted from in Table 2.1.

The combination /hi/ retains a relatively back articulation; this appears to be motivated in part by its opposition with /çi/, which would be threatened by further fronting. The combination [çi] is here transcribed as /hi/.

2.4 Comments about the inventory of syllables

Numerous phonemic oppositions are found in highly restricted contexts in Yongning Na. A similar situation is found in Naxi (Michaud 2006a). The strict application of principles of Praguian synchronic description leads to an analysis of these phenomena as extreme cases of *neutralization* of phonemic contrasts: for instance, the opposition between /h/ and /f/ is neutralized in all contexts save two (before /a/ and /æ/); and that between nasal and oral vowels is neutralized in all contexts except after glottal initials. It may appear counter-intuitive to speak of neutralization in these cases: it is more usual to use this notion to describe cases where a thoroughgoing contrast disappears in a restricted environment, e.g. in Trubetzkoy's classical example: French /e/ and /ɛ/ contrast only in open syllables, the opposition being neutralized in closed syllables.

In French (...) e and ɛ occur only finally in open syllable as members of a distinctive opposition “les” / “lait”, “allez” / “allait”. In all other positions the occurrence of e and ɛ is predictable: ɛ occurs in closed syllables, e in open. These two vowels must thus be considered two phonemes only in final open syllable and combinatory variants of a single phoneme in all other positions. We call such oppositions *neutralizable* oppositions, the positions in which the neutralization takes place, *positions of neutralization*, and those positions where the opposition is relevant, *positions of relevance*. (Trubetzkoy 1969: 78)³

However, the term *neutralization* should not be understood in a dynamic sense, whereby the opposition would have existed and then have been neutralized. It has a static, flatly synchronic application (Martinet 1969: 257–259). It is not unusual for a synchronic formulation to be the reverse image of a diachronic perspective: for instance, describing the synchronic stage when Chinese contrasted three tones (A, B and C) on non-obstruent-final syllables, it can be said that the tonal opposition was neutralized on obstruent-final syllables (described as be-

³ *Original text:* Im Französischen kommen aber e und ɛ nur im offenen Auslaute als Glieder einer phonologisch-distinktiven Opposition vor (*les-lait, allez-allait*); in den übrigen Stellungen ist das Vorkommen von e und ɛ mechanisch geregelt (in gedeckter Silbe ɛ, in ungedeckter e), so daß diese zwei Vokale nur im offenen Auslaut als zwei Phoneme, in den übrigen Stellungen dagegen als kombinatorische Varianten eines einzigen Phonems gewertet werden müssen. Der phonologische Gegensatz ist also im Französischen in gewissen Stellungen aufgehoben. Solche Oppositionen nennen wir a u f h e b b a r; jene Lautstellungen, in denen die Aufhebung erfolgt, A u f h e b u n g s s t e l l u n g e n, jene, wo die Opposition relevant ist, R e l e v a n z - s t e l l u n g e n. (Trubetzkoy 1939: 70)

longing in a fourth category: D), although this opposition had never existed on these syllables.

In Praguaian phonology, phonemes enter into relations of opposition, and are marked for features as a consequence of these relations. If the features shared by two phonemes are not found in any other phoneme, the opposition is bilateral and neutralizable; otherwise it is multi-lateral and not neutralizable. Said differently, only where there is opposition is a feature contrastive. An opposition is neutralized whenever one member does not occur in a specific environment. The product of neutralization is referred to as an archiphoneme.

In phonological transcription, archiphonemes can be set in capitals, but this can get visually cumbersome in a language such as Na, where positions of neutralization can be more numerous than positions of relevance. Notations using archiphonemes are also more abstract than notations containing phonetic symbols, as interpreting them requires a knowledge of the language's phonotactics. For these reasons, notations in terms of archiphonemes are not used in this volume.

From a dynamic point of view, gaps in the inventory of syllables provide structural hints about past evolutions and current tensions within the system.

2.4.1 Combinations of a dental stop and /æ/ vowel seem recent

Combinations consisting of a dental stop followed by /æ/ are scarce. The only example for /dæ/ is /læɫdæɫqæɫ/ 'armpit'; the two examples for /tæ/ are /tæɫɫæɫ/ 'Adam's apple, oesophagus' and /tæɫpvɫ/ 'thin, skinny'; the only example for /t^hæ/ is /t^hæɫɫæɫ/ 'book'. All of these except /tæɫpvɫ/ 'thin, skinny' can be explained as resulting from vowel harmony. Na /t^hæɫɫæɫ/ 'book' corresponds to Laze /t^hɑɫɫɫ/ and Naxi /t^heɫɫyɫɫ/; the vowel correspondence /e:æ:ɑ/ is otherwise unattested, reinforcing the hypothesis that vowel harmony or some other exception-causing force was at play here. Na /tæɫɫæɫ/ 'Adam's apple, oesophagus' corresponds to Labai Na /tɑɫɫɫɫ/, again an irregular correspondence, as the regular correspondences are simply /æ::æ/ and /ɑ::ɑ/. (Throughout this book, correspondences between language varieties are indicated with a pair of colons, following standard practice in comparative-historical linguistics.)

2.4.2 After alveolopalatals, is the rhyme /o/ or /jo/?

The syllables transcribed as /tɕ^ho/, /tɕo/ and /dzo/ could also be analyzed as /tɕ^hjo/, /tɕjo/ and /dzjo/, with a /-jo/ rhyme. The correspondence between Na

/dzo/ and Naxi /gy/ (phonetically: [jy]) suggests that the initial became palatalized in Na by a following high front vowel or glide. From a synchronic point of view, however, it seemed more appropriate to transcribe these syllables as composed of an alveolo-palatal initial followed by a back vowel.

2.4.3 Phonemic status of the retroflex nasal

There exists one single instance of /ɲʏ/: /ɲʏʎ/ ‘to sniff; to get to know (news)’, often used in the negative: /mɣʎ-ɲʏʎ/ ‘[I] don’t know’. This syllable contrasts with /nʏ/, e.g. /nʏʎ/ ‘to bury’. Another possible analysis would be as [ɲɿ], phonemically / nɿ /, in which case one could dispense with positing a /ɲ/ consonant phoneme contrasting with /n/: retroflex realizations would be conditioned by a following /u/ or /ɿ/, the combinations /nuu/ and /nɿ/ being realized as [ɲuu] and [ɲɿ], respectively. In the absence of a phonemic opposition, and given the phonetic proximity between these two rhymes in a retroflex context, this interpretation is not absurd. The next logical step in that perspective would be to reinterpret /dʏ/, /tʏ/ and /tʰʏ/ as /dɿ/, /tɿ/ and /tʰɿ/.

This does not represent a real economy, however, since there exists an opposition between dentals and retroflexes in front of other vowels (e.g. /tʰi/ vs. /ti/). The choice to transcribe as /ɲʏ/ is based on my auditory impression that, in the present state of the system, the rhyme is closer to [ʏ] than to [ɿ].

2.4.4 Syllables introduced by Chinese borrowings

Chinese borrowings have a potential for bringing considerable changes to the phonotactics of Na syllables; in particular, they introduce many new combinations of vowels with semivowels. The overall situation is comparable to that of Naxi. A young Naxi from Dadong, He Likun, did an inventory of the syllables present in his own speech, and found that recent Chinese loanwords account for about 150 of the syllables that he uses when speaking Naxi (Michaud & He 2015). He Likun is basically bilingual in Mandarin, a situation which is common among young Naxi and Na people. On the other hand, the main consultant for Yongning Na is 38 years older than He Likun, and her knowledge of Chinese is limited. In her speech, there is a tension between a general tendency to integrate loanwords into the Na phonological system, on the one hand, and on the other hand occasional efforts at getting closer to the “correct” pronunciation in Mandarin (either Southwestern Mandarin or Standard Mandarin, depending on the addressee).

This source of instability needs to be recognized when transcribing Chinese borrowings: they typically possess (i) a thoroughly adapted form, conforming

to Na phonotactics and phonetics, and (ii) forms that are closer to Chinese, and which depart from Na phonotactics and phonetics. For instance, in the absence of a rounding opposition for front vowels, Chinese [y] is borrowed as [i]: the Chinese 杂菌 [tsa.tɕyn] ‘mixed mushrooms’ is pronounced /tsa.lɕi/. But the consultant is aware of the phonetic distance between [tɕyn] and [ɕi], and is able to make efforts towards rounding of the front vowel (getting close to [tɕye/tɕyi]). The choice made here is to transcribe Chinese loanwords in their Naicized form: the one that the speaker would use when talking Na with speakers of her generation – keeping in mind that Chinese influence is currently an overwhelmingly important factor in the evolution of Na, and that, as the use of Chinese becomes more pervasive, the dividing line between the two languages becomes blurred.

The competing forces of (i) adaptation to the Na system and (ii) faithfulness to Chinese pronunciation can sometimes be observed in the lexicon. A flower (‘wild cotton’) is called /ze.lɕe-l.bæ.lbæ./; this comes from /je.lɕe-l.bæ.lbæ./, literally ‘Westerners’ flower’, which is still an acceptable variant. The borrowed syllable /je/ in /je.lɕe/ 洋人 ‘Westerner’ is Naicized by identifying it with a syllable that is well-attested in Na (/ze/), taking occasion of its presence in the immediate vicinity: as the initial of the word /je.lɕe-/’s second syllable. Unsurprisingly, the stylistic effect of Naicization is to sound more local, playing on a sense of closeness among speakers of Na, whereas the more Chinese-sounding rendering sounds more modern and forward-looking.

2.5 Articulatory reduction: reduced forms and their lexicalization

Phenomena of articulatory reduction pave the way for the lexicalization of new forms, sometimes resulting in the creation of new syllabic combinations. Some salient examples are presented below.

The grammatical word /ji/ ‘to do’ is prone to reduction. Reduction is well on its way towards lexicalization for /gu.l ji/ ‘really, truly’ (from /gu.l/ ‘authentic, true’), realized as [gil] except when hyperarticulated. Phonetic reduction is common, e.g. /no.l | ə.tso.l ji-l.bi-l/ ‘What are you going to do?’ (2SG-INTERROGATIVE:-what-to_do-IMMEDIATE_FUTURE) is commonly realized in a hypo-articulated way that can be approximated as [no-lɾ-tso-lbi-l].

The RELATIVIZER /hɪ/ is articulated much more weakly than the lexical word /hɪ/ ‘human being, person’. The initial fricative is often strongly reduced: it gets voiced throughout. Before a voiced stop, realizations as a nasal consonant

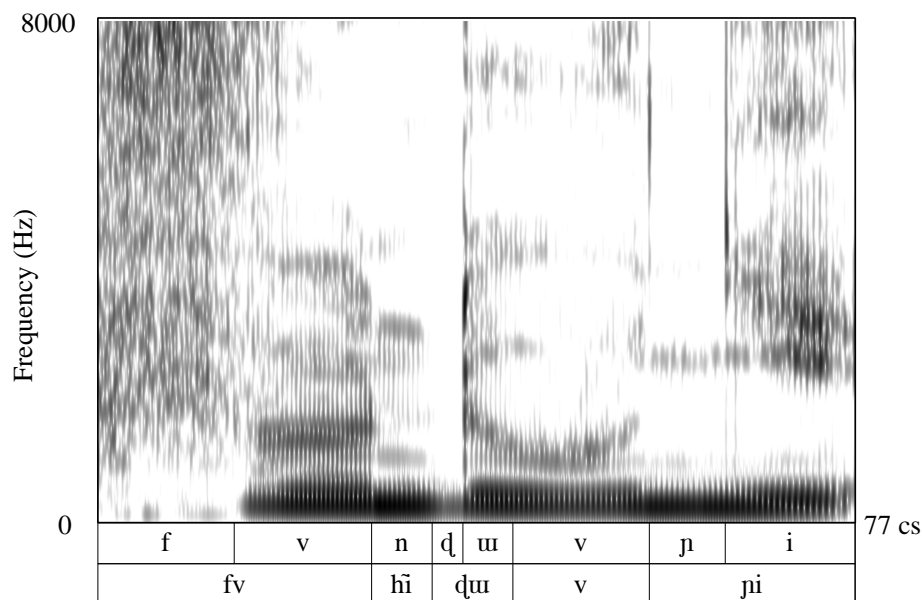


Figure 2.2: An illustration of the reduction of the relativizer /hĩ/ to a nasal consonant. Top: phonetic transcription; bottom: phonemic transcription.

(nasal stop) are observed, as in Figure 2.2, representing the sequence /**dwæ1 | fɻ1-hĩ1 dɯ1-ɻ1 ɲi1**/ ‘(S)he is really happy!’, realized as [**dwæ1 fɻ1 ndɯ1 ɻ1 ɲi1**]. (Roselle Dobbs [p.c.] indicates that some younger speakers are not aware that the RELATIVIZER /hĩ1/ is present, and omit it altogether in some contexts.)

The phrase /**tʰæ1mi1-ɲu1**/ ‘really, actually’ is generally reduced to a lengthened monosyllable which can be approximated as [**tʰæ1æ1**], sometimes with a trace of the final L tone of the full expression: [**tʰæ1æ1**]. In the absence of a length opposition among vowels, the reduced form is unlikely to become lexicalized.

The proximal demonstrative /**tʰu1**/ in association with a following plural clitic /=**ɲæ1**/ yields /**tʰu1=ɲæ1**/ ‘these things, this sort of things’, and the distal demonstrative yields /**tʰɻ1=ɲæ1**/ ‘those things’. These disyllabic forms are strongly coalescent. Regressive vowel harmony exerts itself strongly, yielding instances resembling [**tʰæ1=ɲæ1**], e.g. in Caravans.153 and Agriculture.109. Weakening of the already vowel-like approximant further simplifies the form to such an extent that it often resembles a monosyllable, [**tʰæ1**] or [**tʰæ1**]. Examples include Mountains.83, 109, Funeral.190, BuriedAlive3.50, and Caravans.160, 165.

The exclamative final particle, /**wɻ1**/, which conveys obviousness, tends to fuse

with a preceding copula, /**ni**/, the combination /-**ni**-**wɿ**/ being realized close to [-**no**]. This is well-attested in F5's narratives, and highly frequent in the speech of M21.

2.6 Expressive coinages and phonostylistic observations

To conclude this chapter about Na phonemes (vowels and consonants), it appeared interesting to mention expressive coinages, and some phonostylistic observations.

2.6.1 Onomatopoeia and ideophones

Onomatopoeia are a well-documented source of new phonotactic combinations, filling gaps in a language's inventory of syllables. A classical case of structural gap-filling is found in Vietnamese, where the slots left empty by the phonetic evolution of the /**ɔŋ**/ and /**oŋ**/ rhymes (within which lip rounding was shuffled from the vowel to the consonant, as an added final labial closure) was filled by onomatopoeic coinages, and by loanwords (Haudricourt 1952). He Likun, a native speaker of Naxi, went through each cell in a table of possible combinations of initials and rhymes in the Pianding dialect of Naxi, determining (by introspection) whether the combination was attested, and in which words. The results were supplemented by examining a word list of about 3,000 words. He identified more than fifteen syllables that are only attested in onomatopoeic words (Michaud & He 2015).

Onomatopoeia are likely to be no less abundant in Na than in Naxi. But they are scarce in the set of transcribed narratives, as could be expected of relatively formal monologues. Other data collection methods, such as recording lively conversations, will be required to explore the wealth of expressive phenomena found in Yongning Na. Here is a small sample, drawn from the transcribed narratives.

- (i) The noise of a shock between two hard objects, for instance the sound of an axe hitting a tree trunk ('Bang!'), is rendered as [bō]. This syllable contravenes Na phonotactics, as nasal rhymes do not normally appear after stops.
- (ii) The onomatopoeia for rumbling sounds, for instance the sound of heavy loads carried over a wooden floor, or the noise of lorries, is a prolonged [z̥]. This sound is unlike the syllable /**zu**/. The latter is a full-fledged syllable, which surfaces with an apicalized vowel, as [z̥z̥]. The beginning of

the syllable is more consonant-like, and the end more vowel-like; this is the reason why Chao Yuen-ren advocated the use of special symbols for apicalized sounds. In his system, the syllable would be transcribed as /ʒ̥/. In the onomatopoeic form for rumbling sound, on the other hand, friction is sustained from beginning to end.

- (iii) The hissing noise of water that comes in contact with red-hot metal or incandescent wood ('Pssshh!') is [tʂʰɿ]. The combination of initial and rhyme used to transcribe this onomatopoeic is attested in some lexical items, but the phonetic realization of the onomatopoeia does not exactly match that of the syllable /tʂʰɿ/ of lexical items.

Onomatopoeia only constitute one aspect of expressive coinages, which also comprise interjections, calling sounds, and ideophones. All of these present interesting morphological and phonological specificities. "Of the 446 known onsets in Japhug, forty-five clusters (including thirty-five two-consonant and eleven three-consonant clusters) are exclusively attested in ideophones or ideophonic verbs" (Jacques 2013: 264); "ideophones fill gaps in the distribution of segments within rhymes that have been caused by sound changes" (Jacques 2013: 267).

Because the present volume's focus is on tonal morphology, little attention has been devoted to the rich linguistic field of expressives in Yongning Na. But ultimately, this field is not without relevance to tone and intonation: expressive coinages tend to have a lilt of their own, but they also undergo a continuous attraction from the language's tonal and intonational system, tending to their integration into the language's phonological categories. Investigation of this topic is envisaged at the stage of experimental study of fine phonetic detail in Na tone and intonation – a topic about which some initial observations are set out in Chapter 9.

2.6.2 Phonostylistic observations

Expressivity is not limited to specific areas of the lexicon, such as ideophones. The "appeal function" of speech is constantly present. The study of this function – examining how speakers shape their utterances with a view to evoking a certain response on the part of the hearer – features prominently in the programme of phonological research set out by Trubetzkoy (1969: 14), who coined the term 'phonostylistics' (for a review: Léon 1969). The term 'psycho-phonetics' used by Fónagy (1983) is less specific and therefore perhaps less appropriate, although it has the advantage of bringing out the considerable breadth of this

strand of research: studying how fine phonetic details convey the speaker's communicative purposes. If intonation is “a symptom of how we feel about what we say and how you feel when you say it” (Bolinger 1989: 1), phonostylistics is part and parcel of intonation studies.

This fascinating topic is best investigated at the stage of experimental phonetic study, whereas the present volume focuses on lexical tone and tonal morphology; the approved order of business consists in postponing the study of expressive phenomena until the stage when the more central facts of a language's linguistic structure have been clarified. Discussion is therefore deferred to experimental phonetic studies to be conducted in future. Let us simply mention two salient cases of modification of vowels and consonants for expressive effects in Na.

2.6.2.1 Lip rounding and protrusion with demonstrative (proximal) value

The vowel /**u**/ has neither lip rounding nor lip protrusion. It acquires lip protrusion when the phrase /**tʂ^hu-tu-t/ ‘this one’ (proximal demonstrative plus generic classifier) is used as a real-world demonstrative, pointing to an object within sight. The speaker's face points in the direction of the object, and lip protrusion functions as part of the gesture of pointing. It is often accompanied by an upward movement of the chin, further reinforcing the pointing gesture.**

2.6.2.2 Palatalization conveying a tender emotion

The adjective /**nu-tʂi**/ ‘lovely’ can be pronounced close to /**ni-tʂi**/. This child-speech-like variant has iconic value: palatalization, narrowing the vocal tract, is associated with smallness (Fónagy 1983: 22–23). The realization of this cross-linguistic tendency is facilitated here by the tendency towards regressive vowel assimilation found in Na and other Naish languages.

2.6.3 Expressive uses of reduplication

Reduplication serves various grammatical functions in Na, as also in Naxi (Hé & Jiāng 1985: 30–33). Despite having neatly grammaticalized uses, such as lending reciprocal value to verbs, it retains an expressive dimension, especially in its sporadic application to parts of speech other than verbs and nouns. This is reflected in irregular tone patterns – offering a welcome transition to the topic of tone, addressed in the next chapters.

/**q^ha-tʂi**-t/ ‘how many days’ reduplicates to /**q^ha-tʂi**-t~**q^ha-tʂi**-t/ ‘thus and so many days’ (Healing.29; the context is the following: a priest of the Na religion

diagnoses the number of days of rituals it will take to cure a person's disease will take). The tone pattern is not the same as in numeral-plus-determiner phrases (Chapter 5), where the expected output would be M tone throughout the phrase.

The interrogative /əʈtsoʈ/ reduplicates to /əʈtsoʈ~əʈtsoʈ/ (Dog.48). This is also an unexpected pattern.

The word /zoʈ~zoʈ-mvʈ~mvʈ/ 'thingummy' looks a lot like it could be the product of reduplication, perhaps as a playful manipulation over /zoʈmvʈ/ 'child'. A more common word for 'thing' is /tsoʈtsoʈ#/ʈ/, which may originate in a replication of the nominalizer /tsoʈ/. Both of the above nouns combine into /tsoʈ~tsoʈ-zoʈ~zoʈ-mvʈ~mvʈ/ 'thingummies, stuff', suggesting that they are currently perceived as having a similar internal structure.

The reduplicated form /zuʈ~zuʈ/ for 'life, existence' is more frequent than monosyllabic /zuʈ/, but both are in common use.

The /ly.ly/ portion in /biʈ-lyʈ~lyʈ/ 'snowflake' and /dzoʈ-lyʈ~lyʈ/ 'hailstone' looks like a reduplicated /lyʈ/; I would have expected the classifier for grains and round objects, /ʈwʈ/, to stand here, and have no idea about the origin of this /lyʈ/ morpheme.

The phrase /tɕyʈ~tɕyʈ/ 'right at the moment that ...' looks clearly like a reduplicated form, but the simplex form could not be recovered.

Several four-syllable onomatopoeic expressions of the form ABAB were observed, all of them with a L.L.M.M tone pattern: /tsuʈlqwæʈ~tsuʈlqwæʈ/ 'crashing sound; sound of timber falling down' (HouseBuilding.243), /zuʈlgwʈ~zuʈlgwʈ/ 'boom!' (sound of heavy shock against a door: Tiger.15), /zuʈlzyʈ~zuʈlzyʈ/ 'sound of tearing (leaves to small pieces)' (FoodShortage2.37), and /ɕilhwaʈ~ɕilhwaʈ/ and /zuʈlɕæʈ~zuʈlɕæʈ/, both describing the dizziness of a character under a dazzling moonlight (Reward.17 and Reward.68). These expressions do not have an identifiable simplex (non-reduplicated) form.

3 The lexical tones of nouns

This chapter focuses on the lexical tones of nouns, which constitute a fundamental aspect of the tone system. Because tonal oppositions are partly neutralized when words are spoken in isolation, issues concerning the behaviour of tone in context will also be broached in this chapter, which thus serves as an introduction to the Yongning Na tone system as a whole.

The chapter is organized in analytical order. It starts out from a static inventory of tone patterns over domains of different lengths, and gradually progresses towards an analysis. This mode of exposition replicates the progression of analysis during fieldwork, working up from the surface facts; the aim is to allow the reader to evaluate the analysis step by step, and to reflect on possible alternatives, instead of proposing a complete analysis from a top-down perspective.

3.1 A static inventory of tone patterns

Words spoken in isolation are what one starts out from in the earliest stages of fieldwork. Table 3.1 presents an overview of the tone patterns over monosyllables spoken in isolation. It was not possible to find a minimal set (words distinguished solely by tone) due to the relatively low number of monosyllabic nouns in the language.

The second column of Table 3.1 proposes a first-pass analysis of the three patterns into level tones: L(ow), M(id), H(igh), and their combinations. Justification for the use of a level-tone analysis comes from morphophonological alternations in which the tones partake; pieces of evidence will be provided in the course of the analysis. The question-mark in the column ‘preliminary label’ is intended to emphasize that these labels were given in a first pass; some were modified later on in the course of the analysis, as will be explained below. At this initial stage, the essential information is that provided in the leftmost column in Table 3.1, describing the three patterns as follows: a non-rising, non-low pattern; a low-rising pattern; and a mid-rising pattern.

The restrictions on the tones of monosyllables spoken in isolation are the following. (i) There are no examples of falling contours. (ii) There is no opposition

3 The lexical tones of nouns

Table 3.1: Tone patterns attested over monosyllabic nouns spoken in isolation.

phonetic realization	preliminary label	example
non-rising, non-low	M ?	z̥wæ ‘horse’
low-rising	LM ? LH ?	bo ‘pig’
mid-rising	MH ?	t̥ʂ^hæ ‘deer’

Table 3.2: Tone patterns attested over disyllabic nouns spoken in isolation.

1 st syllable	2 nd syllable	preliminary label	example
non-low	low	M.L ?	/ d̥a.ji / ‘mule’
non-low	low-rising	*M.LM	*
non-low	mid-rising	M.MH ?	/ hw̥ɿ.li / ‘cat’
non-low	mid	M.M ?	/ po.lo / ‘ram’
non-low	high	M.H ?	/ hwæ.t̥ʂæ / ‘squirrel’
low	low	*L.L	*
low	low-rising	L.LM ? L.LH ?	/ k^hv.mi / ‘dog’
low	mid-rising	L.MH ?	/ õ.d̥ɥ / ‘wolf’
low	mid (or high)	L.M ? L.H ?	/ bo.mi / ‘sow’

between a high tone and a mid tone: only one type of non-low, non-rising tone is observed. Its realizations occupy the entire upper part of the tonal space, varying from mid to high, with a flat or falling contour. The choice of the label M (rather than H) for this pattern will be explained further below, at the stage of phonological analysis. (iii) There is only one contour that starts on a low pitch. Using level-tone labels, this observation can be stated as follows: there is no opposition between LM and LH. (iv) There are no examples of low, non-rising tones.

The three surface patterns for monosyllables are the same for other word classes, such as verbs and adjectives.

Over disyllabic nouns, seven patterns are observed, as shown in Table 3.2.

Table 3.2 includes two unattested combinations, marked with an asterisk (*) in the *example* and *preliminary label* columns. If the tone of the first syllable is non-low, there are four observed tonal patterns on the second syllable: low; mid; high; or mid-rising. If the tone of the first syllable is low, there are three attested patterns on the second syllable: low-rising; mid; or mid-rising.

Table 3.3: Tone patterns attested over trisyllabic nouns spoken in isolation.

1 st σ	2 nd σ	3 rd σ	preliminary label	example	gloss
non-low	mid	mid	M.M.M ?	ɖzɹ.q^hwɹ.tʂe	awl
non-low	mid	low	M.M.L ?	mɥ.gɥ-k^hɥ	year of the Dragon
non-low	mid	high	M.M.H ?	njo.bi.li	lips
non-low	mid	mid-rising	M.M.MH ?	bɥ.zɥ-k^hɥ	year of the Serpent
non-low	low	low	M.L.L ?	mo.jo.mi	owl
non-low	high	low	M.H.L ?	æ.tse.p^hæ	kneebone
low	low	mid	L.L.M ?	t^ho.k^hɥ.mi	male dog
low	low	low-rising	L.LLM ?	dzu.na.mi	wilderness
low	mid	mid	L.M.M ?	t^ha.zwæ.mi	donkey
low	mid	high	L.M.H ?	æ.li.p^hæ	mirror
low	mid	mid-rising	L.M.MH ?	bi.p^hɥ-dzu	flood
low	mid	low	L.M.L ?	bæ.bɥ-bɥ	ladybird

The restrictions on the distribution of tones on disyllables can be described as follows.

- (i) Only two tones contrast on the first syllable: low and non-low. There can be no contour on the first syllable.
- (i) A Mid tone cannot be followed by a low-rising tone.
- (ii) A disyllable cannot be low throughout, any more than a monosyllable can.
- (iii) There is no contrast between a low+mid pattern and a low+high pattern.

There are also strong limitations on tone patterns over three syllables: only twelve patterns are attested. The data in Table 3.3 are from trisyllabic nouns whose degree of lexical integration ranges from transparent compounds, such as ‘Year of the Dragon’, to fully undecomposable words, such as ‘lips’. A hyphen is placed between the two parts of decomposable compounds.

Since there is a three-way opposition on the second syllable, these are labelled as ‘low’, ‘mid’ and ‘high’, whereas for the first syllable, where there is no opposition between mid and high, they are simply labelled ‘low’ and ‘non-low’.

3 *The lexical tones of nouns*

In view of the three tables above, the following generalizations can be proposed:

- (i) A mid (non-low) tone can be followed by one of four tones: low, mid, high, or mid-rising.
- (ii) A low tone can only be followed by low-rising, mid or mid-rising.
- (iii) A high tone can only be followed by a low tone.
- (iv) Non-final syllables never carry a contour.
- (v) An entire word cannot carry low tone on all of its syllables.
- (vi) There can never be a trough: a tone surrounded by higher tones (non-low followed by low followed by mid, for instance).

From the above data alone, it is not possible to know whether these generalizations concern the level of the word, the phrase, or entire sentences, since “words produced in isolation are minimal utterances showing both lexical and utterance-level (post-lexical) features” (Himmelman 2006: 164). To preview the result of later analysis, the relevant domain is the *tone group*, a unit in-between the word and the utterance (see Chapter 8 for full details).

A dynamic approach to the tones of nouns sheds light on the above generalizations about static inventories.

3.2 A dynamic view, bringing out the underlying tonal categories

A dynamic view brings out six underlying tonal categories for monosyllabic nouns, and eleven categories for disyllabic nouns. While reading through the following section, the reader may want to make an occasional leap forward to Table 3.5, which presents a synthetic overview of the full picture of the tone system for nouns as it finally emerges from the analysis.

3.2.1 Monosyllabic nouns: six tonal categories

It was mentioned above that there are three patterns for monosyllables spoken in isolation: low-rising; non-low; and mid-rising. The set of nouns realized as non-low in isolation is not homogeneous, however, witness the behaviour of /**jo**/ ‘sheep’, /**z**wæ/ ‘horse’ and /**l**a/ ‘tiger’, all of which are realized with a non-low

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tone in isolation. In association with the copula, these yield: /**jo** **ni**/ ‘is (a/the) ram’, with low tone on the noun and rising tone on the copula; /**z**wæ-**ni**/ ‘is (a/the) horse’, with mid tone on the noun, and high tone on the copula; and /**la**-**ni**/ ‘is (a/the) tiger’, with mid tone on the noun and low tone on the copula. Since the morphosyntactic context is the same, these three words must be considered as representatives of three different lexical tones. These three tones all neutralize to non-low when the noun is spoken in isolation.

The set of nouns realized as low-rising in isolation is not homogeneous either: in some contexts, such as object+verb combinations, /**z**æ/ ‘leopard’ and /**bo**/ ‘pig’ have different behaviours. For example, ‘... has bought leopards’ is /**z**æ **hwæ**-**ze**/, with a L tone on the accomplished suffix, whereas ‘... has bought pigs’ is /**bo** **hwæ**-**ze**/, with M tone on the suffix.

To sum up, out of the three surface patterns on monosyllables in isolation, one (MH) corresponds to a single phonological set: all the words realized with MH tone in isolation have the same tone pattern in a given morphosyntactic context. The two others constitute the neutralization of underlying patterns: the low-rising contour corresponds to two underlying categories, and the non-low tonal realization corresponds to three categories. A dynamic view thus brings out six tonal categories of monosyllables.

3.2.2 Disyllabic nouns: eleven tonal categories

The same procedure as above was also applied to disyllabic nouns, i.e. looking at the behaviour of nouns in different morphosyntactic contexts, in order to find out how many tone classes need to be distinguished.

It was discovered that the nouns realized with a M.M pattern in isolation belong to two distinct types: one after which the copula carries L tone; and one after which the copula carries H tone. One set is illustrated by /**po**-**lo**-/ ‘ram’, /**po**-**lo**-**ni**/ ‘is (a/the) ram’. The other is illustrated by /**z**wæ-**zo**-/ ‘colt’, /**z**wæ-**zo**-**ni**/ ‘is (a/the) colt’.

Likewise, the nouns realized with a M.H pattern in isolation make up two distinct sets, the one illustrated by /**ky**-**se**/ ‘flea’, /**ky**-**se**-**ni**/ ‘is (a/the) flea’, the other by /**hwæ**-**tsæ**/ ‘squirrel’, /**hwæ**-**tsæ**-**ni**/ ‘is (a/the) squirrel’.

Finally, the nouns realized with a L.M pattern in isolation (which could also be transcribed as L.H: there is no opposition between a L.M pattern and a L.H pattern, as mentioned above) fall into no less than three categories. These three categories are brought out by intersecting evidence from two contexts: with a following copula, and with a following possessive, as shown in Table 3.4.

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Table 3.4: Examples illustrating the existence of three tone categories neutralized to L.M in isolation.

in isolation	gloss	with copula	with possessive
/boɭmi˧/	sow	boɭmi˧ ɲi˧	boɭmi˧-bɣ˧
/boɭɬa˧/	boar	boɭɬa˧ ɲi˧	boɭɬa˧-bɣ˧
/naɭhĩ˧/	Naxi	naɭhĩ˧ ɲi˧	naɭhĩ˧-bɣ˧

Addition of the copula sets apart a class exemplified by ‘Naxi’, after which the copula receives H tone. Addition of the possessive sets apart a class exemplified by ‘boar’, which depresses the tone of the possessive to L, as opposed to its realization as M for the other words. While the evidence used to bring out the tone classes is morphotonological – looking at the behaviour of nouns in context –, the tone classes must be described as lexical, since the difference in the surface-phonological tone strings shown in Table 3.4 must be ascribed to a difference between the lexical items at issue, and hence, to a difference in lexical tone category.

In total, this yields eleven tonal classes of disyllables.

3.3 Phonological analysis of the tone categories of nouns

As reported in the preceding paragraphs, a number of tonal categories were brought out on the basis of their different behaviour in various morphosyntactic contexts. The phonological analysis of these categories is up against an issue of circularity, since the tone categories of the simplest units – monosyllabic nouns – can only be brought out by examining their combinations with various other morphemes whose tones, at this stage, have not been analyzed either. In practice, however, bootstrapping is often required when analyzing a new language variety: groping for a correct analysis by trial and error.

A step forward in the analysis of the tones of nouns was made possible by progress in the analysis of the tones of other morphemes: through an analytic process set out further below, it was realized that the copula carried L tone, and that the possessive carried M tone (it can also be analyzed phonologically as toneless). On this basis, it became possible to propose a phonological analysis for each of the tones.

The two tonal categories of nouns illustrated by /ɬa˧ ɲi˧/ ‘is (a/the) tiger’ and

/zɰwæɫ ɲiɫ/ ‘is (a/the) horse’ were reanalyzed as follows. In the first case, the copula surfaces with its own lexical tone. ‘Tiger’ represents the simplest case, analyzed as having M tone: a phonological tone identical with the surface tone in this context. (The same analysis can be proposed for the category of disyllables illustrated by /pɔɫɫɔɫ/ ‘ram’.) In the second case, ‘horse’, the copula surfaces with a H tone which must be supposed to be projected onto it by the noun. ‘Horse’, therefore, exemplifies a tone category characterized by a H tone which can only surface on a following syllable: a floating H tone. This phenomenon warrants a separate subsection for in-depth discussion.

3.3.1 A floating H tone

3.3.1.1 The synchronic facts

Yongning Na has a type of H tone described here as ‘floating’ because it is never realized over the word to which it is lexically attached: it can only be anchored to a syllable that follows this word. The monosyllable for ‘horse’, realized in isolation as /zɰwæɫ/, is an example. The word for ‘colt’, realized in isolation as /zɰwæɫzɔɫ/, offers a neat opportunity to extend the analysis to disyllables: the H tone that appears in /zɰwæɫzɔɫ ɲiɫ/ ‘is (a/the) colt’ is interpreted as reflecting the floating H tone lexically attached to the noun ‘colt’, in a way that is exactly parallel to /zɰwæɫ ɲiɫ/ ‘is (a/the) horse’.¹

Since this floating H tone is the only type of H tone that may be lexically attached to a monosyllable, it is convenient to transcribe it as a simple H tone on monosyllabic nouns in the glossary and in examples within this volume: e.g. ‘horse’ is transcribed as //zɰwæɫ//. For disyllables, however, there is an opposition between this floating H tone and a word-final H tone (as in /hwæɫtsuɫ/ ‘rat’). This complexity of syllabic anchoring makes it necessary to use a nonstandard symbol: a symbol not used in the International Phonetic Alphabet. Desperate tones call for desperate measures. The pound symbol # was (arbitrarily) chosen to stand for the end of a lexical word, adopting notation of the word as /zɰwæɫzɔɫ#/ , and of the tonal category as #H.

To repeat this important point with another example, the #H-tone word ‘little brother’ and the M-tone word ‘little sister’ have the same tonal pattern in isolation (M on both syllables: /ɣiɫzɰuɫ/ ‘little brother’, /ɣɔɫmiɫ/ ‘little sister’), but the

¹ Noun-plus-copula combinations behave tonally like object-verb combinations, of which a detailed account is presented in Chapter 7. The rules yielding the surface-phonological tone pattern are morphosyntactically conditioned: not all combinations of a #H tone and a L tone yield a /M ... M.H/ sequence.

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former yields /**gi**+**zui**+**ni**/ ‘... is little brother’ (tone sequence: M.M+H), the latter /**go**+**mi**+**ni**/ ‘... is little sister’ (tone sequence: M.M+L). The analysis proposed is that ‘little brother’ has a final H tone which remains unassociated unless it can associate to a following syllable: a H tone that is floating at the end of the word. The association of this floating H tone requires specific morphosyntactic conditions. For instance, the possessive, as a clitic, is not a suitable host for a floating tone; it receives M tone (by default), leaving the H tone unassociated (and thus not surfacing in the resulting pattern), hence /**gi**+**zui**+**bv**/ ‘... of (a/the) little brother’, tonally identical to /**go**+**mi**+**bv**/ ‘... of (a/the) little sister’.

3.3.1.2 The floating H tone of Yongning Na corresponds to an overt H tone in neighbouring dialects

Observations on a neighbouring dialect, that of the village of /**p^hv**+**dzɔ**#**l**/ (in Chinese: Labai 拉伯村), offers indirect supporting evidence for the H tone postulated for the Yongning Na tonal category illustrated by ‘horse’. My only contact with the Labai dialect so far has been through two work sessions with Mr. Lamu Gatusa, a researcher at the Academy of Social Sciences in Kunming. (His name in Na is /**la**+**mbv**+**ky**+**t^hv**+**sa**/, 拉木·嘎吐萨; his pen-name is Shi Gaofeng 石高峰.) The monosyllables of Yongning Na analyzed as having a (floating) H tone correspond to monosyllables with H tone in Labai. When a word is spoken in isolation, the H tone does not surface in isolation in Yongning Na (where M and H are neutralized to M in isolation), whereas it is realized as H in Labai. The H::H correspondence among monosyllables is the tonal correspondence that has the most examples. The only exceptions are (in the order Labai::Yongning) /**hō**!::**lo**/ for ‘rib’ and /**hǎ**!::**hǎ**/ for ‘gold’, for which no explanation can be offered at present. The M::M correspondence is also widely attested; for monosyllables, it is exceptionless: all the monosyllables that have M tone in Yongning Na correspond to M-tone monosyllables in Labai. Examples are presented in Table 3.5. (A recording of some of the words is available online from the Pangloss Collection; the title of the resource is: M28_Vocabulary.)

On disyllables, the floating H tones of Yongning correspond to H tones in Labai. Disyllables that have M tone in Yongning likewise carry M tone on both of their syllables in Labai; disyllables that have #H tone in Yongning have a H tone on their second syllable in Labai. Some examples are provided in Table 3.6.

Another neighbouring dialect, that of the village of Wujiao 屋脚, just across the border with the county of Muli in Sichuan (四川凉山州木里县屋脚乡), offers the same confirmation: lexical field notes kindly communicated in 2012 by Xu Duoduo 许许多多, then a graduate student at Tsinghua University, reveal

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Table 3.5: Examples illustrating the H::H tone correspondence between Yongning and Labai.

gloss	Yongning	Labai
earth	tʂě	tʂǐ
hail	dzǒ	dzǒ
sky	mv̌	mv̌
fire	mv̌	mǐ
star	kǔ	kǔ
snow	bǐ	mbǐ
pond	ɕwæ̌	ŋɕwæ̌
canal	qʰæ̌	qʰæ̌
urine	dʒǔ	ŋɕʒǔ
gall	kǔ	kǔ
blood	sɣ̌	sɣ̌
head	ɣǒ	ɣǒ
Pumi	bɣ̌	bɣ̌
man	zǒ	zǒ
bronze	æ̌	æ̌
salt	tsʰě	tsʰě

that words with H tone in Yongning Na (neutralized with M in isolation) have an overt H tone in Wujiao. This H tone is phonetically transcribed by Xu Duoduo as ⁵³ (high-to-mid) on the basis of commonly observed realizations in isolation, but in the absence of a ⁵⁵ (high level) tone in her notes this can confidently be interpreted as a H tone. Here is a handful of examples: /kʰɿ⁵³/ ‘dog’; homophone: ‘to steal’; ‘garlic’, /kɿ⁵³/; and ‘hair’, /hɿ⁵³/. No counterexample has been observed so far.

The above comparisons provide neat confirmation from comparative evidence for the H tone category independently postulated for Yongning Na. Needless to say, the tonal correspondences between Yongning, Labai and Wujiao call for a systematic investigation, based on much more extensive data than could be collected so far. The tone system of Labai warrants an in-depth study in its own right, and a detailed comparison with Yongning. The tone system of Wujiao appears at first blush to be highly similar with that of Yongning.

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Table 3.6: Examples illustrating the M::M and #H::MH tone correspondences between Yongning and Labai.

correspondence type	gloss	Yongning	Labai
M::M	little sister	go-tmi-t	go-tmi-t
	ancestor	ə-tphv-t	ə-tphə-t
	Bai	fi-tbv-t	li-tbv-t
	mother	ə-tmi-t	ə-tmi-t
	body	gv-tmi-t	gv-tmv-t
	heel	mv-t ^h u-t	mi-t ^h u-t
	thigh	do-tbæ-t	do-tbæ-t
	buttock	do-tbv-t	do-tbv-t
	nostril	ni-tq ^h v-t	ni-tq ^h ə-t
	back	gv-tdv-t	gv-tdv-t
	breast	ʁa-tpv-t	ŋga-tpv-t
	belly	bi-tmi-t	bi-tmi-t
	plait	hæ-tpr-t	hæ-tpr-t
	sun	ni-tmi-t	ni-tmi-t
	moon	fi-tmi-t	li-tmi-t
	stone	lv-tmi-t	lv-tmi-t
	powder	tsa-tbr-t	tsa-tmba-t
	hot spring	ʃ-tq ^h v-t	ə-tq ^h ə-t
paddy field	ci-tlv-t	ʂu-tlv-t	
#H::MH	little brother	gi-tzu#-l	gu-tzu-l
	grandson	zv-tv#-l	zv-tv-l
	granddaughter	zv-tmi#-l	zv-tmi-l
	sole	mi-tbr#-l	mi-tbr-l
	nose	ni-tgr#-l	ni-tgr-l
	craftsman	po-tqzu#-l	po-tqzv-l
	forehead	to-tkr#-l	to-tkr-l
	host	da-tpv#-l	nda-tpv-l

3.3.1.3 The creation of floating H tones: a consequence of phonotactic constraints?

The correspondence between floating H tones in Yongning and overt H tones in Labai raises the issue whether an earlier overt H tone became floating in Yongning, or conversely, an earlier floating H tone became an overt H tone in Labai. Cross-linguistically, the more common scenario is that of overt tones being set afloat by changes in metrical structure. For instance, in Manding languages (Mande branch of Niger-Congo), it has been hypothesized that, at one stage of language evolution, there were heavy syllable rhymes, VV or VN, which could carry up to two tonal levels, and that, at a later stage exemplified by Bambara, the distinction between heavy rhymes and light rhymes was lost, and the second tone on former heavy rhymes became floating (Creissels & Grégoire 1993).

Assuming that in Naish languages too the evolution was from overt tones to floating tones, this section ventures a speculative scenario about the evolutionary processes whereby an earlier overt H tone could become floating in Yongning.

A specificity of Yongning Na, as compared with Labai, is the prohibition of tone-group-initial H tone. A consequence of this exceptionless rule is that, at the surface-phonological level, it is impossible to have tone H on a monosyllable said in isolation, or tone patterns H.M, H.MH, H.L or H.H on disyllables said in isolation.

This synchronic fact arguably sheds light on the diachronic origin of the floating H tone in Yongning Na. The proposed scenario is the following: there existed a *H tone (note that the star here refers to a hypothetical, reconstructed entity, not to an ungrammatical one) on monosyllables, and a *H.M pattern on disyllables. As the number of possible contrasts over a group-initial syllable collapsed from three (H, M, L) to two (M, L), the opposition between tone categories M.M and H.M for disyllables, and M and H for monosyllables, was threatened. Given the high functional yield of tonal oppositions in Na, loss without compensation would have increased the issue of homophony. Supposing a state of affairs comparable to that of the present-day language, there are already numerous homophones; the loss of the opposition between M and H tones on monosyllables would have aggravated the homophony issue. To take an example, the word for 'sound' (currently //q^hv^l//), if changed to //q^hv^l+/, would join a list of homophones that already contains 'horn' and 'hole'.

The language appears to have reacted by shifting the threatened H tones from their position on the first syllable of the word to one later in the syllable. For monosyllables, there was no extra syllable available for the initial H tone to move to; this resulted in a floating H tone. For disyllables, reassociation of the initial H

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tone to the second syllable would have caused confusion with the M.H category (characterized by a H tone attached to the last syllable), without compensation. Instead, the H tone became floating; this preserved the lexical distinctions, and also preserved a parallel with monosyllables, such that all former word-initial H tones were now floating H tones.

This scenario supposes that, at the time of the change, the rest of the system was at it is now: that the present-day M and H# categories have not changed their nature since then. This would suggest that the creation of floating H tones is a relatively recent event in the evolution of the prosodic system of Yongning Na.

While these reflections are admittedly speculative, the hypothesis receives indirect support from the fact that three-level systems and two-level systems are found in the Yongning area. Pumi, with which Na has been in at least occasional contact for centuries, has two levels. Among Na dialects, that of Wuzhiluo 五指落, on the north edge of the swamp area known as the Grass Sea which forms the eastern end of Lugu Lake, is reported to have two levels only (Dobbs & La 2016). The dialect of Yongning Na spoken in Shuiluo 水落, in the county of Muli 木里, likewise appears (on the basis of the author's preliminary fieldwork, 2009) to have two levels only. Contact scenarios between two-level and three-level tonal systems appear well worth exploring; such contacts may have played a historical role in shaping the tonal systems that can be observed today.

3.3.2 Word-final H tone and the 'flea' tone

It was mentioned above that the words 'squirrel' and 'flea', realized with a M.H pattern in isolation (as /hwæ-tʂæ/ and /kv-tʂe/, respectively), have different underlying tones.

The former has a simple tonal behaviour: its H tone attaches to the last syllable of the lexical word. This is where it appears in all contexts. Under the present analysis, the first syllable of the word receives a M tone by default, yielding a surface-phonological M.H pattern.²

The latter, on the other hand, is much more elusive. 'Flea' is a fitting example word for this tone category, serving as mnemonic of its propensity to hop around with less predictability than its host could hope for. When a word carrying this

² This sequence might also be analyzed as consisting of a MH sequence, associated to the first syllable, and thereby contrasting with the tone category MH#, in which the MH sequence is associated to the last syllable (for example: /hwɿ-li/ 'cat'). There is no evidence that the tone at issue consists of a MH contour, however. The analysis adopted here is therefore as a lexical-word-final H tone, transcribed as H#.

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tone is pronounced in isolation, the H tone associates to its last syllable: /kʏ-tse⁷/ ‘flea’ has a M.H tone sequence at the surface-phonological level. When the copula is added, the result is /kʏ-tse-t⁺ ni⁷/ ‘is (a/the) flea’, with H tone on the copula; this is the same surface-phonological pattern that observes with the floating H tone, as exemplified by /gi-tzu-t⁺ ni⁷/ ‘... is (a/the) little brother’. When the noun is followed by the possessive, no H tone reaches the phonological surface: the observed form is /kʏ-tse-t⁺-bv-t⁺/ ‘... of (a/the) flea’, with M tone on both syllables of the noun and also on the possessive. Again, this pattern is the same as that which observes with the floating H tone: /gi-tzu-t⁺-bv-t⁺/ ‘... of (a/the) little brother’. This raises the issue of the mode of association of the ‘flea’ tone. It does not sit on the lexical word’s last syllable; and it does not float in the same sense as the ‘little brother’ tone, which is never realized on the word to which it is lexically associated.

One possibility that was entertained in previous reflections about this type of H tone is that its association could be specified relative to a unit higher than the word. In Na, the syllable is the smallest relevant unit for tonal association in Na and the tone-bearing unit at the surface-phonological level, and the tone group is the highest relevant unit: successive tone groups are entirely independent from the point of view of their phonological tones. In-between these two levels, one may propose to distinguish additional levels:

- the lexical word, to which tone categories are lexically associated
- the tonal word: a combination of lexical words, such as noun plus verb in S+V or O+V combinations, and noun plus noun in compounds
- the tonal phrase: a tonal word plus any added clitics and affixes

It was proposed in an article written in 2013 and published in 2015 that the ‘flea’ tone attached to the right edge of the tonal phrase. While lexically associated to a word, this type of H tone would hop all the way to the right of this higher prosodic domain. In cases where the last syllable in the tonal phrase is a suitable host, the H tone attaches to it; otherwise, e.g. in the case of the possessive suffix, the H tone remains unassociated, and does not make it to the surface-phonological level.

Upon further reflection, the search for a defining characteristic of the ‘flea’ tone with respect to a given level in the prosodic hierarchy does not appear as a promising strand of analysis. This tone has a propensity to be realized later than the word to which it is lexically associated; but it shares this behaviour with the floating H tone. For instance, the main consultant’s family name has the ‘flea’

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tone; when spoken in isolation, it is realized as /la-t^ha-miŋ/; when the ASSOCIATIVE clitic /=_ɹl/ is added to it, it yields /la-t^ha-miŋ=_ɹl/ ‘the Latami family; the Latamis’; and addition of the AGT/TOP suffix /-ŋu/ yields /la-t^ha-miŋ=_ɹ-ŋu/ ‘by the Latami family’. Impressionistically, this may seem to be typical of the behaviour of the ‘flea’ tone: hopping, or gliding, all the way to the right edge of the tonal phrase, as the morphotonological opportunity for it arises. But this behaviour is not a defining characteristic of the ‘flea’ tone: the floating H tone yields the same results in association with these added syllables. The behaviour of the various lexical tones in combination with other morphemes, as set out in table form in Chapters 3 to 7, provides ample evidence that metaphorical descriptions of the tones (as semi-personified entities) will not take us very far. The synchronic reason why the copula receives H tone when following the ‘flea’ tone is because there is a morphotonological rule to that effect; no iconic reason is necessary to motivate this phenomenon. It is misleading to build a narrative account of the process whereby the noun’s H tone would ‘hop’ or ‘glide’ onto the verb, overthrowing its lexical L tone. The morphophonological rules are not motivated in an iconic way; they are not transparently analyzable in iconic terms, as opportunities for ‘floating’, ‘hopping’ or ‘gliding’ of which different lexical tones avail themselves depending on their intrinsic propensity to such or such behaviour. The extent to which a certain type of lexical tone tends to be realized close to the edge of a given level in the prosodic hierarchy is a statistical tendency, not to be taken as a defining property of the tone at issue.

It does not appear feasible to pinpoint the exact phonological nature of the ‘flea’ tone by proposing one defining characteristic. Instead, it is more appropriate to view it first and foremost as one of the tones within the system, defined by the set of oppositions in which it enters in the full range of morphotonological contexts. The special feel of a tone can warrant giving it a nickname, as a convenient label, referring to the ‘little brother’ tone (#H) as a *floating* H tone, and to the ‘flea’ tone as a *gliding* H tone, for instance; but this label should not be mistaken for a definition. The symbol chosen for transcribing the ‘flea’ tone is H\$, where the ‘H’ reflects the interpretation of this tone as a H tone, and the dollar sign ‘\$’ is added to distinguish this tone from the other two lexical H tones: #H (lexical-word-final H tone) and #H (floating H tone). The choice of an arbitrary symbol (the dollar sign) is intended to reflect the abstract nature of this tone category, as one of the distinctive tones within the Yongning Na system.

To sum up, disyllabic (and polysyllabic) nouns with H tone must be divided into three categories, labelled H#, H\$ and #H. A H tone on the last syllable of a disyllabic or polysyllabic noun may have different origins. It may be the real-

ization of a High tone that is anchored to the last syllable of the lexical word: H#. Or it may be the realization of tone H\$. It is impossible to distinguish these in isolation. The third of these categories – #H – denotes a noun that carries a floating H tone. In order to find out the underlying tones of words, they have to be heard in various contexts. For nouns, these are: tone-group-final position (as when they are spoken in isolation); tone-group-internal position; and when followed by a suffix such as the possessive. The lexical tone can be arrived at with certainty by matching up the behaviour of the word in these various contexts.

3.3.3 An added complexity concerning L tone: a post-lexical rule for all-L tone groups

‘Sheep’, realized in association with the copula as /joɫɲi/ (i.e. with a low-rising contour on the verb), is a case where the noun’s phonological tone is hypothesized to surface as such: a L tone. A slight complexity is that the copula surfaces with a low-rising tone. This makes sense in view of the exceptionless observation that an entire utterance cannot carry low tone on all of its syllables. The sequences L+L (monosyllabic noun+copula) and L.L+L (disyllabic noun+copula) cannot surface as such, due to a general prohibition against all-L tone groups in Na. The contour observed at the end of a sequence of L tones is interpreted as resulting from the post-lexical addition of an extra tone. The same applies to the tonal class of disyllables exemplified by /k^hvɲi/ ‘dog’.

Concerning the transcription of low-rising contours, the choice between notation as LM or LH could appear as a nonissue, insofar as there is no contrast (at the surface-phonological level) between LM and LH contours. But in the case of /joɫɲi/ ‘is (a/the) sheep’ or /k^hvɲi/ (realization of ‘dog’ in isolation), there exists a language-internal argument for analyzing the endpoint of the contour (a post-lexical tone) as H rather than M: as will be set out in §3.4.3, the M tone in Na is a phonologically inert tone; if the postlexical tone added to all-L sequences were M, this would be the only instance of rule leading to the association of a M tone to a syllable that is already linked to another tone. The postlexical tone added at the end of a sequence of L tones is therefore analyzed as H, and the rising contour found in ‘dog’, ‘wilderness’, ‘... is a sheep’ will hereafter be written as LH, hence /k^hvɲi/, /dzɯɲaɲi/ and /joɫɲi/.

3.3.4 Contour tones as sequences of level tones

As mentioned in the static overview presented earlier, there are no phonological falling contours in Yongning Na: no syllables carry phonological tones HL, HM,

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or ML. Also, tone-group-initial H is never observed.

Rising contours, on the other hand, do exist. They are restricted to the last syllable of a tone group: a rising contour is not found on a non-group-final syllable, except in some special cases discussed in §8.3. The two observed contours are M-to-H and L-to-H (the latter constituting the neutralization of LM and LH in the underlying phonological form). Unlike the low-rising contour, the phonological behaviour of the mid-rising contour, MH, is straightforward. When the word is tone-group-final, the contour is realized as such: a rising tone with a non-low starting-point, e.g. in /tʂ^hæ¹/ ‘deer’ and /hwɤ^rli¹/ ‘cat’. (Note that when a word is pronounced in isolation, it constitutes a tone group on its own: the beginning of the word is also the beginning of the tone group, and the end of the word is also the end of the tone group.) When there is a following syllable within the tone group, the MH contour unfolds, projecting its H part onto that syllable. Unlike the floating High tone (#H), which cannot attach to a following clitic, the MH contour can unfold over any syllable. With the copula, this yields /tʂ^hæ¹ji¹/ ‘is (a/the) deer’ and /hwɤ^rli¹ji¹/ ‘is (a/the) cat’. With the possessive, this yields /tʂ^hæ¹bv¹/ ‘of (a/the) deer’ and /hwɤ^rli¹bv¹/ ‘of (a/the) cat’.

Low-rising contours, on the other hand, raise some rather subtle issues for description and analysis, addressed in the following paragraphs.

3.3.5 Choosing among analytical options: LM vs. LH, or LM vs. LML

Concerning the two categories of tones neutralized to a low-rising tone in isolation, illustrated by /zæ/ ‘leopard’ and /bo/ ‘pig’, at least two analytical options are open. Assuming (for reasons which will become clearer below) that the perfective suffix carries a M tone unless affected by what precedes, the realization of ‘... has bought leopards’ as /zæ¹hwæ¹ze¹/, with a L tone on the suffix, vs. a M tone for ‘... has bought pigs’ (/bo¹hwæ¹ze¹/), could be put down to a floating L tone, parallel to the floating H tone found in the tone categories illustrated by ‘horse’. This tone would remain unassociated when ‘to buy (a/the) panther’ is spoken in isolation, and associate to the suffix when one is available. The tone pattern of ‘to buy (a/the) panther’ would then be LML, as against a more simple LM pattern for ‘to buy a pig’. In turn, the difference between these two object +verb phrases would be put down to a LML vs. LM tone contrast on the noun. The LML sequence could be transcribed as LM+#L: LM followed by a floating L tone.

Another analytical option is suggested by the static observation that a H tone is always followed by L tones within a speech unit – what will be referred to below as a tone group. In this light, the lowering of the tone of the accomplished suffix

3.3 Phonological analysis of the tone categories of nouns

in /zæJ hwæJ-zeJ/ ‘... has bought leopards’ could be ascribed to the presence of a preceding H tone, which depresses the tones of all the syllables that follow it: the phonological form would be //zæJ hwæJ-zeJ//. In turn, the H tone carried by the verb ‘to buy’ in this construction would originate in a lexical LH tone on the noun ‘leopard’.

Among these two options, the second is currently favoured: floating L tones are not required anywhere else in the description of the language, whereas it seems that there is no avoiding floating H tones in the description. Also, an evolutionary scenario setting out the conditions of appearance of the floating H tone can be proposed (see §3.3.1.3), whereas positing a floating L tone would be a flatly synchronic descriptive device. Still, there is no overwhelming evidence for rejecting the analysis of the tone of the ‘leopard’ class as a sequence of three levels: LM, plus a floating L tone (LM+L#). Such cases of analytical indeterminacy are important to understanding the evolutionary potential of the system – a topic which will be taken up in Chapter 11.

Under the present analysis, the lexical tones //LM// and //LH// contrast not only on monosyllables but also on disyllables. These two tones surface in the same way except when the word is followed by a toneless clitic. For instance, //boJmiJ// ‘sow, female pig’ and //boJtaJ// ‘boar, male pig’ are realized with the same surface-phonological tone pattern, not only in isolation but also when followed by the copula: /boJ-miJ-jiJ/ ‘... is (a/the) sow’, /boJ-taJ-jiJ/ ‘... is (a/the) boar’ (these could also be transcribed as /boJ-miJ-jiJ/ and /boJ-taJ-jiJ/: there is no contrast at the surface-phonological level). The contexts that can disambiguate their tone pattern are exemplified by /boJmiJ-bvJ/ ‘... of (a/the) sow’ vs. /boJ-taJ-bvJ/ (which could also be transcribed /boJ-taJ-bvJ/) ‘... of (a/the) boar’: in the latter expression, the possessive clitic //-bvJ// receives L tone.

At first, the differences observed across speakers had led to the hypothesis that the word for ‘boar’ may be an exception (Michaud 2008b: 191). But the existence of the opposition was later confirmed in the speech of the consultant of reference, F4, in elicited combinations and also in narratives.

For the first category, ‘sow’, the analysis of the tone pattern as LH is ruled out: if one were to transcribe this as /boJ-miJ/, then one would have to transcribe the form with the possessive as /*boJmiJ-bvJ/ ‘... of (a/the) sow’, with H+H, a tone sequence which is never observed elsewhere in Yongning Na (by application of Rule 4: “A syllable following a H-tone syllable receives L tone”; for more details, see Chapter 8). This leads us to propose with full confidence an analysis as LM.

As for ‘boar’, a phonological analysis as /boJ-taJ/ makes good phonological sense, insofar as all the tones that follow are lowered to L, as expected following

3 The lexical tones of nouns

a H tone. When a word of this tonal category is followed by the possessive /bɥ/, the latter carries L tone; this is the same as after a disyllable with H# tone, as shown in (1a-1b), where the notation as LH for ‘boar’ is adopted.

- (1) a. hwæ˥[tʃæ˧-bv˨] | ‘... of (a/the) rat’
b. bo˧-ʃa˧-bv˨ | ‘... of (a/the) boar’

In addition, all compounds involving the tone category of ‘boar’ (‘boar’s head’, ‘boar’s blood’ ...) have the same pattern, which can be described as L+H+a sequence of L tones (L+H+L..). This is again parallel to the H# category, where the tone pattern of all compounds is M+H+a sequence of L tones (M+H+L..).

Under the present analysis, disyllables and monosyllables both undergo a neutralization of the underlying //LM// and //LH// categories when they are realized in isolation. Tone neutralization is a salient aspect of the Yongning Na tone system.

An alternative would be to analyze the tone pattern of ‘sow’ as //LM//, and that of ‘boar’ as //LML//. This analysis equally captures the fact that any following tones are lowered to L: in view of Rule 5 (“All syllables following a HL or ML sequence receive L tone”), LML can only be followed by more L tones. This is the analysis that I chose at first, including in the first version of the Yongning Na glossary deposited in the STEDT project (2011). Describing this tone category as a sequence of three levels did not seem exceedingly complex at the time, in view of the complexity of other categories, such as //L+MH// and //LM+#H//. However, the latter two lexical tone categories are composed of two parts, one associating to the beginning of the word, the other to its end; //LML// would be the only pattern specifying three levels in a row. Moreover, it would be the only category for which a //ML// sequence needed to be posited. Notation as //LH// is therefore adopted here. One may nonetheless keep in mind that an analysis as //LML// would also be possible. Such cases of analytical uncertainty do not merely constitute recondite topics for the phonologist to ponder: they also provide insights into the system’s potential for evolution, since language learners also face these competing analytical options when constructing their own phonological system.

3.3.6 Neutralization of //LM// and //LH// in isolation: is the product /LM/ or /LH/?

Monosyllables with //LM// and //LH// lexical tones, such as //bo˧// ‘pig’ and //zæ˧// ‘leopard’, are realized in isolation with the same tone: a low-rising contour. Phonetically, a low-to-mid realization and a low-to-high realization are

both acceptable. My consultants sometimes corrected my productions of this tone category because the starting-point was not low enough, which obviously entails risks of confusion with //MH//. On the other hand, they never corrected me for a mistaken endpoint (too high or too low).

In an attempt to find out to what extent there is a preference for a phonetically [Mid] or phonetically [High] endpoint for the low-rising contour, I tried fishing for corrections from consultant F4 on several occasions, producing two variants of words such as ‘pig’ and ‘leopard’, both with a low starting-point, one with what I intended as a moderate rise (approximately up to F₀ mid-range), and one which I intended as a strong, rapid rise towards a [High] final target. I asked the consultant to choose which of the two productions sounded better. The answer was always ‘both are correct’ (/jɪt-bæɪ | hoʌ/: 2-classifier+correct).

The choice made here is to transcribe the product of the neutralization of //LM// and //LH// as /LH/ at the surface-phonological level; but there is no decisive phonetic argument for this notation. The product of tone neutralization tends to be phonetically less definite than the product of consonantal neutralization. For instance, the opposition between coronal and retroflex stops in Yongning Na is neutralized in front of /w/, and the product of neutralization is clearly a retroflex: [tʰw] is a well-formed syllable in Na, and [tʰɰ] is not. On the other hand, the product of the neutralization of //H// and //M// in isolation occupies the entire portion of the phonetic tone space corresponding to these two tones: it is a non-low tone, and it may not prove appropriate to try to assign it a more precise phonetic label, such as either ‘high’ or ‘mid’.

3.3.7 Lexical tones anchored at beginning and end of the word

Two of the lexical tones of Yongning Na consist of two-part lexical tones: the first part of the tone pattern is anchored at the beginning of the lexical word, and the second part is anchored at its end. These two tones are //LM+#H// and //LM+MH#//. The + sign materializes the boundary between their first and second part.

The H tone in the phrase /na.lhɪt.jɪɪ/ ‘... is (a/the) Naxi’ is interpreted as the manifestation of a floating H tone, and the lexical tone of this category analyzed as //LM+#H//: a //LM// sequence plus by a floating H tone, //H//. Likewise, //LM+MH#//, exemplified by //õ.lɔvʌ// ‘wolf’, is analyzed as a tonal category consisting of two parts: a //LM// tone, plus a final //MH// contour. In both cases, the pound symbol indicates the syllabic anchoring of the second part of these two-part tone categories: after the end of the lexical word for //LM+#H//; and at the end of the lexical word (i.e. on its last syllable) for //LM+MH#//.

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These two lexical tones may seem staggeringly complex, being composed of two parts each of which associates at a different end of the same word. The complexity is real, and probably goes a long way towards explaining why there are only two such lexical tones in Na, and not the full range of combinations that would be theoretically possible: there is no //LM+H\$/ tone, for instance. On the other hand, seen from within the Na tone system, the behaviour of these two lexical tones, //LM+#H// and //LM+MH#//, is not all that complex, insofar as it results straightforwardly from that of their constituting elements. The tones only need to be specified as consisting of two parts, A+B, each of which takes care of its own mode of association, like A and B when they appear on their own. The mode of association of the A part of the tone (the //LM// part) in //LM+#H// and //LM+MH#// is straightforward; likewise for the B part (//H// and //MH#//, respectively). As suggested by the + symbol in //LM+#H// and //LM+MH#//, the complexities in these two-part lexical tones add up: they do not multiply.

3.4 Overview of the system and reflections on its structure

Some generalizations emerge from the observations made above. There are three level tones in Yongning Na, H(igh), M(id) and L(ow). The tone-bearing unit is the syllable – more specifically the syllable rhyme. There is no distinction in terms of syllable weight, and thus no need for a decomposition into moras: any syllable rhyme, including syllabic consonants, can function as a tone-bearing unit for one or two tonal levels. Out of six theoretically possible contours (HM, HL, MH, ML, LH, and LM), only three are attested as lexical categories: MH, LH and LM, e.g. /tʂ^hæ/ ‘deer’, /zæ/ ‘leopard’, and /bo/ ‘pig’. Moreover, at the surface-phonological level, (i) contours are restricted to tone-group-final position, and (ii) LM and LH are neutralized to LH. Said differently, each syllable within a tone group carries one of three levels: H, M or L, and the last syllable can carry one of the following: H, M, L, MH, or LH. There are no phonological falling contours on a single syllable: *HL, *HM or *ML, only rising contours.

The following paragraphs propose an overview of the system of lexical tones for nouns, and some reflections on its structure.

3.4.1 Usefulness of an autosegmental approach

A first general observation that can safely be made in view of the data presented so far is that tone in Yongning Na is best analyzed in terms of autosegmental

models: models in which the tones are AUTOnomous from the SEGMENTs (i.e. vowels and consonants). These models were originally developed for Subsaharan tone systems, but have been convincingly applied to certain Tibeto-Burman languages (see, in particular, Hyman & VanBik 2002). The choice of these descriptive concepts is motivated by language-internal evidence; it is by no means dictated by a priori theoretical commitments. I am fortunate to be familiar with a few strikingly different tone systems of Asia: that of Yongning Na, which has phonetically simple and morphophonologically complex tones; and that of Vietnamese, which has phonetically complex and morphophonologically inert tones. To me, it is clear that Yongning Na is to be described as having a level-tone system, unlike Vietnamese in which “there are no objective reasons to decompose [...] tone contours into level tones or to reify phonetic properties like high and low pitch into phonological units such as H and L” (Brunelle 2009c; see also Brunelle, Nguyễn & Nguyễn 2010; Kirby 2010; 2011).

3.4.2 Recapitulation of the lexical tone categories

Tables 3.7a and 3.7b set out the analysis of the six tone categories of monosyllabic nouns and the eleven categories of disyllabic nouns. To date, no single morphosyntactic context bringing out all the tonal contrasts of nouns has been found: each context brings out only some of the oppositions, whereas others are neutralized. For instance, addition of the copula brings out the opposition between //M// and //H// tones (/M+L/ vs. /M+H/ for monosyllables, /M.M+L/ vs. /M.M+H/ for disyllables). This opposition is neutralized to /M/ and /M.M/ respectively in isolation. On the other hand, addition of the copula neutralizes the tonal contrasts that appear in isolation between //H//, //MH#// and //H\$// on disyllables: all three yield /M.M+H/ with the copula, whereas they are realized as /M.M/, /M.MH/ and /M.H/ respectively in isolation. So it is necessary to elicit a word in several contexts to determine its lexical tone. The table provides information on the tone categories (i) in isolation, (ii) when followed by the copula //ji// (in frame (2): see below), and (iii) when followed by the possessive clitic //bɣ+//.

- (2) tɕ^huɿ _____ ji
 DEM.PROX target item COP
 ‘This is (a/the) _____.’

A recording of disyllabic nouns in frame (2) is available online; its identifier is: NounsInFrame.

Table 3.7a: The lexical tones of monosyllabic nouns.

analysis	in isolation	+COP	+POSS	example	meaning
// LM //	LH	L+H	L+H	bo ↓	pig
// LH //	LH	L+H	L+H	zæ ↓	leopard
// M //	M	M+L	M+M	la ↑	tiger
// L //	M	L+LH	L+M	jo ↓	sheep
// #H //	M	M+H	M+M	zwa ↓	horse
// MH# //	MH	M+H	M+H	tʂ^hæ ↓	deer

This set of three contexts is sufficient to bring out all oppositions, except that between //LM// and //LH// on monosyllables, which only surfaces in a very restricted number of contexts due to the neutralization of //LH// and //LM// sequences at the surface-phonological level. (As was seen above, §3.2.2, one such context is in association with the verb ‘to buy’: for instance, the //LM//-tone word ‘pig’ yields /**bo**↓ **hwæ**↑-**ze**↑/ ‘... bought pigs’, whereas the //LH//-tone word ‘leopard’ yields /**zæ**↓ **hwæ**↑-**ze**↑/ ‘... bought leopards’.)

The tone of the proximal demonstrative //tʂ^hu↓// in (2) is /M/, 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 3.7a–b. On the other hand, no tone is indicated for the copula in frame (2), because its surface tone changes according to the tone category of the target word.

Dots indicate boundaries between syllables within the lexical word, and the ‘+’ sign indicates the boundary between the noun and a following morpheme. For instance, the information provided in Table 3.7b for disyllabic L-tone nouns is: L.LH in isolation, and L.L+H with copula and with possessive clitic. As an example, the word ‘dog’ is /**k^hv**↓**mi**↓// in isolation, yielding /**k^hv**↓**mi**↓ **ni**↑/ ‘... is (a/the) dog’ and /**k^hv**↓**mi**↓-bv↑/ ‘... of (a/the) dog’. The final H tone in /**k^hv**↓**mi**↓// is due to a general rule, discussed in §3.3.3: tone groups containing only /L/ tones are not allowed by Yongning Na phonotactics; if a tone group only has /L/ tones, a postlexical /H/ tone is added to its last syllable.

The leftmost column in Table 3.1 (“analysis”) presents the phonological categories. The three following columns contain surface-phonological transcriptions. Examples in the column before last are transcribed according to the phonological categories, following conventions set out in §3.4.4.

Table 3.7b: The lexical tones of disyllabic nouns.

analysis	in isolation	+COP	+POSS	example	meaning
// M //	M.M	M.M+L	M.M+M	po-llo ↓	ram
// #H //	M.M	M.M+H	M.M+M	zwæ ↓ zo ↑	colt
// MH# //	M.MH	M.M+H	M.M+H	hwɿ ↓ li ↑	cat
// H\$ //	M.H	M.M+H	M.M+M	ky ↓ ʃe ↓	flea
// H# //	M.H	M.H+L	M.H+L	hwæ ↓ [ʃæ] ↓	squirrel
// L //	L.LH	L.L+H	L.L+H	k^hv ↓ mi ↓	dog
// L# //	M.L	M.L+L	M.L+L	da ↓ ji ↓	mule
//LM+MH#//	L.MH	L.M+H	L.M+H	õ ↓ ɔ ↓	wolf
//LM+#H//	L.M	L.M+H	L.M+M	na ↓ hi ↑	Naxi
//LM //	L.M	L.M+L	L.M+M	bo ↓ mi ↓	sow
// LH //	L.M	L.M+L	L.M+L	bo ↓ la ↓	boar

In light of this synthetic view, the distributional observations made above can be flipped around. For instance, instead of stating that “a monosyllabic noun that carries a M tone in isolation may belong in one of three distinct underlying categories”, it can now be said that the three non-contour lexical tones, //M//, //L// and //H//, all neutralize to /M/ when a monosyllable is said in isolation. Among disyllables, //M// and //H// neutralize to /M.M/; //H\$// and //H#// neutralize to /M.H/; and //LM//, //LH// and //LM+#H// neutralize to /L.M/.

When the possessive clitic //by-// is added after a monosyllabic noun, yielding, for example, /**bo**↓-**by**↓/ ‘of the pig’, contours unfold over the two syllables of the resulting combination: //LH// yields /L+H/ (as does //LM//, following neutralizing with //LH//), and //MH// yields /M+H/. The non-contour tones, //M//, //L// and //H//, do not affect the possessive, which surfaces with default /M/.

This last point offers crucial evidence for the distinction between contours (//LM//, //LH// and //MH#//) on the one hand and the floating H tone (//H//) on the other. The second part of a contour is realized on the possessive; the floating H tone is not. The interpretation proposed is that the possessive clitic cannot provide anchorage for a tone, whereas it can host a tone level that is part of a tone anchored to a preceding syllable. The //MH#// contour tone in Table 3.7a–b has a stable phonological anchorage: it is anchored to the syllable preceding the clitic. From there, the second part of the contour can be projected onto the possessive clitic – a process of contour unfolding which is distinct from processes of tonal

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anchoring.

The noun is a disyllable that carries lexical MH# tone. The copula carries lexical L tone.

A schematic representation in successive stages is presented in Figure 3.1 below: the //MH// tone is lexically associated to a syllable; from there, the H part reassociates to the next syllable, resulting in a situation where each of the two syllables carries one tonal level. Stage 1 is the input: the noun is a disyllable that carries lexical MH# tone; and the copula carries lexical L tone. Stage 2 shows the anchoring of the MH tone pattern onto the last syllable of the lexical word. Anchorage on the lexical word's last syllable is part of this lexical tone's specification, as indicated by the symbol # in the label MH#. Stage 3 represents one-to-one mapping of levels to available syllables. The MH contour associates to syllables one by one, starting from its point of anchorage, namely the noun's last syllable, which receives M. The H level associates to the following syllable: the copula. This leaves no syllable available for the copula's lexical L tone, which remains unassociated, and does not surface at all. The first syllable of the noun, which has not been assigned a tone in the above process of association of the lexical tone, remains toneless. Stage 4 represents the hypothesized process whereby it receives a M level, by default. Stage 5 corresponds to the surface-phonological result.

The step-by-step representation in Figure 3.1 goes into much more detail than tonologists with an experience of level tones may find necessary. It nonetheless appeared useful to provide this explicit representation for one of the lexical tones of Na. Doing a similar figure for other lexical categories of Yongning Na could be a useful exercise for an introductory phonology class.

By contrast with MH#, the floating H tone initially lacks anchorage, and the possessive clitic is unable to provide such anchorage. Since this H tone receives syllabic anchorage neither onto the word to which it is lexically attached, nor on the possessive clitic that follows it, it remains unassociated, and does not surface at all.

3.4.3 **Analysis of M as a default tone**

The above analysis assumes that M serves as a default tone: syllables that are not specified for tone receive M. For instance, a //H// tone carried by a disyllabic noun can only manifest itself on a following word: the H tone, though lexically attached to the noun, never appears on the noun itself. Both syllables of the noun receive /M/ tone in the surface-phonological form; under the present analysis, this is understood as default tone assignment. Likewise, /M.L/ is observed

3.4 Overview of the system and reflections on its structure

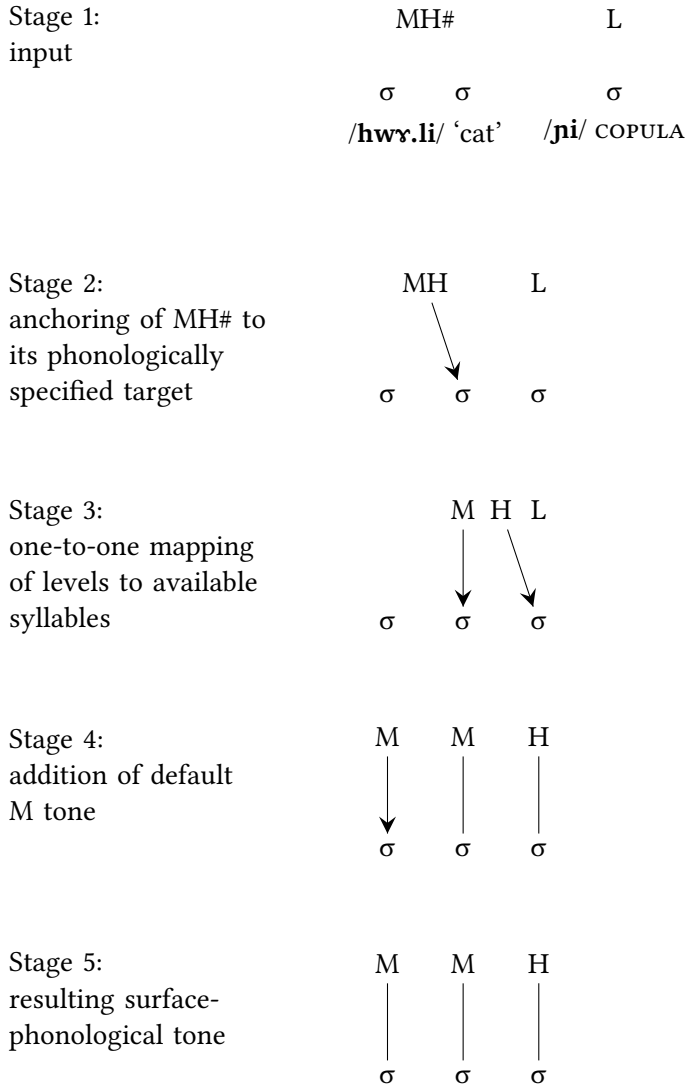


Figure 3.1: A detailed representation of tone-to-syllable association for /hwɤ.liɪ ɲi/, 'is (a/the) cat'.

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as a surface pattern on disyllabic and polysyllabic words, such as /**da-tji**/ ‘mule’, but this pattern is analyzed as the manifestation of a lexical-word-final L tone (notation: //L#//), the /M/ tone on the first syllable being a default tone, not a lexically specified tone. Evidence for this analysis will be presented in the course of the discussion, drawing on the combinatorial properties of tones, such as the tones of compound nouns.

One may be tempted to push this analysis further and try avoiding specifying the M tone anywhere in the model of lexical tones. At present, disyllables such as /**da-tji**/ ‘mule’, with a surface-phonological M.L pattern, are analyzed as having a final L (notation: //L#//), the M tone on the first syllable being a default tone, whereas disyllables such as /**bo-lmi**/, with surface L.M, are analyzed as having a phonological //LM// tone, i.e. specifying phonologically the M tone of their second syllable. The reason for this analysis is that L tone spreads progressively (‘left-to-right’) onto syllables that are unspecified for tone (this is referred to as Rule 1; see Chapter 8 for further detail). In Table 3.7b, disyllables that carry L tone on both of their syllables are accordingly analyzed as possessing a simple lexical L tone. In transcriptions, L tone is indicated on both syllables by convention (e.g. the word for ‘dog’, //k^hv-lmi//), so as to stay close to surface realizations, but underlyingly, these words are analyzed as carrying a simple //L// tone. Disyllabic nouns that have a /L.M/ pattern (L on first syllable, M on second syllable) are analyzed as having a phonological /M/ on the second syllable, blocking L-tone spreading.

Under an approach dispensing with M at the lexical level, the syllabic anchoring of all L tones would need to be specified. This would to some extent be parallel to H tones, whose modes of association to the syllabic string are indicated with reference to the end of the lexical word, transcribed as #, and of the tone group, transcribed as \$. However, if the L.M pattern were reanalyzed as a word-initial L tone, it would be necessary to specify that it does not spread, unlike other L tones. Reanalyzing the //LM// category as a non-spreading L, contrasting with a spreading L, is a theoretical possibility; but positing two different types of L tones, with different phonological behaviours, is costly in terms of descriptive simplicity and naturalness.

Another alternative would be to analyze the surface /L.H/, /M.L/ and /L.L/ surface patterns as the realization of initial //L//, final //L//, and //L.L// (with L tone specified on both syllables), respectively, avoiding any reference to L-tone spreading. However, L-tone spreading is such a commonly attested process in Yongning Na that this alternative does not appear promising either.

Moreover, another device would be needed in order to describe MH contour

tones, since they cannot be described simply as H tones. It would be necessary to posit a separate type of H tones: a contour-creating H tone, in addition to the three types recognized so far. Finally, M-tone words need to be distinguished from toneless words – words that are altogether devoid of tone, such as the possessive, /bʏ/.

For these various reasons, it seems much preferable to adopt a model using M in the lexical specification of some of the categories.

3.4.4 The notation of tonal categories in lexical entries

This section explains the choices made for the notation of tonal categories in lexical entries (typically as head words in lexicon entries), as exemplified for nouns in Table 3.7a–b.

One option would be to indicate the phonological category in superscript at the beginning or end of the word, e.g. //zʷæ^{#H}// for ‘horse’, and //õ.dv^{LM} + ^{MH}#// for ‘wolf’. This notation, which separates tone from vowels and consonants, is unambiguous, and computationally easy to implement. It also reflects the analysis proposed here: that tone in Na is lexically associated to entire lexemes, not to individual syllables. On the other hand, working out the tone-to-syllable mapping requires complete familiarity with the conventional notations; so it appeared better to offer a transcription that looks closer to a surface realization, indicating a tone at the end of each syllable. Following standard usage, International Phonetic Alphabet tone letters (Chao 1930) were chosen: ɿ for High, ɿ for Mid, ɿ for Low, ʌ for Low-to-Mid, ʌ for Low-to-High, and ʌ for Mid-to-High.

This is strictly equivalent to Africanist notation by means of accents: for instance, //boʌ// ‘pig’ could be written as //bõ// in Africanist notation. Tone letters are favoured over accents for want of a satisfactory solution to the typographic issue of combinations of diacritics, e.g. how to indicate a rising contour on a syllable such as /ɿ̃/.

Instead of tone letters, numbers are favoured in Chinese-language publications; here too, the equivalences are straightforward: ɿ corresponds to 5, ɿ to 3, ɿ to 1, ʌ to 13, ʌ to 15, and ʌ to 35.

In the process of mapping tonal categories to syllables written in IPA, some cases are simple: for instance, the tone category LM can be represented by associating both levels to monosyllables, for instance //boʌ// ‘pig’, and distributing them over the two syllables of disyllables, for instance //boJmiɿ// ‘sow’. Not all cases are that straightforward, however.

For monosyllables, one adjustment was made when mapping tonal categories to syllables written in IPA, concerning the H tone. On monosyllables, there exists

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only one type of H tone: a floating H (notation: #H), that can only surface after the syllable to which it is lexically attached. In the absence of a distinction between various types of H tones, it appeared economical to dispense with the character ‘#’, which indicates the mode of syllabic association, and to write the tone simply as ʔ. Thus, ‘horse’ is transcribed simply as //zʷæʔ//, rather than //zʷæ#ʔ//.

For words of two syllables and more, on the other hand, there are three types of H tones, namely H#, #H and H\$, so an indication about syllabic anchoring cannot be entirely dispensed with. At least two diacritics need to be used to make the three-way distinction among H#, #H and H\$. The first of these three is indicated by a simple H-tone mark ʔ, as its mode of anchoring appears as phonologically simplest: sitting inert on the last syllable, and never moving from there. Hence //hwæ-ʔsæʔ//, not //hwæ-ʔsæʔ#//, for ‘squirrel’.

Moreover, when writing the lexical (deep-phonological) form of words, it appeared better to indicate a tone for each syllable; this introduces a degree of redundancy. For instance, ‘dog’ is transcribed as //k^hv.lmi.l//, not //k^hv.mi.l// or //k^hv.lmi.l//: the L tone is indicated (redundantly) on both syllables. Likewise, the M tone on the first syllable of disyllables even for lexical categories for which this M tone can be analyzed phonologically as unspecified, hence //hwæ-ʔsæʔ//, not //hwæ.ʔsæʔ//, for ‘squirrel’; //zʷæ-ʔzo#ʔ//, not //zʷæ.zo#ʔ//, for ‘colt’; //kv-ʔseʔ \$//, not //kv.ʔseʔ \$//, for ‘flea’; and //hwɣ.liʔ//, not //hwɣ.liʔ//, for ‘cat’.

Conversely, the tone pattern analyzed as LM+#H is, by convention, represented in the lexical form of disyllables simply as L on the first syllable and #H on the second, because indicating the M tone as a tone letter would wrongly suggest the presence of a contour on the syllable to which it would be associated. Hence, the notation chosen is //na.lhĩ#ʔ// for ‘Naxi (person)’, rather than //na.lhĩ#ʔ// or //na.lhĩʔ#ʔ//.

3.4.5 Attested and unattested lexical tones

The static regularities brought out in §3.1 can be reformulated in dynamic terms, as resulting from a set of tone rules. These are discussed in detail in Chapter 8, which also presents the fundamental phonological unit for tonal computation: the tone group. As a preview, the key facts are the following. Within a tone group, contours are only realized as such in tone-group-final position; in non-group-final position, the second level (the H portion in MH, for instance) associates to the following syllable. L tone spreads progressively (left-to-right). All tones following H are lowered to L. Finally, H and M are neutralized to M in tone-group-initial position.

These generalizations, together with the observation that there are no falling

contours on a single syllable, rule out all of the nonattested lexical tone patterns for monosyllables, and most of the patterns for disyllables: *H.L, *H.M, *M.LM, *ML.M, and so on. (The star refers to an unattested form, not a proto-form.) On the other hand, there exists a combination that is compatible with the language's phonotactics and yet unattested: there is no //LM+H\$/ tone pattern, whereas there exist //LM+MH#// and //LM+#H// patterns. (As for //LM+H#//, it is undistinguishable from //LH//, since for a disyllable both formulas result in the same tonal assignment: L on the first syllable, and a fixed H on the second.) This gap in the system can be interpreted as pointing to a relatively marginal status of //H\$/.

3.4.6 Phonological regularities and morphophonological oddities

Looking back at the data in Table 3.7a–b, it is tempting to look for phonological regularities that would account for all the observed data. The search for phonological regularities is soon up against sets of facts that resist phonological generalizations, however. For instance, there is no obvious reason why L should surface as M in isolation. This may have to do with the prohibition of all-L tone groups (about which see §3.3.3), and a fortiori all-L utterances; but for verbs this is remedied by adding a post-lexical final H tone, so that verbs with lexical //L// tone surface with a /LH/ contour when they are spoken in isolation. If the tone system were based on a set of phonological rules – rules applying uniformly in all morphosyntactic contexts –, lexical //L// on a noun would be expected to surface as /LH/, not as /M/. A similarly puzzling case is that of the //L// tone on disyllabic nouns. A word such as //k^hvJmiJ// 'dog' yields /k^hvJmiJ/ in isolation, as expected, but when followed by the copula it yields /k^hvJmiJ ni/ 'is (a/the) dog': the copula loses its lexical //L// tone. There is no obvious reason why this should be so: one would have expected a /L.L.L/ sequence, realized as /†k^hvJmiJ ni/ following the addition of a post-lexical H tone to avoid an all-L phonological word.

This asymmetry in the tonal treatment of the copula after a //L//-tone noun, depending on the number of syllables in the noun, points to a crucial aspect of Yongning Na tone: many tone rules have narrowly restricted fields of application; they apply in highly specific morphosyntactic contexts, and are sensitive to the number of syllables (and internal makeup) of the morphemes at issue.

4 Compound nouns

Tonal processes applying within the noun phrase constitute a major part of the Yongning Na tone system. They also shed light on evolutionary processes. In Na, as in other Sino-Tibetan languages that have undergone considerable phonological erosion (such as Tujia, Bai, Namuyi, or Shixing), many roots that used to be phonologically distinct have become homophonous; as a consequence, there exists a strong tendency towards disyllabification. The study of synchronic tonal processes brings out which processes – such as compounding and affixation – feed into which categories of disyllabic nouns. It also brings out, by contrast, those disyllabic nouns whose tones are not those that one would expect in view of currently productive rules. In turn, this draws attention to these outlier nouns, raising the issue of where they got their tone from – whether they date back to a time when different tone rules applied, for instance.

Tonal phenomena taking place within the noun phrase in Na will be presented in the following order: compounds (this chapter); numeral-plus-classifier phrases (Chapter 5); and combinations between nouns and grammatical morphemes (Chapter 6).

The study of compounds is known to be highly revealing of prosodic systems. In Yongning Na, determinative compounds, such as ‘tiger’s skin’, and coordinative compounds, such as ‘mother and daughter’, do not follow the same tone rules. For instance, the determinative compound ‘nanny goat’s back’, /ts^hu^h-mi^h-gv^h-dv^h/, carries tone H# (a final H tone), whereas the coordinative compound ‘father and mother’, /ə^h-da^h-ə^h-mi^h#/, carries tone #H (a floating H tone), even though the input tones are the same: both ‘nanny goat’ and ‘father’ have tone H\$; and both ‘mother’ and ‘back’ have tone M. Determinative compounds and coordinative compounds are therefore presented separately.

4.1 Determinative compound nouns. Part I: the main facts

Compounding is a highly productive word formation process in Na, as in many other languages of East and Southeast Asia (on Sinitic: Arcodia 2012: passim). Determinative compounds (the *tatpuruṣa* compounds of Sanskrit grammar) are

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more common than coordinative compounds (Sanskrit *dvandva*). In determinative compounds, the order of constituents is determiner plus head, as is generally the case in Sino-Tibetan (Michailovsky 2011).

In some tonal languages, possessive constructions (genitival syntagms) and compounds (complex lexemes) are distinguished by their tone patterns: in Kita Malinké, ‘the meat of the cow’ is /**mìsì sùbù**/, and ‘beef, cow meat’ is /**mìsì-sùbù**/ (Creissels & Grégoire 1993). The latter is characterized by tonal compactness (*compacité tonale*): the tone pattern of the compound is determined by that of its first component, which is the determiner. Similarly, in Yongning Na, no tonal change takes place in possessive constructions, whereas tonal changes take place in compounds – although the tone changes are more complex than in Malinké, as will be explained further down. In Na, the two constructions are conspicuously different: in possessive constructions, the possessive /**bv̄**/ is added after the determiner, before the head, e.g. /**hw-li**/ ‘cat’, /**ʎ**/ ‘brains’, /**hw̄-li-bv̄** | **ʎ**/ ‘brains of the cat’. The first noun – the determiner – and the possessive particle form a single tone group. As for the second noun – the head –, its tone pattern remains the same as in isolation. By contrast, the tones of compounds are not simply the concatenation of those of their constituents. The present analysis progresses in increasing order of abstraction, from the surface-phonological patterns of compounds to the underlying system.

Determinative compounds are sometimes divided into “fixed combinations” and “free combinations”. The former constitute lexicalized combinations; they could also be called complex nouns, and one may want to grant them separate dictionary entries, e.g. /**ǎ-bv̄**/ ‘poultry yard’, from /**ǎ**/ ‘chicken’ and /**bv̄**/ ‘pen, sty, corral’. The latter consist of two nouns that are not habitually associated, e.g. /**gi-na-mi-nj̄** | **lu**/ ‘bear’s eye’: the two nouns are combined into a noun phrase in the context of a given utterance. “Fixed combinations” and “free combinations” are not neatly distinct from each other, however: there is a continuum between the two. The distinction made in this chapter is not between “fixed” and “free” combinations, but between regular and irregular combinations. From a morphotonological point of view, the relevant parameter is whether the tone pattern of a compound follows productive rules or not.

4.1.1 The role of the number of syllables

Tonal changes in compounding are only observed when the second term – the head – is less than three syllables in length, i.e. in combinations of the form $\sigma + \sigma$, $\sigma + \sigma\sigma$, $\sigma\sigma + \sigma$, $\sigma\sigma + \sigma\sigma$, $\sigma\sigma\sigma + \sigma$, or $\sigma\sigma\sigma + \sigma\sigma$. Otherwise no tone change takes place. What matters is thus not the total number of syllables of the resulting

compound, but the number of syllables of the head. Examples (1a–1c) constitute an illustration.

- (1) a. **lo-ʃv** | **-hi|na-mi#**
 ‘Lugu lake’
 b. **hi-di|**-di|mi|
 ‘Yongning plain’
 c. **gi-na-mi**+njʁ|**u**|
 ‘bear’s eye’

The place names in (1a-b) have the same syntactic structure: /**lo-ʃv**/ (Chinese: 落水 *Luòshuǐ*) is the name of a village on the shore of Lugu lake, and /**hi-di|**/, literally ‘the central place’, is the name of Yongning. The relationship in both cases is between determiner and head: ‘the lake of /**lo-ʃv**/’, ‘the plain of /**hi-di|**/’. In (1a), both parts of the compound retain their lexical tones: /**lo-ʃv**/ ‘Luoshui’, and /**hi|na-mi#**/ ‘lake’. The phrase ‘Lugu lake’, /**lo-ʃv** | **-hi|na-mi#**/, must be analyzed as consisting of two tone groups; if it constituted a single tone group, its tone pattern would be /***lo-ʃv|hi|na|mi**]/, by application of Rule 5: “All syllables following a HL or ML sequence receive L tone”. (For a recapitulation of the tone rules, see Chapter 8.) In (1b), the expected tone change takes place, by application of Rule 5: the lexical tone of ‘plain’ is M (/di-mi+); in the compound, this word is lowered to L. Example (1c), from /**gi-na-mi#**/ ‘bear’, and /**njʁ|u**+/ ‘eye’, illustrates the fact that tonal change takes place in compounds with a three-syllable determiner, provided that the head comprises no more than two syllables.

To venture an intuitive comment, it is clear from the data set out below (Table 4.4 and following tables) that heads undergo more tonal changes than determiners in compounding: in particular, there are numerous cases where a H tone that originates lexically on the determiner associates to the last syllable of the head. If this happens in a $\sigma\sigma+\sigma$ compound, the distance between the site to which the tone is lexically attached and the syllabic position of the tone in the surface phonology is no greater than one syllable. In a $\sigma\sigma+\sigma\sigma$ compound, this distance increases to two syllables. (In this rule-of-thumb calculation, the H tone is considered to be associated to the lexical word’s last syllable: remember that H tones never appear on a word-initial syllable.) Impressionistically, the same process applying to a $\sigma\sigma+\sigma\sigma\sigma$ compound would become rather unwieldy, resulting in a H tone moving three syllables away from where it sat in the lexical representation. This is by no means a cognitive impossibility – staggeringly complex tonal phenomena are firmly attested in the world’s languages, and by some

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estimates Na would rate as a complex system, in its own way. Still, it seems intuitively clear that in this instance the observed pattern (dividing the compound into two parts) avoids the greater complexity that would result. The asymmetrical state of affairs whereby $\sigma\sigma+\sigma\sigma$ compounds undergo tonal change, and not $\sigma\sigma+\sigma\sigma\sigma$ compounds, makes intuitive sense in light of the asymmetry of the two cases in terms of tonal computation. This suggests a preference (in this particular language and dialect) for tonal processes that do not result in tonal movements of more than two syllables at a time. This observation will be taken up below, in the discussion of the tone patterns that result from compounding: a tendency to avoid long-distance movement of tones can be observed.

4.1.2 **How the tone patterns were collected**

Some lexicalized compounds are found in the glossary compiled in the course of fieldwork; others can be found in narratives. In order to obtain all possible tonal combinations of determiner and head, systematic elicitation was also used. The main language consultant, F4, was extremely reluctant to accept semantically implausible combinations. She gradually understood that the unusual combinations that I put forward were designed to obtain a particular sequence of tones; she nonetheless retained a strong commitment to a common-sense use of language, standing on the firm ground of common usage. In the consultant's view, compounds such as 'flea's back' and 'flea's liver' did not stretch plausibility too far, and I gratefully recorded them. But she would definitely not accept combinations such as 'chief's beetle's kidney basket' (to cite an example used by Hyman 2007a, taken up in Evans 2010: 225). It was nonetheless possible to obtain all combinations in the end, searching through the word list to arrive at the least implausible combinations, and discussing possible contexts with the consultant. This made the elicitation process slower than with a consultant who readily accepts to create any combination. A consultant's conservative behaviour may have some advantages, however: while I have no reason to doubt the validity of results obtained through highly artificial combinations, some might have suspicions that a consultant whose imagination runs free from the trammels of common sense could occasionally take similar liberties with the language's ordinary rules.

Recordings of compounds are available online from the Pangloss Collection, containing over 1,500 compounds (recordings: DetermCompounds1 through DetermCompounds16). Some examples are also found in texts, e.g. /ə-**mi**-**væ**-**tv**/ 'mother's neck' in Tiger2.86; in all cases, the tone patterns are identical with those obtained through systematic elicitation. Table 4.1 provides an example

Table 4.1: Example words used to elicit body-part compound nouns.

tone	determiners	meaning	heads	meaning
LM	bo ↓	pig	yuu ↓	skin
M	la ↓	tiger	bu ↓	intestine
L	jo ↓	sheep	mu ↓	fat
#H	zwa ↓	horse	su ↓	blood
MH#	tsʰæ ↓	deer	tu ↓	brains

M	po ↓ lo ↓	ram	gv ↓ dv ↓	back
#H	zwa ↓ zo ↓#	colt	ni ↓ gy ↓#	nose, snout
MH#	hwɿ ↓ li ↓	cat	qv ↓ tsæ ↓	voice
H\$	hwɿ ↓ mi ↓\$	she-cat	ho ↓ mi ↓\$	stomach
L	kʰv ↓ mi ↓	dog	nv ↓ mi ↓	heart
L#	da ↓ ji ↓	mule	ti ↓ pi ↓	ear
LM+MH#	õ ↓ dv ↓	wolf	ji ↓ tsæ ↓	waist
LM+#H	na ↓ hi ↓#	Naxi person	njæ ↓ qʰæ ↓#	gum in the eyes
LM	æ ↓ mi ↓	hen	njɿ ↓ lu ↓	eye
LH	bo ↓ ka ↓	boar	hi ↓ zæ ↓	uvula
H#	hwæ ↓ tsu ↓	rat	xæ ↓ tv ↓	neck

word for each tonal category of noun used to build compounds referring to body parts of animals.

4.1.3 The facts: surface-phonological tone patterns

The tone patterns of compound nouns in Yongning Na are set out in Tables 4.2a–e as a function of the tones of their constituting elements. Each line of the table corresponds to a determiner and each column to a head. Tables 4.2a and 4.2b presents monosyllabic heads, and Tables 4.2c and 4.2d disyllabic heads.

Like simple nouns, compounds must be elicited in at least two contexts to bring out their tone category. The data were therefore elicited not only in isolation but also in the carrier sentence /**tsʰu**↓ | __ **ni**↓/, ‘This is ...’. This distinguishes tone categories M and #H. For these categories, the tonal string that obtains when adding the copula is indicated after a comma. For instance, the information ‘M.L’ at the intersection of line M and column LM indicates that the tone of the compound at issue is M.L, e.g. /**la**↓-**yuu**↓/ ‘tiger’s skin’. The fact that one single pattern

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Table 4.2a: Surface-phonological representation of the tone patterns of compound nouns. Monosyllabic head and monosyllabic determiner.

tone	LH; LM	M	L	H	MH
LM	L.M	L.M	L.M	L.M, L.M.H	L.MH
LH	L.H	L.L	L.H		
M	M.L	M.M, M.M.H	M.L	M.M, M.M.H	M.MH
L	L.LH				
H	M.H	M.M, M.M.H			M.L
MH	M.H			M.H, M.M.H	

is provided means that this pattern is unchanged when a copula is added, the copula bearing its lexical L tone: /**la**-**ɣu** **ji**/ ‘... is tiger’s skin’. The information ‘M.M, M.M.H’ at the intersection of line M and column M indicates that the tonal string of the compound at issue is M.M when said in isolation, e.g. /**la**-**bv**/ ‘tiger’s intestine’, and that addition of a copula yields a M.M.H pattern: /**la**-**bv** **ji**/ ‘... is tiger’s intestine’. In view of the tone in isolation, M.M ([**la**-**bv**]), the underlying tone could be a M tone or a #H tone (a H tone that is floating, and can only be realized after the lexical item at issue). The fact that the copula receives a H tone when it follows this compound ([**la**-**bv** **ji**]) reveals that the underlying tone pattern is #H.

When there exist tonal variants, alternatives are separated by slashes. For instance, the indication ‘M.L.L/M.M.H’ in line #H, column H\$ of Table 4.2c means that these compounds can have either of two patterns: M.L.L or M.M.H, e.g. /**zwæ**-**ho** **mi**/ or /**zwæ**-**ho** **mi**/ for ‘horse’s stomach’. Adjacent cells with identical patterns have been fused. Finally, for the sake of typographical economy, sequences of four M tones (M.M.M.M) have been abbreviated to ‘M...M’.

In view of the rarity of three-syllable nouns, one single three-syllable determiner was used: /**gi**-**na** **mi** **#**/ ‘bear’ (tone: #H). The data are set out in Table 4.2e.

4.1.4 Analysis into underlying tone patterns

The tonal strings reported in Tables 4.2a–e can be analyzed into abstract patterns. For instance, the sequence L.LH can be interpreted as the realization of a simple

Table 4.2b: Surface-phonological representation of the tone patterns of compound nouns. Monosyllabic head and disyllabic determiner.

tone	LH; LM	M	L	H	MH
M	M.M.L	M.M.M, M.M.M.H	M.M.L	M.M.M, M.M.M.H	M.M.L
#H	M.M.H	M.M.M, M.M.M.H			M.M.L
MH#	M.M.H	M.M.MH			M.M.H
H\$	M.M.H	M.M.M, M.M.M.H	M.M.H, M.M.M.H	M.M.M, M.M.M.H	M.H.L
L	L.L.H	L.L.LH			L.L.H
L#	L.L.L				
LM+MH#	L.M.H	L.M.MH	L.M.H, L.M.M.H		
LM+#H	L.M.H	L.M.M, L.M.M.H	L.M.H	L.M.M, L.M.M.H	L.M.H
LM	L.M.L	L.M.M	L.M.L	L.M.M, L.M.M.H	L.M.MH
LH	L.H.L				
H#	M.H.L				

L tone: it spreads over the two syllables of the compound, yielding L.L; and this sequence is further supplemented by a postlexical H tone due to Rule 7 (“If a tone group only contains L tones, a post-lexical H tone is added to its last syllable”). The result of analysis is presented in Tables 4.3a–e, which contains all the information required to generate the patterns of compounds, following the standard tone-to-syllable association rules set out in §8.1.

In the description of these patterns, reference must be made to a juncture that is internal to the tone group: one that separates the determiner from the head. This juncture is indicated by the symbol $^{\circ}$; the same symbol will be used in the description of numeral-plus-classifier phrases in Chapter 5, to refer to the juncture between the numeral and the classifier. Thus, L° refers to a L tone that attaches to the first part of an expression, $^{\circ}L$ to a L tone attaching to its second part, and

Table 4.2c: Surface-phonological representation of the tone patterns of compound nouns. Part b. Disyllabic head. Top: monosyllabic determiner.

tone	M	#H	MH#	H\$	L	L#	LM+MH#; LM+#H; LM; LH	H#
LM; LH	L.M.M	L.M.M, L.M.M.H	L.M.MH / L.H.L	L.M.H, L.M.M.H	L.M.L	L.M.L / L.L.H	L.H.L (=L.M.L)	L.M.H / L.L.H
M	M.M.M	M.M.M, M.M.M.H	M.M.MH	M.M.H, M.M.M.H	M.L.L	M.M.L	M.L.L	M.M.H
L	[L.L.LH]			L.L.H	L.L.LH	L.L.H	L.H.L	L.L.H
#H	M.M.H	M.M.M, M.M.M.H	M.H.L	M.L.L / M.M.H	M.H.L	M.M.H	M.H.L	M.M.H
MH#	M.M.H	M.M.M, M.M.M.H	M.M.MH	M.H.L	M.H.L	M.M.H	M.H.L	M.M.H

Table 4.2d: Surface-phonological representation of the tone patterns of compound nouns. Part b. Disyllabic head and determiner.

tone	M	#H	MH#	H\$	L	L#	LM+MH#; LM+#H; LM; LH	H#
M	M...M	M...M, M...MH	M...MH	M.M.M.H, M...MH/ M.M.H.L	M.M.L.L	M.M.M.L	M.M.L.L	M.M.M.H
#H	M.M.M.H	M...M, M...MH	M.M.H.L	M.M.M.H, M...MH/ M.M.H.L / M.M.M.H	M.M.H.L	M.M.M.H	M.M.H.L	M.M.M.H
MH#	M...MH	M...MH	M.M.H.L	M.M.H.L / M.M.M.H	M.M.H.L	M.M.M.H	M.M.H.L	M.M.M.H
H\$	M...M, M...MH	M...M, M...MH	M.M.H.L / M.H.L.L	M.M.H.L	M.M.H.L	M.M.M.H	M.M.H.L	M.M.M.H
L	L.L.L.H	L.L.L.L.H	L.L.H.L	L.L.L.H	L.L.H.L	L.L.L.H	L.L.H.L	L.L.L.H
L#	M.L.L.L	M.L.L.L	M.L.L.L	M.L.L.L	M.L.L.L	M.L.L.L	M.L.L.L	M.L.L.L
L+MH#	L.M.M.H	L.M.M.M, L.M.M.M.H	L.M.H.L	L.M.M.H	L.M.H.L	L.M.M.H	L.M.H.L	L.M.M.H
LM+#H	L.M.M.M	L.M.M.M	L.M.H.L	L.M.M.H, L.M.H.L	L.M.H.L	L.M.M.L	L.M.L.L	L.M.M.H
LM	L.M.M.M	L.M.M.M	L.M.M.M.H	L.M.M.M.H	L.M.L.L	L.M.M.L	L.M.L.L	L.M.M.H
LH	L.H.L.L	L.H.L.L	L.H.L.L	L.H.L.L	L.H.L.L	L.H.L.L	L.H.L.L	L.H.L.L
H#	M.H.L.L	M.H.L.L	M.H.L.L	M.H.L.L	M.H.L.L	M.H.L.L	M.H.L.L	M.H.L.L

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Table 4.2e: Surface-phonological representation of the tone patterns of compound nouns. Part c. Compounds with a trisyllabic, #H-tone determiner: ‘bear’+body part.

head		compound	
form	tone	surface form	surface tone
uɿ ‘skin’	LM	gi+na+mi+ɣuɿ	M.M.M.H, M.M.M.H.L
bɣ+ɿ ‘intestine’	M	gi+na+mi+bv+ɿ	M.M.M.M, M...M.H
mɣɿ ‘grease’	L	gi+na+mi+mɣɿ	M.M.M.MH
sɣɿ ‘blood’	H	gi+na+mi+sɣ+ɿ	M.M.M.M, M...M.H
ɬvɿ ‘brains’	MH	gi+na+mi+ɬvɿ	M.M.M.L

gv+dv+ɿ ‘back’	M	gi+na+mi+gv+dv+ɿ	M.M.M.M.M, M...M.H
ni+gɣ+ɿ ‘nose’	#H	gi+na+mi+ni+gɣ+ɿ	M.M.M.M.M, M...M.H
qv+ɬsæɿ ‘throat’	MH#	gi+na+mi+qv+ɬsæɿ	M.M.M.H.L
ho+miɿ\$ ‘stomach’	H\$	gi+na+mi+ho+miɿ	M.M.M.M.H, M...M.H
nvɿmiɿ ‘heart’	L	gi+na+mi+nvɿmiɿ	M.M.M.H.L
ɬi+piɿ ‘ear’	L#	gi+na+mi+ɬi+piɿ	M.M.M.M.H
jiɿɬsæɿ ‘waist’	LM+MH#	gi+na+mi+jiɿɬsæɿ	M.M.M.H.L
njɣɿɿuɿ ‘eye’	LM	gi+na+mi+njɣɿɿuɿ	M.M.M.H.L
ɣæ+ɿvɿ ‘neck’	H#	gi+na+mi+ɣæ+ɿvɿ	M.M.M.M.H

Table 4.3a: Abstract representation of the tones of compound nouns. Monosyllabic head and monosyllabic determiner.

tone	LM; LH	M	L	#H	MH
LM; LH	LH	LM	LH	LM+#H	LM+MH#
M	°L	#H	°L	#H	MH#
L	L				
H	#H°	#H			°L
MH	H#			H\$	

L#° to a final L tone attaching to the first part of the expression.

4.1 Determinative compound nouns. Part I: the main facts

Table 4.3b: Abstract representation of the tone patterns of compound nouns. Monosyllabic head and disyllabic determiner.

tone	LH; LM	M	L	H	MH
M	°L	#H	°L	#H	°L
#H	#H°	#H			
MH#	H#	MH#			H#
H\$	#H°	#H	H\$	#H	H#°
L	L+H#	L			L+H#
L#	L#°				
LM+MH#	LM+MH#°	LM+MH#	LM+H\$		
LM+#H		LM+#H	LM+H#	LM+#H	LM+H#
LM	LM°L	LM	LM°L		LM+MH#
LH	LH				
H#	H#°				

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Four tonal classes of head nouns always behave in the same way: the opposition between LM, LH, LM+#H and LM+MH# is neutralized. These tone categories for heads are therefore pooled together in the above tables. Among determiners, the opposition between LH and LM on monosyllables is neutralized; accordingly, these two tones are also pooled together in the tables.

Let us now proceed to an analysis of the patterns thus brought to light.

4.2 **Determinative compound nouns. Part II: discussion**

A few of the combinations in Tables 4.3a–e appear counter-intuitive in terms of the input tones. For instance, a M-tone determiner plus a M-tone monosyllabic head combine to a H-tone compound; specifically, a compound with a floating H tone, #H. This result could go so far as to cast doubt on the correctness of the analysis of the tone category of the two members of the compound as M, since this tone is expected to be inactive (see §3.4.3). However, while a disyllabic determiner with M tone and a monosyllabic head with M tone likewise yield a compound with #H tone, a compound made of a M-tone determiner and a M-tone disyllabic head carries a simple M tone. The analysis of the lexical category as M does not appear mistaken: the unexpected #H output is not the result of a general phonological rule of Na whereby any combination of two M tones would produce a floating H; it results from a morphophonological rule that is specific to this syntactic construction.

Such observations may come as a slight disappointment to the linguist, whose job consists in accounting for all observations through a model that is as simple and elegant as possible. Here as in many other domains of the Na tone system, it is clear that the gap between the lexical tones of words and their tonal realization in context is not simply a matter of sandhi rules operating on a phonological level. The behaviour of the three-syllable noun ‘bear’, /**gi-na-mi**#1/, as a determiner is a case in point: it patterns almost like disyllabic #H-tone nouns, such as ‘colt’, /**zwa-zo**#1/, but not quite – when the head is a L-tone monosyllable, the output tone is MH#, instead of #H when the determiner is disyllabic.

Many of the combinations in Tables 4.3a–e make sense in terms of the tone categories of the determiner and head, however. In the simpler cases, the tone of the determiner expresses itself first, then the tone of the head expresses itself to the extent allowed by the tones already assigned. Within this category, the tone patterns of compounds in which the tone of the determiner is H#, LH or L# are so simple as to appear trivial: in these three cases, only the tone of the determiner expresses itself.

Table 4.3c: Abstract representation of the tone patterns of compound nouns. Disyllabic head and monosyllabic determiner.

tone	M	#H	MH#	H\$	L	L#	LM+MH#; LM+#H; LM; LH	H#
LM; LH	LM	LM+#H	LM+MH# / L+#H°	LM+H\$	L+#H°	L+#H° / L+H#	L+#H°	LM+H# / L+H#
M	M	#H	MH#	H\$	°L	°L#	°L	H#
L	L			L+H#	L	L+H#	L+#H°	L+H#
#H	H#	#H	#H°	°L / H#	#H°	H#	#H°	H#
MH			MH#	#H°				#H

Table 4.3d: Abstract representation of the tone patterns of compound nouns. Disyllabic head and disyllabic determiner.

tone	M	#H	MH#	H\$	L	L#	LM+MH#; LM+#H; LM; LH	H#
M	M	#H	MH#	H\$ / #H°	°L	°L#	°L	[H#
#H	[H#		[#H°	H\$ / #H° / H#	[#H°	[H#	#H°	
MH#		MH#		#H° / H#			MH#°	
H\$		#H	[#H° / H#°		#H°		#H°	
L	L+H#	L	L+H#	L+H#	L+#H°	L+H#	L+#H°	L+H#
L#	L#°							
LM+MH#	[LM+H#	[LM+#H	[LM+MH#°	LM+MH#° / H#	LM+MH#°	[LM+H#	[LM+MH#°	[LM+H#
LM+#H				LM°H\$	LM+#H°			
LM	LM°		LM+MH#		LM°L	LM°L#	LM°L	
LH	LH							
H#	[H#°							

Table 4.3e: Examples and abstract representation of the tones of compound nouns with a trisyllabic, #H-tone determiner: ‘bear’+body part.

head		compound	
form	tone	underlying form	underlying tone
uɹ ‘skin’	LM	gi+na+mi+yu ɹ	H#
by ɹ ‘intestine’	M	gi+na+mi+by #ɹ	#H
mɹ ɹ ‘grease’	L	gi+na+mi+mɹ ɹ	MH#
sɹ ɹ ‘blood’	H	gi+na+mi+sɹ #ɹ	#H
ɬv ɹ ‘brains’	MH	gi+na+mi+ɬv ɹ	L#

gv+dv ɹ ‘back’	M	gi+na+mi+gv+dv #ɹ	#H
ji+gɹ ɹ ‘nose’	#H	gi+na+mi+ji+gɹ #ɹ	#H
qv+tsæ ɹ ‘throat’	MH#	gi+na+mi+qv+tsæ ɹ	#H°
ho+mi ɹ\$ ‘stomach’	H\$	gi+na+mi+ho+mi ɹ\$	H\$
nv ɹmiɹ ‘heart’	L	gi+na+mi+nv ɹmiɹ	#H°
ɬi+pi ɹ ‘ear’	L#	gi+na+mi+ɬi+pi ɹ	H#
ji+tsæ ɹ ‘waist’	LM+MH#	gi+na+mi+ji+tsæ ɹ	#H°
njɹ ɹɹ[ɹ ‘eye’	LM	gi+na+mi+njɹ ɹɹ[ɹ	#H°
ɬæ+tv ɹ ‘neck’	H#	gi+na+mi+ɬæ+tv ɹ	H#

When the determiner has tone H# (a H tone on its last syllable), tonal oppositions on the head are neutralized, irrespective of the number of syllables: see the last lines of Tables 4.3a–e. The compound carries H#, i.e. a H tone on the last syllable of the determiner. This can be analyzed as the result of the straightforward association of the H# tone to the determiner: H on its last syllable, and M on its first syllable, by default. The lowering of all the following tones to L results from Rules 4 and 5: “A syllable following a H-tone syllable receives L tone”, and “All syllables following a HL or ML sequence receive L tone”. The same analysis can be extended to the two other tone categories of disyllables after which all tonal oppositions are neutralized: LH and L#. The former’s tone pattern, applied to the first part of the compound (the determiner), precludes any tone other than L on the following syllables, by Rules 4 and 5. The latter’s L# tone attaches to the second syllable of the determiner, whose first syllable receives M by default; this ML sequence precludes, again, any tones other than L on the next syllables, by Rule 5.

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In the other cases, which constitute a broad majority, the tonal oppositions on the head are not entirely neutralized, and the tone pattern of the compound can be interpreted in light of the input tones of the two components: determiner and head. These cases are discussed below, sorting them by the tone of the determiner.

4.2.1 LM-tone determiners

A LM tone on the determiner results in the assignment of L on the first syllable of the compound, and M on its second syllable, in all cases. This leaves room for some of the tone categories of the head to manifest themselves, since a relatively high number of tone sequences are allowed after LM. Over three syllables, one may observe L.M.L, L.M.M, and L.M.H; over four syllables, only *L.M.L.M and *L.M.L.H are ruled out, because the sequence M.L can only be followed by L, by virtue of Rule 5 (“All syllables following a HL or ML sequence receive L tone”).

Accordingly, the tones that are compatible with the realization of an initial LM pattern are observed to manifest themselves in the compound: LM plus #H, LM plus MH#, LM plus H\$ and LM plus H# are realized as such – a concatenation of the two input tones. As expected, a M tone on the head has no effect on the final tone pattern, which is simply LM. The combinations LM plus #L and LM plus H# for quadrisyllabic compounds likewise surface as such.

Some of the surface patterns are analytically indeterminate. For instance, the result of the combination of a disyllabic LM determiner and a monosyllabic MH# determiner is L.M.MH (e.g. /boJ-tv/ ‘pig’s brains’). This could be analyzed as L°MH#: L tone on first part, and MH# on second part. Or it could be analyzed as LM+MH#: the LM portion of the pattern yields L on the first syllable and M on the second, followed by assignment of a MH contour to the last syllable, in this case the second syllable. Both analyses are equivalent insofar as they generate the same output, but it appears simpler to describe this tone pattern as the concatenation of the two input tones: LM+MH#. Under this analysis, the pattern is the same for trisyllabic compounds and quadrisyllabic compounds ($\sigma\sigma + \sigma$ and $\sigma\sigma + \sigma\sigma$); the different surface patterns (L.M.MH for $\sigma\sigma + \sigma$, and L.M.M.H for $\sigma\sigma + \sigma\sigma$) result straightforwardly from the general rules of tone-to-syllable mapping summarized in §8.1.

If the compound is disyllabic, a L or LM tone on the head cannot express itself, since the determiner’s LM contour has already projected its endpoint (M) on the second syllable. While the M tone can in some respects be considered as default (see §3.4.3), as the endpoint of a LM contour it counts as a fully specified tone. Such cases are not typologically infrequent; this point will be returned to in the

typological discussion in Chapter 10. In derivational terms, this interpretation of the Yongning Na facts could be phrased as follows: at the point when the tone of the head could come into play, both syllables of the compound are already specified for tone, resulting in the neutralization of LM, M and L as the second members of disyllabic compounds with a LM determiner.

On the other hand, if the compound has three or four syllables, a L or LM tone on the head can express its L tone, resulting in LML on three-syllable compounds, and in LMLL on four-syllable compounds (by virtue of Rule 5: “All syllables following a HL or ML sequence receive L tone”).

To sum up, the tones of all compounds with a LM determiner obtains through the concatenation of that of their two components, modified by subsequent application of the general rules that hold in tone groups (as recapitulated in Chapter 8).

4.2.2 M-tone determiners

After M tone, one expects the tone of the second member of the compound to express itself fully. This prediction is not entirely carried out, however. As expected, the L and LM tones are neutralized after M due to Rule 5 (“All syllables following a HL or ML sequence receive L tone”). On the other hand, as mentioned at the outset of this Chapter, the tone pattern #H (a floating H tone) that results from the combination of a M-tone determiner with a monosyllabic M-tone head does not obey the regularities brought out by the analysis of the other combinations. The #H° variant for disyllabic M-tone determiner plus H\$-tone head is likewise unexplained. A third unexpected pattern is the °L output of the combination of disyllabic M with monosyllabic MH#, which one would expect to surface as MH#, as is the case in all other three combinations (disyllable plus disyllable, monosyllable plus disyllable, and monosyllable plus monosyllable). These three cases point to the fact that some combinations are not simply the product of a set of rules applying throughout the tone system. Children acquiring Yongning Na need to learn a great number of tone patterns individually, acquiring tonal morphology in a comparable way to children learning the morphology of Rgyalrongic or Kiranti languages, to cite two subgroups of Sino-Tibetan that have flamboyant morphology (Michailovsky 1975; Van Driem 1990; Sun 2000; Jacques 2004).

4.2.3 L-tone determiners and what they reveal for the analysis of the head noun

Rule 1 is that L tone spreads progressively ('left-to-right') onto syllables that are unspecified for tone. The tone patterns of compounds with L-tone determiners provide an interesting testing-ground to determine whether the lexical tones which have an initial M tone in their surface form are specified for tone on their first syllable or not: if they were, that initial M tone would be expected to block L-tone spreading; on the other hand, if that syllable is unspecified for tone, it should receive a L tone through spreading.

The observed patterns lend support to the analysis of the disyllables with High tone (#H, H\$, and H#) as unspecified for tone on the first syllable: if the head has one of these tones, a L tone on the determiner spreads onto the first syllable of the head. The first syllable of the head is unspecified for tone: the tone of the head is H\$, a tone that attaches at the end of the word, even moving to the last syllable of the tone group. The L tone of the determiner therefore spreads onto the first syllable. The second syllable is specified for tone and therefore cannot receive the spreading L tone. The same analysis can be extended to the L# tone: L+L# yields H#, e.g. /k^hv|mi|/ 'dog' and /ti|pi|/ 'ear' yield /k^hv|mi|~~ti~~|pi|/ 'dog's ear', where the L tone on the first syllable of the head is analyzed as resulting from L-tone spreading. (More below about the H element in the tone of this compound.)

The weight of this argument is admittedly decreased by the fact that the tone patterns after a L-tone determiner cannot be generated through the application of a set of general rules. It is not entirely clear to what extent the processes at play in this particular morphosyntactic context (determinative compounds) relate to the general rule of L-tone spreading. If the determiner is monosyllabic and combines with another monosyllable, all oppositions are neutralized; the compound carries L tone. In the other three length combinations ($\sigma\sigma+\sigma\sigma$, $\sigma\sigma+\sigma$, $\sigma+\sigma\sigma$), the picture is more complex. A floating H tone (#H) on the head is always disregarded, and the result is L. In combination with a M-tone head, the result is L except for $\sigma\sigma+\sigma\sigma$ which yields L+H#: a sequence of L tones and a final H (L.L.L.H). The presence of a final H is not due to a general rule preventing the L tone from spreading more than one syllable to its right: for instance, the L+#H compound /jo|~~gv~~|dv|/ 'sheep's back' carries a simple L tone, which spreads over the two syllables of the head. (It surfaces as /jo|~~gv~~|dv|/, with a final rise, due to postlexical H-tone addition: Rule 7.) A combination of L+L on disyllables also yields a result that is unexpected under the hypothesis that the tones of the determiner and head are simply concatenated: L+#H° (surface form: L.L.H.L).

Ad hoc accounts can be put together for individual patterns, e.g. imagining, for the quadrisyllabic combination of L and H\$ (illustrated by /k^hvJmiJ-hoJmi/ ‘dog’s stomach’), that the L tone spreads onto the first syllable of the head, which is unspecified for tone, and is then blocked by the presence of a tonal specification on the last syllable; the resulting L+H\$ pattern is neutralized with L+H#, yielding the surface result. However, such accounts do not generalize to the entire data set. For instance, in some cases it seems as if dissimilation were at play. In the example /k^hvJmiJ-nvJmi/ ‘dog’s heart’, from a L+L input, there is a H tone on the first syllable of the head; this suggests a process of dissimilation whereby the L tone on the head dissimilates to an initial H tone. A L+L input yields a simple L output for words of other lengths, however ($\sigma\sigma+\sigma$, $\sigma+\sigma$ and $\sigma+\sigma\sigma$). Here again, it appears that these patterns are learnt individually and applied in table-lookup fashion, rather than through the application of a set of rules.

4.2.4 H-tone determiners: #H, H#, H\$

Compounds with a #H-tone determiner have the same output tone whether the determiner is monosyllabic or disyllabic; this is taken as a confirmation of the initial hypothesis that the tone category of monosyllables illustrated by /zwæ#/ ‘horse’ and the category of disyllables illustrated by /giJzu#/ ‘little brother’ are phonologically identical. For the sake of typographical simplicity, and in the absence of an opposition between different types of H tones on monosyllabic nouns, ‘horse’ is nonetheless transcribed as /zwæ/ rather than /zwæ#/, omitting the information on the segmental anchoring of its H tone.

For the H tones (#H, H#, H\$) as for the L tone, there are differences in the tone of the compound depending on the number of syllables of the head noun. Attempts at generating the tones of these compounds from the input tones on the basis of a set of rules were unsuccessful. A general observations can be made nonetheless:

A floating H (#H) and a tone-group-final H (H\$) are never observed to reassociate more than one syllable to their right.

This regularity is specific to determinative compounds. It does not hold in other parts of the tonal morphology, witness the following example: /la-t^ha-tmi/\$/ ‘Latami’ (family name), /la-t^ha-tmi-t=ɽ-t-ŋu/ ‘... by the Latamis’, where tone H\$ moves two syllables away from the word to which it is lexically attached.

In combinations with a monosyllabic head, the #H tone is preserved in six cases out of ten; as this tone attaches at the end of the word that carries it, this amounts

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to a one-syllable shift to the right from its original position. In combinations with a disyllabic head, the #H tone is never present in the output, as if it could not move more than one syllable away from its original position without changing its nature. In eight of the sixteen combinations, it turns into a fixed, word-final H tone (H#).

In this light, the H# tone that obtains on H#-plus-H# combinations (with a disyllabic head) must be interpreted as originating in the H# tone of the head, not of the determiner.

The above generalization captures the fact that the H\$ tone never surfaces on compounds with a disyllabic head. But no hypothesis can be proposed as to why it surfaces when the head is a L-tone monosyllable, and not in association with any other monosyllabic head. Interestingly, the seven combinations that have two or three variants all involve a H\$-tone head noun, pointing to the relatively marginal status of this tone.

4.2.5 **MH-tone determiners**

In determinative compounds, tone MH, like other tones containing a H level, is not observed to move more than one syllable to the right. When the head is monosyllabic and the determiner disyllabic, a MH tone on the determiner moves onto the last syllable of the compound; in $\sigma+\sigma$, on the other hand, the MH tone does not move as a whole: it appears to remain associated to the head, and to project its H level onto the head – except when the head has a #H or MH tone. Again, those are simply piecemeal observations: no set of rules can be proposed to generate the tones of these compounds from the input tones.

4.2.6 **Determiners carrying LM+MH# tone or LM+#H tone**

The behaviour of LM+MH# and LM+#H when they appear on determiners provides evidence for their phonological analysis. In the abstract, the former could be analyzed as L+MH#: for the surface patterns in isolation, this would yield a /L.MH/ output tone string, the same as LM+MH#, and the label would be shorter. But if this tone were phonologically L+MH#, its initial L level would be expected to spread as a sequence of Ls, followed by a final MH contour. In fact, these two categories (LM+MH# and LM+#H) unfold as L.M over the first two syllables of polysyllabic compounds, showing that they are to be analyzed as comprising a LM pattern.

Apart from this observation, the interpretation of individual combinations is not straightforward. The cases that seem to make good sense in terms of the

input tones do not greatly outnumber those that seem opaque. For instance, LM+MH# followed by a monosyllable with #H or MH yields a pattern comprising a tone-group-final H tone (H\$), exactly like a combination of monosyllables with MH on the determiner and #H or MH on the head; but the parallel ends here: if the head is a L-tone monosyllable, a MH-tone determiner yields a final H tone (H#), whereas a LM+MH# determiner yields a tone-group-final H (H\$).

4.2.7 About the neutralization of tonal oppositions on the head

Four tonal classes of disyllabic head nouns always behave in the same way: the opposition between LM, LH, LM+#H and LM+MH# is neutralized. This fact is not the direct result of the application of the tone rules that hold throughout the tonal grammar of Yongning Na, as set out in Chapter 8. In principle, one could imagine a morphotonological rule whereby L tone on the determiner and LM+MH# on the head would yield L°LM+MH# on the entire compound, through the simple concatenation of the two tones. Thus, ‘sheep’s waist’ (input tones: L and LM+MH#) would be /*jo-l-ji-ltʂæ¹/.

While such a compound does not violate conditions on well-formedness, one can speculate about language-internal tendencies that arguably go against it. As observed at the outset of §2.4, in the simplest cases, the tone of the determiner expresses itself first, then the tone of the head expresses itself to the extent allowed by the tones already assigned. The four categories LM, LH, LM+#H and LM+MH# all have an initial L tone; in almost all cases, expression of this L tone results in the creation of a H.L or M.L sequence. Taking the simple example of a M-tone determiner, such as /po-llo-l/ ‘ram’, and a LM+MH#-tone head, such as /ji-ltʂæ¹/ ‘waist’, tone assignment can be hypothesized to take place as follows: (i) the compound /po-llo-l-ji-ltʂæ¹/ ‘ram’s waist’ first receives M on its first two syllables, from association of the M tone of the determiner, yielding /po-llo-l-ji-ltʂæ¹/; (ii) since the tone of the determiner is M, a tone that does not spread, the tone of the head can express itself, by left-to-right association of its tone pattern; its first syllable receives L, through association of the first tone level in the LM+MH# pattern, yielding /po-llo-l-ji-ltʂæ¹/; (iii) the last syllable receives L tone through application of Rule 5: “All syllables following a HL or ML sequence receive L tone”. This yields /po-llo-l-ji-ltʂæ¹/.

Another way of thinking of it would be to consider that the entire tone pattern gets associated to the head, yielding /*po-llo-l-ji-ltʂæ¹/, and that this expression, which does not constitute a well-formed tone sequence due to the presence of a trough in the middle (the L in the M.M.L.MH sequence), is repaired by deletion of the final MH sequence and its replacement by L. Rule 5 could then be rephrased

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as Rule 5': "All syllables following a HL or ML sequence are lowered to L". Rule 5' would apply after association of the entire LM+MH# tone pattern, whereas under the present account, Rule 5 applies as soon as the M.L sequence is created: as soon as a L tone associates to the syllable /...-ji.../. Since both views do not have any different practical implications, the choice of one or the other can be made freely in view of one's theoretical preferences.

The situation illustrated by /**po·lo·l·ji·l̥t̥sæ**l/ 'ram's waist' is widespread: the only case in which a tone pattern beginning in L could express itself fully on the head is when the determiner has L tone, as in the fictitious example of a realization of 'sheep's waist' (input tones: L and LM+MH#) as /***jo·l·ji·l̥t̥sæ**l/. In this light, the neutralization of the opposition between LM, LH, LM+#H and LM+MH# in this context can be viewed as the generalization of a pattern of neutralization which in most cases obtains simply by application of Rule 5: "All syllables following a HL or ML sequence receive L tone".

4.2.8 A tendency to avoid long-distance movement of tones

It was noted at the outset of this chapter, when discussing compounds of five syllables and more, that there was in Na a tendency to avoid processes that would result in long-distance movement of tone: reassociation of a H tone more than two syllables away from the word to which it is lexically attached. This tendency is confirmed by observations about the tone patterns that result from compounding. A floating H tone (#H) on the determiner plus a M tone on the head yields a final H tone (H#) on the compound, not a floating H tone (#H); a consequence is that the H tone does not move further away, as a floating tone would do. To propose an impressionistic description of the process: the H tone only floats once; at the outcome of the compounding process, its mode of association does not retain any potential for further movement. It appears highly significant that the only $\sigma\sigma+\sigma\sigma$ compounds that carry a floating H tone result from an input where the head had this tone in the first place, i.e. cases where the floating H tone does not move in the process of compounding. It seems as if a floating H tone lost its ability to float when it became modified by compounding.

The association of L tone to long stretches of syllables does not constitute a counterexample to the tendency to avoid long-distance movement of tones: this process consists in tone spreading, neutralizing all tonal oppositions on an entire portion of the tone group; it does not consist in tonal movement (reassociation of a tone away from the word to which it is lexically attached). The process is summarized in Chapter 8 as Rule 5: All syllables following a HL or ML sequence receive L tone.

4.2.9 Slips of the tongue

Hesitations, variants, and tonal slips of the tongue can point to a certain closeness between tone patterns. A full-fledged study of this captivating topic would require more fine-grained tools than were employed so far. The boundary between an acceptable variant and a commonly occurring mistake is not altogether clear, and the main consultant's judgments sometimes wavered between the one and the other. While the greatest care was exercised to verify the data, the initial dichotomy between starred forms (mistakes) and acceptable variant would need to be followed up by specific experiments to ascertain the degree of acceptability of variants along a precise scale. (On the notion of gradient acceptability, see e.g. Goldrick 2011; Kirby & Yu 2007.)

A look at the mispronunciations in the recorded Na data suggest that M is more liable to confusions with #H than with other tones. For instance, errors involving /la-1/ 'tiger' consist in the substitution of the tone pattern expected for a #H-tone word: /*la-1v1/ 'tiger's brains', instead of /*la-1v1/; and /*la-ho1mi1/ 'tiger's stomach', instead of /la-1-ho1mi1/ (there are two instances of both of these mistakes; the recordings are: DetermCompounds6 and DetermCompounds7).

There are also instances of substitutions between H\$, MH# and H#, e.g. /hwɣ-1i-1sɣ1/ instead of /hwɣ-1i-1sɣ1/ for 'cat's blood', and /*hwɣ-1i-1v1/ instead of /hwɣ-1i-1v1/ for 'cat's brains'. There are also cases of confusions between LM+H# and LM+MH#° over compounds involving a LM+#H-tone head. In the first case, a H tone floats all the way to the last syllable of the compound. In the second case, a H tone associates to the first syllable that follows the determiner.

Some errors could be put down to the application of rules that hold elsewhere in the tone system, such as the spreading of L, leading for instance to /*k^hv1mi1-1v1/ instead of /*k^hv1mi1-1v1/ (recording: DetermCompounds12). This suggests another perspective for exploring slips of the tongue: determining in which morphosyntactic constructions the tone patterns would count as correct. This would contribute to a geography of the various areas of Na morphotonology, bringing out which constructions are best kept apart by the speakers and which are harder to keep distinct.

4.2.10 Perspectives for comparison across idiolects

The entire data set discussed here was provided by the consultant of reference, F4. Data were also elicited from three other speakers: F5, who is F4's daughter-in-law; M21, a relative of F4, belonging to the same generation; and M23, who is M21's son. All three are slightly less proficient speakers than F4, due to long

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Table 4.4: Differences between speakers F4 and M21 in the tones of compounds. As elsewhere, the notations $\sigma\sigma+\sigma$, $\sigma+\sigma$ etc. are used to indicate the number of syllables.

input	output		example
	F4	M21	
M+M ($\sigma+\sigma$)	#H	L#	‘tiger’s intestine’: la ↓- bv #↑ vs. la ↓- bv ↓
#H+H\$ ($\sigma\sigma+\sigma\sigma$)	H#, H\$, or #H°	°L	‘colt’s stomach’: zɥwæ ↓- zo ↓- ho ↓ mi ↓ vs. zɥwæ ↓- zo ↓- ho ↓ mi ↓

stays away from Yongning in the case of M21, and to a generation gap in the case of F5 and M23, both proficient speakers of Southwestern Mandarin.

Unsurprisingly, some cross-speaker differences are observed. Analysis of these data is crucial to understanding the dynamics of the tone system. Some of the differences reflect the fact that the nouns at issue belong in different categories in the speech of the other consultants. For instance, ‘flea’ is /**kv**↓**ʃe**↑/ in F4’s speech (LH tone), whereas in M21’s speech it is /**kv**↓**ʃe**#↑/ (#H tone). Likewise, ‘boar’ is /**bo**↓**ʃa**↑/ in F4’s speech (LH tone), whereas in M21’s speech it fluctuates between /**bo**↓**ʃa**↑/ and /**bo**↓**ʃa**↑/ (LM+MH# tone). The difference in tones for ‘boar’s nose’ between the two speakers – /**bo**↓**ʃa**↑-**ni**↓**gɥ**↑/ for F4 (tone: LH), and /**bo**↓**ʃa**↑-**ni**↓**gɥ**#↑/ (tone: LM+#H) for M21 – is to be interpreted in this light: it does not originate in a difference in the rules that determine the tonal output for compounds, but in a difference in input tones. Both compounds follow the regularities summarized in Tables 4.3a–e, but the input combination is different.

This situation requires a full checkup of each consultant’s lexical tone system as a preliminary to the selection of compound nouns for elicitation. On this basis, cross-speaker differences in the tone rules can be brought out.

To begin with a comparison within close age groups, Table 4.4 presents an overview of differences between F4 and M21.

The combination of M+M over monosyllables is odd in both cases: why not use a simple concatenation of the input tones, yielding M tone for the compound, as happens for the other M+M compounds ($\sigma\sigma+\sigma\sigma$, $\sigma\sigma+\sigma$ and $\sigma+\sigma\sigma$)? For both F4 and M21, one can say that the output differs from what would be expected as default. The combination #H+H\$ over disyllables ($\sigma\sigma+\sigma\sigma$) is also different for

the two speakers, who both refused the other's variant when I tried it on them.

An interesting characteristic of these different patterns is that they still have a family resemblance: M21's patterns are not that different from F4's. M21 has °L tone on the phrase 'colt's stomach'; this same °L tone is found in F4's data, when monosyllabic input nouns with these same tones are combined into a compound. Such observations suggests that subtle processes may be at play, whereby individuals bound by close social ties tend towards a degree of convergence. One could speculate that, in cases where speakers wish to promote a feeling of community, for instance in relaxed discussions with members of the extended family, they tend to accommodate to their interlocutor's tone patterns, occasionally adopting new patterns so as to emphasize linguistic common ground over differences. Since one and the same surface tone pattern is open to several phonological interpretations (e.g. [M.M] may be the realization of underlying //M// or //H//), this process of accommodation can result in a proliferation of divergent variant forms from one speaker to another. Speakers' open-mindedness about their customary interlocutors' tone patterns could account for much of the observed pool of morphonological variation. By a related process, speakers may tend to select from within this pool of variation those patterns that they feel will be most accessible to their addressee: avoiding, among possible variants, those that are felt to be most sharply at variance with the addressee's. Conversely, self-assertive speakers who want to distance themselves from the addressee could favour linguistic patterns that they feel are most different from those used by the addressee: this would be a possible path whereby a variant acquires prominence and eventually comes to be generalized by that speaker.

Testing these hypotheses will require close examination of dialogues, for instance comparing F4's tone patterns in conversations with different family members – whose tone patterns will need to be described with the greatest possible precision. This is a perspective for future research; it holds promise of bringing out mechanisms that play a key role in the evolution of the tone system, thereby shedding light on the system's synchronic outlook.

4.2.11 **Exceptional items**

Some compounds possess lexical tones that differ from those that would be expected on the basis of their constituting elements. Examples are provided in Table 4.5. These examples are discussed one by one below.

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Table 4.5: Compounds whose tones differ from those that would obtain from the application of the synchronic tone rules.

word	meaning	tone	observed compounds	expected pattern
naJhĩ#l	Naxi	LM+#H	naJhĩ-l-k^hu^ldzil ‘Naxi puttee’; naJhĩ-l-ba^lla^l ‘Naxi clothes’	LM+MH#°; LM+#H°
ni^lgɣ#l	nose	#H	ni^lgɣ-l-dzu^l ‘mucus’	#H
mv^l	sky	#H	mv^l-ko^l ‘sky’	
ji^l	ox	MH#	ji^lbv^l ‘cows’ stable’	#H
t^lsa-lbɣ^l	powder	M	lv^lmi^l-t^lsa^lbɣ^l ‘fine sand’; q^ha^ldze^l-t^lsa^lbɣ^l ‘sweetcorn flour’; / dze^l[u^l-t^lsa^lbɣ^l ‘wheat flour’	M

4.2.11.1 The noun ‘Naxi’

The noun ‘Naxi’ (/naJhĩ#l/, tone LM+#H) yields irregular results in two quadri-syllabic compounds (see the recording DetermCompounds16):

- (i) with tone MH#: /naJhĩ-l-k^hu^ldzil/ ‘Naxi puttee’. The regular tone pattern would be: /*naJhĩ-l-k^hu^ldzil/ (with underlying tone: LM+MH#°); however, this pattern is not acceptable. The observed tone is LM+#H°. An example of the regular tone pattern is /naJhĩ-l-ŋwɣ^lp^hæ^l/ ‘Naxi tile’.
- (ii) with tone L: /naJhĩ-l-ba^lla^l/ ‘Naxi clothes’. The regular tone pattern would be: /*naJhĩ-l-ba^lla^l/ (underlying tone: LM+#H°, which can also be described as LM+MH#°), but it is not acceptable. The observed tone is LM+H#. An example of the regular tone pattern is /naJhĩ-l-su^lt^hi^l/ ‘Naxi knife’.

‘Naxi’ has a special status in Yongning Na. On the one hand, it refers to an ethnic group perceived as distinct from the Na: the Naxi of the Lijiang plain, including people who settled in Yongning since the early 20th century but retain their distinct costumes and language. On the other hand, it is made up of the endonym of the Na, compounded with the word for ‘person, human being’, so that its

independence from ‘Na’ is problematic. The exceptional treatment of this noun may have to do with the perceived necessity of handling the term in such a way as to attempt to avoid its perception as a compound meaning ‘Na person’.

4.2.11.2 The nouns ‘nose’ and ‘hair’

‘Mucus’ is /**ni-lgr-t-dzu**l/ ‘mucus’ (tone: MH#); on the basis of /**ni-lgr**#l/ ‘nose’ and /**dzu**l/ ‘water’, the expected tone would be #H (/†**ni-lgr-t-dzu**#l/). Likewise, ‘hair’ is /**ro-lh̃**l/; on the basis of /**ro**l/ ‘head; top’ and /**h̃**l/ ‘hair’, one would expect /†**ro-lh̃**#l/.

The etymology of these two words seems self-evident, but it is also clear that mucus is not just a kind of water (‘nose-water’). The difference between hair on the head and on the body is thinner, but many languages have different terms for both, even if they share the same root, as in Na (where ‘body hair’ is /**zi-lh̃**#l/, literally ‘ape hair’). These semantic distinctions may shed light on the irregular tone patterns of these two words, suggesting an early lexicalization of the compound. The discrepancy between the tones of these items and the output of the currently productive tone rules for compounds may be due to different tone rules that applied at the time when they were created. Or they may result from an evolution of the compound away from the regular tone pattern, triggered by the perception of their status as lexical units rather than compounds. In the abstract, this second possibility might sound less plausible than the first; but item-by-item tone change accompanying lexicalization is a salient characteristic of the tone system of Laze, a language closely related to Na (Michaud 2008a; 2009; Michaud & Jacques 2012), so this possibility cannot be lightly dismissed.

4.2.11.3 The noun ‘flour, powder’

The word for ‘powder, flour’ is /**tsa-lbr**l/, with M tone. According to the synchronically productive rules, the combination of this word with /**lv-mi**l/, ‘stone’, /**q^ha-dze**l/ ‘sweetcorn’ and /**dze-lu**l/ ‘wheat’ should yield a simple M-tone output, e.g. /***lv-mi-tsa-lbr**l/ for ‘fine sand’.) But the observed forms are /**lv-mi-tsa-lbr**l/ ‘fine sand’, /**q^ha-dze-tsa-lbr**l/ ‘sweetcorn flour’, and /**dze-lu-tsa-lbr**l/ ‘wheat flour’, all with a M.M.L.L tone pattern (phonological notation: °L). This may well be related to the fact that /**tsa-lbr**l/ is a Tibetan loanword; as for the exact reason why the word acquires L tone in these compounds, there is no way to tell, until a detailed study of the various layers of Tibetan loanwords can be conducted.

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4.2.11.4 The noun ‘sky’

The disyllabic form of the noun ‘sky’ is /**mv**˥**ɬo**˥\$/ . The monosyllabic root for ‘sky’ is /**mv**˥/; if the second syllable were /**ɬo**˥/ ‘head; top’, one would expect the compound to have tone #H (on the basis of the regularities set out in Tables 4.2a–e). But the second syllable may be the particle ‘on’ – itself likely to be grammaticalized from ‘head’.

4.3 Coordinative compounds

4.3.1 The main facts

In the closely related language Naxi, the tones of coordinative compounds are simply the concatenation of those of their constituents, e.g. /**ni**˥**nv**˥**-jæ**˥**qæ**˥**zɯ**˥/ ‘wife and husband’ – a compound whose ethnolinguistic interest admittedly makes up in part for its tonal inertia: as the Chinese-influenced Naxi of Lijiang like to point out, this compound places the wife in front of the husband, in contradiction of basic Confucian principles. Discussions of the role of women in Naxi society soon wander back to lake Lugu and the Yongning plain, to which we also return presently for a discussion of the coordinative compounds of Yongning Na, which are tonally active, to an extent comparable with determinative compounds.

Coordinative compounds are less common than determinative compounds, however, and less easy to elicit systematically. Any pair of nouns can in principle be coordinated, witness, in English, the names of public houses. Once the pattern is established, through combinations which were initially motivated (like “Fox and Hounds” or “Dog and Duck”, referring to hunting traditions; or “Bear and Ragged Staff”, from heraldry), new ones can be created at will, such as the humorous “Snail and Salad”, where the relationship between the two terms – and their relationship to the food served in the pub – is offered to the customer’s fancy. In Yongning Na, any two nouns can be coordinated by means of the conjunction /-**la**/, but coordinative compound nouns are not as easy to coin.

Three sources were found: pairs of animal names of the two sexes, and their offspring, such as ‘ewe and ram’, ‘ram and ewe’, ‘ewe and lamb’, and ‘ram and lamb’; pairs of kinship terms, such as ‘uncle and nephew’ and ‘mother and daughter’; and successive numerals followed by the same classifier, such as ‘two or three years’, ‘five or six months’ or ‘four or five days’. A broad sample of the first two sets can be found in the online recording CoordCompounds; the second set is found in CoordCompounds2. The consultant (F4) clearly preferred to remain within the bounds of common sense, and semantically inappropriate pairs such

Table 4.6a: Compounds of less than four syllables, arranged by input tones.

compound	meaning	input	output
mv ↓ di ↑	universe ('sky'+ 'earth')	H and LM	MH#
zo ↓ mv ↑	child ('son'+ 'daughter')	H and LH	H#
ə↓ mi ↑- mv ↓	mother and daughter	M and LH	°L
ə↓ mi ↑- zo #↑	mother and son	M and #H	#H
ə↓ da ↑- mv ↓	father and daughter	H\$ and LH	H#
ə↓ da ↑- zo #↑	father and son	H\$ and H	#H

as 'mother and nephew' or 'grandmother and brother' were avoided. The elicited data are set out in Table 4.6b. As elsewhere, a slash separates variants. Some tone patterns that were proposed by the investigator and refused by the consultant are indicated, with a star, in the output column: for instance, in view of the existence of two variants for the L+L combination /zɿ↓**hi**↓-ŋwɿ↓**hi**↓/ ~ zɿ↓**hi**↓-ŋwɿ↑**hi**↓/ 'four or five months', the L variant was attempted for other L+L combinations, such as 'nephews and nieces', /ze↓**v**↓-ze↓**mi**↓/. The fact that the L variant is not possible for these expressions (/ *ze↓**v**↓-ze↓**mi**↓/) is indicated through the mention '(*L)' in the output column.

Three suffixes appear repeatedly in the table: the female/augmentative suffix /-**mi**/, the male suffix /-**p^hv**/, and the child/diminutive suffix /-**zo**/. They are discussed in §6.1.

Most examples are quadrisyllabic, from two input disyllables ($\sigma\sigma + \sigma\sigma$). The two disyllabic examples ($\sigma + \sigma$) at the top of the table are written without a hyphen, on the basis of the intuition that they are more strongly integrated than the others. Trisyllabic examples are of the structure *disyllable plus monosyllable* ($\sigma\sigma + \sigma$), showing a preference for coordinative compounds where the first term has at least as many syllables as the second. Hexasyllabic compounds can be created, witness /ŋwɿ↓-**hi**↓**mi**↓-q^hv↓-**hi**↓**mi**↓/ (Dog2.64) 'the fifth and sixth months'. example was

4.3.2 Discussion: tonal variability and lexical diversity

The existence of variants was already observed for some determinative compounds (see Tables 4.3a–e), but the overall proportion of combinations that have

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Table 4.6b: Quadrisyllabic compounds with M as the first input tone.

compound	meaning	input	output
ə p ^h v zɣ v#	great-uncle and great-nephews	M and M	#H
ə p ^h v zɣ mi#	great-uncle and great-nieces		
ə si ə p ^h v#	3 rd -generation ancestors		
ə si zɣ mi#	(great-)grandmother and granddaughters		
ə si zɣ v#	great-grandmother and grandsons		
gɣ dv gɣ mi	(human) body	M and M	M
jo mi po lo	ewe and ram		
qzɰæ mi qzɰæ p ^h v	male and female sparrow		
qɰ fi ni fi	one or two months		
ni fi so fi	two or three months	M and M	°L
bæ mi bæ p ^h v#	female and male duck	M and #H	#H
bæ mi bæ zo#	female duck and duckling		
bv mi bv zo#	female yak and baby yak		
ʂu fi hõ fi#	seven or eight months	M and H\$	#H
ə mi ze mi	aunt and niece	M and L	°L
ə mi ze v	aunt and nephew		
bv mi bv ʂwæ	female and male yak		
dzo mi dzo p ^h v	female and male lizard		
so fi zɣ fi	three or four months		

variants is low: 7 combinations out of 257, all of which have H\$ tone on the head noun. For coordinative compounds, on the other hand, less regularity is observed. There exist not only tonal variants, but compounds with identical input tones and different outputs. Among quadrisyllabic compounds, two different outputs (on different examples) are found for no less than six tonal combinations: those with input tones M and M; #H and M; MH# and M; H\$ and M; H\$ and #H; and L and #H. A seventh combination, #H and #H, even has three different outputs. For quadrisyllabic compounds, the proportion of tone combinations with

Table 4.6c: Quadrisyllabic compounds with #H as the first input tone.

compound	meaning	input	output
gi-tzu-t-go-tmi#1	little brothers and sisters	#H and M	#H
bæ-tzo-t-bæ-tmi#1	duckling and female duck		
bæ-t^hv-t-bæ-tmi#1	male duck and female duck		
ts^hu-tzo-t-to-tqa1	kids and little nanny goats	#H and M	H#
z^hv-t-z^hlmi1	grandchildren	#H and #H	H#°
hw^ht^hv-t- hw^htzo#1 / hw^ht^hv-t-hw^htzo1	tom-cat and kitten	#H and #H	#H / #H°
ho-tmi-t-ho-t^hv#1 / ho-tmi-t-ho-t^hv1	female and male pheasant		
dzi-tmi-t-dzi-tzo#1 / dzi-tmi-t-dzi-tzo1	female and baby buffalo		
dzi-tzo-t-dzi-tmi#1 / dzi-tzo-t-dzi-tmi1	baby and female buffalo		
la-tmi-t-la-t^hv#1 / la-tmi-t-la-t^hv1	female and male tiger		
la-tmi-t-la-tzo#1 / la-tmi-t-la-tzo1	female and baby tiger		
z^hv-t^hni-t-^hw^ht^hni#1 / z^hv-t^hni-t-^hw^ht^hni1	four or five days		
ɛv-t^hv-t-ɛv-tmi#1	male and female crane	#H and MH	#H
hw^ht^hv-t-hw^htmi1	tom-cat and she-cat	#H and H\$	H#
hw^htzo-t-hw^htmi1	cats: kitten and parents		
^hw^ht^hni-t-q^hv-t^hni1	five or six days	#H and H\$	°L
su-t^hni-t-hō-t^hni1	seven or eight days		
z^hwæ-tzo-t-z^hwæ-tmi1 / z^hwæ-tzo-t-z^hwæ-tmi1	colt and mare	#H and L	#H° / H#
p^hɣ-t^hv-t-p^hɣ-tmi1 / p^hɣ-t^hv-t-p^hɣ-tmi1	male and female hyena		
gv-t^hni-t-ts^he-t^hni1 / gv-t^hni-t-ts^he-t^hni1	nine or ten days	#H and L	°L / L+H#
k^hv-tzo-t-k^hv-tmv1 / k^hv-tzo-t-k^hv-tmv1	male and female puppies	#H and H#	H#° / H#

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Table 4.6d: Quadrisyllabic compounds with MH# as the first input tone.

compound	meaning	input	output
ə-zi-ə-p ^h v-]	elders, grandparents	MH# and M	MH#
æ-ɪmv-]-go-ɪmi-]	sisters, female siblings	MH# and M	H#
ə-zi-]-zɣ-]v-]	grandmother and grandsons	MH# and #H	#H°
ə-zi-]-zɣ-]mi-]	grandmother and granddaughter		
æ-ɪmv-]-gi-]zu-]	brethren, brothers		
ɖu-]-k ^h v-]-ji-]k ^h v-]	one or two years	MH# and MH#	MH#°
ə-]-v-]-ze-]v-]	uncle and nephew	MH# and L	MH#°
ə-]-v-]-ze-]mi-]	uncle and niece		
zo-]-h ^h v-]-mv-]zo-]	descendants		
ji-]-k ^h v-]-so-]-k ^h v-] (*ji-]-k ^h v-]-so-]k ^h v-])	two or three years	MH# and L	H#
ɣu-]-k ^h v-]-hō-]k ^h v-] / ɣu-]-k ^h v-]-hō-]k ^h v-]	seven or eight years	MH# and H#	MH#° / H#

two or three different outputs is about one out of four.

The general picture is thus one of great tonal variability. But coordinative compounds are not simply characterized by a general looseness of their tone patterns, whereby two or three tonal variants would be acceptable for any combination of input tones: for instance, the consultant considers it incorrect to say / *gi-]-zu-]-go-]mi-] / for ‘little brothers and little sisters’, / *ts^hu-]-zo-]-to-]qa-] / for ‘kids and little nanny goats’, / *ə-]-zi-]-ə-]p^hv-] / for ‘ancestors’, / *æ-]-ɪmv-]-go-]mi-] / for ‘sisters’, / *ts^hu-]-mi-]-po-]-lo-] / for ‘nanny goat and billy goat’, or / *ə-]-da-]-ə-]mi-] / for ‘father and mother’. Pronunciation habits develop for certain items, which come to have a habitual tone pattern to the exclusion of others.

This relates to the semantic diversity of coordinative compounds. Importantly, it is not always possible to arrive at the meaning of coordinative compounds simply on the basis of their two constituents. For instance, / hwɣ-]-zo-]-hwɣ-]mi-] /, made up of ‘kitten’ and ‘she-cat’, does not mean ‘kitten and she-cat’ (the child and the mother), but refers to cats in general, as a species. More spectacularly, the

Table 4.6e: Quadrisyllabic compounds with H\$ as the first input tone.

compound	meaning	input	output
ts^hu+mi+po+lo	nanny goat and billy goat	H\$ and M	H#
ə+da+ə+mi#	father and mother, parents	H\$ and M	#H
q^hv+hi+su+hi	six or seven months	H\$ and M	H#°
ə+ni+ts^hi+ni#	these days	H\$ and #H	#H
ə+ji+ts^hi+ji#	these years		
ʈ^hæ+mi+ʈ^hæ+zo#	doe and stag		
hwɣ+mi+hwɣ+zo# / hwɣ+mi+hwɣ+zo	she-cat and kitten	H\$ and #H	#H / H\$
hwɣ+mi+hwɣ+p^hv / hwɣ+mi+hwɣ+p^hv# / hwɣ+mi+hwɣ+p ^h v	she-cat and tom-cat	H\$ and #H	#H° / #H / H\$
q^hv+ni+su+ni / q^hv+ni+su+ni / q ^h v+ni+su+ni# (*q ^h v+ni+su+ni\$)	six or seven days	H\$ and #H	H#° / #H° / #H
hō+ni+gv+ni / hō+ni+gv+ni / hō+ni+gv+ni# (*hō+ni+gv+ni\$)	eight or nine days		
ni+ni+so+ni (*ni+ni+so+ni)	two or three days	H\$ and MH#	H#
ɖu+ni+ɖu+hā (*ɖu+ni+ɖu+hā)	one day and one night		#H°
ʈ^hæ+mi+ʈ^hæ+zo# ɖu+ni+ni+ni#	doe and fawn one or two days	H\$ and H\$	#H
hō+hi+gv+hi ni+ni -so+ni	eight or nine months two or three days	H\$ and L	H#°
ə+ji+su+ji	in the past	H\$ and LM+#H	#H°

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Table 4.6f: Quadrisyllabic compounds with L as the first input tone.

compound	meaning	input	output
bv ↓ ʃwæ ↓- bv ↓ mi ↓ / bv ↓ ʃwæ ↓- bv ↓ mi ↓	male yak and female yak	L and M	L / L+#H°
kʁ ↓ p^hv ↓- kʁ ↓ mi ↓ / kʁ ↓ p^hv ↓- kʁ ↓ mi ↓	male and female falcon		
dzo ↓ p^hv ↓- dzo ↓ mi ↓ / dzo ↓ p^hv ↓- dzo ↓ mi ↓	male and female lizards		
mv ↓ zo ↓- ə ↓ mi ↓ / mv ↓ zo ↓- ə ↓ mi ↓	young woman and (her) mother	L and M	L+#H° / L+H#
gv ↓ hi ↓- ts^he ↓ hi ↓ / gv ↓ hi ↓- ts^he ↓ hi ↓	nine or ten months		
mv ↓ zu ↓- ni ↓ mi ↓	brothers and sisters	L and #H	L+#H°
zʷæ ↓ mi ↓- zʷæ ↓ zo ↓ so ↓ ni ↓- zʷ ↓ ni ↓	mare and colt three or four days	L and #H	L
ŋwʁ ↓ hi ↓- q^hv ↓ hi ↓	five or six months	L and H\$	#H°
ji ↓ mi ↓- zʁ ↓ qo ↓ ze ↓ v ↓- ze ↓ mi ↓ ji ↓ bv ↓- ji ↓ mi ↓	cow and veal nephews and nieces bull and cow	L and L	L+#H° (*L)
pʁ ↓ mi ↓- pʁ ↓ p^hv ↓ p^hʁ ↓ mi ↓- p^hʁ ↓ zo ↓	female and male frog female and child hyena		
zʷ ↓ hi ↓- ŋwʁ ↓ hi ↓ / zʷ ↓ hi ↓- ŋwʁ ↓ hi ↓	four or five months	L and L	L / L+#H°
so ↓ k^hv ↓- zʷ ↓ k^hv ↓	three or four years	L and L#	L+H#

terms for male and female puppies, /**k^hv**↓**zo**↓#/ and /**k^hv**↓**mv**↓#/ respectively, are used as names for human newborns: an unlovely name is purposely chosen to repel demons who may be lurking around to take their lives. The real name is only given after a couple of months; sometimes as late as one full year after birth. The two terms /**k^hv**↓**zo**↓#/ and /**k^hv**↓**mv**↓#/ , and their compound /**k^hv**↓**zo**↓-**k^hv**↓**mv**↓/ , have become culturally specialized and cannot be used to refer to real puppies. (This type of information is not systematically recapitulated in Table 4.6b, and must be looked up in the Glossary.) There is thus a broad range of situations,

Table 4.6g: Quadrisyllabic compounds with L# as the first input tone.

compound	meaning	input	output
z̥wæ̥ su̥ z̥wæ̥ zo̥ 	stallion and colt	L# and #H	L#°
z̥wæ̥ su̥ z̥wæ̥ mi̥ 	stallion and mare	L# and L	L#°
g̥v̥ k̥h̥v̥ ts̥h̥e̥ k̥h̥v̥ 	nine or ten years		
z̥v̥ k̥h̥v̥ ŋ̥w̥ɣ̥ k̥h̥v̥ 	four or five years	L# and L#	L#°
ŋ̥w̥ɣ̥ k̥h̥v̥ q̥h̥v̥ k̥h̥v̥ 	five or six years	L# and H#	L#°

Table 4.6h: Quadrisyllabic compounds with LM as the first input tone.

compound	meaning	input	output
ɑ̥ ʁo̥ z̥i̥ dv̥ 	the household	LM and M	LM°
p̥v̥ tsu̥ p̥v̥ mi̥ 	combs	LM+MH# and L	LM+MH#°
p̥ɣ̥ t̥ci̥ p̥ɣ̥ mi̥ 	tadpole		
æ̥ mi̥ æ̥ ʃwæ̥ 	hen and cock	LM and H#	LM+H#
æ̥ mi̥ æ̥ tsu̥ 	hen and chicks		
bo̥ mi̥ bæ̥ bv̥ 	sow and piglets		
z̥æ̥ p̥h̥v̥ z̥æ̥ mi̥ 	male and female panther	LM and LM+#H	LM°L
dv̥ mi̥ dv̥ p̥h̥v̥ 	female and male weasels	LM+#H and LM	LM+#H°
ɑ̥ mi̥ ɑ̥ p̥h̥v̥ 	female and male goose	LM+#H and LM	LM+#H°
q̥u̥ zo̥ q̥u̥ mi̥ 	female and male mule	+ #H	

from elicited combinations which the consultant may never have conceptualized before (such as ‘male and female jackal’) to highly lexicalized expressions.

This sheds indirect light on the observed tonal variability; however, the overall number of examples is too small to make out with confidence which of these outputs are currently productive. It may be that some disyllables are treated as indecomposable units whereas others are treated as compounds, with different tonal outputs. For instance, ‘she-cat’ and ‘tom-cat’ both have the same lexical tone (H\$), but ‘she-cat and tom-cat’ and ‘tom-cat and she-cat’ have different tone patterns; this could derive from a stronger perception of the second syllable

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Table 4.6i: Compounds of four to six syllables with H# as the first input tone.

compound	meaning	input	output
q^hv k^hv ŋsu k^hv 	six or seven years	H# and MH#	H#°
hō k^hv gv k^hv 	eight or nine years	H# and L#	H#°
æ ŋwæ æ mi 	cock and hen	H# and LM	H#°
ŋwv fi mi q^hv fi mi 	the fifth and sixth months		

Table 4.7a: The tones of coordinative compounds. Part a: monosyllabic second noun. A question mark indicates that no example was found.

	tone of 1 st noun	tone of 2 nd noun		
		LM	L	#H
monosyllables	#H	MH#	H#	?
disyllables	M	?	°L	#H
	H\$?	H#	#H

as an affix for one of these two nouns. It is likely that the two compounds have different degrees of lexicalization (frequency of use); one may follow currently productive rules whereas the other is learnt as a single unit.

The tone patterns observed in these data are summarized in Tables 4.7a and 4.7b. When two different (and mutually exclusive) patterns are observed over different compounds, these patterns are separated by a semi-colon. In cases of free variation (over the same compounds), the patterns are separated by a slash. In order to save space, tone categories for which there are no examples are omitted from the table. Slashes separate variants, and semicolons different outputs for the same input.

Sixty percent of the combinations are identical with those found on determinative compounds. There is a considerable proportion of combinations for which no example was found; to the cells containing a question mark in the table must be added the empty columns, which are omitted from the table. Only 35 combinations were observed, out of a possible 257. This is due to the limitations of available materials, since there is nothing to rule out any of the tonal combinations. But the paucity of the materials arguably sheds indirect light on the

Table 4.7b: The tones of coordinative compounds. Part b: combinations among disyllables. A question mark indicates that no example was found.

tone of 1 st noun	2 nd noun							
	M	#H	MH#	H\$	L	LM+#H	LM	H#
M	M; #H	#H	?	?	°L	?	?	?
#H	H#; #H	H#°; H#/#H°	#H	H#	#H° / H#	?	?	H# / H#°
MH#	MH#; H#	MH#°	?	?	MH#°	?	?	?
H\$	H#; #H	#H; #H° / H#	#H°	#H	?	#H°	?	?
L	L+H# / L+#H°	L; L+#H°	?	?	L+#H°	?	?	?
L#	?	L#°	?	?	L#°	?	?	?
LM+MH#	?	?	?	?	LM+MH#°	?	?	?
LM+#H	?	?	?	?	?	LM+MH#°	LM+MH#°	?
LM	LM°	?	?	?	?	LM°L	?	LM+H#
LH	?	?	?	?	?	?	?	?
H#	?	?	?	?	?	?	H#°	?

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attested tone patterns: coordinative compounds are much less common than determinative compounds; the system is therefore less productive, which may be conducive to less synchronic regularity, and greater lexical diversification. This hypothesis is consistent with the high diversity of observed patterns.

4.3.3 Compound given names and terms of address

Compound given names and terms of address constitute independent sets of facts: they do not obey the regularities brought out above for coordinative compounds.

In Yongning, given names are of Tibetan origin; they are chosen by the Buddhist priests, on the basis of the date of birth. They consist of a combination of two disyllabic names: /**ji-tɕi-dʒa**ʌ/ is made up of /**ji-tɕi**ʌ/ and /**dʒa**ʌ#ʌ/; /**dʒa-dzɹ-tshɹ**ʌ-ɿ/ is a combination of /**dʒa-dzɹ**ʌ/ and /**tshɹ**ʌ-ɿ#ʌ/. The tones of the second name are lowered to L in all cases, even when they could in theory combine without problem. For instance, /**dʒa-dzɹ**ʌ/ and /**tshɹ**ʌ-ɿ#ʌ/ could combine as /**dʒa-dzɹ-tshɹ**ʌ-ɿ#ʌ/: this would not violate conditions on well-formedness. The observed lowering of the last two syllables in the attested form, /**dʒa-dzɹ-tshɹ**ʌ-ɿ/ʌ/, cannot be put down to the application of tone rules that apply throughout the system: this lowering is specific to given names – another instance of tone rule applying in a highly specific morphosyntactic context.

One of the two parts of the name serves as the usual term of address; it may be the first or the second, depending on the parents' preference. For instance, the full given name of M18 is /**tɕɹ-sɹ-tshɹ**ʌ-ɿ/ʌ/, but people address him as /**tɕɹ-sɹ**ʌ-ɿ/. The name that was bestowed on me by a priest of the Yongning monastery is /**ji-sɹ-ti**ʌ-ɿ/ʌ; F4 chose to call me by the second part of that compound given name: /**ti**ʌ-ɿ/ʌ. This shows that speakers retain a clear awareness of the two parts of the name as distinct components.

The lowering to L of the second part of compound names is an exceptionless and productive rule. It only applies to given names, not to compound names made up of a term of address and a two-syllable given name. For instance, a woman named /**ki-zo**ʌ/ʌ may be addressed as /**ə-mi-ki-zo**ʌ/ʌ (“Mother **ki-zo**ʌ/ʌ, Aunt **ki-zo**ʌ/ʌ”) by her nephews and nieces; this term of address is not realized as /***ə-mi-ki-zo**ʌ/ʌ, as would be the case if it were treated in the same way as compound given names. As another example, the full name of F4's grandmother was /**dʒa**ʌ-ɿ-**pv**ʌ-ɿʌ/ʌ; her siblings addressed her as /**pv**ʌ-ɿʌ/ʌ, using the second part of the given name, and her nephews and nieces, as well as other persons from the village, addressed her respectfully as “Mother /**pv**ʌ-ɿʌ/ʌ” (which could also be translated as “Aunt /**pv**ʌ-ɿʌ/ʌ”), /**ə-mi-pv**ʌ-ɿʌ/ʌ. The lowering of the last

syllable is due to Rule 5, which prohibits tonal troughs such as *M.M.L.M within a tone group.

4.4 Compound nouns containing adjectives

Compounds containing adjectives are a difficult topic in Na, not least because they are the product of lexicalization, and cannot be coined on the fly to bring out a full set of synchronic rules, as can be done for N+N compounds. As a preliminary to the study of lexicalized compounds, it is useful to present adjectival phrases.

4.4.1 Productive construction: N+ADJ+RELATIVIZER

Liberty Lidz notes that “the constituent order for Na adjectival phrases is N+ADJ, which is consistent with Na’s OV constituent order” (Lidz 2010: 215). The example provided is (2):

- (2) ni33 zɔ33 du55 zwæ13 du33 mi31
 fish big INTS one CLS
 鱼 大 很 一 量词

‘a very big fish’ (example 187 from Lidz 2010: 215)

But in the dialect under investigation here, the association of adjectives to nouns is realized by the construction N+ADJ+RELATIVIZER/NOMINALIZER /hĩ/. For instance, /ɖu˩/ ‘big’ yields /ɖu˩-hĩ/ ‘(which is) big’, and /ɣu˩/ ‘new’ yields /ɣu˩-hĩ/ ‘(which is) new’; these are added after the noun as a separate tone group, as in /ni˩-zo˩ | ɖu˩-hĩ/ ‘big fish’, /pʰi˩ | ɣu˩-hĩ#˩/ ‘brand new linen cloth’, /tɕʰo˩ | ɣu˩-hĩ#˩/ ‘new ladle’, and /qʰwɿ˩ | ɣu˩-hĩ#˩/ ‘new bowl’. No tonal interaction takes place between the noun and adjective. If an intensifier is substituted for the relativizer, the construction becomes a statement: /ni˩-zo˩ | ɖu˩ | zɰwæ˩/ ‘the fish is very big’. The construction /ni˩-zo˩ | ɖu˩/ likewise means ‘the fish is big’.

Looking at example (2) through the lens of the dialect described in the present volume, a reinterpretation is: /ni˩-zo˩ | ɖu˩ | zɰwæ˩ | ɖu˩-mi˩/, where ‘fish’ appears in a tone group separate from ‘big’, a stative verb followed by the intensifier ‘very’. The numeral-plus-classifier phrase has the effect of nominalizing a construction that would otherwise mean ‘the fish is/was really big’, rather than ‘a very big fish’. Examination of the texts in L. Lidz’s dissertation suggest that this analysis may also apply to the dialect that she investigated (Luoshui 落水).

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Noun phrases that contain a noun and an adjective are lexicalized nouns: names of entities that require an explanation in the dictionary, and not phrasal constructions (descriptions associating a quality to the entity that the noun refers to). For instance, /zɯ-ɲa/ , from /zɯ-/ ‘alcohol’ and /ɲa/ ‘black’, does not mean ‘black alcohol, alcohol of a black colour’, but refers to a specific type of strong, high-quality alcohol. The nouns /ə-mi-tɕi/ and /ə-mi-tɕi/ , referring to the mother’s older sisters and younger sisters respectively, are lexical units, even though they can still be transparently analyzed as made up of /ə-mi-/ ‘mother’ plus the adjectives /ɕi/ ‘large’ and /tɕi/ ‘small’. The conceptual difference among aunts (mother’s older sisters and younger sisters) is clear in Na culture, witness the existence of distinct terms of address: /ə-ɲɔ/ for ‘mother’s older sister’ and /ə-tɕi/ for ‘mother’s younger sister’.

By contrast, there is one single term of address for maternal uncles: /ə-ɲɔ/. To specify whether one is referring to the mother’s older brother or younger brother, an adjective is added: ‘mother’s elder brother’ is /ə-ɲɔ | ɕi-hi/ , and ‘mother’s younger brother’ is /ə-ɲɔ | tɕi-hi/ , with the RELATIVIZER/NOMINALIZER. (Some examples of both are found in Caravans.75, 76, 78, 79, 177–179, 196, 259 and Elders3.23, 31, 32.)

The study of successive occurrences within the same text confirms that the construction with the RELATIVIZER/NOMINALIZER /hi/ , although it may seem cumbersome, is the standard construction to associate an adjective to a noun. This construction is not followed by a synthetic, compact N+ADJ construction at later occurrences. For instance, a text explains: ‘It is said that [this couple] had a big girl, a big child (=a child who thought very seriously for her age), /mv-ɲo | ɕi-hi/ , | ɲo-mv | ɕi-hi | ɕi-ɲɔ-tɕi/ (Reward.59). The same phrasing, with the RELATIVIZER/NOMINALIZER /hi/ , appears again soon afterwards: /mv-ɲo | ɕi-hi-ki/ ‘to his elder daughter, [the father said ...]’ (Reward.65).

This is a notable difference from Naxi. For instance, ‘important person, great personage; adult’ in Naxi is /hi-tɕi/ ‘person’+‘big’. This appears in the text Weresow: /hi-tɕi wa ji , ɕi-mə-ɲɔ-tɕi-be kæ le-tɕi/ ‘being an important person, [the to-mba priest] left [the place where he had conducted a ritual] rather early’. In Na, the same concept is : /ɕi-hi/ , ‘big’+REL, with ‘person’ as the implicit referent (e.g. Sister.13, 14, 34; Sister3.31, 36, 38, 41; and BuriedAlive3.5).

4.4.2 Lexicalized compounds of N+ADJ structure

The adjectives that appear in lexicalized combinations with nouns in the examples provided above are /ɲa/ ‘black, dark’, /ɕi/ ‘large’ and /tɕi/ ‘small’. Is it

a coincidence that ‘black’ is also the adjective used in the textbook English example of *black bird* and *blackbird*? The compound noun *blackbird* refers to *Turdus merula*, a species of thrush; and the combination of noun and adjective *black bird* refers to any bird of a black colour. The former, *blackbird*, carries stress on the first element of the compound (for short: “first-element stress”), whereas the latter, *black bird*, carries last-element stress: primary stress on *bird*. The meaning of *black bird* can be deduced from the meaning of its elements and the meaning of the construction, whereas the meaning of *blackbird* cannot be predicted from the meaning of the elements. First-element stress is generally interpreted as a marker of degree of lexicalization. It has been observed, in a study of English, that “the number of adjectives that work in the way that *black* does in our *example-type* seems to be very restricted” (Bauer 2004: 9). The examples are shown in Table 4.8.

At the end of a quest using corpus-query tools to explore hypotheses about the relevance of factors such as the frequency of the particular collocations involved, contrasting patterns of premodification, and the collocations in which the particular adjectives are used, the author concludes that the gaps are likely to be accidental. In Na, as in English, adjectives that appear in compound nouns do not constitute a closed set.

An interesting fact about Na is that adjective-plus-noun compounds are conspicuously different from attributive constructions, since word order is different (ADJ+N, versus N+ADJ+RELATIVIZER), whereas in English there is variation (across speakers, and even for one and the same speaker) in judgments about stress patterns, and in stress assignment in actual speech. This makes it easy to identify these compounds in Na; on the other hand, their tonal analysis is not straightforward. Examples for the Lb-tone adjectives /naJb/ ‘black’ are shown in Table 4.9.

All the items in Table 4.9 are lexicalized: e.g. the phrase /tʂʰæ:naJ/ refers to a legendary species of stag, which only spirits are able to hunt down; it is thus different from an attributive construction (a stag that is black).

In terms of tone, the compounds exhibit diversity that suggests uneven time depth, or different evolutionary paths. Of the five compounds that relate to monosyllabic roots with H tone, three have L# tone, and two have H# tone. This is not related to any obvious structural property of the compounds: of the two compounds carrying L# tone, one is a *bahuvrihi* compound, and the other is not. The compound /hṽ:naJ/, literally ‘black hair’, does not refer to a type of hair, but to ‘wild animal’, referring by synecdoche to the *possessor* of dark hair;¹ on the other

¹ Interestingly, the association of darker fur with wildness (less disposition to domestication) is confirmed by scientific studies of animal domestication (Trut 1999); the phenomenon is ap-

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hand, the compound /**se-t̪na**l/, literally ‘dark meat’, refers to a sort of meat (lean meat). Semantically, there is no salient difference either. In the L#-tone compounds for ‘dark hair’ and ‘lean meat’ the adjective /**na**l/ can be argued to have a literal interpretation as ‘black, dark’: traditionally, pigs and cattle were only slaughtered once a year, so that fresh meat was the exception; the norm for lean meat was the preserved sort, with a dark brown colour. By contrast, *prinsepia* is not black or dark-coloured, and /**k^hv-t̪na**l/ for ‘dog’ carries no hint of hair colour, so it may be argued that one of the two tone patterns corresponds to a semantically bleached use of the adjective. But this is less clear in the case of /**si-t̪na**l/, ‘wood’+‘dark’, for ‘deep forest’: here the semantic indication of darkness seems clearly present.

Similar difficulties are encountered in compounds involving other adjectives: /**zo-t̪ɕu**#l/ ‘eldest son’ and /**ʁo-t̪ɕu**l/ ‘tadpole’ (literally ‘big head’) have different tones (#H and MH#, respectively), although both contain a noun root that has H tone in association with the adjective /**ɕu**l/ ‘big’.

To venture four speculative hypotheses about the origin of these variegated tone patterns: first, they may belong to different historical layers, and hence result from different sets of tone rules. For instance, ‘deep forest’, ‘dog’ and ‘*prinsepia*’ may be earlier than ‘wild animal’ and ‘lean meat’, as the compounds look less transparent semantically.

Another possibility is that some of these compounds are not based on the association of a monosyllabic noun with a monosyllabic adjective, but constitute a reduced form of longer words: for instance, the syllable /**si**-l/ in /**si-t̪na**l/ could result from the truncation of a disyllable meaning ‘forest’. In the case of ‘eldest son’ and ‘tadpole’, such a process appears rather implausible, as they seem to have a straightforward link to the monosyllabic nouns ‘son’ and ‘head’, respectively; if one nonetheless tries to push this hypothesis, one might hypothesize that ‘tadpole’ was built on the basis of a disyllabic noun, which in principle might still be present in another dialect.

A third possibility is that the adjective is not the same in all of these words: in synchrony, there exists another adjective, /**na**l/, meaning ‘important, serious (e.g. a wound)’, and this adjective, or some other adjective pronounced [**na**], may have provided the second syllable in some adjectival compounds. This does not apply to ‘eldest son’ and ‘tadpole’, where the adjective seems recognizably

parently due (at least in part) to links between levels of stress in an individual and amount of melanine, itself reflected in darker fur (Burchill & Thody 1986): individuals in the wild experience greater stress. Limiting observations to the Himalayan context, wild yaks have dark hair (blackish to brown) whereas domestic yaks are variable in colour, often having patches of rusty brown and cream (Leslie & Schaller 2009).

identical – unless interpretation of ‘tadpole’ as ‘big head’ is folk etymology, but this seems fitting enough as the name of this small and amusing animal, which is an obvious candidate for frequent replacement through expressive coinages.

A fourth possibility is that differences in frequency of use lead to differences in tone patterns, through the adoption of certain preferential patterns for frequently-occurring compounds. Patterns of preference would be expected to fluctuate in time, further complicating the picture.

So far, while there is some evidence of consistency, it mostly concerns synchronically trivial patterns. For instance, it does not come as a surprise that Mid-tone /zɯ-/ ‘wine’ and Low-tone /naɪb/ ‘black’ yield a compound with M+L surface tone pattern, /zɯ-ɪnaɪ/: this looks like a case of simple concatenation. This tone pattern is also found with another adjective that has the same lexical tone, /dzɤɪb/ ‘good’: from the compound /kuɪ-dzɤɪ hãɪ dzɤɪ/ ‘auspicious day’, literally ‘good star, good day’, from /kuɪ-/ ‘star’ and /hãɪ/ ‘evening, night’ (a term used to count days), disyllabic /kuɪ-dzɤɪ/ was easily extracted, and it was confirmed by the main consultant. (Its L# tone pattern results in the following two syllables receiving tone L, through Rule 5.) The tone pattern is the same as is /zɯ-ɪnaɪ/ ‘high-quality wine’, but the output seems so trivial that this does not appear to constitute solid evidence that both compounds belong together in a clearly identified layer of compounds.

To sum up: in view of the relatively limited number of examples and their heterogeneity, it does not appear illuminating to pool them all into a table summarizing the tonal output of N+ADJ compounds. Provisionally, examples are simply listed in Table 4.10.

As a first general observation, it can be seen that the patterns in adjective-plus-noun compounds are not identical to those in noun-plus-verb combinations (described in Chapter 7). For instance, ‘hot water’, /dzɯɪtsʰiɪ/, has tone L, from an input of L and M on the noun and adjective respectively; in noun-plus-verb combinations (object plus verb or subject plus verb), the output is M.

The way forward for analysis will consist in gathering more examples, sorting them into sets according to their tone patterns, and trying to identify which historical layer that they belong to, and to understand their process of formation. As a first step in this direction, the following paragraph discusses items that are currently on the verge of lexicalization.

4.4.3 N+ADJ items currently in the process of lexicalization

There exist cases that offer insights into the process of lexicalization: words that currently stand in-between adjectival constructions (such as /əɪvɪ | dɯɪ-hi/

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‘mother’s elder brother’) and lexical items (such as /ə+mi+ɖu/ ‘mother’s elder sister’). ‘Elderly person’ is /hĩ+mo/, from /hĩ/ ‘person’ and /mo/ ‘old’. In a set of 20 texts, this noun appears 15 times, always in the plural, as /hĩ+mo=ɶ/; the fact that it is followed by a clitic shows that it is a full-fledged noun. But there is a higher number (23) of occurrences of /hĩ+mo-hĩ/, again from /hĩ/ ‘person’ and /mo/ ‘old’, but with addition of the relativizer /hĩ/. This is not quite like the adjectival construction presented above: in that construction, the noun constitutes a tone group on its own, e.g. /tɕ^ho | su+hi#/ ‘new ladle’, whereas one says /hi+mo-hĩ/. At a push, it would be possible to say /hi+ | mo-hĩ/ ‘a person that is old’, but this is judged decidedly awkward in the attested contexts where /hi+mo-hĩ/ is found. The interpretation that can be proposed is that /hĩ+mo/ is on its way towards lexicalization, witness the tonal interaction between its two constituting morphemes, but the perception of its second syllable as an adjective remains strong enough for the relativizer to be commonly added after it. The impossibility of adding the agent suffix (/hi+mo-ɳ/) or the topic marker (/hi+mo-tɕ^hu/) shows that /hĩ+mo/ is not fully lexicalized yet; it is indispensable to add an intervening plural or relativizer: /hĩ+mo=ɶ-ɳ/, /hĩ+mo=ɶ-tɕ^hu/, /hĩ+mo-hĩ-ɳ/, and /hĩ+mo-hĩ-tɕ^hu/.

For purposes of synchronic description, the notations adopted are /hĩ+mo=ɶ/, where /hĩ+mo/ is treated as a lexical unit, with no hyphen or blank space between its two syllables, and /hĩ+mo-hĩ/, where the first syllable is analyzed as a noun, and separated by a blank space from the adjective that follows. This notational difference may appear to overemphasize the difference between the two expressions; this difference appears important enough for two distinct notations to be adopted, however.

This tonal ambivalence partakes in a more general versatility of disyllables made up of a noun and an adjective. For instance, /zo+ba/, from /zo/ ‘son; man’ and /ba/ ‘stupid; dumb’, has clearly nominal uses, meaning ‘dumb man; stupid man’; more than twenty examples are found in the Lake narrative, one of whose main protagonists is a dumb person. The noun can be followed by the agent suffix: /zo+ba-ɳ/ (Lake3.29, Lake4.24); there is no need for an intervening relativizer/nominalizer for quantization purposes: /zo+ba ɖu-ɳ/ ‘a dumb person’ (Lake4.4), /zo+ba tɕ^hu-ɳ/ ‘this dumb person’ (Lake4.6), /zo+ba t^hɳ-ɳ/ ‘that dumb person’ (Lake4.12-14); and it can also appear right in front of a verb: /zo+ba | go+bo+di/ ‘the dumb man drove cattle’. But the word also has adjectival uses: in a context of self-deprecation where someone accuses himself of being stupid, /zo+ba/, another person may comfort him by saying: /mɳ+zo+ba/ ‘[No, you are] not stupid!’

The antonym of /zo-|bæJ/ in this adjectival sense is /zo-|t^{hi}-|/ ‘clever; clever person’, which has the same structure, from /zo-|/ ‘son; man’ and /t^{hi}-|/ ‘able; capable; competent; clever’. The two words have different tones – tone L# for /zo-|bæJ/, tone M for /zo-|t^{hi}-|/ – despite their constituting morphemes having the same tones. This tonal difference alerts us to the fact that the two words may have different time depths. Syntactically, the two words also differ: it is not possible to say /*mɣ-|zo-|t^{hi}-|/ ‘not clever’, on the analogy of /mɣ-|zo-|bæJ/ ‘not stupid’. The first syllable of these two words is bleached enough for them to be used as adjectives for men and women alike, but in their nominal use they can only refer to men: /zo-|bæJ/ means ‘stupid man’, and /zo-|t^{hi}-|/ ‘clever man’; the corresponding words for women are /mv-|bæ-|mi-|/ and /mv-|t^{hi}-|/.

4.4.4 A lexicalized compound of ADJ+N structure

There exists a lexicalized compound of ADJ+N structure: /pv-|lv-|/ ‘nonirrigated farmland; dry land’, clearly related to /pv-|/ ‘dry’ and /lv-|/ ‘field’. This word shows no phonological signs of antiquity, such as a difference in consonant, vowel or tone from its etymological components. But comparative evidence suggests that it may have some time depth: it is also found in Naxi, as /pv-|lɯ-|/, with the same ADJ+N structure, the same meaning, and the same transparency in terms of its components (in Naxi, ‘dry’ is /pv-|/, and ‘field’ is /lɯ-|/). Naxi has another ADJ+N compound containing ‘dry’: /pv-|dy-|/ ‘dry land (as opposed to water)’ (Pinson 2012: 55; note that there is a typo in the phonetic transcription, /pv-|dv-|/, which should be /pv-|dy-|/, as indicated by the orthographic transcription).

4.4.5 A lexicalized compound of v+ADJ structure

As a final observation about compounds, there exists a lexicalized compound that seems to be of v+N structure: /ts^h-|o-|dɯ-|/ ‘group dance’, a dance that can involve from ten to about a hundred people. Its components are /ts^h-|o-|b/ ‘to jump’ (in a nominalized reading) and /dɯ-|a/ ‘large’. An alternative reading in which /dɯ-|a/ would have an adverbial reading (‘jumping a lot’) would be implausible, because /dɯ-|a/ does not have attested adverbial readings.

This is not a productive construction: it is not possible to create compounds such as ‘banquet’ from the verb ‘to eat’ and the adjective ‘large’, for instance. Still, the existence of this word can be interpreted as evidence of an occasional permeability of word classes. Across languages, the distinction between nouns and verbs may be more or less stringent (Launey 1994). In Naish languages, there

are some borderline items, such as ‘speech’ and ‘to speak’: Na /**kr-tʃsu**l/, like Naxi /**ku-tʃsu**l/, has both verbal and nominal uses.

4.5 Concluding notes

4.5.1 About productive tone rules in compounding

The tone patterns of compounds present a complex picture. On the one hand, about half the patterns can be explained straightforwardly as the simple concatenation of the two input tones, followed by application of the general rules governing the adjustment of successive tones within a tone group. On the other hand, it was not found possible to capture the other half of the patterns by means of a set of rules.

At this point, it may be useful to speculate in the abstract about possible ways in which the tones of the determiner and head could combine. The simplest theoretical possibility would consist in having no tone change at all in compounds. Such is the case in numerous languages, including Naxi and Sinitic languages, showing that tone change is not necessary to signal compounding.

Another possibility would consist in complete neutralization of tonal oppositions on the determiner or the head. In the neighbouring language Shixing, only the tone of the determiner expresses itself, i.e. all tonal oppositions on the head are neutralized (Chirkova & Michaud 2009).

In Na, a similar state of affairs would be observed if simple concatenation of the input tones were generalized to all combinations. Under that configuration, the tone of the determiner would express itself first, and given the limitations on tone sequences within a tone group (summarized as Rules 1–7: see Chapter 8), this would leave little room for the tone of the head to express itself. H tones of the lexical categories #H, H\$, MH#, LM+MH#, LM+#H and H# have a propensity to associate towards the end of the tone group, so that they would preclude the expression of any other tone on the compound. Likewise, the L tones of the lexical categories L and L# would spread rightward all the way to the end of the compound noun. Basically, the tone of the head could only express itself when the determiner has M tone: M+L would yield °L, M+#H would yield #H, and so on.

The example of Shixing shows that it is possible to find such neutralizations in a language where tonal oppositions have a high functional yield: the nine tonal combinations among nouns in Shixing boil down to three patterns on compounds. The existence of more lexical tones in Yongning Na may explain in part

why such massive neutralization did not take place in this language. The state of affairs found in Na is more complex and delicate: when the determiner carries #H, H\$ or MH#, the H part of the tone does show a propensity to associate to a following syllable within the compound, but it tends to remain close to the position that it had in the original noun, and the nature of its anchoring is sometimes modified in compounding. A case in point is tone H\$, which yields H\$, #H°, #H or H#° (with a range of different modes of association) depending on the tone of the head.

The complexity of the state of affairs in Na arguably sheds light on the considerable diversity of patterns: from one dialect to the next, and even between different speakers from the same village (not to mention the existence of variants within a single idiolect). A few compounds happen to carry the same tone sequence as would the simple juxtaposition of their constituting elements. Most carry a tone pattern that reflects their status as compounds; among these, the nature of the compound (determinative or coordinative) can further be identified in a few cases, whereas in the others it must be arrived at on the basis of other types of information, in particular semantic information.

4.5.2 On the lexicalization of compounds

There is a cross-linguistic tendency for compounds to stray away from regular morphophonological patterns (becoming exceptions) and from the semantics that one would expect on the basis of their constituting elements. In detail, however, there exist a wide range of situations: the meaning may be specialized (non-predictable on the basis of synchronic rules) whereas the phonological form remains undistinguishable from that of a newly coined compound; conversely the phonological form may be irregular whereas the meaning remains that which would be predicted on a flatly synchronic basis.

Thus in Zarma, *háw bî* /ox/black/ is a syntagm with a perfectly regular form, which would be expected to mean ‘black ox’, but which refers to the buffalo – an animal that resembles the ox, and whose colour is black. In *cùrò bî*, one easily recognizes *cùrò* ‘bird’ and *bî* ‘black’, but the meaning is ‘guinea fowl’; in this case, semantic specialization is accompanied by a tonal irregularity: a syntagm meaning ‘black bird’ would be expected to have the form *cùrò bî*. (Creissels 1991: 121)²

² *Original text:* Ainsi en zarma, *háw bî* /boeuf/noir/ est un syntagme de formation parfaitement régulière dont on attendrait qu’il signifie « boeuf noir », mais qui désigne le buffle (animal semblable au boeuf et de couleur noire). Dans *cùrò bî*, nous reconnaissons facilement *cùrò* «

4 *Compound nouns*

The lack of straightforward correspondence between semantic regularity and morphophonological similarity is an important parameter to take into account when exploring a tone system. Specifically, semantics cannot be used as the sole criterion to tease apart morphophonologically irregular compounds.

oiseau » et *bî* « noir », mais la signification est « pintade » ; dans ce cas, le figement sémantique s'accompagne d'une irrégularité tonale : le syntagme signifiant « oiseau noir » serait *cùrò bî*.

Table 4.8: Types of adjectives that appear in compound nouns in English (from Bauer 2004: 9).

type of adjectives	examples	example compounds
some colour adjectives	<i>black, blue, brown, green, grey, red, white</i>	<i>blackboard, blue-tit, brownstone, greenfly, greyhound, redfish, whiteboard</i>
<i>grand</i> in words of family relationships	<i>grand</i>	<i>grandfather</i>
a miscellaneous set of monosyllabic gradable adjectives	<i>broad, dry, free, hard, hot, mad, small, sweet</i> (among others)	<i>broadcloth, dry-cell, freepost, hardboard, hotbed, madman, small-arm, sweetcorn</i>
a small set of non-gradable monosyllabic adjectives	<i>blind, dumb, first, quick</i> (= ‘alive’), <i>square, whole</i>	<i>blindsided, dumbcluck, first-day, quicksand, squaresail, wholestitch</i>
a very small number of disyllabic adjectives	<i>bitter, narrow, silly</i>	<i>bitter-cress, narrow-boat, sillyseason</i>

Table 4.9: Examples of compounds containing the Lb-tone adjective /na_L/ ‘black’.

head noun			compound		
form	tone	meaning	form	tone	meaning
h^hv̄	H	hair	h^hv̄-na	L#	wild animal
ʒe	H	meat	ʒe-na	L#	lean meat
si	H	wood	si-na	H#	deep forest
k^hv̄	H	dog	k^hv̄-na	H#	same
tʃ^hi	H	thorn	tʃ^hi-na	H#	prinsepia
zu	M	alcohol	zu-na	L#	high-quality alcohol
njɾ	LH	eye	njɾ-na	L#	eyeball
tʃ^hæ	MH	stag	tʃ^hæ-na	H#	legendary black stag

4 Compound nouns

Table 4.10: Further examples of adjective-plus-noun compounds.

noun		adjective		compound	
hɑ]	food	pʋ]	dry	hɑ]- pʋ]	dry cooked rice (as opposed to gruel)
tʃe]	earth	pʋ]	dry	tʃe]- pʋ]	dry earth
zo]	son	bæ]	stupid	zo]- bæ]	idiot
ɣo]	head	dʒu] _a	large	ɣo]- dʒu]	tadpole
zo]	son	dʒu] _a	large	zo]- dʒu]	eldest son
tɕu]	cloud	p^hv] _a	white	tɕu]- p^hv]	white cloud
mv]	daughter	dʒu] _a	large	mv]- dʒu]	eldest daughter
mv]	daughter	t^hi]	clever	mv]- t^hi]	clever woman
dzu]	water	q^hæ]	cold	dzu]- q^hæ]	cold water
dzu]	water	ts^hi]	hot	dzu]- ts^hi]	hot water
zu]	life	ʃæ]	long	zu]- ʃæ]	long life
zu]	life	dæ]	short	zu]- dæ #]	short life

5 Classifiers

This chapter presents the tonal behaviour of classifiers in association with numerals, demonstratives and nouns.

A classifier is “a type of limited noun that occurs only after numerals (...), and whose selection is determined by a preceding (overt or implicit) noun” (Matisoff 1973: 88). Classifiers are dealt with in a chapter of their own in view of their great importance in the language, and of the complexity of their tone patterns. The bulk of the chapter (§5.1) deals with the tonal behaviour of classifiers in association with numerals. Classifiers also associate with demonstratives, however (§5.2). In turn, numeral-plus-classifier or demonstrative-plus-classifier phrases may interact tonally with a preceding noun (§5.3).

5.1 Numeral-plus-classifier phrases

Within the small group of Naish languages, tonal alternations in numeral-plus-classifier phrases are vestigial in Naxi (as spoken in the plain of Lijiang), limited in Laze, and ubiquitous in Yongning Na. Consider the diversity of tones found on classifiers in: /**ni**+**ni**l/ ‘two days’, /**so**J-**ni**l/ ‘three days’, /**zy**+**ni**l/ ‘four days’; and: /**ni**+**k**^h**v**l/ ‘two years’, /**so**J-**k**^h**v**l/ ‘three years’, /**zy**+**k**^h**v**l/ ‘four years’. This section proposes an extensive synchronic description and analysis.¹

5.1.1 Elicitation procedures

For each noun in the vocabulary list collected in the course of fieldwork, a note was made of the classifiers typically associated with the noun (following the example of E. Henderson’s dictionary of Bwe Karen [1997]). This obviously does not capture the full range of stylistic possibilities in the choice of classifiers, which are best studied from their actual use: “a noun can be accompanied by various classifiers depending on context, so that it may not be adequate to describe one of those as fundamental at a lexical level” (François 2000: 167, my translation).

¹ An earlier version of this chapter was published as Michaud (2013). Among other minor differences, the present version uses subscript letters to distinguish among subcategories of tones for classifiers, e.g. M_a and M_b instead of the earlier notation as M1 and M2.

Table 5.1: One example of each of the tonal categories of classifiers.

classifier	tone	description: classifier for ...
ɖwæ̃l	H _a	steps (of stairs)
ɲĩl	H _b	day
hã̃ʔ	MH _a	nights
kɣ̃ʔ	MH _b	humans (plural)
nãʔ	M _a	tools
dzĩʔ	M _b	pairs of non-separable objects, e.g. shoes
dzẽl	L _a	pairs of separable objects, e.g. pots, bottles
dzĩl	L _b	trees, bamboo
zɣ̃l	L _c	lines/patterns (in weaving or drawing)

To the list of classifiers obtained through lexical elicitation were added measure words (inch, armspan, heap ...) and time units (day, month, year ...). The term ‘classifier’ is understood here in the syntactic sense of: any noun that may appear directly after a numeral. Table 5.1 presents one example of each of the tone categories brought out for monosyllabic classifiers. Disyllabic classifiers will be dealt with separately in §5.1.4.

Establishing the underlying tonal categories was not a straightforward task, because the tone of the classifier is affected by the numeral with which it is associated, as illustrated by the example provided at the outset of this chapter: the classifier for days has a H tone in /**ɲĩʔ-ɲĩl**/ ‘two days’, a LH tone in /**sõl-ɲĩl**/ ‘three days’, and a M tone in /**zɣ̃ʔ-ɲĩl**/ ‘four days’. The classifier for years has a MH tone in /**ɲĩʔ-kʰɣ̃ʔ**/ ‘two years’, a LH tone in /**sõl-kʰɣ̃ʔ**/ ‘three years’, and a L tone in /**zɣ̃ʔ-kʰɣ̃ʔ**/ ‘four years’. The first step in the analysis consisted of conducting systematic elicitation, to find out how many tonal categories there were. A first data set was elicited in 2009, covering the range of numerals from 1 to 30, and a second set in 2011, covering the range from 1 to 100 and including more classifiers.

Elicitation yielded less than fully consistent results, due in part to the unusual nature of the counting task for the consultant. Although familiar with the process of linguistic elicitation, she easily became confused when counting all the way from 1 to 30 or 100. One and the same combination was realized in different ways during different elicitation sessions. When such discrepancies were pointed out to the consultant, she would identify one pattern as correct and reject the others

as mistaken. However, these *a posteriori* judgments also wavered: a variant that had been brushed aside as mistaken would come up again in a later session, and the consultant would then insist that it was correct. Initially, I wrongly assumed that only one tone pattern could be correct: it gradually became clear that there exist two variants for some of the phrases. For instance, the association of ‘47’ with the classifier for round objects can be realized either as /zɿ+ts^hi|sɯ+|ɿ/ or as /zɿ+ts^hi|sɯ+|ɿ/. (Variants like this one are discussed in §5.1.3.3; to preview the result of analysis: in the first variant, the phrase is parsed into two tone groups, whereas in the second, it is parsed as a single tone group.) Taking into account these two factors – that occasional mistakes are not uncommon in systematic elicitation, and that two variants can both be correct –, a comprehensive description could finally be arrived at.

The entire set of transcribed recordings is available online, with both a surface-phonological transcription and an indication of the underlying tonal pattern. Some technical details are presented in the next paragraphs.

5.1.2 Recordings

In 2009 the recordings were in stereo, collecting the signal from two microphones: a head-mounted Sennheiser HSP 2, and an AKG C-900. In 2011, an electroglottographic signal was collected simultaneously with the audio from the head-mounted microphone. The electroglottographic signal allows for a high-precision measurement of the voice’s fundamental frequency, as well as of other glottal parameters (about electroglottography, see the initial report of the invention: Fabre 1957; a synthesis: Baken 1992; some caveats: Orlikoff 1998; discussions about parameters that can be measured: Henrich et al. 2004; Michaud 2004; and applications to the study of specific linguistic issues, e.g. Mazaudon & Michaud 2008; Brunelle, Nguyễn & Nguyễn 2010).

A total of 2,810 numeral-plus-classifier phrases were recorded, divided into 41 files, 28 of which have an electroglottographic component. In the recordings that extend from 1 to 100, the intervals [50..59] and [80..89] were not recorded, because previous elicitation had shown that their tone patterns were identical with those of [40..49] and [60..69], respectively, and shortening the list of numerals reduced consultant fatigue.

The entire set is available online from the Pangloss collection (about which see Michailovsky, Michaud & Guillaume 2011), synchronized with transcriptions in English, Chinese and French.

No amount of continuous speech would be enough to obtain all the numeral-plus-classifier combinations from 1 to 100, hence the choice to resort to system-

atic elicitation. However, some of the combinations are attested in the narratives with transcriptions, glosses and translations that are also available online from the Pangloss collection.

5.1.3 Results

A summary of all the results is presented in Tables 5.2a–d and 5.3a–d, which contain, in tightly packed form, the information necessary to generate the surface-phonological tone patterns of all numeral-plus-classifier phrases in Yongning Na. The mass of information presented in this table may seem staggering; were it not for the clear evidence from recorded data, one could suspect that this multiplicity of tone patterns is an artefact of elicitation procedures.

Variants are separated by a slash (/). For typographical reasons, the table is divided into two halves: the H and MH tones (H_a , H_b , MH_a and MH_b) in a first table, and the M and L tones (M_a , M_b , L_a , L_b and L_c) in a second table.

Numeral-plus-classifier phrases typically constitute one single phonological group – although speakers can choose to split them into two groups for expressive (emphatic) purposes, as will be discussed in Chapter 8. The juncture indicated by $^\circ$ is internal to the phonological group: it does not separate two phonological groups.

The items in Tables 5.2a–d and 5.3a–d that begin with $^\circ$ do not have any specified tone on their first portion; that portion receives a Mid tone by default. Thus, the phrase ‘33 days’ has a $^\circ L$ tone pattern: a Low tone that associates after the juncture, yielding /...soJni|. Since Low tones do not spread regressively (‘right-to-left’), the first portion receives M by default (/so^hts^hi|.../), resulting in the final output /so^hts^hi|soJni|/.

Likewise, the items that end with $^\circ$ do not have any specified tone on their second portion. That portion receives its tones by the application of the tonal rules that govern tonal groups in Yongning Na. For instance, ‘40 years’ has the tone pattern L° : tone $L^\#$ (a final L tone) associates to the first half of the phrase, yielding /zy^h.ts^hi|.../, then /zy^hts^hi|.../. As already mentioned, tones do not spread leftward; the first syllable receives a Mid tone by default. At this point a tonal rule applies (see Chapter 8 for more details): Rule 5, “All syllables following a HL or ML sequence receive L tone”. This amounts to saying that a tone cannot be surrounded by higher tones within a phonological group: there are no | MLM | sequences, nor are there | HMM |, | HLM |, | MLMH |, and so on. The only possible tone on the second portion of the phrase is therefore L. The final output is /zy^hts^hi|k^hv|/.

Table 5.2a: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. H and MH tones. Numerals from 1 to 25.

	H _a	H _b	MH _a	MH _b
1	H\$	H\$	MH#	MH#
2	H\$	H\$	MH#	MH#
3	L	L	L	L
4	#H	#H	L#	L
5	#H	#H	L#	L
6	H\$	H\$	H#	H\$
7	#H	#H	MH#	MH#
8	H\$	H\$	H#	H\$
9	#H	#H	L#	L
10	L	L	L	L
11	L	L	L	L
12	L	L	L	L
13	L	L	L	L
14	L+H\$	L	L+H#	L+H#
15	L+H\$	L	L+H#	L+H#
16	L+H\$	L	L+H#	L+H#
17	L	L	L	L
18	L+H\$	L	L+H#	L+H#
19	L+H\$	L	L+H#	L+H#
20	#H	#H	MH#	MH#
21	H\$	H\$	MH#	MH#
22	H\$	#H	MH#	MH#
23	°L	°L	°L	°L
24	#H	#H	°L#	°L
25	#H	#H	°L#	°L

Table 5.2b: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. H and MH tones. Numerals from 26 to 50.

	H _a	H _b	MH _a	MH _b
26	H\$	H\$	H#	H\$
27	#H	#H	MH#	MH#
28	H\$	H\$	H#	H\$
29	#H	#H	°L#	°L
30	#H	#H	MH#	MH#
31	H\$	H\$	MH#	MH#
32	H\$	#H	MH#	MH#
33	°L	°L	°L	°L
34	#H	#H	°L#	°L
35	#H	#H	°L#	°L
36	H\$	H\$	H#	H\$
37	#H	#H	MH#	MH#
38	H\$	H\$	H#	H\$
39	#H/°L	#H	°L#	°L
40	L#°	L#°	L#°	L#°
41	L#°H\$ / L#°	L#°H\$ / L#°	L#°MH# / L#°	L#°MH#
42	L#°H\$ / L#°	L#°#H / L#°	L#°MH# / L#°	L#°MH#
43	L#°L	L#°L / L#°	L#°L	L#°L
44	L#°#H / L#°	L#°#H / L#°	L#°L#	L#°L
45	L#°#H / L#°	L#°#H / L#°	L#°L#	L#°L
46	L#°H\$	L#°H\$	L#°H#	L#°H\$
47	L#°#H	L#°#H	L#°MH#	L#°MH#
48	L#°H\$	L#°H\$	L#°H#	L#°H\$
49	L#°#H / L#°L	L#°#H / L#°	L#°L#	L#°L
50	L#°	L#°	L#°	L#°

Table 5.2c: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. H and MH tones. Numerals from 51 to 75.

	H _a	H _b	MH _a	MH _b
51	L#°H\$ / L#°	L#°H\$ / L#°	L#°MH / L#°	L#°MH#
52	L#°H\$ / L#°	L#°#H / L#°	L#°MH / L#°	L#°MH#
53	L#°	L#°	L#°L	L#°L
54	L#°#H / L#°	L#°#H / L#°	L#°L#	L#°L
55	L#°#H / L#°	L#°#H / L#°	L#°L#	L#°L
56	L#°H\$	L#°H\$	L#°H#	L#°H\$
57	L#°#H	L#°#H	L#°MH#	L#°MH#
58	L#°H\$	L#°H\$	L#°H#	L#°H\$
59	L#°#H / L#°	L#°#H / L#°	L#°L#	L#°L
60	LM°H\$	LM°H\$	LM°H#	LM°#H
61	LM°H\$	LM°H\$	LM°H#	LM°#H
62	LM°H\$ / LM°#H	LM°#H	LM°H#	LM°H#
63	LM°H\$ / LM°L	LM°H\$ / LM°L	LM°H#	LM°H#
64	LM°#H	LM°#H	LM°H#	LM°H#
65	LM°#H	LM°#H	LM°H#	LM°H#
66	LM°H\$	LM°H\$	LM°H#	LM°H#
67	LM°#H	LM°#H	LM°H#	LM°H#
68	LM°H\$	LM°H\$	LM°H#	LM°H#
69	LM°#H / LM°L	LM°L	LM°H#	LM°H#
70	L#°	L#°	L#°	L#°
71	L#°H\$ / L#°	L#°H\$	L#°MH# / L#°	L#°MH#
72	L#°H\$ / L#°	L#°#H	L#°MH# / L#°	L#°MH#
73	L#°L	L#°L	L#°L	L#°L
74	L#°#H	L#°#H	L#°MH# / L#°	L#°L
75	L#°#H	L#°#H	L#°MH# / L#°	L#°L

Table 5.2d: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. H and MH tones. Numerals from 76 to 100.

	H _a	H _b	MH _a	MH _b
76	L#°H\$	L#°H\$	L#°H# / L#°	L#°H#
77	L#°#H	L#°#H	L#°MH# / L#°	L#°MH#
78	L#°H\$	L#°H\$	L#°H# / L#°	L#°H#
79	L#°#H / L#°L	L#°#H	L#°L#	L#°L
80	LM°H\$	LM°H\$	LM°H#	LM°H#
81	LM°H\$	LM°H\$	LM°H#	LM°H#
82	LM°H\$	LM°#H	LM°H#	LM°H#
83	LM°H\$	LM°H\$ / LM°L	LM°H#	LM°H#
84	LM°#H	LM°H\$	LM°H#	LM°H#
85	LM°#H	LM°#H	LM°H#	LM°H#
86	LM°H\$	LM°H\$	LM°H#	LM°H#
87	LM°#H	LM°#H	LM°H#	LM°H#
88	LM°H\$	LM°H\$	LM°H#	LM°H#
89	LM°#H	LM°#H	LM°H#	LM°H#
90	L#°	L#°	L#°	L#°
91	L#°H\$	L#°H\$	L#°MH# / L#°	L#°MH# / L#°
92	L#°H\$	L#°#H	L#°MH# / L#°	L#°MH# / L#°
93	L#°L	L#°L	L#°L	L#°L
94	L#°#H	L#°#H	L#°L# / L#°	L#°L
95	L#°#H	L#°#H	L#°L# / L#°	L#°L
96	L#°H\$	L#°H\$	L#°H# / L#°	L#°H# / L#°
97	L#°#H	L#°#H	L#°MH# / L#°	L#°MH# / L#°
98	L#°H\$	L#°H\$	L#°H# / L#°	L#°H# / L#°
99	L#°L	L#°#H	L#°L# / L#°	L#°L
100	#H	#H	MH#	MH#

Table 5.3a: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. M and L tones. Numerals from 1 to 25.

	M _a	M _b	L _a	L _b	L _c
1	M	M	L#	L#	L#
2	M	M	L#	L#	L#
3	M	M	L	M	M
4	L	L	H#	H#	H#
5	L	L	H#	H#	H#
6	H#	H\$	H#	H#	H#
7	M	M	L#	L#	L#
8	H#	H\$	H#	H#	H#
9	L	L	H#	H# / L#	H#
10	M	M	L	M	L
11	M	M	L#	L#	L#
12	M	M	L#	L#	L#
13	M	M	L#	L#	L#
14	L+H#	L	L+H#	L+H#	L+H#
15	L+H#	L	L+H#	L+H#	L+H#
16	L+H#	L	L+H#	L+H#	L+H#
17	M	M	L#	L#	L#
18	L+H#	L	L+H#	L+H#	L+H#
19	L+H#	L	L+H#	L+H#	L+H#
20	M	M	°L	°L	°L
21	M	M	°L#	°L#	°L#
22	M	M	°L#	°L#	°L#
23	°L / M	M / °L	°L	°L	°L
24	°L	°L	H#	H#	H#
25	°L	°L	H#	H#	H#

Table 5.3b: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. M and L tones. Numerals from 26 to 50.

	M _a	M _b	L _a	L _b	L _c
26	H#	H\$	H#	H#	H#
27	M	M	°L#	°L#	°L#
28	H#	H\$	H#	H#	H#
29	°L	°L	H#	°L# / H#	H#
30	M	M	°L#	°L	°L#
31	M	M	°L#	°L#	°L#
32	M	M	°L#	°L#	°L#
33	°L	°L	°L	°L	°L
34	°L	°L	H#	H#	H#
35	°L	°L	H#	H#	H#
36	H#	H\$	H#	H#	H#
37	M	L	°L#	°L#	°L#
38	H#	H\$	H#	H#	H#
39	°L	°L	H# / °L#	H# / °L#	H# / °L#
40	L#°	L#°	L#°	L#°	L#°
41	L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
42	L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
43	L#°	L#°M / L#°	L#°M / L#°L	L#°M / L#°	L#°M / L#°
44	L#°H# / L#°	L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
45	L#°H# / L#°	L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
46	L#°H# / L#°	L#°H\$ / L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
47	L#°M / L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
48	L#°H# / L#°	L#°H\$ / L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
49	L#°H# / L#°	L#°L	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
50	L#°	L#°	L#°	L#°	L#°

Table 5.3c: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. M and L tones. Numerals from 51 to 75.

	M _a	M _b	L _a	L _b	L _c
51	L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
52	L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
53	L#°	L#°M / L#°	L#°M / L#°L	L#°M / L#°	L#°M / L#°
54	L#°H# / L#°	L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
55	L#°H# / L#°	L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
56	L#°H# / L#°	L#°H\$ / L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
57	L#°M / L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
58	L#°H# / L#°	L#°H\$ / L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
59	L#°H# / L#°	L#°L	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
60	LM°H#	LM°H\$	LM°H#	LM°H#	LM°H#
61	LM°H# / L +MH#°M	LM°H\$	LM°H#	LM°H#	LM°H#
62	LM°H# / L +MH#°M	LM°H\$	LM°H#	LM°H#	LM°H#
63	LM°H# / L +MH#°M	LM°H\$	LM°H#	LM°H#	LM°H#
64	LM°H# / L +MH#°L	LM°H\$	LM°H#	LM°H#	LM°H#
65	LM°H# / L +MH#°L	LM°H\$	LM°H#	LM°H#	LM°H#
66	LM°H#	LM°H\$	LM°H#	LM°H#	LM°H#
67	LM°H# / L +MH#°M	LM°#H	LM°H#	LM°H#	LM°H#
68	LM°H#	LM°H\$	LM°H#	LM°H#	LM°H#
69	LM°H# / L +MH#°L	LM°H\$ / LM°L	LM°H#	LM°H#	LM°H#
70	L#°	L#°	L#°	L#°	L#°
71	L#° / L#°M	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
72	L#° / L#°M	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
73	L#° / L#°M	L#°M / L#°	L#°L	L#°M / L#°	L#°M / L#°
74	L#° / L#°H#	L#°L	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
75	L#° / L#°H#	L#°L	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°

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Table 5.3d: The underlying tone patterns of the nine categories of numeral-plus-classifier phrases. M and L tones. Numerals from 75 to 100.

	M _a	M _b	L _a	L _b	L _c
76	L#°H# / L#°	L#°H\$ / L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
77	L#°M / L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L# / L#°
78	L#°H# / L#°	L#°H\$ / L#°	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
79	L#°L / L#°H#	L#°L	L#°H# / L#°	L#°H# / L#°	L#°H# / L#°
80	LM°H#	LM°H\$	LM°H#	LM°H#	LM°H#
81	LM°H# / L +MH#°M	LM°H\$	LM°H#	LM°H#	LM°H#
82	LM°H# / L +MH#°M	LM°H\$	LM°H#	LM°H#	LM°H#
83	LM°H# / L +MH#°M	LM°H\$	LM°H#	LM°H#	LM°H#
84	LM°H# / L +MH#°L	LM°H\$	LM°H#	LM°H#	LM°H#
85	LM°H# / L +MH#°L	LM°H\$	LM°H#	LM°H#	LM°H#
86	LM°H#	LM°H\$	LM°H#	LM°H#	LM°H#
87	LM°H# / L +MH#°M	LM°#H	LM°H#	LM°H#	LM°H#
88	LM°H#	LM°H\$	LM°H#	LM°H#	LM°H#
89	LM°H# / L +MH#°L	LM°H\$ / LM°L	LM°H#	LM°H#	LM°H#
90	L#° / L#°	L#°	L#°	L#°	L#°
91	L#°M / L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L#
92	L#°M / L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L#
93	L#°M / L#°	L#°M / L#°	L#°M / L#°	L#°M / L#°	L#°M / L#°
94	L#°L / L#°H#	L#°	L#°H# / L#°	L#°H# / L#°	L#°H#
95	L#°L / L#°H#	L#°	L#°H# / L#°	L#°H# / L#°	L#°H#
96	L#°H# / L#°	L#°H\$ / L#°	L#°H#	L#°H# / L#°	L#°H#
97	L#°M / L#°	L#°M / L#°	L#°L# / L#°	L#°L# / L#°	L#°L#
98	L#°H# / L#°	L#°H\$ / L#°	L#°H#	L#°H# / L#°	L#°H#
99	L#°L / L#°H#	L#°L	L#°H#	L#°H# / L#°	L#°H# / L#
100	M	M	L#	L#	L#

5.1.3.1 How the tonal categories were brought out and labelled

All of the classifiers in Table 5.1 fall into one of nine tonal categories: the nine data columns of Tables 5.2a–d and 5.3a–d, based on their tonal behaviour when combined with numbers. In turn, these categories were grouped into four sets on the basis of their similarities. For instance, H_a and H_b are identical except for fourteen of the numerals: [14..16], [18..19], 22, 32, 42, 52, 62, 72, 82, 92, 99. Finally, labels were chosen for these four sets and the nine subcategories, as explained below.

Decisive evidence for the analysis of the tones of classifiers could, in principle, come from those classifiers that correspond transparently to a noun (or verb). However, only few such classifiers were observed, and the tonal correspondences between lexical word and classifier are not straightforward. The classifier for blows is /**da**1/; under the hypothesis made here (that its tonal category is MH), the correspondence with the verb /**da**1/ ‘to hit, to strike’ looks transparent, though its affiliation to the subcategory MH_b within MH still requires explanation. ‘Mountain, hill’ is /**ɬwɬ**1/ (M tone); as a classifier it yields /**ɬwɬ**1/ ‘heap(s) of’ (M_a category); ‘beam’, /**dzo**1/, has /**dzo**1/ (category H_a) as its self-classifier. Taking these three examples, it might appear that the tone category of a classifier is identical to that of its corresponding noun or verb.

Other examples, however, do not exhibit such simple correspondences. The classifier for marketplaces and cities is /**dzu**1/ whereas the noun ‘city’ has a H tone: /**dzu**1/. A third tonal correspondence for H-tone nouns is exemplified by /**ku**1/ ‘star’, which yields /**ku**1/ (M_b category) as a self-classifier. ‘Bowl’ is /**q^hwɬ**1/ (LM tone), whereas as a classifier it yields /**q^hwɬ**1/ ‘bowlful’ (MH_a category).

Another source of evidence could be the treatment of Chinese borrowings: it can be assumed that the tone subcategories used to accommodate recent borrowings are productive in synchrony. However, only one borrowing was observed: /**tei**1/ for ‘pound (weight unit)’. As expected, its tonal category is MH_a, i.e. the majority category for classifiers with a MH tone, but it would be unreasonable to draw general conclusions from this isolated example.

In the absence of decisive evidence from either of these two sources, the choice of labels for the nine categories brought out by distributional analysis was guided by structural hints. The tone of the classifiers after ‘6’ and ‘8’ is not highly informative, since almost all tonal oppositions are neutralized in this context (the only tones that are observed are H# and H\$). Likewise, in phrases involving ‘3’ and ‘10’, only two patterns are observed. After ‘4’ and ‘5’, four groups can be distinguished; but if these patterns were indicative of the classifiers’ lexical tone, the system would only contain two High tones (#H and H#) and two L tones (L#

and L). There would be no Mid tones, and no contours. This would be completely unlike the lexical tones of the other monosyllabic nouns found in Yongning Na, which consist of: H, M, L, and two types of rising contours, analyzed as MH and LM.

On the other hand, the tone patterns in association with the numerals ‘1’ and ‘2’ make good sense as labels for tonal categories: these four patterns are H, MH, M and L, all of which exist as lexical tones for nouns. They are therefore provisionally adopted, adding a letter to distinguish the subcategories (two for H, MH and M, and three for L), by order of decreasing frequency (e.g. there are more classifiers in category M_a than M_b). Such labels for subcategories are also used for verbs, among which it is necessary to distinguish two subcategories of L tones, L_a and L_b , and three categories of M tones, M_a , M_b and M_c (see Chapter 7). Note, however, that these subcategories are established separately for nouns and verbs, and that no arguments can be proposed to identify these subcategories across parts of speech: for instance, the label ‘ L_a ’ as used for verbs does not refer to the same category as for classifiers. In order to preclude misunderstandings, it would be possible to use different subscript letters, for instance using Greek letters for subcategories of classifiers, and Latin letters for subcategories of verbs. Latin letters are here used in all cases with a view to avoiding an excessive load of symbols.

The labels L, M, H and MH adopted here make sense under the (admittedly simplistic) assumption that the contribution made by the tone of the classifier will be reflected statistically in the tone pattern of the numeral-plus-classifier phrase. Averaging over the entire range of tone patterns from the number 1 to the number 100, the categories that have a High tone after ‘1’ and ‘2’ (labelled H_a and H_b in Tables 5.2a–d and 5.3a–d) are also those with the highest proportion of H tones (either on their own: H#, #H, H\$, or as part of a MH or MH# contour) and the lowest proportion of L tones. Conversely, the categories that have a Low tone after ‘1’ and ‘2’ (labelled L_a , L_b and L_c in Tables 5.2a–d and 5.3a–d) have the lowest proportion of H tones and the highest of L tones. The other two subgroups (M_a and M_b ; and MH_a and MH_b) are between these two extremes; again as predicted, M_a and M_b have a higher proportion of M tones, and a lower proportion of H tones, than MH_a and MH_b . These rule-of-thumb comparisons, which do not carry demonstrative value, are simply mentioned to convey a feel for the overall outlook of the data. Another indirect way of approaching these data consists of examining the occasional mistakes made by the consultant: this is one of the benefits of having an extensive set of recordings at hand.

5.1.3.2 About mistaken realizations in the recordings

As was mentioned earlier, the task of realizing long sequences of numeral-plus-classifier phrases was challenging for the consultant. Among the 2,810 tokens, 7% have a mistaken tone pattern:² a tone pattern which the consultant (F4) consistently judged to be incorrect (a tonal slip of the tongue) when we returned to the data after recording sessions.

These mistakes reflect in part the phonological complexity of the tone patterns at issue. The notion that mistakes may provide insights about language dates back at least to Henri Frei's *Grammar of Mistakes* [1929] (see also Fromkin 1973 and Rossi & Peter-Defare 1998, among others). The usefulness of speech errors and word games to gain insights into tonal systems was shown by Hombert (1986: 180–181): speakers of Mandarin, Cantonese, Minnan (Taiwanese) and Thai tend to move the tones with the syllables when changing a $C_1V_1C_2V_2$ sequence into $C_1V_2C_2V_1$ or $C_2V_2C_1V_1$, whereas speakers of Bakwiri, Dschang-Bamileke and Kru tend to leave tone patterns unchanged; see also Wan & Jaeger (1998) on Mandarin.

Figure 5.1 shows the distribution of mistakes as a factor of the range of tens: how many of the observed mistakes concern numerals between 1 and 9 (leftmost bar), 10 and 19 (second bar), etc. The ranges of numerals between 50 and 59, and between 80 and 89, are not represented: they were not included in the recordings (to reduce the consultant's fatigue), because the phonological tone patterns for 50–59 are identical with those for 40–49, and those for 80–89 with 60–69.

Figure 5.2 shows the distribution of mistakes as a factor of the last digit (units): how many mistakes concern numbers ending in '1' (namely 1, 11, 21, 31, 41, and so on), in '2', etc.

The data are not symmetrical enough for a full-fledged statistical treatment. In particular, (i) there are more data for some tonal categories than others, (ii) some combinations have several repetitions, and (iii) there are slightly more data in the range [1..10] than for higher numerals.

5.1.3.3 About variants of tone patterns

No observed numeral-plus-classifier phrase has more than two acceptable variants for its tone pattern. Many of the variants can be explained in light of general rules which hold within a tone group in Yongning Na: if the numeral-plus-classifier phrase is treated as one single tone group, then these rules apply, and modify

² This figure includes some items that were deleted from the sound files at an early stage of the study, before the principle of preserving the recordings unchanged was adopted.

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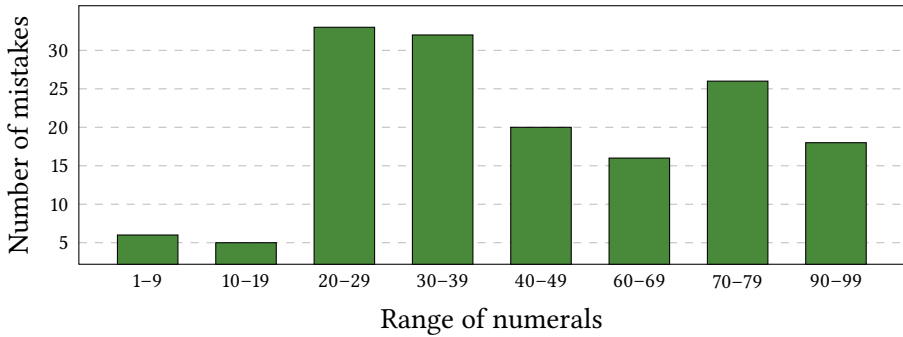


Figure 5.1: Number of mistakes in the recorded numeral-plus-classifier phrases as a factor of the range of tens.

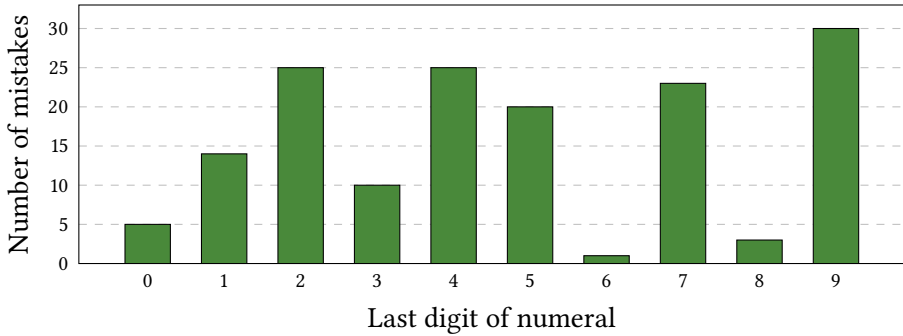


Figure 5.2: Number of mistakes in the recorded numeral-plus-classifier phrases as a function of the last digit (units).

the tone pattern.

For instance, in the case of ‘44’ plus the classifier for tools, /**na**/ (category M_a), the phrase /**zy**-**ts^{hi}** | **zy**-**na**/ is not a well-formed phonological group, since it is not in keeping with Rule 5: the L tone on /**ts^{hi}**/ is surrounded by higher tones. This syntactic phrase is therefore to be analyzed as consisting of two phonological groups: /**zy**-**ts^{hi}** | **zy**-**na**/ (tone pattern: L#°H#). If this phrase were treated as one single phonological group, the tones of its last two syllables would be lowered to L. This is precisely what happens in the tonal variant that is attested for this phrase: /**zy**-**ts^{hi}** | **zy**-**na**/ (tone pattern: L#°). The two variants can therefore be described as (i) a form consisting of two phonological groups, and (ii) a simplified form, whose tonal pattern results straightforwardly from its treatment as a single phonological group.

The same applies to all tonal patterns in the range [40..59], [70..79] and [90..99], since the first two syllables (corresponding to ‘40’, ‘50’, ‘70’ and ‘90’ respectively) have a Mid-plus-Low pattern. This pattern precludes any tone other than L on the following syllables within the same phonological group (since that would not be in keeping with Rule 5). One would therefore expect all of these combinations to have two variants. This holds true as a general rule: when the consultant indicated a complex form and I tried substituting a simplified form, that form was never rejected by the consultant. On the other hand, for some combinations the simpler form is the only acceptable one: for instance, for ‘44’ with a classifier of category M_b , such as /**lɯ**/ (the classifier for round objects), one has to say /**zy**-**ts^hi** | **zy**-**lɯ**/ (tone pattern: L#°).

Supposing, on the analogy of category M_a , that /***zy**-**ts^hi** | **zy**-**lɯ**/ was acceptable in an earlier state of the language, it must be supposed to have fallen out of use; this is in keeping with the expected preference for simpler forms in language evolution. For category M_a , where there are currently two variants in common use, the consultant’s intuition is that the complex variant, /**zy**-**ts^hi** | **zy**-**na**/, is somewhat “slow” and “clumsy”: in discourse, it conveys special emphasis and is only appropriate as part of an expressive strategy to draw attention to the figure at issue. To sum up, the integration of numeral-plus-classifier phrases into one single phonological group is the general rule.

Interestingly, when a phrase ends in two Low-tone syllables, it is possible to test whether these Low tones result from the levelling down of originally non-Low tones (as in the case of /**zy**-**ts^hi** | **zy**-**na**/, mentioned above) or reflect an underlying Low tone. In the latter case, it is possible to divide the phrase into two phonological groups; the second group, having an underlying L tone, receives a postlexical final H tone, by the application of Rule 7 (“If a tone group only contains L tones, a post-lexical H tone is added to its last syllable”). For example, ‘23 years’ (category MH_a) can be realized either as /**ni**-**tsi**-**iso**-**k^hɣ**/ or as /**ni**-**tsi**- | **so**-**k^hɣ**/, revealing that its underlying tone pattern is M°L, whereas with the classifier for tools it would be incorrect to say /***zy**-**ts^hi** | **zy**-**na**/: the variant with a division into two groups is /**zy**-**ts^hi** | **zy**-**na**/ . This explains neatly why the contour-creating final H tone is only allowed for some of the phrases. A device for forcing the division of the phrase into two phonological groups consists of inserting the syllable /**la**/, ‘and’, before the last digit: e.g. /**su**-**ts^hi**-**la** | **q^hɣ**-**ɣwɣ**/ ‘79 heaps’.

Table 5.4a: The tonal behaviour of disyllabic classifiers (tone: M or #H).

numeral	example form	output tone	meaning
1	ɖu-t-q^hv-t^hv# ɭ	#H	one hornful
2	ɲi-t-q^hv-t^hv# ɭ	#H	two hornfuls
3	soJ-q^hvJt^hv ɭ	L	three hornfuls
4	zɣ-t-q^hv-t^hv# ɭ	#H	four hornfuls
5	ŋwɣ-t-q^hv-t^hv# ɭ	#H	five hornfuls
6	q^hv-t-q^hv-t^hv# ɭ	#H	six hornfuls
7	ɣu-t-q^hv-t^hv# ɭ	#H	seven hornfuls
8	hõ-t-q^hv-t^hv# ɭ	#H	eight hornfuls
9	gv-t-q^hv-t^hv# ɭ	#H	nine hornfuls
10	ts^heJ-q^hvJt^hv ɭ	L	ten hornfuls

5.1.4 Disyllabic classifiers, and what they reveal about the tones of numerals

Only a few disyllabic classifiers were observed. One is a reduplicated monosyllable: /ts^he-t~ts^he-t/ ‘the width of a room’. Others are nouns: /ɲi-t-q^hv#ɭ/ ‘bull’s horn’ can be used as a classifier, since bull horns were used to drink or to pour liquids, for instance to pour water into a pot. The noun ‘bull’s horn’ is in competition, in its use as a classifier, with another classifier referring specifically to hornfuls of liquids, /q^hv-t^hv-t/, which is more commonly used than the noun. The classifier for strides (large steps) is disyllabic: /pɣ-tɣa-t/. ‘Bottle’, /toJbi#ɭ/, can be used as a noun: /toJbi#ɭ | ɖu-t-lu-t/ ‘a bottle’, or as a classifier: /zu-t | ɖu-t-toJbiJ/ ‘a bottle of wine’. The classifier for ladlefuls is /bvJdzeJ/, and that for handfuls (using both hands) is /loJdziJ/.

The disyllabic classifiers observed to date fall into one of two tonal classes: M and #H on the one hand, L and LM+#H on the other. Tables 5.4a and 5.4b present the data.

Overall, there is much less diversity of tones for disyllabic classifiers than for monosyllabic ones.

5.1.5 Conclusions

From the mass of information set out in this chapter, it is clear that the tone patterns of numeral-plus-classifier phrases encapsulate information not derived

Table 5.4b: The tonal behaviour of disyllabic classifiers (tone: LM+#H).

numeral	example form	output tone	meaning
1	ɖuɾ-tɔɭbiɿ	#H	one bottle
2	ɲiɿ-tɔɭbiɿ	#H	two bottles
3	soɿ-tɔɭbiɿ	L	three bottles
4	zɻɿ-tɔɭbiɿ	#H	four bottles
5	ŋwɻɿ-tɔɭbiɿ	#H	five bottles
6	q^hvɿ-tɔɭbiɿ	#H	six bottles
7	ɣuɿ-tɔɭbiɿ	#H	seven bottles
8	hõɿ-tɔɭbiɿ	#H	eight bottles
9	gvɿ-tɔɭbiɿ	#H	nine bottles
10	ts^heɿ-tɔɭbiɿ	L	ten bottles

from synchronic rules. The system as presented in Tables 5.2a–d and 5.3a–d is regular and productive, in that all the classifiers of a given tone category have the same tone patterns. As it lends itself straightforwardly to computer implementation, a simple Perl script was written (available from the author). It takes as its input the classifier’s tone category and segmental composition and a numeral (or range of numerals) from 1 to 100. The data in Tables 5.2a–d and 5.3a–d are stored within the script, allowing for the tone pattern to be recovered through table lookup. The surface-phonological tone pattern is then assigned to the phrase on the basis of the general principles governing tone assignment in Na (which are encoded into the script), such as that simple L and M tones attach to all the syllables within their domain, tone sequences attach to syllables left-to-right, and so on. For instance, providing as input the segments /**na**/, the tonal category M_a , and the numeral ‘44’, the script yields the following two variants: /**zɻɿ-t^hiɿ-zɻɿ-t^hiɿ-na**/ (tone pattern: L#°H#) and /**zɻɿ-t^hiɿ-zɻɿ-t^hiɿ-na**/ (tone pattern: L#°).

In the present version of the script, all of the information set out in Tables 5.2a–d and 5.3a–d is encoded in full, specifying the tone patterns of 900 combinations (9 tone categories of classifiers times 100 numerals). This allows for straightforward table-lookup, but is uneconomical from the point of view of linguistic modelling. The addition of some rules could significantly reduce the number of combinations that need to be indicated. In particular, the tone patterns of [40..49] are identical with those of [50..59]; likewise for [60..69] and [80..89]. Numerals ending in ‘1’ also have identical patterns with those ending in ‘2’, with a few ex-

ceptions in category H_b . The information provided for each subcategory (H_a and H_b , M_a and M_b , and so on) could also be simplified by considering one of the subcategories as the norm, and only supplying the forms for the other subcategories where they differ from that norm.

However, it is clear that even after this simplification task has been conducted, large numbers of tonal patterns will still need to be specified individually. For instance, neither H_a nor H_b can be considered as a simplified version of the other: while the systematic application of a L tone to all the phrases from ‘10’ to ‘19’ suggests that H_b is a simplified version of the patterns of H_a , the presence of different tones after numerals ending in ‘1’ and ‘2’ is a complexity found for H_b and not for H_a . The latter observation is a striking counterexample to the pan-Naish generalization that the numerals ‘1’ and ‘2’ always have the same tone patterns – a generalization which holds for Naxi and Laze, and for all the rest of the Na data. One case of idiosyncratic tone patterns was observed: /toŋ/ ‘armful’ belongs to the H_a category, but the combination ‘11 armfuls’ is realized as /ts^he↓dɰ↓-toŋ/ instead of the expected /†ts^he↓dɰ↓-toŋ/.

5.2 Demonstrative-plus-classifier phrases

A demonstrative and a following classifier are always integrated into a single tone group. The elicitation procedure was similar to that used for numeral-plus-classifier phrases, and similar puzzles were encountered.

As explained in the previous section, the tonal categories of classifiers were established on the basis of their behaviour when combined with numerals. The nine categories are: H_a and H_b ; MH_a and MH_b ; M_a and M_b ; and L_a , L_b and L_c . As for the proximal demonstrative, /ts^hu#ŋ/, and the distal demonstrative, /t^hv#ŋ/, they both carry lexical #H tone. The expectations were that, in demonstrative-plus-classifier phrases, (i) there would be no difference proximal and distal demonstrative, since they have the same lexical tone, and (ii) all classifiers within each of the nine tonal categories would have the same tonal behaviour.

The first prediction was verified: phrases containing /ts^hu#ŋ/ ‘this’ and /t^hv#ŋ/ ‘that’ always have the same tonal behaviour. The second prediction, on the other hand, proved to be incorrect: some of the tonal classes for classifiers proved to be less than fully homogeneous. The account provided below starts out from the simplest cases, and progresses towards the category for which the greatest degree of divergence was found (category L_c).

When combined with demonstratives, H_a and H_b behave in the same way, as do MH_a and MH_b . This is the simplest part of the picture: the distinction be-

tween H_a and H_b is neutralized in this context, and the distinction between MH_a and MH_b is likewise neutralized. Categories M_a and M_b behave differently from each other, but each in a consistent and simple way, with only one possible pattern: demonstrative plus M_a -tone classifier yields L#, e.g. /**t^hv**-**na**l/ (classifier for tools); demonstrative plus M_b -tone classifier yields #H, e.g. /**t^hv**-**lu**#l/ (generic classifier).

Among Low tone categories of classifiers, L_a and L_c are relatively straightforward. All L_a -tone classifiers have the same behaviour, allowing two variants: H# and H\$. Both variants are firmly attested; the speaker expresses a preference for the former, but this slight imbalance appears to be the same for all examples, suggesting that there does not exist any clear (lexicalized) preference for the one or the other in association with a specific classifier.

Category L_b is the most problematic. In the production data, there are three variants, H#, H\$ and MH#. But for some classifiers of this category (e.g. /**mi**_b/, the classifier for animals, and /**k^hu**_b/, the classifier for long objects), MH# is by far the most frequent pattern, with H\$ as an occasional variant, and H# rarely attested. For other classifiers (including /**mi**_b/, the classifier for animals, and /**k^hu**_b/, the classifier for long objects), H# and H\$ appear with comparable frequency, whereas MH# is seldom found.

When several variants are proposed by the investigator and the consultant is asked which ones are correct, a similar picture emerges: MH# is strongly preferred for some classifiers, with H\$ as an acceptable variant, whereas H# is dispreferred: either refused as incorrect, or judging it marginally acceptable only. For other classifiers, the preferred form is H#; tone H\$ is an acceptable variant; and tone MH# is not. Table 5.5 presents these two sets, provisionally labelled as 'a' and 'b'.

The consultant's acceptance of variants fluctuated from session to session, but the distinction between subsets a and b was confirmed in the course of an extensive series of elicitation sessions. Examples from the recorded texts provide evidence to the same effect.

The tone patterns for all categories of classifiers are set out in Table 5.6, using the distal demonstrative, /**t^hv**#l/, as an example. (As mentioned above, the tone patterns for the proximal demonstrative, /**t^hu**#l/, are the same.) The corresponding online recordings are DemClf, DemClf2 and DemClf3.

The 'type I' and 'type II' distinction among L_b -tone classifiers constitutes an impressive extra complexity within the system. Category L_b is a subdivision within the L category of tones; its further division into types I and II constitutes a subdivision within a subdivision. From the point of view of phonological output, type

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Table 5.5: The two subcategories of L_b -tone classifiers, based on their behaviour in association with demonstratives.

type	tone pattern in association with demonstrative	form	classifier for
L_b , type I	MH# most common; H\$ attested; H# dispreferred or refused	bo ↓ _b	headdresses
		dv ↓ _b	small groups
		dzi ↓ _b	trees
		jo ↓ _b	ounces
		k^hu ↓ _b	long objects
		lo ↓ _b	valleys
		fi ↓ _b	armspans
		mi ↓ _b	animals
		p^hv ↓ _b	fields
		t^hv ↓ _b	sets of ten
		tɕ^hi ↓ _b	meals
		wɣ ↓ _b	loads
		wo ↓ _b	teams of oxen
L_b , type II	H# most common; H\$ attested; MH# dispreferred or refused	pɣ ↓ _b	ladders, doors
		po ↓ _b	packs
		ɣo ↓ _b	types, sorts
		su ↓ _b	times
		ts^he ↓ _b	leaves
		tɥ ↓ _b	large chunks

I within the L_b category yields an output (MH# / H\$) which is not identical with any other within the system.

5.3 Tonal interactions with a preceding noun

5.3.1 Introduction

Occasionally, there is tonal interaction between numeral-plus-classifier or demonstrative-plus-classifier phrase and the preceding noun, as in (1).

Table 5.6: The tone patterns of demonstrative-plus-classifier phrases.

tone pattern		example	
tone of CLF	tone of DEM+CLF phrase	classifier for	DEM+CLF phrase
H _a , H _b	H\$ / #H	chunks	t ^h v- -k ^h wɣŋ\$ / t ^h v- -k ^h wɣŋ#ŋ
MH _a , MH _b	L#	cattle	t ^h v- -p ^h oŋ
M _a	L#	tools	t ^h v- -naŋ
M _b	#H	generic	t ^h v- -[ɰ#ŋ
L _a	H# / H\$	quantities	t ^h v- -mɣŋ / t ^h v- -mɣŋ\$
L _b , type I	MH# / H\$	animals	t ^h v- -miŋ / t ^h v- -miŋ\$
L _b , type II	H# / H\$	doors	t ^h v- -pɣŋ / t ^h v- -pɣŋ\$
L _c	MH# / H# / H\$	plains	t ^h v- -diŋ / t ^h v- -diŋ / t ^h v- -diŋ\$

- (1) ə-|mi-|! | pæ-|k^hwɣŋ-| so-|-|ɰ-| ki-|mæ-|!
 ə-|mi-| pæ-|k^hwɣŋ#-| so-| [ɰ-| ki-|_a mæ-|
 INTJ silver_coin three CLF to_give DISC.PTCL
 ‘Wow! [(S)he] is giving you three silver coins!’

According to the main consultant’s memories, (1) is the type of comment that uncles and aunts would make when a child received significant amounts of money on the occasion of their coming-of-age ceremony. To offer only one coin would be inappropriate, as gifts should come in pairs. Two coins is a beautiful gift. Three coins is beyond expectations (the equivalent today would be about half a month’s salary).

The tonal derivation for the phrase ‘three silver coins’ is as follows:

- (i) the input tones are: #H for ‘silver coin’, //pæ-|k^hwɣŋ#-|//; L for ‘three’; and M for the classifier, //[ɰ-|//
- (ii) the numeral-plus-classifier phrase ‘three-CLF’ carries M tone: //so-|-|ɰ-|//
- (iii) the noun plus the numeral-plus-classifier phrase yields a H# tone: //p^hæ-|k^hwɣŋ-| so-|-|ɰ-|#-|//

Examples from texts include /mɣ-|zo-| t^hv-|-|ɰ-|/ ‘girl-DEM.DIST-CLF’ (ComingOf-Age2.60; Tiger2.139, 141, 147) and /ə-|ɣ-| t^hv-|-|ɰ-|/ ‘uncle-DEM.DIST-CLF’ (Tiger2.109). The underlying tonal category of such expressions can be established in the same

way as that of nouns, by tests such as adding the copula. ‘Three silver coins’, /p^hæ-|k^hwɾ-| so-|**l**uɪ/, yields /p^hæ-|k^hwɾ-| so-|**l**uɪ **ni**./, revealing that its tone is H#: //p^hæ-|k^hwɾ-| so-|**l**uɪ#//. ‘That uncle’, /ə-|ɸ-| t^hɸ-|ɸ-|/, yields /ə-|ɸ-| t^hɸ-|ɸ-| **ni**./, revealing that its tone is #H: //ə-|ɸ-| t^hɸ-|ɸ-|#//.

Why is tonal change only occasional? Here are some speculations.

If tone change were systematic, it would entail the neutralization of some of the tonal distinctions among classifiers, because the number of possible tone patterns in tone groups of three syllables or more is not as high as the combinatorial diversity that obtains in sequences of short tone groups. For instance, after disyllabic nouns carrying a L# tone, determiners would have their tones lowered to L (by application of Rule 5: “All syllables following a HL or ML sequence receive L tone”), which would entirely neutralize tonal oppositions among classifiers. Even if the majority of contrasts between different categories of classifiers were retained, tonal change would increase opacity, as there would be more cases where surface-phonological tone on determiners differs from underlying tone. Given the high degree of complexity of the tone system of classifiers, an increase in opacity would be likely to create a pressure towards the simplification of the system. The fact that tonal interaction between a noun and a following determiner is only occasional may thus favour the preservation of the current system.

Functionally, having the choice between both options allows for richer linguistic content.

5.3.2 Some tones are more prone to change than others

While discourse factors are paramount in determining whether there is interaction between the noun and its determiner, the tonal category may also play a role. All other things being equal, some tones appear to resist interaction, whereas others are prone to interaction. For instance, the change of H\$ plus L# to MML appears easy; division into two tone groups is possible, but it requires a strong stylistic load (emphasizing separate constituents). Conversely, there may be combinations whose integration is especially difficult to obtain, requiring a strong stylistic load emphasizing close association.

The implication for the analysis of the tone system would be that some tones are stronger than others, triggering tone changes that are simple, easy to implement, and exceptionless. The spreading of L# onto following syllables appears as the best example. Other tones are weaker: tone change involving them is not straightforward, and tends to allow several variants. Tone H\$ is a case in point. This hierarchy of strength would be reflected in the frequency of tonal interactions between a noun and a following determiner (N+dem+CL, N+Num+CL).

Systematic verification of these hypotheses will require a greater amount of texts than is available at the time of writing.

5.4 General conclusion

The tone patterns of phrases containing classifiers are part of the language's irregular morphotonology: tone patterns which can be accounted for neither by sandhi nor regular morphotonological rules. This system may appear staggeringly complex; these phrases are frequent in discourse, however, a factor which is known to favour the preservation of irregular morphology.

6 Combinations of nouns with grammatical words

This chapter brings together data on a disparate set of constructions containing nouns, from morphological derivation – e.g. nouns containing gender suffixes – through reduplication to combinations of nouns with particles in discourse. This is a loosely arranged collection of observations, not a presentation in synthetic order; there is clearly room for much further progress in description and analysis. The discussion of gender suffixes could usefully be expanded to other processes of morphological derivation, based on a systematic study of the Yongning Na lexicon, paying attention to traces of nonproductive derivation such as the animal suffix */-li/* found in */hwɿ-liʔ/* ‘cat’ and */pʰi-liʔ/* ‘butterfly’ (Naxi cognates: */hwalɿ/* and */pʰeɿleʔ/*). The discussion of affixes, clitics and particles would also call for several complete chapters of description and analysis, exploring many more combinations than are reported here. The chapter in its present state simply offers introductory glimpses of vast stretches of Yongning Na’s morphotonological landscape.

6.1 Derivational affixes: gender suffixes and the kinship prefix

6.1.1 Introduction to gender suffixes

The most common derivational affixes in Na are gender suffixes: */-mi/*, */-zo/* and */-pʰv/*, carrying the meaning ‘female, mother; large’, ‘son, young; small’, and ‘male’, for instance in */ʰi-miʔ/* ‘female roebuck’, */ʰi-zoʔ/* (variant: */ʰi-zo#ʔ/*) ‘young roebuck’, and */ʰi-pʰvʔ/* (variant: */ʰi-pʰv#ʔ/*) ‘male roebuck’.

These suffixes are related to the free morphemes */miʔ/*, */zoʔ/* and */pʰvʔ/*, which appear in contexts such as */ʈʂʰuʔ | miʔ niʔ/* ‘this is a female’, */ʈʂʰuʔ | zoʔ niʔ/* ‘this is a young/male’, */ʈʂʰuʔ | pʰvʔ niʔ/* ‘this is a male’. In this case, it is not difficult to imagine the evolutionary path from the nouns to the derivational affixes. But while the free forms */zoʔ/* ‘young/male’ and */pʰvʔ/* ‘male’ have different tones

(H and M, respectively), the suffixes /-zo/ and /-p^hv/ always have the same tonal patterns, even sharing the same tonal variants, as in the example of ‘roebuck’. Their tonal behaviour differs from that of /-mi/.

The study of classifiers provided in Chapter 5 showed that classifiers do not necessarily have the same tone as the noun from which they derive. Seen in this light, differences in tone between a noun as a full form and as a derivational suffix are not a particularly out-of-the-way finding in the context of Yongning Na morphotonology.

The difference in tone patterns between /-mi/ on the one hand, and /-zo/ and /-p^hv/ on the other, suffice to establish that (i) suffixes are not toneless, and (ii) some of the tonal oppositions found on monosyllabic nouns are neutralized when these nouns function as suffixes. Due to the limited number of suffixes, it is not possible to tell for sure how many tones exist on suffixes, however.

The suffixes /mi/ and /zo/ serve as augmentative and diminutive suffixes, respectively. ‘Mother’ stands for ‘large’, and ‘son’ for ‘small’, as in numerous languages of the area (see Mazaudon 2003 on Tamang; and a cross-language discussion by Matisoff 1992). For instance, /k^hv/ ‘basket (carried on back)’ yields /k^hv-mi/ ‘large basket’ and /k^hv-zo/ ‘small basket’. This construction is in competition with the adjectives /d^uₐ/ ‘large’ and /t^ɕiₐ/ ‘small’, which can be added after any object, whereas /mi/ and /zo/ are restricted to a closed set of words. In many cases, the augmentative meaning has faded away. For instance, while there exists an augmentative counterpart /l^ɣmi/ to /l^ɣ/ ‘main beam’, both terms are currently used to refer to the same object, namely main (supporting) beams. It is not possible to build an augmentative /*z^vl^u-mi/ on the basis of /z^vl^u/ ‘small beam’ (referring to the slanting beams resting on the supporting beams, upholding the roofing: planks or tiles), with the intended meaning of ‘a large-sized /z^vl^u/’.

It may also be the same morpheme /mi/ that appears in the second syllable of the words /ni-mi/ ‘sun’ and /hi-mi/ ‘moon’, which currently lack a monosyllabic counterpart. Since these two words have the same structure in Naxi (/ni-me/ and /he-me/) and Laze (/nie-mie/ and /hie-mie/), their disyllabic status is likely to go back a long way. The suffix /zo/ appearing in /ni-zo/ ‘fish’, another disyllable without a monosyllabic counterpart, is also found in Laze (/ze/ ‘son’, /ni-ze/ ‘fish’), whereas Naxi has a monosyllable: /ni/.

The discussion below covers names of animals and peoples with gender suffixes, as well as the augmentative and diminutive suffixes. Needless to say, words that contain a /mi/ syllable of other origin were excluded, e.g. the name of the Yongning monastery, /d^æmi/, which is a loanword from Tibetan *dgra med*.

6.1.2 The facts

Tables 6.1a–g and Tables 6.2a–b present the data set arranged by tone. Tables 6.1a–g present disyllables, and Tables 6.2a–b trisyllables. Nouns in which the suffixes are augmentative/diminutive and not gender suffixes are italicized (i.e. nouns that do not refer to animals or ethnic groups). As elsewhere, a slash separates variants. An asterisk as the only content of a cell indicates that the form does not exist: for instance, it is not possible to use a /zo/-suffixed word for ‘piglet’ (the attested form is /bæɪbvɪ/). An asterisk preceding a noun indicates that it is a form that was proposed by the investigator and rejected by the consultant. For instance, “zæɪmi#ɪ (*zæɪmiɪ)” for ‘female panther’ indicates that the tonal variant /*zæɪmiɪ/, tested by the investigator on the analogy of the existence of a L-tone variant /*ziɪmiɪ/ for ‘female ape’, whose root belongs in the same category as ‘panther’, was rejected by the consultant.

Table 6.1a includes two roots, ‘thumb’ and ‘bee’, which are not synchronically attested as monosyllables, but whose internal reconstruction yields a LM-tone root.’

6 Combinations of nouns with grammatical words

Table 6.1a: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words. LM-tone roots.

correspondences	root	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
first type	sow	bo↓mi↓	*	bo↓p ^h v↓
	hen	æ↓mi↓	*	*
	thumb	lo↓mi↓	*	*
	bee	dze↓mi↓	*	*
second type	yak	bv↓mi↓	bv↓zo#↓ / bv↓zo↓	bv↓p ^h v#↓ / bv↓p ^h v↓
	sparrow	qzwa↓mi↓	qzwa↓zo#↓ / qzwa↓zo↓	qzwa↓p ^h v#↓ / qzwa↓p ^h v↓
	hawk	ky↓mi↓	ky↓zo#↓ / ky↓zo↓	ky↓p ^h v#↓ / ky↓p ^h v↓
	food	bv↓mi↓	bv↓zo↓ /	*
	steamer		bv↓zo#↓	
third type	weasel	dv↓mi#↓ / dv↓mi↓	dv↓zo#↓ / dv↓zo↓	dv↓p ^h v#↓ / dv↓p ^h v↓
	goose	a↓mi#↓ / a↓mi↓	a↓zo#↓ / a↓zo↓	a↓p ^h v#↓ / a↓p ^h v↓
	lizard	dzo↓mi#↓ / dzo↓mi↓	dzo↓zo#↓ / dzo↓zo↓	dzo↓p ^h v#↓ / dzo↓p ^h v↓
	ladle	tɕ ^h o↓mi#↓ / tɕ ^h o↓mi↓	tɕ ^h o↓zo#↓ / tɕ ^h o↓zo↓	*
	Na	na↓mi#↓ /	na↓zo#↓ /	*
	(people)	na↓mi↓	na↓zo↓	
fourth type	jackal	p ^h ɣ↓mi↓	p ^h ɣ↓zo#↓ / p ^h ɣ↓zo↓	p ^h ɣ↓p ^h v#↓ / p ^h ɣ↓p ^h v↓
	road, path	zy↓mi↓	*	*

6.1 Derivational affixes: gender suffixes and the kinship prefix

Table 6.1b: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words. LH-tone roots.

correspondences	root	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
first type	panther	zæ̀lmi#l (*zæ̀lmi)	zæ̀lzo#l (*zæ̀lzo)	zæ̀lp ^h v#l (*zæ̀lp ^h v)
	monkey	zi̯lmi#l / zi̯lmi	zi̯lzo#l / zi̯lzo	zi̯lp ^h v#l / zi̯lp ^h v
	buffalo	t ^h almi#l (*t ^h almi)	t ^h alzo#l	t ^h alp ^h v#l
	muntjac	tɕ ^h u̯lmi#l / tɕ ^h u̯lmi	tɕ ^h u̯lzo#l / tɕ ^h u̯lzo	tɕ ^h u̯lp ^h v#l / tɕ ^h u̯lp ^h v
	plane (tool)	t ^h i̯lmi#l (*t ^h i̯lmi)	t ^h i̯lzo#l (*t ^h i̯lzo)	*
	second type (isolated example)	slope	to̯lmi	to̯lzo
third type (isolated example)	plain	di̯lmi	*	*

6 Combinations of nouns with grammatical words

Table 6.1c: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words. M-tone roots. One single type of correspondence.

root	suffixed forms		
	/-mi/	/-zo/	/-p ^h v/
tiger	la+mi#l	la+zo#l	la+p ^h v#l
goral	se+mi#l	se+zo#l	se+p ^h v#l
message	q ^h wæ+mi#l	*	*

Table 6.1d: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words. L-tone roots. One single type of correspondence.

root	suffixed forms		
	/-mi/	/-zo/	/-p ^h v/
woman	mv+mi+l	*	*
ewe	jo+mi+l	jo+zo#l / jo zo	jo+p ^h v#l / jo p ^h v
roebuck	fi+mi+l	fi+zo#l / fi zo	fi+p ^h v#l / fi p ^h v
bottle	ky+mi+l	ky zo (*ky+zo#l)	*
large river	dzu+mi+l	*	*

For two of the items that lack a monosyllabic counterpart, the tone of the root can be obtained through internal reconstruction: since there is a substantial number of examples (7) of LM-tone disyllables corresponding with LM-tone monosyllables, and there is no other attested source for LM-tone disyllables, /dze|mi+l/ ‘bee’ and /lo|mi+l/ ‘thumb’ can be hypothesized to be derived from LM-tone roots. For most of the items that lack a monosyllabic counterpart, however, internal reconstruction does not lead to a clear-cut conclusion, since several tone categories of roots feed into the same tone categories of disyllables. For instance, /ji+zo#l/ ‘fish’ could originate in a monosyllabic root of any tone category except H, and M-tone words with the /-mi/ suffix, such as /q^hy+mi+l/ ‘fox’, could be derived from any of the following four tone categories of monosyllables: LH, L, H or MH. The last two items in Table 6.1g, ‘Hwamei’ (a species of bird) and ‘lighter’, carry a tone does not correspond to any of the attested correspondences.

The purpose of Tables 6.1a–g and 6.2a–b is to provide a bird’s eye view of the tonal correspondences. It does not contain pieces of information about etymol-

6.1 Derivational affixes: gender suffixes and the kinship prefix

Table 6.1e: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words. H-tone roots.

correspondences	root	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
first type	cow	ji mi	ji zo#	ji p ^h v#
	horse	zwaɛ mi	zwaɛ zo#	zwaɛ p ^h v#
	dog	k ^h v mi	k ^h v zo#	k ^h v p ^h v#
second type	Pumi (people)	bɣ mi#	bɣ zo#	*
	pheasant	ho mi#	ho zo#	ho p ^h v#
	cooking pan	v mi#	v zo#	*
third type	door	k ^h i mi	k ^h i zo#	*
	canal	q ^h æ mi	q ^h æ zo#	*
	tree trunk	ʃ mi	*	*

ogy and frequency of use that are relevant to the analysis: for instance, that /ʃ|mi|/ ‘trek trunk’ etymologically means ‘big bone’; that /po|lo|/ is a more common form for ‘ram’ than the /p^hv/ suffixed form; and that /zo/ suffixed forms are more common than /p^hv/ suffixed forms to refer to male mules and water buffalos. Such facts are adduced in the discussion below; they can be looked up in the Glossary entries.

6.1.3 Discussion

The tonal correspondences between monosyllabic roots and disyllables are not bijective. The diversity of tonal correspondences suggests that disyllables with this suffix have different degrees of lexicalization, and different degrees of historical depth; it would thus be misleading to think of all the suffixed forms as the result of a synchronic, currently productive morphological process. Semantically, there is a continuum between disyllables with a clearly female meaning, such as ‘sow’, and disyllables in which the semantic content of the suffix has become bleached, e.g. /k^hv|mi|/ which simply means ‘dog’, not specifically ‘she-dog’. After semantic bleaching, suffixes need to be added anew to specify gender: for instance, on the basis of /nɣɣ|mv|mi|/ ‘camel’, the words for ‘baby camel’ and ‘male camel’ come out as /nɣɣ|mv|mi|zo|/ and /nɣɣ|mv|mi|p^hv|/, respectively. But these two forms, while readily understandable, are considered awk-

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Table 6.1f: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words. MH-tone roots.

correspondences	root	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
first type	cat	hwɣ+miŋ\$	hwɣ+zo#ŋ / hwɣ+zoŋ\$	hwɣ+p ^h v#ŋ / hwɣ+p ^h vŋ\$
	doe	tʂ ^h æ+miŋ\$	tʂ ^h æ+zo#ŋ / tʂ ^h æ+zoŋ\$	tʂ ^h æ+p ^h v#ŋ / tʂ ^h æ+p ^h vŋ\$
	goat	ts ^h u+miŋ\$	ts ^h u+zo#ŋ / ts ^h u+zoŋ\$	ts ^h u+p ^h v#ŋ / ts ^h u+p ^h vŋ\$
	crane	ɣv+miŋ\$	ɣv+zo#ŋ / *ɣv+zoŋ\$	ɣv+p ^h v#ŋ / ɣv+p ^h vŋ\$
	wasp	tɕu+miŋ\$	tɕu+zo#ŋ / tɕu+zoŋ\$	tɕu+p ^h v#ŋ / tɕu+p ^h vŋ\$
	basket	k ^h ɣ+miŋ\$	k ^h ɣ+zoŋ\$	*
			(*k ^h ɣ+zo#ŋ)	
	needle	ɣo+miŋ\$	ɣo+zo#ŋ	*
			(*ɣo+zoŋ\$)	
	scales	tɕu+miŋ\$	tɕu+zoŋ\$	*
			(*tɕu+zo#ŋ)	
second type (isolated example)	bowl	q ^h wɣ+miŋ\$	q ^h wɣ+zoŋ\$	*
			(*q ^h wɣ+zo#ŋ)	
	stomach	ho+miŋ\$	*	*

ward by the main consultant. This could be interpreted as testifying to a continuing perception of the /-mi/ component in /njɣ+mvŋmiŋ/ ‘camel’ as carrying its *female* meaning, but this contradicts headlong the view that the word currently refers to ‘camel’ irrespective of gender. Instead, it seems that the weirdness of /njɣ+mvŋmiŋ-zoŋ/ ‘baby camel’ and /njɣ+mvŋmiŋ-p^hvŋ/ ‘male camel’ is due to the /mi.zo/ and /mi.p^hv/ sequences, where the suffix re-activates, as it were, the gender denotation of the preceding /-mi/.

The study of combinations for which two tone patterns are acceptable, e.g. /hwɣ+zo#ŋ/ and /hwɣ+zoŋ\$/ for ‘male kitten’, shows that tonal variants are item-

6.1 Derivational affixes: gender suffixes and the kinship prefix

Table 6.1g: Nouns with gender suffixes, or augmentative/diminutive suffixes. Disyllabic words without a corresponding monosyllable.

possible root tone	meaning	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
M or H	water buffalo	dzi ↓mi#↓	dzi ↓zo#↓ (*dzi↓zo↓)	dzi ↓p ^h v#↓
	granddaughter	zy ↓mi#↓	*	*
	sun	ji ↓mi#↓	*	*
L or LM	duck	bæ ↓mi↓	bæ ↓zo#↓	bæ ↓p ^h v#↓
	large vat	dzo ↓mi↓	dzo ↓zo#↓	*
	sword	ɤæ ↓mi↓	ɤæ ↓zo#↓	*
LH, L, H or MH	fox	ɖɣ ↓mi↓	*	*
	tummy, belly	bi ↓mi↓	*	*
	louse	ʂe ↓mi↓	*	*
	wife	tʂ^hv ↓mi↓	*	*
	king, lord	ko ↓mi↓	*	*
	moon	fi ↓mi↓	*	*
LM or LH	frog	pɣ ↓mi↓	*	pɣ ↓p ^h v↓
LM, LH or H	tongue	hi ↓mi↓	*	*
	large comb	pɤ ↓mi↓	*	*
	axe	bi ↓mi↓	*	*
	heart	nv ↓mi↓	*	*
	niece	ze ↓mi↓	*	*
	mule	ɖu ↓mi#↓	ɖu ↓zo#↓	ɖu ↓p ^h v#↓
LM or H	bow	zy ↓mi↓	zy ↓zo#↓	*
any tone except LH	fish	*	ji ↓zo#↓	*
unclear	Hwamei (bird)	tɕu ↓mi↓	*	*
	lighter	tse ↓mi↓	*	*

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Table 6.2a: Nouns with gender suffixes, or augmentative/ diminutive suffixes. Three-syllable words derived from M-tone disyllables.

correspon- dences	root	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
first type	rabbit	t ^h o-li-t-mi↓	t ^h o-li-t-zo#↓	t ^h o-li-t-p ^h v#↓
	serpent	z ^v -t-bæ-t-mi↓	z ^v -t-bæ-t-zo#↓	z ^v -t-bæ-t-p ^h v#↓
	lion	si-t-gu-t-mi↓	si-t-gu-t-zo#↓	si-t-gu-t-p ^h v#↓
	earth- worm	d ^z u-t-dv-t-mi↓	d ^z u-t-dv-t-zo#↓	d ^z u-t-dv-t-p ^h v#↓
second type	demon	si-t-bv-t-mi#↓	si-t-bv-t-zo#↓	*
	ghost	ts ^h o-t-q ^h w ^r -t-mi#↓	ts ^h o-t-q ^h w ^r -t-zo#↓	*
	Bai (people)	fi-t-bv-t-mi#↓	fi-t-bv-t-zo#↓	*

Table 6.2b: Nouns with gender suffixes, or augmentative/ diminutive suffixes. Three-syllable words without a corresponding disyllable.

root tone	root	suffixed forms		
		/-mi/	/-zo/	/-p ^h v/
L	bird	v↓dze↓-mi↓	v↓dze↓-zo↓	v↓dze↓-p ^h v↓
L#	bat	dze-t-b ^r -t-mi↓	dze-t-b ^r -t-zo↓	dze-t-b ^r -t-p ^h v↓
	owl	mo-tjo↓-mi↓	mo-tjo↓mi↓-zo↓	mo-tjo↓mi↓-p ^h v↓
LM+MH#	wolf	ō↓dv-t-mi↓	ō↓dv-t-zo#↓	ō↓dv-t-p ^h v#↓
H#	camel	nj ^r -t-mv↓-mi↓	nj ^r -t-mv↓mi↓-zo↓	nj ^r -t-mv↓mi↓-p ^h v↓
unclear	cicada	d ^z u-t-dze-t-mi#↓	*	*
	vulture	se↓g ^w -t-mi↓	*	*

specific (lexicalized). Out of the set of nine words suffixed in /-zo/ or /-p^hv/ corresponding with a MH-tone root, only four allow both variants, #H and H\$. Among the nine words, four refer to names of objects: ‘basket’, ‘needle’, ‘scales’, and ‘bowl’; interestingly, none of these four allows a tonal variant: they all fall into one category or the other (#H for ‘needle’, and H\$ for the other three). By

contrast, four of the five animal names allow both variants. The difference between the gender suffixes and size suffixes in this respect is statistical, not clear-cut: some nouns referring to objects allow two variants. For instance, ‘ladle’ conforms to the exceptionless existence of two tone variants for LM-tone roots: /tɕ^hoɭmi#ɿ/ ~ /tɕ^hoɭmiɿ/, and /tɕ^hoɭzo#ɿ/ ~ /tɕ^hoɭzoɿ/. Still, there appears to be a tendency for animal names to preserve a tonal flexibility reflecting the stronger perception of their internal structure by the speakers.

In some cases, it is possible to identify factors that played a role: ‘little bottle’, /kɻɿzoɿ/, does not have the expected #H-tone variant /ɿkɻɿzo#ɿ/; to the consultant, the latter form immediately summons up the given name /kɻɿzo#ɿ/. Supposing that ‘little bottle’ once had two tonal variants, L and #H, the pressure to avoid homophony may have played a role in the selection of the variant /kɻɿzoɿ/ to the exclusion of the other.

The data are discussed below tone by tone, discussing the suffix /-mi/, then the suffixes /-zo/ and /-p^hv/.

6.1.3.1 LM-tone roots

There are no less than four tone correspondences between monosyllables with tone LM and suffixed forms: LM, as in /boɭmiɿ/ ‘sow’ and /æɭmiɿ/ ‘hen’; M, as in /bvɿmiɿ/ ‘female yak’, /dɕwæɿmiɿ/ ‘female sparrow’ and /kɻɿmiɿ/ ‘female falcon’; LM+#H, in /dvɿmi#ɿ/ ‘female weasel’, /aɭmi#ɿ/ ‘goose’, /dzoɿmi#ɿ/ ‘female lizard’ and /naɭmi#ɿ/ ‘Na woman’; and finally L, in /p^hvɿmiɿ/ ‘female jackal’.

Three LM-tone nouns outside the semantic sphere of animal names can carry the /mi/ suffix, with three of the above four tone patterns. One has M tone: /bvɿmiɿ/ ‘big food steamer’ (from /bvɿ/ ‘food steamer’). Another has LM+#H tone: /tɕ^hoɭmi#ɿ/ ‘big ladle’ (from /tɕ^hoɿ/ ‘ladle’). The third has L tone: /zɻɿmiɿ/ ‘road, path’, which does not specifically mean ‘large road’ anymore: the monosyllable /zɻɿ/, likewise meaning ‘road, path’, is falling into disuse.

Given the diversity of these patterns, it is hard to establish the relative chronology of the tone rules that produced the four types (LM, M, LM+#H, and L). A few hints may be detected nonetheless. While LM-tone monosyllables correspond to no less than four tone categories of suffixed forms, LM-tone suffixed forms only correspond to LM-tone monosyllables. Said differently, LM-tone monosyllables are the only source of LM-tone disyllables. On this basis, the two words /dzeɭmiɿ/ ‘bee’ and /loɭmiɿ/ ‘thumb’, for which there exists no corresponding monosyllable in the present state of the language, can plausibly be interpreted as originating in nouns of the LM category: *dzeɿ and *loɿ. Judging from these two reconstructed examples, and from the two examples ‘sow’ and ‘hen’, all of

which belong to basic vocabulary, the LM::LM correspondence between monosyllable and disyllable can be hypothesized to reflect an older pattern.

The tone patterns for the /-zo/ and /-p^hv/ suffixes are fully consistent with those for the suffix /-mi/: in the second type of correspondences, the former two always have #H (with L as a variant) when the latter has M; in the third type, all three prefixes have LM+#H, with LM as a variant. On the other hand, these patterns differ widely from those observed in other syntactic structures, such as compound nouns and combinations between nouns and verbs or adjectives. This state of affairs requires the language learner to grasp a number of rules applying in different morphosyntactic contexts; it also entails good distinctivity.

6.1.3.2 LH-tone roots

Monosyllables with tone LH correspond with disyllables carrying tone LM+#H. But some items also have a L-tone variant, namely /zi_lmi#ɿ/ and /zi_lmi/ for ‘female monkey’, and /tɕ^hu_lmi#ɿ/ and /tɕ^hu_lmi/ for ‘female muntjac’, whereas /zæ_lmi#ɿ/ ‘female panther’ does not allow this variant: the form /*zæ_lmi/ is not acceptable. Outside the field of animal names, /t^hi_lmi#ɿ/ ‘large plane’ (from /t^hi/ ‘plane [carpentry tool]’) cannot be realized as /*t^hi_lmi/; conversely, the word for ‘large slope’ (from /to/ ‘slope’) is /to_lmi/, and cannot be pronounced /*to_lmi#ɿ/. No certainty can be reached at present on whether two different tone rules applied at different times – in which case the existence of two variants would be a development due to analogy or dialect contact – or the two variants used to coexist for all items and were lost by individual lexical items. The fact that variants are present for the majority of items within the same correspondence class suggests the latter hypothesis.

Two other patterns are illustrated by one single example each, which may be relatively old: M tone in /di_lmi/ ‘plain’ (compare ‘earth, land’, /di/), and LH tone in /ljɿ_lmi/ ‘major beam’.

6.1.3.3 M-tone roots

Monosyllables with M tone yield disyllables with #H tone: /la_lmi#ɿ/ ‘female tiger’ and /se_lmi#ɿ/ ‘female goral’. This pattern is also found, outside the semantic field of animal names, in /q^hwæ_lmi#ɿ/ ‘message; letter’. That the rule is currently productive was verified by adding the augmentative suffix to the M-tone noun /qwæ/ ‘bed mat’: this yields /qwæ_lmi#ɿ/ ‘large bed mat’.

The situation is more complex for disyllables, with two attested patterns: °L, in /si_lg_uɿ_lmi/ ‘lionness’, /zɿ_lbæ_lmi/ ‘female serpent’ and /t^ho_lli_lmi/ ‘hare’;

and #H, in /**hi**-**bv**-**mi**#ɿ/ ‘woman of the Bai ethnic group’. The latter correspondence coincides with that found for monosyllables. To determine which of the two is currently productive, the suffix was added to a word to which it is not normally attached: ‘earthworm’, /**dzɯ**-**dv**-/. The earthworm is a hermaphrodite animal. For elicitation, the imagined context was the following: a child wonders whether there exist male and female earthworms, and asks, ‘Are there female earthworms?/Do female earthworms exist?’ The speaker had no hesitation in formulating the question as: /**dzɯ**-**dv**-**mi**ɿ, | əɿ-**dzɔ**ʌ?/, with °L tone on the suffixed form /**dzɯ**-**dv**-**mi**ɿ/ ‘female earthworm’.

The tone patterns for the /-**zo**/ and /-**p^hv**/ suffixes are identical with those for /-**mi**/.

6.1.3.4 L-tone roots

Words derived from L-tone monosyllables yield M-tone disyllables: /**jo**-**mi**-/ ‘ewe’, /**hi**-**mi**-/ ‘female roebuck’, and /**mv**-**mi**-/ ‘woman’. The form /**mv**-**mi**-/ for ‘woman’ is attested in a proverb discussed in the narrative “The Sister’s Wedding” (Sister. 130, 131, 139, 158, 171 and Sister3.3, 113, 117); it is no longer understood by younger speakers, such as M23. It is therefore likely that the correspondence between L-tone roots and M-tone disyllabic forms reflects a tone rule that already has a relatively great time depth. The same pattern is observed in /**ky**-**mi**-/ ‘large bottle’ and /**dzɯ**-**mi**-/ ‘large river’.

The tone patterns for the /-**zo**/ and /-**p^hv**/ suffixes are identical for roots with tones L and LM.

6.1.3.5 H-tone roots

For words derived from H-tone monosyllables, there exist three patterns: #H tone, in /**ho**-**mi**#ɿ/ ‘female pheasant’ and /**by**-**mi**#ɿ/ ‘Pumi woman’; L tone, in /**ji**-**mi**ɿ/ ‘cow’, /**zwæ**-**mi**ɿ/ ‘mare’ and /**k^hv**-**mi**ɿ/ ‘dog’ (about which more below); and M tone, in three highly lexicalized words: /**k^hi**-**mi**-/ ‘main door’, /**q^hæ**-**mi**-/ ‘canal; large ditch’, and /**ɕ**-**mi**-/ ‘tree trunk’ (etymologically ‘large bone’).

The first pattern makes good synchronic sense: the tones of the monosyllable and disyllable correspond neatly with each other, and the semantic relationship is also clear, with one term that does not refer to gender and one that does. The second and third patterns are not phonologically transparent. Concordantly, the semantic relationship is less clear in some cases. The words for ‘mare’, ‘cow’ and ‘dog’ illustrate three stages in the gradual evolution of the suffix’s meaning. The monosyllable for ‘horse’, /**zwæ**ɿ/, is in common use, and the word for ‘mare’,

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/zɰwæɭmiɭ/, simply specifies gender. On the other hand, the monosyllable /jiɭ/ for ‘cow’ is not in frequent use; there are more than ten different disyllables pronounced /ji/, six of them with H tone, and the /mi/ suffix serves purposes of disambiguation. In this role, while the suffix retains its female meaning, it can be said to function as an animal suffix just as much as a female suffix. The third example, /k^hvɭmiɭ/, ‘dog’, is already further down this evolutionary path: it refers to dogs both male and female, and the monosyllable /k^hvɭ/ for ‘dog’ is seldom used (see examples in the narrative “Dog: How dog and man exchanged their lifespan”). These observations suggest that #H may be the tone of more recently derived words, and L a tone that used to obtain at an earlier stage, and that remains lexically preserved in some old words.

This conjecture is confirmed by examples from outside the semantic field of animal names: /saɭmiɭ/ ‘Cannabis indica’ (the psychotropic plant), corresponding to monosyllabic /saɭ/ ‘Cannabis sativa’ (used to produce thread), has L tone. The semantic content of the suffix is ‘large’, referring to the size of the leaves (as an aside: in Chinese too, ‘cannabis’ 大麻 *dàmá* is derived from ‘hemp’ 麻 *má* by addition of the augmentative 大 *dà* ‘large’). Again, this suggests that L was the tone that used to obtain at an earlier stage. By contrast, ‘large pot’, /vɭmiɭ#,ɭ/, a less clearly lexicalized and probably more recent disyllable, carries #H tone, as does /suɭɭiɭmiɭ#ɭ/ ‘backbone, spine’ (compare /suɭɭiɭ#ɭ/ ‘tree trunk’).

The tone patterns for the /-zo/ and /-p^hv/ suffixes are identical for roots with tones H and M.

6.1.3.6 MH-tone roots

MH-tone monosyllables all correspond to disyllables with H\$ tone. The following examples were observed: /hwɣɭmiɭ\$/ ‘she-cat’; /tʂ^hæɭmiɭ\$/ ‘hind’; /ts^huɭmiɭ\$/ ‘nanny goat’; /ɰvɭmiɭ\$/ ‘female crane’; /tɕuɭmiɭ\$/ ‘wasp’; and, from outside the semantic field of animal names, /k^hɣɭmiɭ\$/ ‘large basket’, /ɰoɭmiɭ\$/ ‘big needle’, /tɕuɭmiɭ\$/ ‘large basket’, and /hoɭmiɭ\$/ ‘stomach, bowels’ (the latter now more common than monosyllabic /hoɭ/, and with no strong connotation of ‘big’).

Words with the /-zo/ and /-p^hv/ suffixes can carry either #H, a pattern which is widely attested with these suffixes, or H\$, the same tone found in /-mi/-suffixed items.

6.1.3.7 Some observations about other lexical tones

As predicted by Rule 5, tone L# yields M.L.L, its final L level spreading over the suffix: /dzeɭɰɭmiɭ/ ‘female bat’, /dzeɭɰɭzoɭ/ ‘little bat, pup’, and /dzeɭɰɭ-

Table 6.3a: Tonal correspondences between monosyllabic base forms and disyllables containing the suffixes /-mi/, /-zo/ and /-p^hv/, with tentative indications on whether the tone pattern is currently productive.

/-mi/		/-zo/, /-p ^h v/	
older?	productive?	no distinctions in productiveness	
LM	LM; L	M; LM+#H / LM	LM+#H / LM; #H / L
LH	M; LH; L	LM+#H / L	LM+#H / L
M		#H	#H
L		M	#H / L
H	L; M	#H	#H
MH		H\$	#H / H\$

p^hv/ ‘male bat’. On this basis, a disyllabic /*mo-tjo/ can confidently be extracted from /mo-tjo-mi/ ‘owl’. (The asterisk here indicates the status of /*mo-tjo/ as an internal reconstruction, not as an ungrammatical form.)

The tone patterns of ‘cicada’, ‘vulture’, ‘Hwamei’, and ‘lighter’ have no equivalent elsewhere, so that it is not possible to extract the tones of their roots.

6.1.3.8 Concluding general observations

The patterns in Tables 6.1a–g and 6.2a–b are summarized in Tables 6.3a–b; it must be emphasized that the classification into currently productive patterns and older patterns for the /-mi/ suffix is highly speculative. As elsewhere, a slash (/) separates variants.

Roots with the same lexical tones correspond with diverse tones on suffixed forms, with as many as four types of correspondences for tone LM. The total number of subsets in Tables 6.1a–g and 6.2a–b, excluding disyllabic roots, is 14. Since /-mi/ on the one hand, and /-zo/ and /-p^hv/ on the other, fall into different tone categories, there exist 28 potentially distinct tonal types of suffixed nouns. Given that many types have variants, the number of different tones on suffixed nouns could be considerable; one could expect it to cover the entire range of eleven existing tone patterns for disyllables. Yet the set of tones observed on suffixed nouns is limited to six: {M, #H, H\$, L, LM, LM+#H}, apart from two outliers: tones that are found on one single noun each. Thus, some tone categories contain large amounts of words produced through compounding or suffixation,

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Table 6.3b: Tonal correspondences between disyllabic base forms and trisyllabic nouns containing the suffixes /-mi/, /-zo/ and /-p^hv/, with tentative indications on whether the tone pattern is currently productive.

	/-mi/		/-zo/, /-p ^h v/
	older?	productive?	no distinctions in productiveness
M	#H	°L (L#)	#H
H		#H	
L		L	L
L#		L#°	L#°
LM+MH#		LM+H#	LM+#H
H#		H#°	*

whether others are not fed by any currently productive combination processes. Such facts contribute to giving different lexical tone categories a specific morphological flavour.

Taking a static view of attested tone patterns for the /-zo/ and /-p^hv/ suffixes, it appears that only five patterns are attested: #H, H\$, L, LM, LM+#H. One more pattern is attested for /-mi/, namely M tone. The relatively greater simplicity of tone patterns for /-zo/ and /-p^hv/ may be linked to their more restricted distribution in the lexicon: words with the ‘male’ and ‘child’ suffix may have undergone more simplification of tone patterns by the analogical extension of productive patterns to marginal cases surviving the demise of earlier tone rules.

6.1.4 The suffix /-ḡwæ/ for ‘male’

In addition to the currently productive suffix /p^hv/ for ‘male’, there also exists an earlier suffix, /-ḡwæ/, now with the meaning ‘castrated/neutered male’, but which may have had the meaning ‘male’ at an earlier stage. It appears in four items, shown in Table 6.4. In one of these, it clearly means ‘male’: /æ-ḡwæɭ/, meaning ‘cock’, has no competitor with the suffix /p^hv/ (it is not possible to say /*æɭp^hv#ɭ/). In the three others, it carries the meaning ‘castrated male’, which has become its core meaning: /tḡ^huɭ | ḡwæɭ niɭ/ (demonstrative+/ḡwæɭ/+copula) currently means ‘This is a castrated male’. Interestingly, the tone pattern is different for ‘cock’ and ‘castrated yak’, two words whose root has the same tone (tone LM) but in which the suffix takes different meanings: ‘male’ in one case,

6.1 Derivational affixes: gender suffixes and the kinship prefix

Table 6.4: Names of animals with the suffix /ɣwæ/.

tone of root	meaning of root	suffixed form	meaning
LM	chicken	æ-ɣwæɿ	cock (not castrated)
LM	yak	bv-ɣwæɿ	castrated yak
L	sheep	jo-ɣwæɿ	wether, castrated male sheep
MH	castrated goat	ts ^h u-ɣwæɿ	wether, castrated male goat

‘castrated male’ in the other. It is a safe guess that /æ-ɣwæɿ/ ‘cock’ has greater time depth.

The word for ‘castrated horse’ is /zɣwæ-ɬroɿ/, with a different morpheme as its second syllable. Horses have long been the object of great care and interest on the part of speakers of Naish and other languages, so it is no wonder that the words belonging to this semantic field are numerous, some of them probably very old.

6.1.5 The kinship prefix /ə-/

Another non-productive but readily identifiable affix is the kinship prefix /ə-/. It is common to various languages of the area, such as Qiang (Evans & Huang 2007: 158–159), Yi, and Chinese. Table 6.5 presents the examples that were observed in Yongning Na, where this prefix is “the only common noun prefix” (Lidz 2010: 167).

Monosyllabic forms do not exist, and no convincing method to extract the tone of the root could be found. It is tempting to hypothesize that the prefix does not make a tonal contribution, and that the tone of the disyllable reflects that of the root: disyllables with M, MH# and H\$ tone would originate in roots with M, MH, H tone, respectively; and disyllables with L# tone would originate in roots with tone L, LM or LH. But this reasoning is highly speculative; no evidence could be found to explore this issue. The root /mi/ in /ə-ɿmiɿ/ ‘mother’ is likely to be linked with /miɿ/ ‘female’, and with the classifier /miɿ/, but the difference in tone between the latter two cautions that closely related morphemes may have different tones.

From a static-synchronic point of view, it is also difficult to reach hard-and-fast conclusions, due to the limited amount of data: one prefix and four suffixes. With this qualification, one may observe that disyllables with tone M, H\$ or L can be the result of suffixation as well as prefixation; that disyllables with tone #H, H#, L,

Table 6.5: Kinship terms with the prefix /ə-/.

kinship term	tone	meaning
ə+ma+	M	mother (term of address)
ə+mi+	M	mother; aunt
ə+p ^h v+	M	grandmother's elder brother
ə+si+	M	great-grandmother; ancestor
ə+dɔ+	M	boyfriend/girlfriend, lover
ə+zi1	MH#	grandmother mother's mother
ə+v1	MH#	maternal uncle
ə+bo1\$	H\$	paternal uncle
ə+da1\$	H\$	father
ə+ɕjɣ1	L#	lover, boy/girl-friend
ə+jɣ1	L#	maternal aunt: mother's elder sister
ə+teɪ1	L#	maternal aunt: mother's younger sister
ə+mv1	L#	elder sibling (brother or sister)
ə+zɯ1 / ə1zɯ1	L# / L	dual: us two
ə+su1kv1 / ə1-su1kv1	°L / LMH	1 st person plural, inclusive

LM+#H can result from suffixation but not from prefixation; and that disyllables with tone MH# or L# can result from prefixation but not from suffixation.

Kinship terms in the Luoshui dialect (Lidz 2010: 167) are similar, e.g. Luoshui /a33zɯ33/ for 'grandmother' clearly seems cognate with Yongning /ə+zi1/. Only three terms from L. Lidz's list are not attested in Yongning. One of these is /a33pɔ31/, for 'uncle: father's elder or younger brother'. This is likely to be a borrowing from Chinese *ābó* 阿伯 'brother-in-law; father's older brother'. Borrowing is facilitated by the similar structure in both languages, with a similar prefix (in Chinese: *ā* 阿). A different term is in use in Yongning: /ə+bo1\$/, whose voiced initial suggests that it is not a recent borrowing from Chinese, which does not have voiced stops. Ethnological data shed light on the fact that the terms for uncles on the father's side do not correspond neatly across dialects: the social relationship with one's father was traditionally loose, and there used to be no formal, social links between the child and the father's relatives, and no distinct terms for these relatives. When necessary, the terms used within the traditional household, i.e. on the mother's side, could be extended to refer to persons on the father's side.

The peculiar family structure of Na society invites linguistic speculation as to the origin and evolution of the terms currently used for relatives on the father's side. Fu Maoji (1980: 23; 1983: 38–39) hypothesizes that /əɪboŋ\$/ 'uncle on the father's side' used to refer to male relatives of the father's generation, on the father's side, i.e. the father and his brothers, and that the introduction of the term /əɪdaŋ\$/ 'father' led to the specialization of /əɪboŋ\$/ to refer to uncles on the father's side. This supposes that people had a term to refer to their paternal uncles (pooled together with their father under the term /əɪboŋ\$/) before they had a term for 'father'. Since children did not live in the same household as their paternal uncles, and their only link to these uncles was through the father, Fu Maoji's hypothesis on this topic appears highly implausible. To venture a further speculation, it may well be that, to him, as a respected, senior, male Chinese, it was the absence of a term for senior male relatives on the father's side (上一辈男系尊亲属) that appeared implausible – despite his scholarly training and awareness of the specificities of Na society.

Keeping in mind that these hypotheses remain purely speculative at present, one could venture an alternative hypothesis: that the words reflected in present-day Yongning Na /əɪvɪ/ 'uncle on the mother's side' and /əɪboŋ\$/ 'uncle on the father's side' used to refer to the mother's older and younger brothers, respectively. This new hypothesis would entail that the word /əɪboŋ\$/, corresponding to a socially less important and prestigious role than /əɪvɪ/, was later applied to uncles on the father's side, while /əɪvɪ/ was extended to all of the mother's brothers irrespective of age – preserving the hierarchy between /əɪvɪ/ as the more important social figure and /əɪboŋ\$/ as the less important social figure, while transforming the age hierarchy into a hierarchy between the mother's side and the father's side.

The second term that is not found in Yongning is /a33mɔ13/ as another term for 'grandmother'. The third is /a33la31/, referring to great-great-grandparents; in Yongning, the term /əɪsiɪ/ is used for all ancestors of the great-grandmother's generation and above.

6.2 Reduplication

Reduplication only involves one input lexical word; it thus appears promising as a simple starting-point in the study of the combinatorial properties of nouns. But the reduplication of noun phrases is nowhere as frequent as that of verbs (described in 7.2). The only well-attested case is the reduplication of numeral-plus-classifier phrases.

6.2.1 Reduplication of numeral-plus-classifier phrases

Reduplication of a phrase consisting of the numeral ‘one’ plus a classifier indicates iteration. The entire reduplicated phrase is integrated into a single tone group (about this crucial unit of Na morphotonology, see Chapter 8); the tone pattern of the first part of the phrase conditions that of the second:

- after a H-tone classifier, the second half of the phrase receives L tone, by application of Rules 4 and 5, e.g. /**ɖuː-tɕi**˧~**ɖuː-tɕi**˧/ ‘day after day’ (Reward.155, BuriedAlive2.85, Caravans.259)
- after a M-tone classifier, the second part is unaffected, as in /**ɖuː-tɕwɔː**˨~**ɖuː-tɕwɔː**˨/ ‘one heap after another’ (Housebuilding.51)
- after L, the second part is lowered to L, by application of Rule 5, e.g. /**ɖuː-tɕi**˩~**ɖuː-tɕi**˩/ ‘one family after the other’ (Healing.94, Caravans.237)
- after MH, the H part of the contour lands onto the first syllable of the second half: /**ɖuː-tɕɔː**˨~**ɖuː-tɕɔː**˨/ ‘one tree after the other’ (Housebuilding.28), from /**ɖuː-tɕɔː**˨/

6.2.2 Addition of the reduplicated suffix /-ɕoː~ɕoː/ to nouns, conveying abundance

Nouns and adjectives can be followed by reduplicated suffixes. The case of adjectives is presented in 7.7.1. Addition of the reduplicated suffix /-ɕoː~ɕoː/ to nouns conveys abundance: e.g. /**mɔː-tɕoː**˩~**ɕoː**˩/ ‘smeared with grease, covered with grease’ (of a person’s mouth; Lake3.15), /**ɕeː-tɕoː**˩~**ɕoː**˩/ ‘with lots of meat, rich in meat’ (of dishes given to the dog on New Year’s Eve; Dog.35), or /**siː-tɕoː**˩~**ɕoː**˩/ ‘packed with wood’ (of the traditional Na house, made of wood; Housebuilding.281). This reduplicated suffix can be added to a wide range of nouns, including count nouns, such as persons: a household with numerous young men may be described as /**pʰæ-tɕi**˩~**ɕoː**˩/, ‘teeming with youngsters’. The wide range of semantic application of the suffix allows for the elicitation of an entire set, as shown in Table 6.6. (No audio recording has been conducted for this set.) As elsewhere, the ‘+’ sign in the transcription of surface tone patterns indicates the tone of the copula when placed after the expression – a test to ascertain the type of syllabic anchoring of a final H tone.

The tone of the suffix /**ɕoː~ɕoː**/ can be hypothesized to be L# (hence the notation //**ɕoː~ɕoː**// adopted here) on the basis of its behaviour after M-tone disyllables

Table 6.6: The tonal behaviour of the reduplicated suffix /-**ʒo**+~**ʒo**↓/ depending on the tone of the preceding noun.

example	tone	example	surface pattern	analysis
dust	LM	dæ ↓- ʒo +~ ʒo ↓	L.M.L	LM+L#
pimple	LH	ji ↓- ʒo ↓~ ʒo ↓	L.H.L (=L.M.L)	LH°
star	M	ku ↑- ʒo +~ ʒo ↓	M.M.H+L	H#
grease	L	mɻ ↓- ʒo ↓~ ʒo ↓	L.L.H+L	L+H#
meat	H	ʒe ↑- ʒo +~ ʒo ↓	M.M.H+L	H#
mushroom	MH	mo ↑- ʒo +~ ʒo ↓	M.M.H+L	H#

dew	M	dzy ↑- q^h ↑- ʒo +~ ʒo ↓	M.M.M.L	L#
fly	#H	bv ↑- ɽ ↑- ʒo +~ ʒo ↓	M.M.M.H+L	H#
paste	MH#	ho ↑- dz ↑- ʒo +~ ʒo ↓	M.M.M.H+L	H#
mud	H\$	dzæ ↑- q^h ↑- ʒo +~ ʒo ↓	M.M.M.H+L	H#
egg	L	æ ↓- ɻ ↓- ʒo ↓~ ʒo ↓	L.L.L.H+L	L+H#
cake/bread	L#	dze ↓- dv ↓- ʒo ↓~ ʒo ↓	M.L.L.L	L#°
bean chaff	LM+MH#	nv ↓- tsa ↑- ʒo +~ ʒo ↓	L.M.M.H+L	LM+H#
potato	LM+#H	jɻ ↓- jo ↑- ʒo +~ ʒo ↓	L.M.M.H+L	LM+H#
sow	LM	nv ↓ ʉ ↑- ʒo +~ ʒo ↓	L.M.M.L	LM+L#
button	LH	pɻ ↓ ʉ ↑- ʒo ↓~ ʒo ↓	L.H.L.L	LH°
youngster	H#	p^h ↑- tɕi ↓- ʒo ↓~ ʒo ↓	M.H.L.L	H#°

and after LM-tone disyllables. In detail, the tone patterns are not straightforward; they differ from those of the other disyllabic suffixes, discussed in 6.5.

6.3 Possessive constructions containing pronouns

Possessive constructions were already discussed in Chapter 3, where the behaviour of the various tonal classes of nouns when followed by the possessive /**bɻ**/ served as a criterion for determining lexical tone classes. From a tonal point of view, pronouns constitute a separate set from nouns.

6.3.1 The 1st, 2nd and 3rd person pronouns

To build a possessive construction containing a pronoun, the possessive /**bɻ**/ is generally used, as in (1). The tone pattern is the following: /**njɻ**↑-**bv**↓/, /**no**↑-**bv**↓/

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and /tʂ^hu-**bv**/ for the 1st, 2nd and 3rd persons respectively.

- (1) əʃi-ɕuʃi | njɾ-bv | zwæ-tʂ^hu | ŋwɾ-ky | tʂæ | po-**hu**-ni!
 əʃi-ɕuʃi njɾ -bv zwæ -tʂ^hu ŋwɾ ky tʂæ po
 in_the_past 1SG POSS horse TOP 5 CLF to_rob to_take_away
 hu_c -ni
 to_go.PST CERTITUDE
 ‘Long ago, five of my family’s horses were stolen!’ Literally: ‘Long ago, my
 horses (=my family’s horses), five were stolen and taken away!’ (Caravans.
 183)

An interesting complication is that there are seemingly two variants for the 3rd-person pronoun: /tʂ^hu-**bv**/ and /tʂ^hu-**bv**/. These are not tonal variants, however: they have different meanings. The latter, /tʂ^hu-**bv**/, is a reduced form of /tʂ^hu-**=ɾ**-**bv**/, where /**=ɾ**/ is the associative plural. Thus, /tʂ^hu-**bv**/ means ‘their’, whereas /tʂ^hu-**bv**/ simply means ‘his’. Ellipsis of the associative plural /**=ɾ**/ is complete: there is no trace left of it, only a tonal difference. This example provides an insight into how tonal morphology expands, through segmental simplifications – a type of evolution that is especially well-attested among Bantu languages. This topic will be taken up in the typological discussion.

Returning to possessive constructions in Na, a pronoun may also immediately precede the noun, as in (2).

- (2) “njɾ mɿ ... | ə-zu | ɕu-bi | ə-mi | t^hi-ɕu-k^hu!”
 njɾ mɿ ə-zu ɕu -bi
 1SG daughter 1PL.INCL to_die IMM_FUT

“My dear daughter ... We are going to die [=we can’t avoid death, now that the tiger is at our door]; let Mum die [=let me sacrifice myself, so you can survive]!” (Tiger.16)

Combinations between pronouns and nouns as in (2) were systematically elicited. The results are identical for the 1SG and 2SG pronouns, /njɾ/ and /no/. They are shown in Table 6.7. The corresponding recording is: PossessPro.

In all cases, the pronoun carries the same tone as in isolation: a M tone. The patterns for monosyllabic nouns cannot be obtained through the application of a simple set of general rules. On the other hand, the patterns for disyllables are extremely simple. They consist in the succession of the pronoun, as said in isolation: /njɾ/, followed by the noun, which carries the same tone as when it appears on its own, except that some tone levels are deleted to comply with

Table 6.7: The tones of possessive constructions consisting of a 1sg pronoun and a noun.

tone	head	meaning	example	tone pattern
LM	bo ↓	pig	njɣ ↓ bo ↓	L#
LH	mv ↓	daughter	njɣ ↓ mv ↓	L#
M	zu ↓	life, existence	njɣ ↓ zu #↑	#H
L	dzu ↓	water	njɣ ↓ dzu #↑	#H
#H	hi ↑	human being	njɣ ↓ hi #↑	#H
MH#	ts^hu ↓	goat	njɣ ↓ ts^hu ↓	MH#

M	po ↓ lo ↓	ram	njɣ ↓ po ↓ lo ↓	M
#H	zwæ ↓ zo #↑	colt	njɣ ↓ zwæ ↓ zo #↑	#H
MH#	hwɣ ↓ li ↓	cat	njɣ ↓ hwɣ ↓ li ↓	MH#
H\$	kv ↓ ʒe ↑\$	flea	njɣ ↓ kv ↓ ʒe ↑\$	H\$
L	k^hv ↓ mi ↓	dog	njɣ ↓ k^hv ↓ mi ↓	°L
L#	da ↓ ʒi ↓	mule	njɣ ↓ da ↓ ʒi ↓	L#
LM+MH#	ʒi ↓ ʒæ ↓	waist	njɣ ↓ ʒi ↓ ʒæ ↓	°L
LM+#H	bi ↓ ʒ^hɣ #↑	whiskers	njɣ ↓ bi ↓ ʒ^hɣ #↑	°L
LM	bo ↓ mi ↓	sow	njɣ ↓ bo ↓ mi ↓	°L
LH	bo ↓ ʒa ↑	boar	njɣ ↓ bo ↓ ʒa ↑	°L
H#	k^hv ↓ na ↑	dog	njɣ ↓ k^hv ↓ na ↑	H#

the requirements on a well-formed tone group. This affects the tone categories in which a L tone is attached to the first syllable: L, LM+MH#, LM+#H, LM, and LH. For these categories, the sequence found on the first two syllables (M tone on the pronoun, and L tone on the initial syllable of the disyllabic noun) is incompatible with any tone other than L on following syllables, following Rule 5 (“All syllables following a HL or ML sequence receive L tone”). For instance, /***njɣ**↓ **bo**↓**mi**↓/ (obtained through simple concatenation) would not be a well-formed tone group; this is repaired to /**njɣ**↓ **bo**↓**mi**↓/, lowering the final M to L.

This construction thus offers an example of minimal tonal integration of two elements: it can be described as concatenation of the two parts of the expression, followed by adjustments required by the general tone rules that apply in the language.

For disyllables, the tone patterns after the 3rd person pronoun, /**ʒ^hu**↑/, are identical with those after the 1st and 2nd persons. For monosyllables, on the other

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Table 6.8: The tones of possessive constructions consisting of a 3sg pronoun and a noun.

tone	example	meaning	with 3sg	tone pattern
LM	bo↓	pig	tʂ ^h u↓ bo↓	L#
LH	mv↓	daughter	tʂ ^h u↓ mv↓	L#
M	zu↓	life, existence	tʂ ^h u↓ zu#↑	#H
L	dzu↓	water	tʂ ^h u↓ dzu↓	M
#H	hi↑	human being	tʂ ^h u↓ hi#↑	#H
MH#	ts ^h u↓	goat	tʂ ^h u↓ ts ^h u↓	MH#
M	po↓lo↓	ram	tʂ ^h u↓ po↓lo↓	M
#H	zwa↓zo#↑	colt	tʂ ^h u↓ zwa↓zo#↑	#H
MH#	hwɣ↓li↓	cat	tʂ ^h u↓ hwɣ↓li↓	MH#
H\$	kv↓ʂe↓\$	flea	tʂ ^h u↓-ə↓da#↑	#H
L	k ^h v↓mi↓	dog	tʂ ^h u↓ k ^h v↓mi↓	°L
L#	da↓ji↓	mule	tʂ ^h u↓ da↓ji↓	L#
LM+MH#	ji↓tʂæ↓	waist	tʂ ^h u↓ ji↓tʂæ↓	°L
LM+#H	bi↓tʂ ^h ɣ#↑	whiskers	tʂ ^h u↓ bi↓tʂ ^h ɣ↓	°L
LM	bo↓mi↓	sow	tʂ ^h u↓ bo↓mi↓	°L
LH	bo↓ʂa↓	boar	tʂ ^h u↓ bo↓ʂa↓	°L
H#	k ^h v↓na↓	dog	tʂ ^h u↓ k ^h v↓na↓	H#

hand, the tone patterns are different. This asymmetry poses yet another challenge to the language learner, who must learn (i) to distinguish the tone patterns for these two tonal sets of pronouns when they associate with a monosyllabic noun, and (ii) to overlook the difference when the following noun is disyllabic. Table 6.8 shows the entire set.

Finally, there also exists a looser construction: a simple juxtaposition of the pronoun and the noun, each in its own tone groups, as in (3). This is not a possessive construction in the proper sense: rather, the pronoun serves as a topic.

- (3) njɣ¹ | ɣ̌|tʂʰe¹-dɯ|ma| -tʂʰu| -dzo|, | no¹su|kɣ| | tʰɣ¹-ji¹ | lo¹ ɟi¹-hu¹-tsu|
 njɣ¹ | ɣ̌|tʂʰe¹-dɯ|ma| -tʂʰu| -dzo| no¹su|kɣ| tʰɣ¹-ji¹ lo¹ ɟi¹
 1SG given_name TOP TOP 2PL.EXCL that.day work to_do
 hu¹c -tsu¹
 go.PST REP

“As for my [daughter] ɣ̌|tʂʰe¹-dɯ|ma| ... that day, you (=the members of your family) had gone away to work” (BuriedAlive2.132)

The context to this example is the following: a young woman was unhappy with a marriage arranged by her parents, and she committed a small fault, which took huge proportions; her mother has now come over to the mother-in-law’s house to make things right by talking the matter over. The young woman’s mother first recapitulates the whole story, clarifying what was done by the two parties: the members of the two families. In this situation, the first person pronoun in the construction /njɣ¹ | ɣ̌|tʂʰe¹-dɯ|ma|/ emphasizes the fact that the mother is speaking on her daughter’s behalf, and that, as head of the family, she assumes some responsibility for her daughter’s acts.

6.3.2 The pronoun ‘oneself’

The pronoun ‘oneself’, /õ¹/, has a different behaviour from the 1st, 2nd and 3rd person pronouns. It is not followed by the possessive, /bɣ¹/, except in the frequent construction /õ¹-bɣ¹-õ¹/ ‘one’s one’, ‘one’s proper’, ‘by oneself’, which can in turn be followed by a noun, as in (4).

- (4) õ¹-bɣ¹-õ¹ ha|, | õ¹-bɣ¹-õ¹ dzu|!
 õ¹ -bɣ¹ õ¹ ha| dzu|
 oneself poss oneself food to_eat

‘One’s own food, one eats it oneself! / We eat our own produce!’ (Agriculture.68; this summarizes the traditional self-sufficiency of the Na, who grew their own food crops)

After /õ¹-bɣ¹-õ¹/, all tonal oppositions are neutralized, because the following noun can only carry L tones, due to a constraint formulated here as Rule 5: “All syllables following a HL or ML sequence receive L tone”.

The pronoun /õ¹/ usually combines with a following noun, without an intervening morpheme, as in (5).

Table 6.9: The tones of possessive constructions consisting of /*õ*1+noun/.

tone	example	meaning	with / <i>õ</i> 1/	tone pattern
LM	ɖæ 1	dirt, dust	<i>õ</i> 1- ɖæ 1	H#
LH	mv 1	daughter	<i>õ</i> 1- mv 1\$	H\$
M	lv 1	field	<i>õ</i> 1- lv 1\$	H\$
L	dzu 1	water	<i>õ</i> 1- dzu 1\$	H\$
#H	zo 1	son	<i>õ</i> 1- zo 1#	H#
MH#	ts^hu 1	goat	<i>õ</i> 1- ts^hu 1\$	H\$
M	go 1 mi 1	younger sister	<i>õ</i> 1- go 1 mi 1	H#
#H	zwa 1 zo 1#	colt	<i>õ</i> 1- zwa 1 zo 1#	#H
MH#	ə 1 mv 1	elder sibling	<i>õ</i> 1- ə 1 mv 1 / <i>õ</i> 1- ə 1 mv 1	MH# / MH# ^o
H\$	ə 1 da 1\$	father	<i>õ</i> 1- ə 1 da 1	H#
L	k^hv 1 mi 1	dog	<i>õ</i> 1- k^hv 1 mi 1	MH# ^o
L#	da 1 ji 1	mule	<i>õ</i> 1- da 1 ji 1	H#
LM	ji 1 tsæ 1	waist	<i>õ</i> 1- ji 1 tsæ 1	MH# ^o
+MH#				
LM+#H	bi 1 ts^hv 1#	whiskers	<i>õ</i> 1- bi 1 ts^hv 1	MH# ^o
LM	a 1 ko 1	home	<i>õ</i> 1- a 1 ko 1	MH# ^o
LH	bo 1 ta 1	boar	<i>õ</i> 1- bo 1 ta 1	MH# ^o
H#	k^hv 1 na 1	dog	<i>õ</i> 1- k^hv 1 na 1	H#

- (5) *õ*1 ə1mv1 ni1-ze1!
*õ*1 ə1mv1 ni1 -ze1
 self elder_sibling COP PFV

‘This is my own brother!’ (Sister.57; Sister3.58; context: a young woman recognizes a ragged stranger attending her wedding as being her long-lost brother)

This construction, /*õ*1+noun/, ‘[my/one’s] own **noun**’, has a tonal behaviour of its own. Combinations were systematically elicited. This did not prove difficult: on the analogy of (4) above, new maxims can be coined, stating that ‘one must sweep one’s own garbage’, /*õ*1-**ɖæ**1, *õ*1 **bæ**1/ (from /**ɖæ**1/ ‘dust, dirt’ and /**bæ**1a/ ‘to sweep’), and ‘one must look after one’s own fields’, /*õ*1-**lv**1, *õ*1 **li**1/ (from /**lv**1/ ‘field’ and /**li**1/ ‘to watch; to attend to’). The data are shown in Table 6.9.

The behaviour of /*õ*1/ in association with disyllables coincides with that of determinative compounds containing a MH-tone determiner; with monosyllables,

however, the tone patterns only coincide with those of determinative compounds for nouns with tone LM or MH#.

6.4 Suffixes and enclitics

Enclitics are divided below into subsets on the basis of their behaviour after M-tone nouns: those that carry L tone in that context are considered to carry lexical L tone. The rest are provisionally grouped as having a tone other than L; they display a great diversity of behaviours.

6.4.1 L-tone enclitics: plural and associative plural

No proclitics were observed in Yongning Na. Among enclitics, a range of tonal types were observed. On the basis of their tonal behaviour after M-tone items, where they carry L tone, plural /=**ɬæ**↓/ and associative plural /=**ɬ**↓/ are analyzed as having L tone. Table 6.10 presents the facts for the plural. Following a procedure already used in the study of the tones of nouns (Chapter 3), the possessive /-**bv**/ is added in cases where the plural carries M tone, in order to bring out the underlying tone of the expression.

As elsewhere, the pronouns have an exceptional behaviour. The first and second persons, /**njɣ**↓/ and /**no**↓/, yield /**njɣ**↑=**ɬæ**↓/ and /**no**↑=**ɬæ**↓/ with the plural; this is different from the pattern that obtains for nouns, e.g. /**jo**↓=**ɬæ**↑/ ‘sheep’. On the other hand, the proximal demonstrative (also serving as 3rd person) /**ɬʂ^hu**↓/ and distal demonstrative /**t^hv**↓/ yield /**ɬʂ^hu**↑=**ɬæ**↓\$/ and /**t^hv** =**ɬæ**↓\$/, i.e. the same pattern as nouns.

The plural marker /=**ɬæ**↓/ is frequently used. By contrast, the associative plural, /=**ɬ**↓/, has a highly specific meaning, referring to the clan: the extended family circle. It is therefore mostly restricted to pronouns and family (clan) names, which are few in number. It cannot be used with kinship terms. It occasionally partakes in nominalization processes, however, as in example (6), where /**p^hæ**↑~**p^hæ**↑/ ‘to attach’, in association with /=**ɬ**↓/, comes to mean ‘a couple; a pair; a set (of things, persons ...) tied together’.

- (6) **p^hæ**↑~**p^hæ**↑=**ɬ**↓ **ni**↓-**kv**↓-**tsu**↓-**mv**↓
p^hæ↑**b** ~ =**ɬ**↓ **ni**↓ **kv**↓ **tsu**↓ **mv**↓
to_tie/fasten RED ASSOCIATIVE COP ABILITIVE REP AFFIRM
‘[The mountains **kv**↓**mv**↓ and **æ**↑**ɬæ**↑] make up a couple/a pair!’ (Mountains. 99)

Table 6.10: The tonal behaviour of plural / =ɹæ/.

example	tone	with / =ɹæ-bv/	resulting tone
Na (ethnic group)	LM	na ↓ = ɹæ↑-bv↓	LM
daughter	LH	mv ↓ = ɹæ↓-bv↓	LH
Han (ethnic group)	M	hæ ↑ = ɹæ↓	L#
sheep	L	jo ↓ = ɹæ↓	LM
person, human being	H	hĩ ↑ = ɹæ↓\$ / hĩ ↑ = ɹæ↓	#H
deer	MH	ʈʂ^hæ ↑ = ɹæ↓	H#

aunt	M	ə ↑ mi ↑ = ɹæ↓	°L
younger brother	#H	gi ↑ zu ↑ = ɹæ↓\$	H\$
maternal uncle	MH#	ə ↑ v ↑ = ɹæ↓\$	H\$
she-cat	H\$	hwv ↑ mi ↑-ɹæ↓\$	H\$
woman	L	mi ↓ zu ↓ = ɹæ↓\$	L+H\$
older brother/sister	L#	ə ↑ mɥ ↓ = ɹæ↓	L#°
wolf	LM+MH#	õ ↓ dv ↓ = ɹæ↓\$	LM+H\$
Naxi (ethnic group)	LM+#H	na ↓ hĩ ↑ = ɹæ↓\$	LM+H\$
sow	LM	bo ↓ mi ↑ = ɹæ↓	LM°L
boar	LH	bo ↓ ta ↓ = ɹæ↓	LH°
young man	H#	p^hæ ↑ tɕi ↓ = ɹæ↓	H#°

The low frequency of / =ɹ↓/ explains the great number of gaps in Table 6.11.

Pronouns have a complex tonal behaviour, as is often the case. For the two L-tone pronouns (1SG and 2SG), the tone patterns with the associative plural are the same as with the plural: /**njv**↑ = ɹ↓/ and /**no**↑ = ɹ↓/. As for the proximal demonstrative (also serving as 3rd person) /**ʈʂ^hu**↓/ and distal demonstrative /**t^hv**↓/, they yield /**ʈʂ^hu**↑ = ɹ↓/ and /**t^hv**↑ = ɹ↓/, whereas the forms with the plural are /**ʈʂ^hu**↑ = ɹæ↓\$/ and /**t^hv** = ɹæ↓\$/.

6.4.2 M-tone suffixes

This paragraph presents enclitics that carry M tone when following a M-tone noun – an indication that, unlike the enclitics presented in the previous paragraph, they do not have a L lexical tone. This negatively defined set of enclitics displays a great internal diversity. To preview the results, these morphemes will be divided into two tonal categories, M and H, neither of which displays complete

Table 6.11: The tonal behaviour of associative plural /=**ɹ**/.

example	meaning	tone	with /= ɹ /	output
–	–	LM	–	–
–	–	LH	–	–
–	–	M	–	–
ɲjɹ ↓, no ↓	1SG, 2SG	L	ɲjɹ ↓= ɹ ↓, no = ɹ ↓	L#
ʈʂ^hu ↑, t^hv ↑	DEM.PROX, DIST	H	ʈʂ^hu ↑= ɹ ↓, t^hv ↑= ɹ ↓	L#
–	–	MH	–	–
dze ↑ bo ↓	family name	M	dze ↑ bo ↓= ɹ ↓	L#
–	–	#H	–	–
–	–	MH#	–	–
kv ↑ ts^ha ↑ ɔ ↓\$	family name	H\$	kv ↑ ts^ha ↑= ɹ ↓\$	H\$
la ↓ ma ↓	family name	L	la ↓ ma ↓= ɹ ↓\$	L+H\$
ə ↑ ɕjo ↓	family name	L#	ə ↑ ɕjo ↓= ɹ ↓	L# ^o
–	–	LM+MH#	–	–
–	–	LM+#H	–	–
–	–	LM	–	–
–	–	LH	–	–
–	–	H#	–	–
ɖzɹ ↓ kyɹ ↓\$	family name	LM+H\$	ɖzɹ ↓ kyɹ ↓= ɹ ↓\$	LM+H\$

internal homogeneity. xxxx issue: all M tone?

Tables 6.12a–b presents the tonal behaviour of three clitics: agentive/topic /**ɲu**/, dative /-**ki**/ (whose tonal behaviour is identical with that of the possessive, /-**by**/), and topic marker /**ʈʂ^hu**/. The latter can be hypothesized to be an extension of the 3rd person singular pronoun /**ʈʂ^hu**↓/, which also serves as a demonstrative. Part a of the table presents examples, and part b the abstract tone patterns. The tones of /**bo**↓-**ɲu**↑/ and /**zæ**↓-**ɲu**↑/ are transcribed differently here on the basis of the knowledge of the existence of an opposition between LM and LH tones, but these two patterns are neutralized at the surface-phonological level. As elsewhere, variants are separated by a slash. The difference in tone patterns between these clitics when associated to ‘horse’ was carefully verified: the tones are M.L in /**zwæ**↑-**ɲu**↓/, as opposed to M.M in /**zwæ**↑-**ki**↓/ and /**zwæ**↑-**ʈʂ^hu**↓/.

An exceptional pattern is observed for /**di**↓/ ‘earth’: in addition to the expected /**di**↓-**ɲu**↑/ (observed e.g. in Reward.145), the form /**di**↑-**ɲu**↓/ is also acceptable (an

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Table 6.12a: Tone patterns of agentive/topic /**ŋw**/, dative /-**ki**/, and topic marker /**ʈʂ^hu**/ with monosyllabic and disyllabic nouns: examples in full.

example	tone	/- ŋw /	/- ki /	/- ʈʂ^hu /
pig	LM	bo ↓- ŋw ↑	bo ↓- ki ↑	bo ↓- ʈʂ^hu ↑
leopard	LH	zæ ↓- ŋw ↓	zæ ↓- ki ↓	zæ ↓- ʈʂ^hu ↓
tiger	M	la ↑- ŋw ↑	la ↑- ki ↑	la ↑- ʈʂ^hu ↑
sheep	L	jo ↑- ŋw ↑ / jo ↓- ŋw ↓	jo ↑- ki ↑ / jo ↓- ki ↓	jo ↑- ʈʂ^hu ↑ / jo ↓- ʈʂ^hu ↓
horse	H	zwæ ↑- ŋw ↓	zwæ ↑- ki ↓	zwæ ↑- ʈʂ^hu ↓
deer	MH	ʈʂ^hæ ↑- ŋw ↓	ʈʂ^hæ ↑- ki ↓	ʈʂ^hæ ↑- ʈʂ^hu ↓ / ʈʂ^hæ ↓- ʈʂ^hu ↓

fox	M	ɖy ↑ mi ↑- ŋw ↑	ɖy ↑ mi ↑- ki ↑	ɖy ↑ mi ↑- ʈʂ^hu ↑
colt	#H	zwæ ↑ zo ↑- ŋw ↓	zwæ ↑ zo ↑- ki ↓	zwæ ↑ zo ↑- ʈʂ^hu ↓
cat	MH#	hwɣ ↑ li ↑- ŋw ↓	hwɣ ↑ li ↑- ki ↓	hwɣ ↑ li ↑- ʈʂ^hu ↓
she-cat	H\$	hwɣ ↑ mi ↓- ŋw ↓ / hwɣ ↑ mi ↑- ŋw ↓	hwɣ ↑ mi ↓- ki ↓	hwɣ ↑ mi ↑- ʈʂ^hu ↓
dog	L	k^hv ↓ mi ↓- ŋw ↓	k^hv ↓ mi ↓- ki ↓	k^hv ↓ mi ↓- ʈʂ^hu ↓
mule	L#	da ↓ ji ↓- ŋw ↓	da ↓ ji ↓- ki ↓	da ↓ ji ↓- ʈʂ^hu ↓
wolf	LM+MH#	o ↓ dv ↑- ŋw ↓	o ↓ dv ↑- ki ↓	o ↓ dv ↑- ʈʂ^hu ↑ / o ↓ dv ↑- ʈʂ^hu ↓
Naxi	LM+#H	na ↓ hi ↑- ŋw ↓	na ↓ hi ↑- ki ↑	na ↓ hi ↑- ʈʂ^hu ↑
sow	LM	bo ↓ mi ↑- ŋw ↑	bo ↓ mi ↑- ki ↑	bo ↓ mi ↑- ʈʂ^hu ↑
boar	LH	bo ↓ ʃa ↓- ŋw ↓	bo ↓ ʃa ↓- ki ↓	bo ↓ ʃa ↓- ʈʂ^hu ↓
rat	H#	hwæ ↑ tsu ↓- ŋw ↓	hwæ ↑ tsu ↓- ki ↓	hwæ ↑ tsu ↓- ʈʂ^hu ↓

example is found in Reward.121). This variant is not acceptable for other LH-tone nouns, e.g. it is not possible to say /***zæ**↑-**ŋw**↑/ for ‘leopard’.

Where two variants are possible, stylistic nuances can occasionally be pinpointed. For instance, in ComingOfAge2.18, the realization of ‘to the father’ as /**ə**↓**da**↓-**ki**↓/ constitutes a means to emphasize the term ‘father’ through its realization with the same tone sequence that it would have if said in isolation: /**ə**↓**da**↓/ (lexical form: //**ə**↓**da**↓\$//). Realization as /**ə**↓**da**↑-**ki**↑/ would be acceptable; outside context, /**ə**↓**da**↑-**ki**↑/ is in fact considered better than /**ə**↓**da**↓-**ki**↓/,¹ but it does not

¹ In such situations, an informal way is used to test the consultant’s preference: the investigator says one of the two alternatives while raising his right hand, then the second while raising his

Table 6.12b: Tone patterns of agentive/topic /**ɲu**/, dative /-**ki**/, and topic marker /**ʈs^hu**/ with monosyllabic and disyllabic nouns.

tone of noun	/- ɲu /	/- ki /	/- ʈs^hu /
LM	L.M	L.M	L.M
LH	L.H	L.H	L.H
M	M.M	M.M	M.M
L	M.M / L.H	M.M / L.H	M.M / L.H
H	M.L	M.M	M.M
MH	M.H	M.H	M.H

M	M.M.M	M.M.M	M.M.M
#H	M.M.L	M.M.M	M.M.M
MH#	M.M.H	M.M.H	M.M.H
H\$	M.H.L / M.M.H	M.M.M	M.M.M
L	L.L.H	L.L.H	L.L.H
L#	M.L.L	M.L.L	M.L.L
LM+MH#	L.M.H	L.M.H	L.M.M / L.M.H
LM+#H	L.M.L	L.M.M	L.M.M
LM	L.M.M	L.M.M	L.M.M
LH	L.H.L	L.H.L	L.H.L
H#	M.H.L	M.H.L	M.H.L

carry the same stylistic effect.

The demonstratives /**ʈs^hu**ɾ/ (proximal, also 3rd person singular) and /**t^hv**ɾ/ (distal) have a different behaviour from other H-tone items: they yield M.M in association with /-**ɲu**/: /**ʈs^hu**ɾ-**ɲu**ɾ/, /**t^hv**ɾ-**ɲu**ɾ/ (also /**ʈs^hu**ɾ-**la**ɾ/, /**t^hv**ɾ-**la**ɾ/ ‘this/that one too’). Not all pronouns have a special treatment in this respect: the 1st and 2nd person pronouns behave like other L-tone items: /**ɲjɾ**ɾ-**ɲu**ɾ/, /**no**ɾ-**ɲu**ɾ/.

For typographical reasons, only three clitics are shown side by side in Tables 6.12a–b. The data for the clitic /-**la**/, meaning both ‘too’ and ‘only’ (or, said differently, the two homophonous clitics meaning ‘too’ and ‘only’, respectively), are shown in Table 6.13. The high number of homophonous words, such as the verb ‘to strike’, facilitates errors; as an illustration of the pitfalls of systematic elic-

left hand. The consultant indicates whether both are acceptable, and expresses a preference, as an understatement: /**ʈs^hu**ɾ-**bæ**ɾ, | **ɖu**ɾ-**pi**ɾ | **ho**/, “This one is pretty correct”, meaning “This one is better”.

6 Combinations of nouns with grammatical words

Table 6.13: The behaviour of /la/ ‘only; also’ with monosyllabic and disyllabic nouns.

example	tone	example	abstract tone pattern
pig	LM	bo ↓- la ↑	L.M
leopard	LH	zæ ↓- la ↑	L.H
tiger	M	la ↑- la ↑	M.M
sheep	L	jo ↓- la ↑	L.H
horse	H	zwæ ↑- la ↓	M.L
deer	MH	tʂ^hæ ↑- la ↑	M.H

fox	M	ɕʰ ↑- mi ↑- la ↑	M.M.M
colt	#H	zwæ ↑- zo ↑- la ↓	M.M.L
cat	MH#	hwʰ ↑- li ↑- la ↑	M.M.H
she-cat	H\$	hwʰ ↑- mi ↑- la ↓	M.H.L
dog	L	k^hʷ ↓- mi ↓- la ↑	L.L.H
mule	L#	da ↑- ji ↓- la ↓	M.L.L
wolf	LM+MH#	õ ↓- dv ↑- la ↑	L.M.H
Naxi	LM+#H	na ↓- hĩ ↑- la ↓	L.M.L
sow	LM	bo ↓- mi ↑- la ↑	L.M.M
boar	LH	bo ↓- ka ↑- la ↓	L.H.L
rat	H#	hwæ ↑- tsu ↑- la ↓	M.H.L

itation of tone patterns, the combination ‘only (a/the) she-cat’ was first recorded with a M.M.L pattern, as /**hwʰ**↑-**mi**↑-**la**↓/, then with a M.M.M pattern, as /**hwʰ**↑-**mi**↑-**la**↑/; later the consultant pointed out that those were wrong, and that the correct pattern was M.H.L: **hwʰ**↑-**mi**↑-**la**↓.

The four clitics /-**ŋu**/, /-**ki**/, /**tʂ^hu**/ and /-**la**/ have a tantalizingly similar behaviour: the tone patterns for the four clitics are identical for eleven of the seventeen categories of nouns. The only difference between /-**ŋu**/ and /-**la**/ is in combination with the L category of monosyllables, where the patterns are M.M (e.g. /**jo**↑-**ŋu**↑/ ‘by the sheep’) and L.H (e.g. /**jo**↓-**la**↑ | **ts^hu**↑/ ‘sheep and goats’). Needless to say, the data in this section were carefully verified across several work sessions. (A recording is available: OnlyAnd.)

Table 6.14: The tonal behaviour of the dative/comitative marker /qa/ following nouns.

example	tone	example	tone pattern
pig	LM	bo↓-qa↑	L.M
leopard	LH	zæ↓-qa↓	L.H (on surface: same as LM)
tiger	M	la↑-qa↑	M.MH
sheep	L	jo↓-qa↓	L.LH
horse	H	zwæ↑-qa↓	M.L
deer	MH	tʂ ^h æ↑-qa↓	M.H

fox	M	ɬɣ↓mi↑-qa↑	M.M.MH
colt	#H	zwæ↑zo↑-qa↓	M.M.L
cat	MH#	hwɣ↑li↑-qa↓	M.M.H
she-cat	H\$	hwɣ↑mi↓-qa↓	M.H.L
dog	L	k ^h v↓mi↓-qa↓	L.L.H
mule	L#	da↑ji↓-qa↓	M.L.L
wolf	LM+MH#	ō↓dv↑-qa↓	L.M.H
Naxi	LM+#H	na↓hī↑-qa↓	L.M.L
sow	LM	bo↓mi↑-qa↑	L.M.MH
boar	LH	bo↓hɑ↓-qa↓	L.H.L
rat	H#	hwæ↑tsu↓-qa↓	M.H.L

6.4.3 The MH-tone enclitics /-qa/ (dative/comitative) and /-gi/ ‘behind’

The enclitic /qa/ has dative and comitative uses. It is analyzed as carrying MH tone on the basis of its behaviour after M-tone words both monosyllabic and disyllabic, and after LM-tone disyllables. Table 6.14 sets out the data. (No recording was conducted.) The data for /-gi/ ‘behind’ are identical.

Note that, as in all other morphosyntactic contexts, the L.H.L pattern is neutralized with L.M.L at the surface-phonological level. The tone pattern for ‘boar’ could therefore be transcribed as L.M.L (i.e. its surface-phonological representation), as well as L.H.L (a more abstract representation). The latter notation reflects the phonological analysis put forward in the present work: that the tone of the enclitic is lowered to L because of the presence of a preceding H tone – the H part of the LH tone pattern lexically attached to the noun ‘boar’. The choice of

a notation as /L.M.L/ could seem advisable in order to stay closer to surface realizations, limiting the degree of abstraction of the notations; on the other hand, in the presentation of phonological data this could clash with the notation of the lexical categories – as if the LH lexical category somehow became LM when this enclitic is added.

6.4.4 The ambivalent behaviour of the topic marker /-dzoŋ/

The topic marker /-dzoŋ/, which can appear after nouns and verbs, raises a phonological issue. A MH-tone noun or verb preceding it is realized with a MH contour, e.g. /tʂ^hæŋ-dzoŋ/ ‘as for the deer’ (from /tʂ^hæŋ/ ‘deer’) and /mɤŋ-lɑŋ-dzoŋ/ ‘as [he/she] did not strike’ (from /lɑŋ/ ‘to strike’). This suggests that there is a tone group boundary after the noun or verb, since contours are only realized tone-group-finally. Such a behaviour would not be unparalleled: for instance, the contrastive topic marker /-noŋ/ and the word /t^hiŋ/ ‘then’ always mark the beginning of a new tone group. But after nouns or verbs bearing a tone other than MH, the tonal behaviour of the topic marker would suggest that it is integrated within the same tone group. For instance, after a M-tone noun or verb, the pattern is M.M.H, e.g. /lɑŋ-dzoŋ/ ‘as for the tiger’ and /mɤŋ-hwæŋ-dzoŋ/ ‘as [she/he] does not buy’. These observations suggest that these expressions constitute a single tone group. The full data set (as elicited from the main consultant) is presented in Table 6.15.² These data are taken up in §8.3, as part of the discussion of cases of breach of tonal grouping: how non-final syllables can come to carry a contour, and following syllables become extrametrical.

On the basis of its behaviour after M-tone nouns (and after M-tone verbs, which will be presented in the next chapter), the topic marker is provisionally analyzed as carrying a lexical H tone. If this tonal identification is confirmed, the morpheme constitutes an extreme case of distance between underlying form and surface form: in texts, realizations with a L tone outnumber those with a H tone by a ratio of about 10 to 1. The particles indicated reported speech, -tsuŋ, and affirmation, -mɤŋ, constitute even more spectacular cases: their underlying

² The data were verified by using additional nouns illustrating the tonal categories: /zoŋ/ ‘son’ for tone H; /õŋ/ ‘oneself’ for tone MH; /p^hɤŋ-lɤŋ/ ‘gift’ for tone M; /əŋ-dɑŋ/ ‘father’ and /mɤŋ-lɔŋ/ ‘heavens’ for tone H\$. The patterns were the same, including variant patterns: for ‘gift’, there are two variants, /p^hɤŋ-lɤŋ-dzoŋ/ and /p^hɤŋ-lɤŋ-dzoŋ, as for the example in the table, ‘fox’. The only unexpected result was ‘plain’, //diŋ-qoŋ// : one would expect /t^hdiŋ-qoŋ-dzoŋ/, on the analogy of /d^hɤŋ-miŋ-dzoŋ/, but the observed pattern is M.M.M : /diŋ-qoŋ-dzoŋ/. This unexpected result, confirmed across elicitation sessions, may have to do with the internal structure of this disyllable, literally meaning ‘on earth’.

Table 6.15: The tonal behaviour of the topic marker /-dzo/ following nouns.

example	tone	example	tone pattern
pig	LM	boʌ-dzoʌ	LM.L
leopard	LH	zæʌ-dzoʌ	LH.L
tiger	M	laʌ-dzoʌ	M.H
daughter	L	mvʌ-dzoʌ	LH.L
horse	H	zɰwæʌ-dzoʌ	M.L
deer	MH	tʂʰæʌ-dzoʌ	MH.L
fox	M	qʰɣʌmiʌ-dzoʌ / qʰɣʌmiʌ-dzoʌ	M.M.H / M.M.M
colt	#H	zɰwæʌzoʌ-dzoʌ	M.M.L
cat	MH#	hwɣʌliʌ-dzoʌ	M.MH.L
she-cat	H\$	hwɣʌmiʌ-dzoʌ	M.H.L
dog	L	kʰvʌmiʌ-dzoʌ	L.LH.L
mule	L#	daʌjiʌ-dzoʌ	M.L.L
wolf	LM+MH#	õʌdvʌ-dzoʌ	L.MH.L
Naxi	LM+#H	naʌhĩʌ-dzoʌ	L.M.L
sow	LM	boʌmiʌ-dzoʌ	L.M.H
boar	LH	boʌʌʌ-dzoʌ	L.M.L
rat	H#	hwæʌtsuuʌ-dzoʌ	M.H.L

form rarely surfaces as such (see 8.1.2.3).

6.5 Association with disyllabic suffixes

This paragraph deals with disyllabic suffixes.

6.5.1 Spatial postpositions

The disyllabic spatial postpositions brought to light to date are /ɰoʌtʰoʌ/ ‘behind’, /ɰoʌdaʌ/ ‘in front of’, /ʌoʌtaʌ/ ‘beside, to the side of’, /ɰwæʌgiʌ#ʌ/ ‘to the left’, /joʌgiʌ/ ‘to the right’, and /-qoʌloʌ/ and /-qoʌ/, both meaning ‘inside’.

Table 6.16 shows the data for nouns followed by the spatial postpositions /ʌoʌtaʌ/ ‘beside, to the side of’ and /ɰoʌtʰoʌ/ ‘behind’. The data for /ɰoʌdaʌ/ ‘in front of’ are identical with those for /ʌoʌtaʌ/ ‘beside, to the side of’, and are therefore not shown in the table; likewise, the behaviour of /tʰæʌqoʌ/ ‘under’ is identical with

Table 6.16: The tonal behaviour of the spatial postpositions /**ɬo**-**ɬa**-/ ‘beside, to the side of’ and /**ɬo**-**tʰo**-/ ‘behind’. There are two lines for the L tone because L-tone pronouns have an exceptional behaviour.

tone	example	meaning	to the side of	to the back of
LM	bo ɬ	pig	bo ɬ- ɬo - ɬa -	bo ɬ- ɬo - tʰo -
LH	zæ ɬ	leopard	zæ ɬ- ɬo - ɬa -	zæ ɬ- ɬo - tʰo -
M	la -	tiger	la - ɬo - ɬa -	la - ɬo - tʰo -
L	jo ɬ	sheep	jo ɬ- ɬo - ɬa ɬ	jo ɬ- ɬo - tʰo ɬ
L	no ɬ	2SG	no - ɬo - ɬa -	no - ɬo - tʰo -
H	zɰwæ ɬ	horse	zɰwæ ɬ- ɬo - ɬa ɬ	zɰwæ ɬ- ɬo - tʰo ɬ
MH	tʂʰæ ɬ	deer	tʂʰæ ɬ- ɬo - ɬa ɬ	tʂʰæ ɬ- ɬo - tʰo ɬ
M	ɬɰ - mi -	fox	ɬɰ - mi - ɬo - ɬa -	ɬɰ - mi - ɬo - tʰo -
#H	zɰwæ - zo -#	colt	zɰwæ - zo - ɬo - ɬa ɬ	zɰwæ - zo - ɬo - tʰo ɬ
MH#	hwɰ - li -	cat	hwɰ - li - ɬo - ɬa ɬ	hwɰ - li - ɬo - tʰo ɬ
H\$	hwɰ - mi ɬ\$	she-cat	hwɰ - mi - ɬo - ɬa ɬ	hwɰ - mi - ɬo - tʰo ɬ
L	kʰv - mi ɬ	dog	kʰv - mi ɬ- ɬo - ɬa ɬ	kʰv - mi ɬ- ɬo - tʰo ɬ
L#	da - ji ɬ	mule	da - ji ɬ- ɬo - ɬa ɬ	da - ji ɬ- ɬo - tʰo ɬ
LM+MH#	õ - dv -	wolf	õ - dv - ɬo - ɬa ɬ	õ - dv - ɬo - tʰo ɬ
LM+#H	na - hi -#	Naxi	na - hi - ɬo - ɬa ɬ	na - hi - ɬo - tʰo ɬ
LM	bo - mi -	sow	bo - mi - ɬo - ɬa -	bo - mi - ɬo - tʰo -
LH	bo - ɬa ɬ	boar	bo - ɬa ɬ- ɬo - ɬa ɬ	bo - ɬa ɬ- ɬo - tʰo ɬ
H#	hwæ - tsu ɬ	rat	hwæ - tsu ɬ- ɬo - ɬa ɬ	hwæ - tsu ɬ- ɬo - tʰo ɬ

that of /**ɬo**-**tʰo**-/ ‘behind’. Table 6.17 shows the data for the spatial postpositions /**ɰwæ**-**gi**-/ ‘to the left’ and /**jo**-**gi**-/ ‘to the right’. The corresponding recording is: SpatialPostp.

There are two lines for the L tone in Table 6.16 and Table 6.17 because L-tone pronouns, 1SG /**njɰ**-/ and 2SG /**no**-/, have an exceptional behaviour. The difference in tonal output between pronouns and nouns is clear: with the M-tone postposition ‘beside’, a L-tone pronoun yields a M-tone pattern: /**no**-**ɬo**-**ɬa**-/, and it is not possible to say /***no**-**ɬo**-**ɬa**ɬ-/. Conversely, a L-tone noun yields a L-tone pattern: /**jo**-**ɬo**-**ɬa**ɬ-/, and it is not possible to say /***jo**-**ɬo**-**ɬa**-/.

It would be nice and economical if the tone patterns in these tables were identical with those for other constructions, such as determinative compounds. Such is the case for /**ɬo**-**tʰo**-/ ‘at the back’, which behaves tonally like a L#-tone head

Table 6.17: The tonal behaviour of the spatial postpositions /*ɣwæ-tgi#*l/ ‘to the left’ and /*jo-ŋgi*l/ ‘to the right’. There are two lines for the L tone because L-tone pronouns have an exceptional behaviour.

tone	example	meaning	to the left of	to the right of
LM	bo l	pig	bo l-ɣwæ-tgi#l	bo l-jo-ŋgi#l
LH	zæ l	leopard	zæ l-ɣwæ-tgi#l	zæ l-jo-ŋgi#l
M	la l	tiger	la l-ɣwæ-tgi#l	la l-jo-ŋgi
L	jo l	sheep	jo l-ɣwæ-ŋgi	jo l-jo-ŋgi
L	no l	2SG	no l-ɣwæ-tgi#l	no l-jo-ŋgi
H	zwæ l	horse	zwæ l-ɣwæ-tgi#l	zwæ l-jo-ŋgi
MH	tʂ^hæ l	deer	tʂ^hæ l-ɣwæ-tgi#l	tʂ^hæ l-jo-ŋgi
M	ɖɣ-tmi l	fox	ɖɣ-tmi l-ɣwæ-tgi#l	ɖɣ-tmi l-jo-ŋgi
#H	zwæ-tzo #l	colt	zwæ-tzo l-ɣwæ-tgi#l	zwæ-tzo l-jo-ŋgi
MH#	hwɣ-li l	cat	hwɣ-li l-ɣwæ-tgi#l	hwɣ-li l-jo-ŋgi
H\$	hwɣ-tmi l\$	she-cat	hwɣ-tmi l-ɣwæ-tgi#l	hwɣ-tmi l-jo-ŋgi
L	k^hv-mi l	dog	k^hv-mi l-ɣwæ-ŋgi	k^hv-mi l-jo-ŋgi
L#	da-tji l	mule	da-tji l-ɣwæ-ŋgi	da-tji l-jo-ŋgi
LM+MH#	ō ldv ^l	wolf	ō ldv ^l -ɣwæ-tgi#l	ō ldv ^l -jo-ŋgi
LM+#H	na lhī#l	Naxi	na lhī ^l -ɣwæ-tgi#l	na lhī ^l -jo-ŋgi
LM	bo lmi ^l	sow	bo lmi ^l -ɣwæ-tgi#l	bo lmi ^l -jo-ŋgi
LH	bo lɬa ^l	boar	bo lɬa ^l -ɣwæ-ŋgi	bo lɬa ^l -jo-ŋgi
H#	hwæ -tsu ^l	rat	hwæ -tsu ^l -ɣwæ-ŋgi	hwæ -tsu ^l -jo-ŋgi

noun in determinative compounds, and for /*ɬo-ta*l/ ‘beside, to the side of’, which behaves like a M-tone noun. Not all spatial postpositions share this behaviour, however: compare /*hwɣ-li*-*hi*-*k^hu*l/ ‘cat’s gums (body part)’ (input tones: MH# and #H, output tone: MH#) and /*hwɣ-li*-*ɣwæ-tgi*#l/ ‘to the left of the tiger’ (same input; output tone: #H).

6.5.2 The conjunction /-*pɣ-to*l/ ‘even’

The data for /-*pɣ-to*l/ are set out in Table 6.18; the corresponding recording is NounsEven.

The tonal behaviour of the conjunction /*pɣ-to*l/ differs from that of L#-tone heads in compound nouns.

Table 6.18: The tonal behaviour of /-pɻto/ 'even'.

tone	example	meaning	N+/-pɻto/ 'even'
LM	bo↓	pig	bo↓-pɻto↓
LH	zæ↓	leopard	zæ↓-pɻto↓
M	la↑	tiger	la↑-pɻto↓
L	jo↓	sheep	jo↓-pɻto↓; njɻ↑-pɻto↓
#H	zɰwæ↓	horse	zɰwæ↓-pɻto↓
MH#	tʂ ^h æ↓	deer	tʂ ^h æ↓-pɻto↓

M	qɻ↑mi↑	fox	qɻ↑mi↑-pɻto↓
#H	zɰwæ↑zo#↓	colt	zɰwæ↑zo↓-pɻto↓
MH#	hwɻ↑li↓	cat	hwɻ↑li↓-pɻto↓
H\$	hwɻ↑mi↓\$	she-cat	hwɻ↑mi↓-pɻto↓
L	k ^h v↓mi↓	dog	k ^h v↓mi↓-pɻto↓
L#	da↓ji↓	mule	da↓ji↓-pɻto↓
LM+MH#	ō↓dv↓	wolf	ō↓dv↓-pɻto↓
LM+#H	na↓hī#↓	Naxi	na↓hī↓-pɻto↓
LM	bo↓mi↑	sow	bo↓mi↑-pɻto↓
LH	bo↓ɦa↓	boar	bo↓ɦa↓-pɻto↓
H#	hwæ↑tsu↓	rat	hwæ↑tsu↓-pɻto↓

6.6 A summary

There exists an impressive variety of tonal classes of grammatical words in Na: for instance, agent/ablative /ɲu/, topic marker /tʂ^hu/, and conjunction /-la/ differ in a few of their combinations with nouns; a fourth group, tantalizingly similar to the other three, contains dative /-ki/ and possessive /-bɻ/. Not a few of the morphemes are one of a kind from the point of view of their tonal behaviour. This is further evidence of the high degree of complexity of Yongning Na morphotonology – a complexity that results from the great number of tonal paradigms, none of which is especially complex in itself.

7 Verbs and their combinatory properties

This chapter discusses the tones of verbs and adjectives, and their combinatory properties.

7.1 The lexical tones of verbs

7.1.1 Overview

Most verbs are monosyllabic. Seven tonal categories of verbs have been brought out, as shown in Table 7.1; the subset of intransitive verbs within the M tone category labelled as ‘M_c’ will be discussed further below, §7.1.2.

The three contexts reported in Table 7.1 are: (i) in isolation; (ii) with the negation (NEG); and (iii) with /**ɕwɪt-k^hwɪŋ**/\$/ ‘a piece’ or /**ɕwɪt-t^hɪŋ**/\$/ ‘a drop’ as an object (‘V+a piece’). The two numeral-plus-classifier phrases ‘a piece’ and ‘a drop’ have the same tone: H\$ (see Chapter 5 for a detailed study of the tones of numeral-plus-classifier phrases).

Realizations in isolation only distinguish three tonal subsets: tone H is realized as M due to the neutralization of H and M in tone-group-initial position (Rule 3; for a list of rules, see Chapter 8); and the two types of M tones (M_a and M_b) are also realized as M. Tones L_a and L_b are both realized as LH due to the post-lexical addition of a H tone to all-L tone groups (Rule 7). L-tone verbs do not behave like L-tone nouns: the latter surface with M tone in isolation, as mentioned in Chapter 3. This is one of many examples showing that the tone system of Yongning Na is not based on a set of phonological rules that apply across-the-board in all contexts, but on morphotonological rules which are specific to certain morphological contexts.

The two other contexts provided in Table 7.1, the negation and the association with the object ‘a piece’ or ‘a drop’, were chosen because their combinations reveal all six categories, even though each context taken individually only distinguishes four categories. Tones M_a and M_b yield the same tone pattern in association with the negation, as do L_a and L_b, but they are distinguished in the

Table 7.1: The lexical tones of verbs.

tone	in isolation	example	NEG	example	V+a piece	example
M _a	M	hwæ _a 'buy'	M.M	mɣ ⁺ -hwæ ⁺	M.H.L	ɖur ⁺ -k ^h -wɣ ⁺ hwæ _J
M _b		tɕ ^{hi} _b 'sell'		mɣ ⁺ -tɕ ^{hi} ⁺	M.M.M	ɖur ⁺ -k ^h -wɣ ⁺ -tɕ ^{hi} ⁺
M _c		bi ^c 'go'		mɣ ⁺ -bi ⁺	n.a.	n.a.
H		dzuu ⁺ 'eat'	M.H	mɣ ⁺ -dzuu ⁺	M.M.M	ɖur ⁺ -k ^h -wɣ ⁺ -dzuu ⁺
L _a	LH	dze _a 'cut'	M.L	mɣ ⁺ -dze _J	M.M.H	ɖur ⁺ -k ^h -wɣ ⁺ -dze _J
L _b		ɭ ^{hu} _b 'drink'		mɣ ⁺ -ɭ ^{hu} _J	M.M.MH	ɖur ⁺ -ɭ ^{hu} _J -ɭ ^{hu} _J
MH	MH	ɭa ⁺ 'strike'	M.MH	mɣ ⁺ -ɭa ⁺	M.H.L	ɖur ⁺ -k ^h -wɣ ⁺ -ɭa _J

Table 7.2: Examples of the six categories of verbs.

tone	examples
M _a	hwæ ↓ _a ‘to buy’, hō ↓ _a ‘to go away (°imperative)’, ki ↓ _a ‘to give’, li ↓ _a ‘to watch’
M _b	tɕ ^{hi} ↓ _b ‘to sell’, ni ↓ _b ‘to need’
H	dzu ↓ ‘to eat’, ji ↓ ‘to do’, se ↓ ‘to walk’, tʂ ^{hæ} ↓ ‘to wash’
L _a	bæ ↓ _a ‘to sweep’, dze ↓ _a ‘to cut’, ti ↓ _a ‘to hit (gently)’, tʰi ↓ _a ‘tired’, tɕi ↓ _a ‘to write’, ts ^h u ↓ _a ‘to arrive’, zi ↓ _a ‘to bring’, dzi ↓ _a ‘to sit’
L _b	tʰu ↓ _b ‘to drink’, zɣw ↓ _b ‘to speak’
MH	ɕjɣ ↓ ‘to try; to taste’, gɣ ↓ ‘to carry on one’s shoulder’, la ↓ ‘to strike’, tɕɣ ↓ ‘to boil’, zɣ ↓ ‘to sew (clothes)’

third context; conversely, the tone pairs {M, MH} and {M_b, H} yield the same tone when associated with the object ‘a piece’/‘a drop’ but are distinguished after the negation.

Examples of predicates of the six categories are presented in Table 7.2.

While the data in Table 7.1 demonstrate the existence of six distinct categories, they leave several analytic possibilities open. The labels used for the pairs of categories {L_a, L_b} and {M_a, M_b} are deliberately abstract, for want of decisive evidence about the phonological nature of the categories at issue. The letters are assigned on the basis of relative frequency in the lexicon: among L tones, the ‘to sweep’ type is six times as frequent as the ‘to drink’ type, and the ‘to buy’ type twice as frequent as the ‘to sell’ type.

The ‘to sweep’ and ‘to drink’ types, labelled here as L_a and L_b, must both contain a L tone level, since they are realized with L tone after the negation. There is limited evidence on the phonological nature of the difference between the L_a and L_b categories. On the analogy of nouns, one could be analyzed as a simple L tone, and the other as a contour (LM or LH), but this would be arbitrary, since there is no compelling evidence that either of these categories consists in a contour. The apparent economy gained from using labels similar to those of nouns would come together with high costs in terms of descriptive adequacy. The LM and LH contour tones on nouns surface as such in isolation (where they are neutralized to LH), unlike the L tone, which (for nouns) surfaces as M in isolation. There is

no such difference between the L_a and L_b categories of verbs, which both surface with a contour (LH) in isolation.

As for the M_a and M_b types, it would likewise be possible to reserve the label M to one of the two, and to assign to the other a label selected within the inventory of tone categories of nouns, e.g. describing the opposition as one between M and #H, but no evidence has been found to support such identifications, hence the choice to adopt noncommittal (though somewhat cumbersome) abstract labels with subscript letters.

7.1.2 Tone M_c : a subset of five intransitive verbs within the M tone category

In addition to the six tone categories described above, there is a set of five verbs that behave like M-tone verbs (of the M_a category) except when preceded by the accomplished, /le-/. These are /bi-/ ‘to go’, and its past form /hu-/; /gv-/ ‘to go by, to flow, to fly (of time)’; /ji-/ ‘to come’; and /pv-/ ‘to chant, to perform (a sacrifice, a ritual, a festival)’. With the ACCOMPLISHED prefix and the PERFECTIVE suffix, the pattern is M.L.L: /le-bi-ze/, /le-hu-ze/, /le-gv-ze/, /le-ji-ze/, and /le-pv-ze/, whereas the other verbs of the M tone category carry M tone after the ACCOMPLISHED. All five are intransitive verbs, but not all intransitive verbs behave that way, witness ‘to die’: /le-gu-ze/ (Sister3.11, 95).

These five verbs could be described as a subset of the M_a category having an exceptional behaviour in association with the ACCOMPLISHED; a further diacritic could be added to their tone label, yielding something such as M_a' (M_a prime). However, it appeared less awkward typographically to label them as M_c , a third subcategory within M tones.

This exceptional behaviour calls for analysis. One hint that may be relevant is that the morpheme /le-/ in association with these verbs can carry special semantic connotations – a semantic difference that may shed light on their special phonological behaviour. With these verbs, /le-/ can carry the meaning ‘back/to return’, as in (1) and (2):

- (1) le-bi dzo, | ts^hwɣ | dɯ-mɣ-kɣ tsu mɣ!
 le- bi_c -dzo | ts^hwɣ | dɯ mɣ -kɣ -tsu mɣ
 ACCOMP to.go TOP dinner get NEG ABILITIVE REP AFFIRM

‘If [the daughter] goes back [to her mother’s home after marriage, she] cannot have dinner there.’ [She must not stay there for the night, she has

to go back to her new home before evening.] (Sister3.116)

- (2) lɣ+mi+ so↓-tɣ↓ pɣ↓~pɣ↓! | le↓-bi↓-ze↓!
 lɣ+mi+ so↓-tɣ↓ ~ pɣ↓ le↓- bi↓ -ze↓
 stone a_few ACTIVITY carry ACCOMP to_go PFV
 ‘Tonight, I’ll bring (back) a couple of stones! I’m going back!’ (Reward. 77; context: a man is compelled by his spouse to go and steal in order to support the family; as he is about to steal sweetcorn, he decides to refrain from stealing; instead, he fills his basket with stones and goes back.)

This meaning is not always present, however, and the tone pattern is the same when the meaning is ‘to go, to set off (away from a familiar place and towards an unfamiliar one)’, as in (3).

- (3) “æ.hi.hi!” pi↓, | le↓-bi↓-zo↓-kɣ↓ | tsu↑ | -mɣ↓
 æ.hi.hi pi↓ le↓- bi↓ -zo↓ -kɣ↓ -tsu↓ -mɣ↓
 INTJ to_say ACCOMP to_go OBLIGATIVE ABILITIVE REP AFFIRM

‘[The mother, uncles, aunts and other relatives of the deceased wife’s family shout out a cry of defiance:] A-hi-hi! and they set off [towards the husband’s house]!’ (Sister1.81)

Since no principled explanation can be provided for the behaviour of these five verbs after the ACCOMPLISHED, it appeared best to set up a distinct synchronic tone category for them: M_c .

7.1.3 Adjectives as distinct from verbs

Adjectives behave in most respects like verbs, i.e. as stative verbs. They nonetheless have some tonal specificities which require the recognition of adjectives as a formally distinct class of words.

Four main tonal categories for monosyllabic adjectives were found: L, M, H, and MH. The L tone category must further be split into two subcategories, like for verbs. The L_b category only contains two examples: /dʒɹ↓ L_b / ‘good’ and /na↓ L_b / ‘black, dark’; details on their behaviour in context is provided in the course of this chapter.

Importantly, the MH category of adjectives and the MH category of verbs do not always have the same tonal behaviour: examples are provided in §7.4.3 below. Likewise, the L_a and L_b categories of adjectives are not fully parallel to the L_a and

L_b categories of verbs in terms of their tonal behaviour. As for the M category of adjectives, no evidence was found for a division of the M tone into subcategories corresponding to the M_a, M_b and M_c categories set up for verbs. These differences between the tone system of adjectives and that of verbs exemplifies the morphosyntactic ramifications of tone in Yongning Na.

There also exist disyllabic adjectives, such as /p^hv+ɬw/ ‘expensive’, from /p^hv+/ ‘price’ and /ɬw.ɬa/ ‘large’, and /lo.ɬw+/ ‘generous’, from /lo/ ‘hand’ and, again, /ɬw.ɬa/ ‘large’.

In view of the range of tone categories found on nouns, verbs and adjectives in Yongning Na, it is no wonder that they yield a wealth of diverse patterns when combined among themselves, and combined with grammatical morphemes. The structure of the Na verb phrase as schematized by Lidz (2010: 350–351) comprises: Manner adverb – Verb complex – Causative – Intensifier – Tense/aspect and modal particles, and auxiliary verbs – Quotative evidential. To these may be added spatial indications, such as ‘forward’/‘backward’ and ‘upward’/‘downward’. The verb complex may be a lexical verb, an existential verb, a copula, or a serial verb construction, which may take a verbal prefix; two prefixes, in the case of the durative followed by the negation. The following sections explore the verb phrase’s morphotonology. A topic that is not addressed in this chapter is adverbials, because they seldom interact with verbs; for a discussion, see §8.2.1.

7.2 Reduplication

Table 7.3 presents the tone patterns of reduplicated verbs in Yongning Na. These correspondences hold for all the verbs for which a reduplicated form could be elicited, except a single unexplained exception: ‘to detour past, to bypass’, //wɣ.ɬ~wɣ.ɬ// (surface form: /wɣ.ɬ~wɣ.ɬ/), whose tone does not correspond to any of the patterns below; its simplex form is //wɣ.ɬ//.

The reduplicated expressions are transcribed with their underlying tone category. The underlying tone is also provided in the “tone: U[nderlying]” column, following the usual conventions. The tonal string that obtains in isolation is indicated in the “tone: S[urface]” column. The floating H tone, as in /dzw+~dzw#/, does not surface in isolation, a context where floating H tones are never realized, and the result is M.M (/dzw+~dzw+). The initial H tone cannot surface either, due to the general prohibition of tone-group-initial H tones. On the other hand, these H tones surface in the frame /ɬw- V~V -ɬ/ ‘to V a little’ (/ɬw- V -ɬ/: DELIMITATIVE, /ɬw- V -ɬ/: INCHOATIVE), as shown in Table 7.4.

The tone patterns of reduplicated verbs cannot be derived from those of the

Table 7.3: The tone patterns of reduplicated verbs in Yongning Na. U = underlying; S = surface-phonological.

tone	example	gloss	reduplication	tone: U	tone: S
H	dzɯ ↓	to eat	dzɯ ↓~ dzɯ #↓	#H	M.M
M _a	hwæ ↓ _a	to buy	hwæ ↓~ hwæ ↓	H°	M.L
M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓~ tɕ^hi ↓	M	M.M
L _a	bæ ↓ _a	to sweep	bæ ↓~ bæ ↓	H#	M.H
L _b	zɯɣ ↓ _b	to speak	zɯɣ ↓~ zɯɣ ↓	H	M.L
MH	la ↑	to strike	la ↓~ la ↑	LM+MH	L.MH

Table 7.4: Reduplicated verbs in a carrier phrase.

tone	example	gloss	reduplication	in frame ‘V a little’
H	dzɯ ↓	to eat	dzɯ ↓~ dzɯ #↓	ɬɯ ↓- dzɯ ↓~ dzɯ ↓-ɬ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓~ hwæ ↓	ɬɯ ↓- hwæ ↓~ hwæ ↓-ɬ↓
M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓~ tɕ^hi ↓	ɬɯ ↓- tɕ^hi ↓~ tɕ^hi ↓-ɬ↓
L _a	bæ ↓ _a	to sweep	bæ ↓~ bæ ↓	ɬɯ ↓- bæ ↓~ bæ ↓-ɬ↓
L _b	zɯɣ ↓ _b	to speak	zɯɣ ↓~ zɯɣ ↓	ɬɯ ↓- zɯɣ ↓~ zɯɣ ↓-ɬ↓
MH	la ↑	to strike	la ↓~ la ↑	ɬɯ ↓- la ↓~ la ↓-ɬ↓

simple forms by any simple set of rules. M yields M.L (e.g. /**hwæ**↓/ ‘to buy’ > /**hwæ**↓~**hwæ**↓/); describing the L tone on the second syllable as a default tone would be entirely *ad hoc*, as this never happens elsewhere in Na, where the default tone is M. The pattern that would be expected for the M tone is M.M, which appears instead as the reduplicated form of the #H tone (e.g. /**tɕ^hi**#↓/ ‘to sell’ > /**tɕ^hi**↓~**tɕ^hi**↓/): there is no trace of the verb’s floating tone in the reduplicated form. A floating H tone is found in the reduplicated form of H verbs; and a final H tone in reduplicated L-tone verbs. The final L in the reduplicated form of LM-tone verbs is as surprising as the initial L in the reduplication of MH-tone verbs. The correspondences between simple and reduplicated tones appear to be learnt individually; they constitute a component of the tonal grammar of Yongning Na.

These reduplicated verbs were also elicited with /**tso**↓~**tso**↓/ ‘thing’ as a complement: see Table 7.5. (The corresponding recordings are VerbReduplObj and VerbReduplObj2.) In this combination, some of the oppositions are neutralized:

Table 7.5: Reduplicated verbs with the #H-tone object ‘things’.

tone	example	gloss	reduplication	in frame ‘V things’
H	dzu ↓	to eat	dzu ↓~ dzu #↓	tso ↓~ tso ↓ dzu ↓~ dzu ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓~ hwæ ↓	tso ↓~ tso ↓ hwæ ↓~ hwæ ↓
M _b	tɕ ^{hi} ↓ _b	to sell	tɕ ^{hi} ↓~ tɕ ^{hi} ↓	tso ↓~ tso ↓ tɕ ^{hi} ↓~ tɕ ^{hi} ↓
L _a	bæ ↓ _a	to sweep	bæ ↓~ bæ ↓	tso ↓~ tso ↓ bæ ↓~ bæ ↓
L _b	zɰwɰ ↓ _b	to speak	zɰwɰ ↓~ zɰwɰ ↓	tso ↓~ tso ↓ zɰwɰ ↓~ zɰwɰ ↓
MH	la ↓	to strike	la ↓~ la ↓	tso ↓~ tso ↓ la ↓~ la ↓

the #H, H and L categories of verbs surface in the same way, as do L and LM.

Disyllabic verbs are rare; one single case of reduplication was observed: /sɰ↓~sɰ↓**dɰ**↓~**dɰ**↓/ ‘pensively; with a heavy heart’ (Reward.49), from /sɰ↓**dɰ**↓/ ‘to think; to miss’. This looks like a unique creation, rather than the result of a productive pattern: it is the only example of a correspondence between a M tone on the simplex form and a MH# tone on the reduplicated expression.

7.3 Prefixes

7.3.1 M-tone prefixes

The prefixes described in this section can be interpreted either as M-tone prefixes, or as toneless prefixes that receive M by default; no evidence was found that they are specified for tone. They are referred to as M-tone prefixes for convenience.

The most common verbal prefixes carrying M tone are /**mɰ**↓-/ NEGATION, /**t^hɔ**↓-/ PROHIBITIVE, /**t^hi**↓-/ DURATIVE, and /**le**↓-/ ACCOMPLISHED.¹ They all have the same behaviour (apart from the exceptional case of M_c-tone verbs in association with /**le**↓-, as reported in §7.1.2). A less common prefix, /**mv**↓-, conveying imminence, has a behaviour of its own, described further below.

Table 7.6 presents the tonal behaviour of the most common prefixes. With a view to ease of reference, redundant data are provided, for three different prefixes: negative, durative, and prohibitive, all with identical tone patterns. Some

¹ “The accomplished prefix *lɔ33-* is used to give a reading of accomplishment to a verb with lexical aspect of ongoing state, process, or liminality. (...) The durative prefix *t^hu33-* [in the dialect studied in this volume: /t^hi↓/] is used to give a reading of ongoing action to verbs with lexical aspect of process or liminality” (Lidz 2010: 345).

Table 7.6: The tones of verbs in association with a M-tone prefix.

tone	example	gloss	durative	prohibitive	negation
H	dzɯ ↓	to eat	t^hi + dzɯ ↓	t^hɑ + dzɯ ↓	mɣ + dzɯ ↓
M _a	hwæ ↓ _a	to buy	t^hi + hwæ ↓	t^hɑ + hwæ ↓	mɣ + hwæ ↓
M _b	tɕ^hi ↓ _b	to sell	t^hi + tɕ^hi ↓	t^hɑ + tɕ^hi ↓	mɣ + tɕ^hi ↓
L _a	bæ ↓ _a	to sweep	t^hi + bæ ↓	t^hɑ + bæ ↓	mɣ + bæ ↓
L _b	zɣɣ ↓ _b	to speak	t^hi + zɣɣ ↓	t^hɑ + zɣɣ ↓	mɣ + zɣɣ ↓
MH	la ↓	to strike	t^hi + la ↓	t^hɑ + la ↓	mɣ + la ↓

Table 7.7: Tone patterns in constructions with the ACCOMPLISHED M-tone prefix and a PERFECTIVE or COMPLETION suffix.

tone	example	gloss	ACCOMP	ACCOMP+V+PFV	ACCOMP+V+COMPLETION
H	dzɯ ↓	to eat	le + dzɯ ↓	le + dzɯ ↓- ze ↓	le + dzɯ ↓- se ↓
M _a	hwæ ↓ _a	to buy	le + hwæ ↓	le + hwæ ↓- ze ↓	le + hwæ ↓- se ↓
M _b	tɕ^hi ↓ _b	to sell	le + tɕ^hi ↓	le + tɕ^hi ↓- ze ↓	le + tɕ^hi ↓- se ↓
L _a	bæ ↓ _a	to sweep	le + bæ ↓	le + bæ ↓- ze ↓	le + bæ ↓- se ↓
L _b	zɣɣ ↓ _b	to speak	le + zɣɣ ↓	le + zɣɣ ↓- ze ↓	le + zɣɣ ↓- se ↓
MH	la ↓	to strike	le + la ↓	le + la ↓- ze ↓	le + la ↓- se ↓

of the combinations are found in the following online recordings: VerbProhib; VerbProhib2; VerbDurative; and AccomPfv.

After a M-tone prefix, the lexical tones M, H, L and MH have a straightforward realization. The subcategories M_a and M_b are neutralized in this context; likewise for L_a and L_b.

Table 7.7 sets out the facts for the ACCOMPLISHED prefix /**le**+/ in association with the perfective, /-**ze**+/, or the suffix indicating completion: /-**se**+/. Table 7.8 lists the patterns that obtain when the verb is followed by the CAUSATIVE and CERTITUDE suffixes.

These data show that the expressions with surface M tones, exemplified by /**le**+**hwæ**+/ and /**le**+**tɕ^hi**+/, do not carry floating H tone: otherwise the following copula would surface with H tone. The data also offer a new illustration of the behaviour that is characteristic of the MH and H tones, respectively illustrated

Table 7.8: Tone patterns in constructions with the ACCOMPLISHED M-tone prefix and CAUSATIVE+CERTITUDE suffixes.

tone	example	gloss	ACCOMP	ACCOMP+V+CAUS+CERTITUDE
H	dzu l	to eat	le-l-dzu l	le-l-dzu-l-tsa l- ni l
M _a	hwæ -l _a	to buy	le-l-hwæ -l	le-l-hwæ-l-tsa -l- ni l
M _b	tɕ ^h i-l _b	to sell	le-l-tɕ ^h i-l	le-l-tɕ^hi-l-tsa -l- ni l
L _a	bæ l _a	to sweep	le-l-bæ l	le-l-bæ-l-tsa l- ni l
L _b	zɣwɣ l _b	to speak	le-l-zɣwɣ l	le-l-zɣwɣ-l-tsa l- ni l
MH	la l	to strike	le-l-la l	le-l-la-l-tsa l- ni l

by /**le-l-la**l/ and /**le-l-dzu**l/: the MH tone remains on the syllable to which it is lexically associated, projecting its H part to the next syllable (the CAUSATIVE); and the H tone also associates to this syllable, with a surface-phonological result that is identical to that obtained for tone MH.

A related set of facts is presented in Table 7.9: the construction V-NEG-V, as in example (4).

- (4) **ni**l-**mɣ**l-**ni**l, | **mɣ**-l-**ŋv**l!
 ni l mɣ l- ni l mɣ l- ŋv l
 COP NEG COP NEG to_know/to_get_to_know

‘Whether it is actually the case ... we don’t know!’ (Context: two persons discuss what a third person has said)

Two variants are possible, the one integrated into one single tone group, as in (4), the other divided into two groups: /**ni**l | **mɣ**-l-**ni**l, | **mɣ**-l-**ŋv**l!/ (same meaning and morphemic composition as LLL). In the latter case, the first syllable has the same tone as in isolation, and the negated form the tone indicated in Table 7.6 above. These V-NEG-V constructions are typically followed by /**mɣ**-l-**ŋv**l/ ‘[I/we] don’t know’ or /**mɣ**-l-**do**l/ ‘[we] don’t know/can’t see for ourselves’, sometimes with focalization of the V-NEG-V portion, e.g. /**hwæ**-l-**mɣ**-l-**hwæ**-l-**F** | **mɣ**-l-**do**l/ ‘[I/we] don’t know whether [they] bought [it/some] or not’. In addition to the elicited data in Table 7.9, there are some examples in texts, e.g. in BuriedAlive3.133, Seeds2.85 and Dog59.

As mentioned at the outset of this section, the prefix /**mv**-l-, conveying imminence, is infrequent; only one example is found in the first twenty-five transcribed narratives. The consultant was not comfortable pairing this prefix with verbs into a disyllabic expression, and proposed instead the three constructions

Table 7.9: Tone patterns of the V-NEG-V construction.

tone	example	gloss	V NEG V	V NEG V
H	dzɯ ↓	to eat	dzɯ ↓- mɣ ↓- dzɯ ↓	dzɯ ↓ mɣ ↓- dzɯ ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓- mɣ ↓- hwæ ↓	hwæ ↓ mɣ ↓- hwæ ↓
M _b	tɕ ^{hi} ↓ _b	to sell	tɕ ^{hi} ↓- mɣ ↓- tɕ ^{hi} ↓	tɕ ^{hi} ↓ mɣ ↓- tɕ ^{hi} ↓
L _a	gɯ ↓ _a	to be true	gɯ ↓- mɣ ↓- gɯ ↓	gɯ ↓ mɣ ↓- gɯ ↓
L _b	zɣwɣ ↓ _b	to speak	zɣwɣ ↓- mɣ ↓- zɣwɣ ↓	zɣwɣ ↓ mɣ ↓- zɣwɣ ↓
MH	la ↑	to strike	la ↑- mɣ ↓- la ↑	la ↑ mɣ ↓- la ↑

Table 7.10: Tone patterns for the prefix /**mv**↓-/, and a related construction.

tone	example	gloss	mv ↓-V- bi ↓	t ^{hi} ↓- mv ↓-V	le ↓- mɣ ↓-V
H	dzɯ ↓	to eat	mv ↓- dzɯ ↓- bi ↓	t ^{hi} ↓- mv ↓- dzɯ ↓	le ↓- mɣ ↓- dzɯ ↓
M _a	hwæ ↓ _a	to buy	mv ↓- hwæ ↓- bi ↓	t ^{hi} ↓- mv ↓- hwæ ↓	le ↓- mɣ ↓- hwæ ↓
M _b	tɕ ^{hi} ↓ _b	to sell	mv ↓- tɕ ^{hi} ↓- bi ↓	t ^{hi} ↓- mv ↓- tɕ ^{hi} ↓	le ↓- mɣ ↓- tɕ ^{hi} ↓
L _a	bæ ↓ _a	to sweep	mv ↓- bæ ↓- bi ↓	t ^{hi} ↓- mv ↓- bæ ↓	le ↓- mɣ ↓- bæ ↓
L _b	zɣwɣ ↓ _b	to speak	mv ↓- zɣwɣ ↓- bi ↓	t ^{hi} ↓- mv ↓- zɣwɣ ↓	le ↓- mɣ ↓- zɣwɣ ↓
MH	la ↑	to strike	mv ↓- la ↓- bi ↓	t ^{hi} ↓- mv ↓- la ↑	le ↓- mɣ ↓- la ↑

shown in Table 7.10: DUR-IMMINENCE-V /**t**^{hi}↓-**mv**↓-V/, IMMINENCE-V-IMM_FUT /**mv**↓-V-**bi**↓/, and a construction which the consultant volunteered as a complement, in antonymic relationship to the other two: /**le**↓-**mɣ**↓-V/, ‘... does not V’.

The results for H- and MH-tone verbs are far from trivial. As with other systematically elicited combinations, it appears safer to wait until further confirmation can be obtained (ideally from texts) before attempting an interpretation.

7.3.2 L-tone prefixes

The interrogative /ə↓-/ illustrates the case of L-tone prefixes. The interrogative is segmentally bleached, consisting in a neutral vowel undergoing strong regressive vowel assimilation; from a tonal point of view, on the other hand, it has a specification of its own. Table 7.11 sets out the facts.

The realization of tones M and L after a L-tone prefix reflect the lexical tone in a straightforward way. That of tones H and MH, on the other hand, is, again, non-trivial: both have the same pattern, in which the tone of the prefix is raised

Table 7.11: The tones of verbs in association with a L-tone prefix.

tone	example	gloss	interrogative
H	dzu ᵛ	to eat	əᵛ- dzu ᵛ
M _a	hwæ ᵛ _a	to buy	əᵛ- hwæ ᵛ
M _b	tɕ ^{hi} ᵛ _b	to sell	əᵛ- tɕ ^{hi} ᵛ
L _a	bæ ᵛ _a	to sweep	əᵛ- bæ ᵛ
L _b	zɣɣ ᵛ _b	to speak	əᵛ- zɣɣ ᵛ
MH	la ᵛ	to strike	əᵛ- la ᵛ

to M, and the verb carries H. Such cases of modification of a tone by a following word are scarce in Yongning Na. An observation – which does not amount to an explanation – is that if the interrogative particle were realized with its lexical L tone in all cases, as one could expect, then the contrast between M and H verbs would be neutralized, since /LM/ and /LH/ sequences are neutralized (to LH) in the surface-phonological form. However, this observation does not shed light on the fact that the MH tone is neutralized with H in this context: the sequence L.MH is well-formed, and there is no obvious reason why the interrogative followed by a MH-tone verb is not realized in that way, which would yield *əᵛ-**la**ᵛ (intended meaning: ‘does (s)he strike’), for instance.

7.3.3 The marking of spatial orientation on verbs

A flamboyant marking of orientation on verbs is found in Rgyalrongic, and in Qiangic at large. Rgyalrongic languages “have a whole array of verbal orientation prefixes, which are obligatorily present on all perfective and imperative verb forms” (Sun 2000: 180; see also Lin 2002; and Jacques 2011b on Tangut). This conspicuous characteristic is sometimes awarded the status of a central criteria in proposed language classifications for this area of Sino-Tibetan (e.g. in proposals by Matisoff 2004: 105). Cross-dialect and cross-language differences reveal that orientation systems are no less prone to change than other areas of a language’s structure, however. The three distinct pairs of directions described by J. Sun are: eastward (i.e. in the direction of the rising sun) vs. westward; upstream vs. downstream; and uphill (upward) vs. downhill (downward). The system found in Shixing comprises two productive pairs of (non-obligatory) orientation prefixes, only one of which corresponds semantically with the Rgyalrongic system: upward vs. downward, the other being inward vs. outward; Shixing also displays

traces of a third pair: hence/hither and forth/thither, found in a set construction meaning ‘to V back and forth’ (Chirkova 2009).

Under the hypothesis that directional prefixes go back a long way in the history of Sino-Tibetan, Naish must be hypothesized to have lost them. In Naish, topographically-based spatial deixis is not marked through an obligatory prefix on verbs. Indications of orientation may more properly be called orientation adverbials, as in: /**mɿ**l**tɕo**l **mɿ**l**hu**l/ (downward-NEG-to_go.PST) ‘[The dog, who had come to sit on the wooden platform close to the fire pit, where dogs are not allowed] did not/would not get down!’ (example from a discussion about Sister3.22).

The only monosyllabic indications of orientation in common use, for which one could claim the status of prefixes, are /**gɿ**l-/ ‘upward’ and /**mɿ**l-/ ‘downward’. For instance, /**ʂo**l/ ‘to reap, to gather in’ can be used in association with /**gɿ**l-/ ‘upward’, to mean ‘to reap in, to bring back to the house and into the granary’: /**gɿ**l-**ʂo**l/. These monosyllabic prefixes also appear as part of set constructions, such as /**gɿ**l-V | **mɿ**l-V/, as in (5):

- (5) tʂ^hu⁺ni¹ | gɿl-da¹, | mɿl-da¹, | gɿl-da¹, | mɿl-da¹, | (...) ɕu⁺l-so¹ ʂu⁺l
 ji⁺l-tsu⁺l-mɿ⁺l |
 tʂ^hu⁺ni¹ gɿl- da¹ mɿl- da¹ ɕu⁺l-so¹ ʂu⁺l ji⁺l
 thus upward strike downward strike several times to_do
 -tsu⁺l -mɿ⁺l
 REP AFFIRM

‘He would give blows high and low (= hither and thither), again and again! / He would strike blows in all directions, again and again!’ (Healing.38; context: an exorcist is performing a ritual)

In this context, the prefixes retain to some extent their literal meaning of ‘upward’ and ‘downward’: the exorcist’s blows with his sword are aimed high up, then down (close to the ground), and so on. But in this construction, the spatial indications take up a broader meaning, summoning up the swift, dance-like movements of the exorcist fighting with an invisible cohort of demons surrounding him. Their association with repetition (/**gɿ**l-**da**¹, | **mɿ**l-**da**¹, | **gɿ**l-**da**¹, | **mɿ**l-**da**¹/) participates in the same loosening of the exact indication of spatial orientation, yielding a meaning of ‘in all directions’ rather than ‘up and down’.

When an orientation prefix is separated from the verb by other prefixes, it can constitute a tone group on its own, as in (6):

7 Verbs and their combinatory properties

- (6) ... *gɣl* | *le-t[ɣ^ho-t-se]-dzo* | *t^hi* | ...
gɣl- *le*- *[ɣ^ho]* *-se* *-dzo* *t^hi*
 upward ACCOMP to_pray COMPLETION TOP then
 ‘after one has prayed [literally: prayed up (to the ancestors)]’ (Dog2.54)

Judging from available texts, monosyllabic /*gɣl*-/ ‘upward’ is more frequent than /*mv*-/ ‘downward’. Both are in competition with disyllabic /*gɣl-tɕo*-/ ‘upward’ and /*mv-tɕo*-/ ‘downward’, which are generally preferred.

‘Leftward’ and ‘rightward’ are expressed by disyllabic /*ɣwæ-tgi#*/ or /*ɣwæ-lo*/ ‘to the left’, and /*jo-tgi*/ or /*jo-lo*/ ‘to the right’. Monosyllabic forms are tentatively labelled here as prefixes (and transcribed accordingly: with a following hyphen) and disyllabic forms as adverbials, but in the absence of language-internal criteria to distinguish the two, the divide is not as clear as this choice of terms would suggest. From a tonal point of view, orientation prefixes interact with the following verb, and are therefore considered to belong in the same tone group. Orientation adverbials can likewise interact with the verb, but they usually constitute a tone group on their own, as discussed in §8.2.1.

The tonal behaviour of three more disyllabic adverbials is presented in Tables 7.12a–7.12b: /*ɣo-tɕa*-/ ‘forward, to the front’ (tone: M), /*ɣo-t^ho*-/ ‘backward, to the back’ (tone: L#), and /*lo-ta*-/ ‘to the side’ (tone: M). The example verbs used are /*li*-_a/ ‘to look’, /*tɕi*-_b/ ‘to set, to install’, /*bi*-_c/ ‘to go’, /*se*/ ‘to walk’, /*kwr*-_a/ ‘to throw’, /*t*-_b/ ‘to turn’, and /*p^hæ*-/ ‘to shove, to push away’. The tone indicated after a ‘+’ sign is that carried by the PERFECTIVE /-*ze*-/ after the directional+verb combination at issue: e.g. L.M+H for the combination of /*gɣl*-/ ‘upward’ and a verb with tone M_b indicates that the pattern is /*gɣl-tɕi*-/, /*gɣl-tɕi-ze*/ ‘to set in an upward direction’. As elsewhere, this information is only provided in cases where the tone of the PERFECTIVE /-*ze*-/ cannot be obtained through the application of the seven tone rules (recapitulated in Chapter 8): for instance, L.H can only be followed by L, by virtue of Rule 4 (“A syllable following a H-tone syllable receives L tone”), so the information provided in the table for a combination such as /*gɣl-se*/ ‘to walk upward’ is simply L.H, not L.H+L.

The original data, together with recordings, are found in the online document SpatialOrientation; the verb /*bi*-_c/ ‘to go’ was accidentally omitted. This verb can combine with the disyllabic orientation adverbials, but not with monosyllabic /*gɣl*-/ ‘upward’ and /*mv*-/ ‘downward’. The data are: /*ɣo-tɕa* *bi*-(-*ze*-)/, /*ɣwæ-tgi* *bi*-(-*ze*-)/, /*jo-lo* *bi*-/ (the variant /**jo-lo* *bi*-/ is not acceptable), /*ɣo-t^ho* *bi*-/, /*gɣl-tɕo* *bi*-(-*ze*-)/, and /*ɣwæ-tgi* *bi*-(-*ze*-)/.

A further complexity is that the behaviour of /*αlp^ho*-/ ‘outside’ is not fully identical with that of /*jo-tgi*/ and /*jo-lo*/ ‘to the right’ – spatial indications that

Table 7.12a: The tonal behaviour of verbs after indications of spatial orientation: monosyllabic prefixes.

tone of prefix	tone of verb					
	M _a	M _b	H	L _a	L _b	MH
L	L.M+M	L.M+M	L.H	L.H	L.H	L.MH

have the same lexical tone. In association with /t^hv_a/ ‘come out’, /a₁p^ho/ ‘outside’ yields /a₁p^ho t^hv/ ‘to go outside, to get outside’, instead of the expected /t^hv a₁p^ho/. The latter form is not acceptable as a variant.

A closer examination of this issue reveals a further oddity: different verbs that belong in the same tonal class, M_a, have different tone patterns when associated with /a₁p^ho/ ‘outside’. ‘To look outside’ (from /li_a/ ‘to look’) is /ə₁p^ho li/, and /*ə₁p^ho li/ is not an acceptable variant. The verb /t^hv_a/ ‘come out’ is an outlier: it is the only M_a-tone verb yielding a L.L.L tone pattern.

In view of the fact that L.L.L and L.L.H are both acceptable variants for /jo₁gi/ and /jo₁lo/ ‘to the right’ followed by a M_a-tone verb, one can venture the speculation that the same pattern of variation once existed for /a₁p^ho/ ‘outside’. Under this hypothesis, the L.L.L variant somehow became dominant for ‘to go outside, to get outside’, to the extent that the form /a₁p^ho t^hv/ came to be regarded as the only correct one. But even if one chooses to treat the combination /a₁p^ho t^hv/ ‘to go outside, to get outside’ as a lexicalized oddity, the behaviour of /a₁p^ho/ ‘outside’ is still different from that of /jo₁gi/ and /jo₁lo/ ‘to the right’: see Table 7.13. Here again, knowledge of the input tones is not sufficient to generate the tone patterns.

The interrogative /zo₁qo/ ‘where’ has the same behaviour as /gy₁tcə/ ‘upward’ and /mv₁tcə/ ‘downward’, as shown in Table 7.14. The verb /t^hv/ , whose association with /a₁p^ho/ ‘outside’ yielded an unexpected pattern (see Table 7.13), is not any different from the other M_a-tone verbs, yielding /zo₁qo t^hv(-ze)/.

7.3.3.1 On the morphosyntactic analysis of locative constituents

In principle, the tonal behaviour of locative constituents could shed light on their morphosyntactic treatment in Yongning Na. Various treatments are attested cross-linguistically. Agreement with the verb reveals in Central Bantu a typologically uncommon pattern: “a locative NP in preverbal position can be analyzed as

Table 7.12b: The tonal behaviour of verbs after indications of spatial orientation: disyllabic orientation adverbials.

tone of prefix	tone of verb						
	H	M _a	M _b	M _c	L _a	L _b	MH
M	M.M.M+L	M.M.M+M	M.M.M+L	M.M.M+M	M.M.L	M.M.L	M.M.MH
#H	M.M.M+L	M.M.L	M.M.M+L	M.M.M+L	M.M.H	M.M.H	M.M.L
L	L.L.L	L.L.H	L.L.H / L.L.L	L.L.L	L.L.H	L.L.H	L.L.H
L#	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L
LM	L.M.M+L	L.M.M+M	L.M.M+M	L.M.M+M	L.M.L	L.M.L	L.M.MH
H#	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L

Table 7.13: The tonal behaviour of verbs in association with /aɪpʰo/ ‘outside’.

tone of verb	example	meaning of verb	tone pattern
H	aɪpʰoɪ seɪ	to walk	L.L.L
M _a	aɪpʰoɪ liɪ	to look	L.L.H
M _a (exceptional)	aɪpʰoɪ tʰvɪ	to get/go	L.L.L
M _b	aɪpʰoɪ hõɪ	to go.IMPERATIVE	L.L.L
M _c	aɪpʰoɪ biɪ	to go	L.L.H
L _a	aɪpʰoɪ kwɤɪ	to throw	L.L.H
L _b	aɪpʰoɪ pʰvɪ	to move around	L.L.H
MH	aɪpʰoɪ ziɪ	to sleep	L.L.H

Table 7.14: The tonal behaviour of verbs in association with /zoɪqoɪ/ ‘where’, with added information about a following perfective suffix.

tone of verb	example	meaning of verb	tone pattern
H	zoɪqoɪ seɪ(-zeɪ)	to walk	L.M.M+L
M _a	zoɪqoɪ ʒeɪ(-zeɪ)	to look for	L.M.M+M
M _b	zoɪqoɪ pʰæɪ(-zeɪ)	to attach, to fasten	L.M.M+M
M _c	zoɪqoɪ huɪ(-zeɪ)	to go.PST	L.M.M+M
L _a	zoɪqoɪ dziɪ	to sit; to live	L.M.L
L _b	zoɪqoɪ ɹɪɪ	to turn toward	L.M.L
MH	zoɪqoɪ laɪ	to strike, to hit	L.M.MH

the grammatical subject” (Creissels 2011: 34), whereas in Northern Sotho, in the absence of such evidence, the construction is better analyzed as “an impersonal construction with a preposed locative constituent” (Zerbian 2006b).

The tone patterns presented above are not fully identical with those of any other construction, however. In particular, they differ from subject+verb constructions as well as from object+verb constructions.

Let us now turn from pre-verbal elements to post-verbal elements.

7.4 Suffixes and verb serialization: monosyllabic elements

Verbs appear after their object in Na. They can be followed by verbal suffixes, which do not all have the same tonal behaviour, suggesting that they have lexical tones of their own. This raises the issue of the underlying tone categories, as for nouns and verbs. Precious hints are provided by cases where a suffix can straightforwardly be identified as originating in a lexical verb. For instance, the morpheme indicating completion, /-seJ/, is clearly a grammaticalized use of the verb /seJ/ ‘to finish, to complete’. (No attempt will be made here to draw a clear dividing line between serialized verbs on the one hand, and verb plus suffixes on the other.) The tone category of the suffix can then be taken to be identical to that of the verb.

Monosyllabic elements will be discussed first, before getting on to disyllabic suffixes and combinations between affixes.

7.4.1 L-tone suffixes and serialized verbs

7.4.1.1 Main facts

As mentioned a few lines above, the morpheme indicating completion, /-seJ/, is a grammaticalized use of the verb /seJ/ ‘to finish, to complete’. Its tone is therefore taken to be L. Since its tonal behaviour is identical to that of the DESIDERATIVE morpheme, the same tonal label can be applied to the latter, interpreting it as /-hoJ/. Data are shown in Table 7.15, also including data for the morpheme /-suJ/ ‘yet’ (in the negative construction ‘not yet’). Other items belonging to the same class (L tone) include the inchoative, /-ɬJ/, found in /ɬuɬ-V-ɬJ/ ‘to V a little’, and the morpheme /-dzeJ/ ‘to remain; to be left over’, only observed in /dzuɬ-dzeJ/ ‘left over after eating, 吃剩的’ and /tʰuɬ-dzeJ/ ‘left over after drinking, 喝剩的’.

7.4.1.2 Nominalization

The nominalizing suffix /diJ/ is analyzed as having L tone on the basis of its behaviour after M-tone verbs. However, it behaves differently from the L-tone suffixes discussed in the previous paragraph: /dzuɬ-diJ/ ‘food, things for eating’ vs. /dzuɬ-hoJ/ ‘will eat’; /tʰæɬ-diJ/ ‘thing to bite (e.g. toy given to teething babies)’ vs. /tʰæɬ-hoJ/ ‘will bite’. This observation suggests that this morpheme belongs in a distinct subclass within M-tone suffixes. The data are set out in Table 7.16.

As a dialectal aside, consultant M21 has different tone patterns for the L tone: L.H (e.g. /dzeJ-diJ/ and /tʰuɬ-diJ/), and not L.L. This could result from an analogy

Table 7.15: The patterns of L-tone tense-aspect-mood suffixes.

tone	example	gloss	COMPLETION	DESIDERATIVE	not yet
H	dzɯ ↓	to eat	dzɯ ↓-se↓	dzɯ ↓-ho↓	mɣ ↓- dzɯ ↓-su↓
M _a	hwæ ↓ _a	to buy	hwæ ↓-se↓	hwæ ↓-ho↓	mɣ ↓- hwæ ↓- su↓
M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓-se↓	tɕ^hi ↓-ho↓	mɣ ↓- tɕ^hi ↓-su↓
L _a	bæ ↓ _a	to sweep	bæ ↓-se↓	bæ ↓-ho↓	mɣ ↓- bæ ↓-su↓
L _b	zɣwɣ ↓ _b	to speak	zɣwɣ ↓-se↓	zɣwɣ ↓-ho↓	mɣ ↓- zɣwɣ ↓-su↓
MH	la ↑	to strike	la ↑-se↓	la ↑-ho↓	mɣ ↓- la ↑-su↓

Table 7.16: The tonal behaviour of the nominalizing suffix /di↓/.

tone	example	gloss	nominalizer	gloss
H	dzɯ ↓	to eat	dzɯ ↓-di↑	thing to eat=food
M _a	hwæ ↓ _a	to buy	hwæ ↓-di↓	thing to buy, product
M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓-di↓	thing to sell, commodity
L _a	dze ↓ _a	to cut	dze ↓-di↓	thing to cut=knife, etc.
L _b	ʰu ↓ _b	to drink	ʰu ↓-di↓	thing to drink=drinks
MH	ʰæ ↑	to bite	ʰæ ↑-di↑	thing to bite (for infant, dog ...)

with the L-tone suffixes described in §7.4.1.1, such as the morpheme indicating completion, /se↓/, which takes H tone after a L-tone verb.

7.4.2 M-tone suffixes

The imperative, /-hõ↑/, is grammaticalized from the imperative form of the verb ‘to go’, /hõ↑/; and the immediate future, /-bi↑/, from the non-imperative form of ‘to go’, /bi↑_c/. These two suffixes are therefore interpreted as having M tone. They always have the same tonal behaviour, as does the experiential /-dzɯ↑/; data are shown in Table 7.17. To preview observations set out in §7.6.1, another test confirms that these morphemes carry a lexical M tone: after the negation, they surface with a M tone. Other suffixes with the same tonal behaviour include /-dɔ↑/ ‘must, have to’, the volitive /-tso↑/, the obligative /-zo↑/, and the causative /-tsæ↑/.

In addition to the surface-phonological forms, Table 7.17 proposes an analysis

Table 7.17: The tonal behaviour of M-tone suffixes.

tone	example	gloss	IMM_FUT	experiential	imperative	analysis
H	dzɯ ↓	to eat	dzɯ ↓- bi ↑	dzɯ ↓- dzɯ ↑	dzɯ ↓- hō ↑	M
M _a	hwæ ↓ _a	to buy	hwæ ↓- bi ↑	hwæ ↓- dzɯ ↑	hwæ ↓- hō ↑	M
M _b	tɕ ^{hi} ↑ _b	to sell	tɕ ^{hi} ↑- bi ↑	tɕ ^{hi} ↑- dzɯ ↑	tɕ ^{hi} ↑- hō ↑	M
L _a	bæ ↓ _a	to sweep	bæ ↓- bi ↓	bæ ↓- dzɯ ↓	bæ ↓- hō ↓	L
L _b	zɯ ɣ↓ _b	to speak	zɯ ɣ↓- bi ↓	zɯ ɣ↓- dzɯ ↓	zɯ ɣ↓- hō ↓	L
MH	la ↑	to strike	la ↑- bi ↓	la ↑- dzɯ ↓	la ↑- hō ↓	H#

Table 7.18: Same tonal category of morphemes as in previous table, adding CAUSATIVE and COPULA to the expression made up of the verb and the IMMEDIATE FUTURE suffix.

tone	example	gloss	- bi ↑- tsæ ↓- ni ↓
H	dzɯ ↓	to eat	dzɯ ↓- bi ↑- tsæ ↓- ni ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓- bi ↑- tsæ ↓- ni ↓
M _b	tɕ ^{hi} ↑ _b	to sell	tɕ ^{hi} ↑- bi ↑- tsæ ↓- ni ↓
L _a	bæ ↓ _a	to sweep	bæ ↓- bi ↓- tsæ ↓- ni ↓ (* bæ ↓- bi ↓- tsæ ↑- ni ↓)
L _b	zɯ ɣ↓ _b	to speak	zɯ ɣ↓- bi ↓- tsæ ↓- ni ↓ (* zɯ ɣ↓- bi ↓- tsæ ↑- ni ↓)
MH	la ↑	to strike	la ↑- bi ↑- tsæ ↓- ni ↓ (* la ↑- bi ↑- tsæ ↑- ni ↓)

of the underlying tone, in the last column. This analysis is based on the tone patterns when the causative /-**tsæ**↓/ is added after the immediate future /-**bi**↑/, as shown in Table 7.18. The copula, in its use to convey CERTAINTY, was also added, as a further test to reveal the underlying tonal categories. In every case, the copula carries L, i.e. its lexical tone. This shows that there is no floating H tone in any of the verb phrases. In this light, the first three expressions are interpreted as having M tone. The underlying tone category leading to the realizations /**la**↑-**bi**↓/ and /**la**↑-**bi**↑-**tsæ**↓/ (not /***la**↑-**bi**↓-**tsæ**↓/) is interpreted as H#.

It is reassuring to be able to report that these M-tone suffixes have the same behaviour when preceded by the negation, /**mɣ**↑-/, e.g. in /**V**-**mɣ**↑-**bi**↑/ ‘is not going to V’, /**V**-**mɣ**↑-**ɔ**↓/ ‘ought not to V’, and /**V**-**mɣ**↑-**zo**↓/ ‘must not V’. Table 7.19 shows examples with /**V**-**mɣ**↑-**bi**↑/, and also with an added perfective, /**ze**↑/. M-tone suffixes are not without complexities, however. The verb /**mæ**↑/ ‘to achieve’

Table 7.19: Same tonal category of morphemes as in previous table, with negation.

tone	example	gloss	V-NEG-IMM_FUT	V-NEG-IMM_FUT-PFV
H	dzu ↓	to eat	dzu ↓-mɣ↓-bi↓	dzu ↓-mɣ↓-bi↓-ze↓
M _a	hwæ ↓ _a	to buy	hwæ ↓-mɣ↓-bi↓	hwæ ↓-mɣ↓-bi↓-ze↓
M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓-mɣ↓-bi↓	tɕ^hi ↓-mɣ↓-bi↓-ze↓
L _a	bæ ↓ _a	to sweep	bæ ↓-mɣ↓-bi↓	bæ ↓-mɣ↓-bi↓-ze↓
L _b	zɰɣ ↓ _b	to speak	zɰɣ ↓-mɣ↓-bi↓	zɰɣ ↓-mɣ↓-bi↓-ze↓
MH	la ↓	to strike	la ↓-mɣ↓-bi↓	la ↓-mɣ↓-bi↓-ze↓

carries M tone; but when it appears in serial verb constructions, where it indicates that an action achieved its goal, its behaviour is not fully identical from that of the M-tone morphemes described above. The perfective, /-ze↓/, has the same tonal behaviour as /-mæ↓/. The behaviour of these two morphemes is recapitulated in Table 7.20. The tone patterns are in most respects like the M-tone suffixes described above, but the pattern after a H-tone verb is M.L and not M.M. This justifies setting up a distinct tone category, distinguishing between tone M_a and tone M_b for suffixes, as is done for verbs. In the case of classifiers – an area that has been the object of particularly detailed investigation: see Chapter 5 –, a total of nine tonal categories were brought out; it would not be particularly surprising to have to set up a comparable number of categories for affixes. In view of the greater morphosyntactic diversity of affixes as compared with classifiers, the number may even be higher. Obviously, the added subscript letters are simply a means of classifying; they do not reflect an analysis of the categories. The analysis were best conducted in view of a fuller inventory of morphemes; it should be borne in mind that the current size of the dictionary is on the order of 3,000 words, i.e. only a small part of the full richness of the language’s lexicon. In the present chapter, the suffixes are simply arranged into broad classes (L, M, M, MH), reporting the encountered internal diversity of these classes, and setting up provisional subclasses. For M-tone suffixes, notation will be in terms of subclasses M_a and M_b, rewriting the underlying form of the morphemes as follows:

- tone M_a: IMPERATIVE /-hõ↓_a/, IMMEDIATE FUTURE /-bi↓_a/, EXPERIENTIAL /-dzu↓_a/, /-dɔ↓_a/ ‘must, have to’, VOLITIVE /-tso↓_a/, OBLIGATIVE /-zo↓_a/, and CAUSATIVE /-tsæ↓_a/

Table 7.20: The behaviour of suffixes belonging to a second subcategory of M tones: M_b.

tone	example	gloss	perfective	to achieve
H	dzɯ ɿ	to eat	dzɯ -ɿ-zeɿ	dzɯ -ɿ-mæɿ
M _a	hwæ -ɿ _a	to buy	hwæ -ɿ-zeɿ	hwæ -ɿ-mæɿ
M _b	tɕ ^h i-ɿ _b	to sell	tɕ ^h i-ɿ-zeɿ	tɕ ^h i-ɿ-mæɿ
L _a	bæ ɿ _a	to sweep	bæ ɿ-zeɿ	bæ ɿ-mæɿ
L _b	zɯ ɿ _b	to speak	zɯ ɿ-zeɿ	zɯ ɿ-mæɿ
MH	la ɿ	to strike	la ɿ-zeɿ	la ɿ-mæɿ

- tone M_b: PERFECTIVE /-zeɿ_b/, and /mæɿ_b/ ‘to achieve’

In the data shown in Table 7.19, the H component found in the lexical categories H and MH (illustrated by /dzɯɿ/ ‘to eat’ and /laɿ/ ‘to strike’, respectively) does not surface as such, but it results in the lowering of the perfective suffix /zeɿ_b/, no less than three syllables distant from the verb. The phrase /dzɯɿ-mɿɿ-bi-zeɿ/ ‘will not eat anymore’ constitutes a single tone group, and the underlying presence of a H tone in this group makes itself felt on the morpheme /zeɿ/ despite the intervening syllables.

The same phenomenon is observed when there is no intervening negation. The result for the six tone classes (M_a, M_b, H, L_a, L_b, and MH; M_c behaves like M_a and M_b in this context) is the following: /hwæɿ-bi-zeɿ/; /tɕ^hi-ɿ-bi-zeɿ/; /dzɯɿ-bi-zeɿ/; /bæɿ-bi-zeɿ/; /zɯɿ-bi-zeɿ/; and /laɿ-bi-zeɿ/. The suffix /zeɿ/ is lowered to L in /dzɯɿ-zeɿ/ ‘have eaten’, /dzɯɿ-bi-zeɿ/ ‘will eat’, and /dzɯɿ-mɿɿ-bi-zeɿ/ ‘will not eat’. The last suffix has different realizations depending on the lexical tone of the verb, even though this tone surfaces neither on the verb itself nor on its other suffixes.

Tones that are present underlyingly but only manifest themselves in a restricted set of contexts constitute a salient aspect of the Yongning Na tone system. The surface-phonological notation of ‘going to buy’ as /hwæɿ-bi-ɿ/ and ‘going to eat’ as /dzɯɿ-bi-ɿ/, with the same tone pattern, does not reflect the underlying presence of a H tone in the former phrase. The manifestation of the H tone of the verb is roundabout: it does not lower a M-tone suffix (witness /dzɯɿ-bi-ɿ/, ‘going to eat’), but it lowers the last syllable in the sequence /dzɯɿ-bi-zeɿ/. Such complexities cannot be summarized through a small set of rules. This state of affairs explains the abundance of tables in this chapter, and in the volume as

Table 7.21: Tonal behaviour of the PROGRESSIVE, illustrating a third subcategory of M tones: M_c. (No semantically acceptable combination with a M_c-tone verb was found.)

tone	example	gloss	DUR+V+PROG: ‘is currently V-ing’
H	dzu ↓	to eat	t^hi ↓- dzu ↓- dzo ↓
M _a	hwæ ↓ _a	to buy	t^hi ↓- hwæ ↓- dzo ↓
M _b	tɕ^hi ↓ _b	to sell	t^hi ↓- tɕ^hi ↓- dzo ↓
M _c	bi ↓ _c	to go	–
L _a	bæ ↓ _a	to sweep	t^hi ↓- bæ ↓- dzo ↓
L _b	zɰwɰ ↓ _b	to speak	t^hi ↓- zɰwɰ ↓- dzo ↓
MH	la ↑	to strike	t^hi ↓- la ↑- dzo ↓ (*M.H.L)

a whole. Since this volume is the first description aiming at wide coverage of morphotonology, it appeared advisable to set out the tonal paradigms in full as a first step. There is definitely room for some progress in terms of economy of description: for instance, identifying a set of patterns as default for a certain category of morphemes, and rewriting the data for other categories as *identical to the standard pattern, except for...*, instead of setting out all the data sets in table form. Modelling the morphotonology of Yongning Na, with computer implementation (finite-state modelling), is the author’s long-term project; at the present stage, the aim is to arrive at a precise description, which constitutes the necessary basis for modelling.

Further data on M-tone suffixes are shown in Table 7.21, illustrating the behaviour of the progressive /-**dzo**↓/. The affirmative particle /-**mv**↓/ has the same behaviour. An interesting peculiarity is that a MH contour on the verb does not unfold onto these suffixes. A MH-tone verb preceding these morphemes is realized with a MH contour, e.g. /**mɰ**↓-**la**↑ | -**dzo**↓/ for ‘to strike’. Following the same guiding principle as before, this difference in tonal behaviour requires setting up a third descriptive subcategory of M tones: M_c.

7.4.3 H-tone suffixes

The grammatical word /**hi**↓/ is analyzed here as a relativizer; since it is glossed as ‘nominalizer’ by Liberty Lidz (Lidz 2010: 183), it could be called a ‘relativizer/nominalizer’, to avoid giving the mistaken impression that those are two distinct morphemes. This morpheme behaves in many tonal contexts like the M-tone

Table 7.22: The tonal behaviour of the relativizer/nominalizer, analyzed as having a lexical H tone.

word class	tone	example	gloss	relativizer
verbs	H	dzɯ ↓	to eat	dzɯ ↓-hĩ↓
	M _a	hwæ ↓ _a	to buy	hwæ ↓-hĩ↓
	M _b	tɕ ^h i↓ _b	to sell	tɕ ^h i↓-hĩ↓
	M _c	bi ↓ _c	to go	bi ↓-hĩ↓
	L _a	bæ ↓ _a	to sweep	bæ ↓-hĩ↓
	L _b	zɣɣ ↓ _b	to speak	zɣɣ ↓-hĩ↓
	MH	la ↓	to strike	la ↓-hĩ↓
adjectives	H	bi ↓	shallow	bi ↓-hĩ#↓
	M	tɕi ↓	sour	tɕi ↓-hĩ#↓
	L _a	hỹ ↓ _a	red	hỹ ↓-hĩ↓
	L _b	dzɣɣ ↓ _b	good	dzɣɣ ↓-hĩ↓
	MH	t^ha ↓	sharp	t^ha ↓-hĩ↓\$

postverbal particles conveying the immediate future (/bi↓) and the experiential (/dzɯ↓), but it cannot host the H part of a MH contour from the preceding verb: the result is M.M, e.g. /la↓-hĩ↓/ ‘... who strikes’, instead of the M.H pattern found for M-tone particles, e.g. /la↓-bi↓/ ‘... is going to strike’. The relativizer may therefore be considered to belong to a tonal category distinct from those labelled above as “L” and “M”. The choice of the label as H-tone suffix for the relativizer was made in view of the hypothesis that this morpheme grammaticalized from the word for ‘person, human being’, which has H tone: /hĩ↓/.

When associated with the relativizer /hĩ↓/, the adjectives in tone class L_b (such as /dzɣɣ↓_b/ ‘good’ and /na↓_b/ ‘black, dark’) have a tonal behaviour never observed on verbs, yielding a L.H pattern, as shown in Table 7.22. In combination with the relativizer /hĩ↓/, MH-tone adjectives also have a different behaviour from MH-tone verbs.

On the basis of its behaviour after M-tone verbs (as after M-tone nouns, which were presented in the previous chapter), the topic marker is also (provisionally) analyzed as carrying a lexical H tone. Data on its behaviour in context are presented in Table 7.23a. (A note to Table 7.23a: it has been verified that the pattern *M.M.H is not acceptable for MH-tone verbs: /*mɣ↓-la↓-dzo↓./) Interestingly, the tone patterns shown in this table are different from those of the relativizer/nomi-

Table 7.23a: The tonal behaviour of the topic marker with verbs.

tone	example	gloss	V+TOP	NEG+V+TOP
H	dzu ↓	to eat	dzu ↓- dzo ↓	mɣ ↓- dzu ↓- dzo ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓- dzo ↓	mɣ ↓- hwæ ↓- dzo ↓
M _b	tɕ^{hi} ↓ _b	to sell	tɕ^{hi} ↓- dzo ↓	mɣ ↓- tɕ^{hi} ↓- dzo ↓
M _c	bi ↓ _c	to go	bi ↓- dzo ↓	mɣ ↓- bi ↓- dzo ↓
L _a	bæ ↓ _a	to sweep	bæ ↓- dzo ↓	mɣ ↓- bæ ↓- dzo ↓
L _b	zɰwɣ ↓ _b	to speak	zɰwɣ ↓- dzo ↓	mɣ ↓- zɰwɣ ↓- dzo ↓
MH	la ↑	to strike	la ↑- dzo ↓	mɣ ↓- la ↑- dzo ↓

Table 7.23b: The tonal behaviour of the topic marker with adjectives.

tone	example	gloss	Adj+TOP	NEG+Adj+TOP
H	bi ↓	shallow	bi ↓- dzo ↓	mɣ ↓- bi ↓- dzo ↓
M	tɕi ↓	sour	tɕi ↓- dzo ↓	mɣ ↓- tɕi ↓- dzo ↓
L _a	hỹ ↓ _a	red	hỹ ↓- dzo ↓	mɣ ↓- hỹ ↓- dzo ↓
L _b	dzɣ ↓ _b	good	dzɣ ↓- dzo ↓	mɣ ↓- dzɣ ↓- dzo ↓
MH	t^ha ↑	sharp	t^ha ↑- dzo ↓	mɣ ↓- t^ha ↑- dzo ↓

nalizer. They show stronger surface similarity to those for the PROGRESSIVE suffix, shown in Table 7.21, which is analyzed as having a different lexical tone: M. The only difference between TOPIC and PROGRESSIVE is that, when these morphemes combine with M-tone verbs, the TOPIC marker gets H tone, whereas the PROGRESSIVE gets M tone. For want of more numerous examples, there would be little point in setting up two subcategories of H-tone suffixes (H_a and H_b) each containing only one example. Yongning Na is replete with morphotonological anfractuositities, on an order of complexity that could be likened (pending more fine-grained evaluation of morphotonological complexity) to French conjugation; the suffixes and serialized verbs in the M and H tone categories certainly warrant further analysis.

7.4.4 MH-tone suffixes

As for the other categories of suffixes, the label for the MH category is based on items that exist as verbs, e.g. the ABILITIVE /-kɣ↑/ derives from the verb /kɣ↑/ ‘to

Table 7.24: The tonal behaviour of MH-tone suffixes, after verbs and adjectives.

word class	tone	example	gloss	abilitive	permissive	causative
verbs	H	dzu ↓	to eat	dzu ↓-kv↓	dzu ↓-t ^h a↓	dzu ↓-k ^h u↓
	M _a	hwæ ↓ _a	to buy	hwæ ↓-kv↓	hwæ ↓-t ^h a↓	hwæ ↓-k ^h u↓
	M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓-kv↓	tɕ^hi ↓-t ^h a↓	tɕ^hi ↓-k ^h u↓
	L _a	bæ ↓ _a	to sweep	bæ ↓-kv↓	bæ ↓-t ^h a↓	bæ ↓-k ^h u↓
	L _b	zɣɣ ↓ _b	to speak	zɣɣ ↓-kv↓	zɣɣ ↓-t ^h a↓	zɣɣ ↓-k ^h u↓
	MH	la ↓	to strike	la ↓-kv↓	la ↓-t ^h a↓	la ↓-k ^h u↓
adjectives	H	bi ↓	shallow	bi ↓-kv↓	bi ↓-t ^h a↓	bi ↓-k ^h u↓
	M	ts^hi ↓	hot	ts^hi ↓-kv↓	ts^hi ↓-t ^h a↓	ts^hi ↓-k ^h u↓
	L _a	ɖu ↓ _a	large	ɖu ↓-kv↓	ɖu ↓-t ^h a↓	ɖu ↓-k ^h u↓
	L _b	dʒɣ ↓ _b	good	dʒɣ ↓-kv↓	dʒɣ ↓-t ^h a↓	dʒɣ ↓-k ^h u↓
	MH	t^ha ↓	sharp	t^ha ↓-kv↓	t^ha ↓-t ^h a↓	t^ha ↓-k ^h u↓

be able to’. Examples are provided in Table 7.24: in addition to the ABILITIVE, /-kv↓/, they are the PERMISSIVE, /-t^ha↓/, and the CAUSATIVE, /k^hu↓/. Other MH-tone suffixes include the reported-speech particle /-tsu↓/. The table shows that not all MH-tone suffixes have exactly the same tonal behaviour: the difference in tone pattern between the causative and abilitive constructions for L_b-tone adjectives has been verified through elicitation, on several occasions. The pattern is L.MH in /dʒɣ↓-kv↓/, and L.H in /dʒɣ↓-k^hu↓/. This requires the recognition of at least two subcategories of MH-tone suffixes.

The phrase /dʒɣ↓ k^hu↓/ (‘good’+CAUSATIVE) is in common use as a blessing on special occasions such as the New Year and the rite of passage into adulthood; it could be translated as ‘Best wishes!’ or ‘Let there be good/happiness!’ The phrases /ɖu↓ k^hu↓/ (‘large’+CAUSATIVE), /ts^hi↓ k^hu↓/ (‘hot’+CAUSATIVE) and /t^ha↓ k^hu↓/ (‘sharp’+CAUSATIVE) have a straightforward causative meaning: ‘to enlarge’, e.g. to increase the size of a farm by adding another building; ‘to heat up’; and ‘to sharpen’.

The MH tone surfaces as such after M; the general tendency is that the M tone does not interfere with following tones. The MH tone is lowered to L after H; the interpretation proposed is that the H tone does not surface as such due to the neutralization of M and H in tone-group-initial position (this is formulated in Chapter 8 as Rule 3: “In tone-group-initial position, H and M are neutralized to M”), but it is present underlyingly and lowers all following tones to L (through

Table 7.25: The tonal behaviour of /-kwɣ-tɕuɯɿ(-laɿ)/, ‘after; because’.

word class	tone	example	gloss	V+ ‘after; because’
verbs	H	dzuɿ	to eat	dzuɿ-tkwɣ-tɕuɯɿ(-laɿ)
	M _a	hwæɿ_a	to buy	hwæɿ-tkwɣ-tɕuɯɿ(-laɿ)
	M _b	tɕ^{hi}ɿ_b	to sell	tɕ^{hi}ɿ-tkwɣ-tɕuɯɿ(-laɿ)
	M _c	biɿ_c	to go	biɿ-tkwɣ-tɕuɯɿ(-laɿ)
	L _a	bæɿ_a	to sweep	bæɿ-tkwɣ-tɕuɯɿ(-laɿ)
	L _b	zɣwɣɿ_b	to speak	zɣwɣɿ-tkwɣ-tɕuɯɿ(-laɿ)
	MH	laɿ	to strike	laɿ-tkwɣ-tɕuɯɿ(-laɿ) / laɿ-tkwɣ-tɕuɯɿ(-laɿ)
adjectives	H	biɿ	shallow	biɿ-tkwɣ-tɕuɯɿ(-laɿ)
	M	tɕiɿ	sour	tɕiɿ-tkwɣ-tɕuɯɿ(-laɿ)
	L _a	hɿ̃_a	red	hɿ̃-tkwɣ-tɕuɯɿ(-laɿ)
	L _b	dzɣɿ_b	good	dzɣɿ-tkwɣ-tɕuɯɿ(-laɿ)
	MH	t^haɿ	sharp	t^haɿ-tkwɣ-tɕuɯɿ(-laɿ)

Rules 4 and 5). A preceding L tone spreads over it (/bæɿ/>/bæɿ-kvɿ/), as does the H part of a MH contour (/laɿ/>/laɿ-kvɿ/), delinking the MH tone on the suffix.

7.5 Disyllabic suffixes

7.5.1 M.H tone

A first tonal category of disyllabic suffixes is illustrated by /-kwɣ-tɕuɯɿ/ ‘after; because’. This suffix mostly appears as a trisyllabic expression: /-kwɣ-tɕuɯɿ-laɿ/. It is transcribed below with a hyphen before the syllable /-laɿ/ because this last syllable can be detached from the other two. In texts, out of 140 examples, ten are without /-laɿ/ (Lake3.54, 59, 67, Healing.37, Sister.34, Sister3.133, Caravans.80, 137, Renaming.18, and BuriedAlive2.48). Thus, while addition of /-laɿ/ (presumably meaning ‘and, also’) is a well-established habit, the expression can clearly be employed without it; no special nuance of meaning was found, except that the formulation without /-laɿ/ is apparently felt to be more pithy and economical. The monosyllabic form /-kwɣ-tɕuɯɿ/ is not attested.

The lexical tone of /-kwɣ-tɕuɯɿ/ is deduced from its behaviour in association with the adjective /dzɣɿ_b/ ‘good’. The observed pattern is /dzɣɿ-tkwɣ-tɕuɯɿ-laɿ/,

which does not constitute a well-formed tone group since it contains two H tones. This must therefore be analyzed as a sequence of two full-fledged tone groups: /dzɹʌ | -kwɹʌtɕuɹl-lɑ/|. In this context, the tones carried by /-kwɹʌtɕuɹl/ must be supposed to be their lexical tones; as for /-lɑ/, it receives L tone through Rule 4 (“A syllable following a H-tone syllable receives L tone”).

The sequence /dzɹʌ-kwɹʌtɕuɹl-lɑ/ ‘because/since [it is] good’ illustrates the existence of cases in which a rising contour is realized on the verb, and does not unfold over the suffix. A second case in point is with MH-tone verbs, e.g. /lɑʌ-kwɹʌtɕuɹl-(lɑ)/ ‘because/since [someone] beat [something]’. Variants in which the MH contour unfolds over the first syllable of the following morpheme (/mɹʌ-lɑʌ-kwɹʌtɕuɹl-lɑ/) are considered acceptable, and there exists one example in a text (BuriedAlive2.48), but the majority case is with the contour sitting on the verb.

Since contours are only realized tone-group-finally, this suggests that there is a tone-group boundary after the verb. Such a behaviour would not be unparalleled: for instance, the contrastive topic marker /-noʌ/ and the word /tʰiʌ/ ‘then’ always mark the beginning of a new tone group. This would be consistent with the fact that there tends to be a pause before the morphemes at issue (the postverbal elements over which a MH tone cannot unfold): a perceptual pause, whose main acoustic cue is the lengthening of the rhyme of the preceding syllable. In early transcriptions, a comma was used to reflect this perceived pause, transcribing e.g. /leʌ-tsaʌ, | -kwɹʌtɕuɹl/ ‘... because [they] rowed ...’ (Lake3.59).

A difficulty with this analysis is that after some tonal categories of verbs, the tone patterns that obtain on the suffix suggest that the verb and its suffix are part of the same tone group. Spreading of a L tone from the verb onto the following syllable demonstrates that the verb and its suffix are integrated into the same tone group.

One possible way of handling this would be to postulate that the division into tone groups is determined by the lexical tone of the words at issue: there would be one single tone group, e.g. / | hwæʌ-kwɹʌtɕuɹl-lɑ | /, ‘when [she/he] buys...’, except with a verb carrying MH tone (or an adjective carrying MH or L_b): / | lɑʌ | -kwɹʌtɕuɹl-lɑ | /, ‘when [she/he] strikes...’. But there are more difficulties here. The first is that some lexical tones leave both solutions open. The MH tone allows two variants, which reflect the different outcomes that are expected if the two morphemes stand in different tone groups (no interaction between tones: /lɑʌ | -kwɹʌtɕuɹl/) and if they are integrated into the same group (the H part of the MH contour associates to the following syllable, and triggers a lowering of the following tone to L, hence /lɑʌ-kwɹʌtɕuɹl/). As for the M tone, it

is simply impossible to determine the underlying division into tone groups on the basis of the surface tones, because the pattern is M.M.H in both cases, and could be interpreted as made up of either two tone groups: M.M.H or M | M.H, e.g. /hwæ-|kwɣ-|tɕu-|la-|/ or /hwæ-|kwɣ-|tɕu-|la-|/ for ‘because (she/he) buys...’. Since the M tone does not exert an influence on the following tone, the surface-phonological output is the same in both cases.

Another difficulty is that the situation of the MH tone (for verbs and adjectives) and that of the L_b tone (for adjectives) are different. The tones of the suffix are all lowered to L when following a MH-tone verb, whereas they surface unscathed after the rising contour on a L_b-tone adjective. Lowering to L after a preceding H tone level is a general rule in Na, operating within the tone group, never across a tone-group juncture. The fact that the sequence /kwɣ.tɕu-la/ is lowered to L after a MH-tone verb (e.g. /la-|kwɣ-|tɕu-|la-|/ for ‘to strike’) strongly suggests that the expression /kwɣ.tɕu-la/ does not make up an independent tone group. The sequence /-kwɣ-|tɕu-|la-|/ in /la-|kwɣ-|tɕu-|la-|/ ‘when (she/he) strikes ...’ is not a well-formed tone group, since it only contains L tones.

This special situation is analyzed here as the result of a stylistic process of emphasis, which then became habitually associated with certain morphemes. The analysis is set out in §8.2.

7.5.2 M.L tone

Two categories of disyllabic suffixes have a tantalizingly similar behaviour. They are illustrated by /-ɣo-to-|/ ‘on/during/compared_to/to(wards)’ and /-p^hæ-di-|/ ‘as if’, as shown in Table 7.26. Some of the combinations are attested in texts, including FoodShortage2.72 for H tone, Tiger.14 for L_a tone, BuriedAlive2.24 for L_b tone, and Dog2.108 for MH tone.

The only difference between the two suffixes is found in association with H-tone verbs. This difference may be due to the internal structure of the disyllabic suffixes, with the /-di-| portion of /-p^hæ.di-|/ behaving in a distinct way. From a flatly synchronic perspective, the difference requires placing the two suffixes in two different morphotonological categories.

7.6 Combinations between affixes

7.6.1 Suffixes preceded by the negation

It is common for a verb to be separated from a following suffix or suffixed verb by the negation, as in example (7).

Table 7.26: The behaviour of two disyllabic suffixes analyzed as carrying M.L tone.

tone	example	gloss	V+/-p ^h æ↓di↓ / ‘as if’	V+/-ko↓to↓ / ‘during’
H	dz u↓	to eat	mv ↓-p ^h æ↓di↓	dz u↓-ko↓to↓
M _a	hw æ↓ _a	to buy	hw æ↓-p ^h æ↓di↓	hw æ↓-ko↓to↓
M _b	tɕ ^h i↓ _b	to sell	tɕ ^h i↓-p ^h æ↓di↓	tɕ ^h i↓-ko↓to↓
L _a	b æ↓ _a	to sweep	q^hwɣ ↓-p ^h æ↓di↓	b æ↓-ko↓to↓
L _b	z wɣ↓ _b	to speak	do ↓-p ^h æ↓di↓	z wɣ↓-ko↓to↓
MH	la ↓	to strike	kv ↓-p ^h æ↓di↓ / kv ↓-p ^h æ↓di↓	la ↓-ko↓to↓

- (7) ... p^hv↓-mɣ↓-t^ha↓-ji↓-ho↓-mæ↓
 p^hv↓ mɣ↓ t^ha↓ ji↓ ho↓ mæ↓
 to_take_off NEG PERMISSIVE CERTITUDE DESIDERATIVE AFFIRM
 “[I] was not able to take off [the bracelets]!” (BuriedAlive2.88)

One could expect the tonal behaviour of such expressions to be computed progressively (left-to-right) in some simple way. But as is often the case in Na morphotonology, no simple algorithm can be proposed that would account for all the data. A telling example is that of MH-tone verbs, such as /p^hv↓/ ‘to take off’. In example (7), the H part of the MH contour reassociates to the negation, yielding /p^hv↓-mɣ↓ ... / and resulting in the lowering of all following tones to L (through Rules 4 and 5). When the suffix carries M tone, on the other hand, the H part of the MH contour is not present in the surface-phonological form, e.g. in /p^hv↓-mɣ↓-bi↓/ ‘... will not take off ...’. The data are therefore set out below in static table form, rather than as a set of rules.

7.6.1.1 M-tone suffixes preceded by the negation

Table 7.27 sets out the data for combinations in which the third syllable carries tone M_a or M_b. The example morphemes are the IMMEDIATE FUTURE, /bi↓_a/, and /mæ↓_b/ ‘to succeed, to achieve’. Note that the verb used to illustrate the M_c tone category in Table 7.27 is /ji↓_c/ ‘to come’ rather than /bi↓_c/ ‘to go’, to avoid the form /bi↓-mɣ↓-bi↓/ ‘am not going to go’, which is well-formed but weird-sounding due to homophony of the verb and the suffix, which makes the entire expression homophonous with a V-NEG-V construction.

Table 7.27: The tone patterns of combinations between verb, negation and M-tone suffixes.

tone	example	gloss	‘will not V’ (tone: M _a)	‘cannot manage to V’ (tone: M _b)
H	dzu ↓	to eat	dzu ↓-mɣ↓-bi↓	dzu ↓-mɣ↓-mæ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓-mɣ↓-bi↓	hwæ ↓-mɣ↓-mæ↓
M _b	tɕ ^h i↓ _b	to sell	tɕ ^h i↓-mɣ↓-bi↓	tɕ ^h i↓-mɣ↓-mæ↓
M _c	ji ↓ _c	to come	ji ↓-mɣ↓-bi↓	ji ↓-mɣ↓-mæ↓
L _a	dze ↓ _a	to cut	dze ↓-mɣ↓-bi↓	dze ↓-mɣ↓-mæ↓
L _b	ʈ ^h u↓ _b	to drink	ʈ ^h u↓-mɣ↓-bi↓	ʈ ^h u↓-mɣ↓-mæ↓
MH	ʈ ^h æ↓	to bite	ʈ ^h æ↓-mɣ↓-bi↓	ʈ ^h æ↓-mɣ↓-mæ↓

7.6.1.2 MH-tone suffixes preceded by negation or prohibitive

This paragraph presents three constructions that share the same tone patterns:

- /V-mɣ↓-t^hɑ↓/, V-NEG-PERMISSIVE: ‘[one] must not V’
- /V-mɣ-k^hu↓/, V-NEG-CAUSATIVE: ‘not to let [someone] V’
- /V-t^hɑ↓-k^hu↓/, V-PROHIBITIVE-CAUSATIVE: ‘do not let [someone] V’

Examples from texts include:

- (8) le↓-ɕu↓-dzo↓, | dʒi↓-h̃ṽ | mɣ↓-mɣ↓-k^hu↓! |
 le↓- ɕu↓ -dzo↓ dʒi↓-h̃ṽ |\$ mɣ↓ mɣ↓- -k^hu↓
 ACCOMP to_die PROG clothes to_put_on NEG CAUS
 ‘When someone dies, [we] do not clothe [the corpse]!’ (BuriedAlive3.58)
- (9) so↓jɲi↓-so↓h̃ã | qæ↓ | -dzo↓ | t^hi↓, | le↓-qæ↓, | mɣ↓-mɣ↓-t^hɑ↓!
 so↓jɲi↓-so↓h̃ã qæ↓ -dzo↓ t^hi↓ le↓- qæ↓
 3_days_and_nights to_burn TOP then ACCOMP to_burn
 mɣ↓ mɣ↓- -t^hɑ↓
 consume/burn_up NEG possible
 ‘The corpse was burnt [on the pyre] for three days and three nights, but it was not possible to burn it up!’ (Sister3.93)

The data for all tone classes are shown in Table 7.28 and Table 7.29, bringing out the full identity between the tone patterns for the three constructions.

7 Verbs and their combinatory properties

Table 7.28: The tone patterns of /V-mɻ-tʰa/ ‘[one] must not V’ and /V-tʰa-kʰu/ ‘do not let [someone] V/do not cause to V’.

tone	example	gloss	‘[one] must not V’	‘do not cause to V’
H	dzu ⌊	to eat	dzu ⌊-mɻ-tʰa⌋	dzu ⌊-tʰa-kʰu⌋
M _a	hwæ ⌊ _a	to buy	hwæ ⌊-mɻ-tʰa⌋	hwæ ⌊-tʰa-kʰu⌋
M _b	tɕʰi ⌊ _b	to sell	tɕʰi ⌊-mɻ-tʰa⌋	tɕʰi ⌊-tʰa-kʰu⌋
M _c	bi ⌊ _c	to go	bi ⌊-mɻ-tʰa⌋	bi ⌊-tʰa-kʰu⌋
L _a	dze ⌊ _a	to cut	dze ⌊-mɻ-tʰa⌋	dze ⌊-tʰa-kʰu⌋
L _b	tʰu ⌊ _b	to drink	tʰu ⌊-mɻ-tʰa⌋	tʰu ⌊-tʰa-kʰu⌋
MH	tʰæ ⌋	to bite	tʰæ ⌊-mɻ-tʰa⌋	tʰæ ⌊-tʰa-kʰu⌋

Table 7.29: The tone patterns of V/ADJ-NEG-ABILITIVE.

word class	tone	example	gloss	V/ADJ-NEG-ABILITIVE
verbs	H	dzu ⌊	to eat	dzu ⌊-mɻ-kv⌋
	M _a	hwæ ⌊ _a	to buy	hwæ ⌊-mɻ-kv⌋
	M _b	tɕʰi ⌊ _b	to sell	tɕʰi ⌊-mɻ-kv⌋
	M _c	bi ⌊ _c	to go	bi ⌊-mɻ-kv⌋
	L _a	bæ ⌊ _a	to sweep	bæ ⌊-mɻ-kv⌋
	L _b	zɯ ⌊ _b	to speak	zɯ ⌊-mɻ-kv⌋
	MH	la ⌋	to strike	la ⌊-mɻ-kv⌋
adjectives	H	bi ⌋	shallow	bi ⌊-mɻ-kv⌋
	M	tsʰi ⌋	hot	tsʰi ⌊-mɻ-kv⌋
	L _a	ɕu ⌊ _a	large	ɕu ⌊-mɻ-kv⌋
	L _b	dʒɻ ⌊ _b	good	dʒɻ ⌊-mɻ-kv⌋
	MH	tʰa ⌋	sharp	tʰa ⌊-mɻ-kv⌋

The tones for V/Adj-NEG-ABILITIVE, /V-mɻ-kv⌋/, are entirely identical with those for /V-mɻ-tʰa/ ‘[one] must not V’ and /V-tʰa-kʰu/ ‘do not cause to V’, as shown in Table 7.29.

Table 7.30: The tone patterns of the construction /V **mɻ-ho**/ ‘... will not V’.

tone	example	gloss	‘will not V’
H	dzɯ ↓	to eat	dzɯ ↓- mɻ ↓- ho ↓
M _a	hwæ ↓ _a	to buy	hwæ ↓- mɻ ↓- ho ↓
M _b	tɕ^hi ↓ _b	to sell	tɕ^hi ↓- mɻ ↓- ho ↓
M _c	bi ↓ _c	to go	bi ↓- mɻ ↓- ho ↓
L _a	dze ↓ _a	to cut	dze ↓- mɻ ↓- ho ↓
L _b	t^hɯ ↓ _b	to drink	t^hɯ ↓- mɻ ↓- ho ↓
MH	t^hæ ↓	to bite	t^hæ ↓- mɻ ↓- ho ↓

7.6.1.3 L-tone suffixes preceded by negation

The data are set out in Table 7.30. The first syllable, the verb, can only receive one of two tones: L or M, due to its initial position. L-tone verbs appear with their lexical L tone, and all others (M, H and MH) surface with M tone.

Tone assignment on the second and third syllables does not obey a set of general rules. Some data subsets show regularities, however. When the first morpheme (the verb constituting the first syllable of the expression) has M tone, the tone of the third morpheme (that following the negation) surfaces as such. The M tone is neutral, in the sense that it does not spread or create any restriction on following tones. When the initial morpheme has H tone, on the other hand, this H tone precludes following H tones, even though it does not surface as such. This results in the deletion of a following MH tone. In the abstract, another possibility would be for the H part of the MH contour of the third syllable to be deleted. But the data suggest that Yongning Na treats lexical tones as unitary in this respect: either the MH tone is compatible with what precedes, and it surfaces; or it is not, and it is deleted. As for the cases where the initial morpheme has L tone, it is an open question why the L tone does not spread all the way to the third syllable, yielding */*dze↓-mɻ↓-t^ha↓/* ‘one must not cut’, which would be realized on the surface as */*dze↓-mɻ↓-t^ha↓/*, through the application of Rule 7: “If a tone group only contains L tones, a post-lexical H tone is added to its last syllable”). It does not seem to be the case that the H tone observed in */dze↓-mɻ↓-t^ha↓/* is what remains of the MH lexical tone after its initial portion (M) is removed: this process is unattested anywhere else in the language. Rather, it looks as if the MH tone of the third syllable were deleted, leaving it toneless. Rule 7 then results in assignment of a H tone to that syllable.

Table 7.31: The tone pattern for V+interrogative+suffix.

tone	example	gloss	‘... going to V?’	‘will ... V?’	‘can ... V?’
H	dzɯ ɿ	to eat	dzɯ ɿ-əɿ- bi ɿ	dzɯ ɿ-əɿ- ho ɿ?	dzɯ ɿ-əɿ- tʰa ɿ?
M _a	hwæ ɿ- _a	to buy	hwæ ɿ-əɿ- bi ɿ	hwæ ɿ-əɿ- ho ɿ?	hwæ ɿ-əɿ- tʰa ɿ?
M _b	tɕʰi ɿ- _b	to sell	tɕʰi ɿ-əɿ- bi ɿ	tɕʰi ɿ-əɿ- ho ɿ?	tɕʰi ɿ-əɿ- tʰa ɿ?
M _c	bi ɿ- _c	to go	bi ɿ-əɿ- bi ɿ	bi ɿ-əɿ- ho ɿ?	bi ɿ-əɿ- tʰa ɿ?
L _a	dze ɿ- _a	to cut	dze ɿ-əɿ- bi ɿ	dze ɿ-əɿ- ho ɿ?	dze ɿ-əɿ- tʰa ɿ?
L _b	tʰɯ ɿ- _b	to drink	tʰɯ ɿ-əɿ- bi ɿ	tʰɯ ɿ-əɿ- ho ɿ?	tʰɯ ɿ-əɿ- tʰa ɿ?
MH	tʰæ ɿ	to bite	tʰæ ɿ-əɿ- bi ɿ	tʰæ ɿ-əɿ- ho ɿ?	tʰæ ɿ-əɿ- tʰa ɿ?

7.6.2 The neutralization of tonal oppositions on morphemes following the interrogative particle

The interrogative particle is analyzed as carrying L tone. The data in Table 7.31 reveals a complete neutralization of tonal oppositions on the morphemes placed after the interrogative particle. The three morphemes shown in the table have different tones: the IMMEDIATE FUTURE /-**bi**ɿ-_a/ has M_a tone; the DESIDERATIVE /-**ho**ɿ/ has L tone; and the PERMISSIVE /-**tʰa**ɿ/ has MH tone. The tone patterns for /**mæ**ɿ-_b/, ‘to manage to’, are entirely identical to those for the IMMEDIATE FUTURE. (They are not shown in Table 7.31.)

7.7 Combinations containing adjectives

7.7.1 Addition of reduplicated suffixes to adjectives

Although adjectives behave in the same way as verbs in many respects (i.e. as stative verbs), they do not reduplicate in the same way. Adjectives are intensified by suffixation of a reduplicated syllable that does not carry any meaning of its own. For instance, /**bæ**ɿ-**la**ɿ~**la**ɿ/ ‘limp, flabby (e.g. of meat without bones)’ and /**bæ**ɿ-**ɣwæ**ɿ~**ɣwæ**ɿ/ ‘loose (of knot)’ point to the existence of an adjective ***bæ**ɿ ‘loose, limp’; in the present state of the language, this root is attested neither on its own, nor in reduplicated guise. There are two variants for ‘short (of persons)’: /**to**ɿ-**tɯ**ɿ/ and /**to**ɿ-**tɯ**ɿ~**tɯ**ɿ/; data from other dialects will be necessary to tell whether the disyllable is a shortened version of the trisyllable, and whether the latter is derived from a L-tone monosyllabic root.

7.7.2 Demonstrative and intensive constructions

In Na, in addition to the construction with the RELATIVIZER/NOMINALIZER /hĩ/, adjectives are often used in demonstrative or intensive constructions. The demonstrative construction ‘this ADJ’ (‘this big’, ‘this thick ...’) is /tʂ^hu- ADJ -gv/, where /tʂ^hu/ is the proximal demonstrative, and /gv/ indicates the degree of a quality (compare /tʂ^hu | no | ni-gv | ʂwæ-t-mv-gv/ ‘his nose is not as high as yours’). All tonal oppositions on the adjective are neutralized, e.g. /tʂ^hu-dæ-gv/ ‘this short’, from /dæ/; /tʂ^hu-hwv-gv/ ‘this broad’, from /hwv/; /tʂ^hu-tci-gv/ ‘this small’, from /tci/; and /tʂ^hu-ɬo-gv/ ‘this deep’, from /ɬo/ (e.g. Sister.28, BuriedAlive3.144). The adjective can be reduplicated, e.g. /tʂ^hu-dw~dw-gv/ ‘this big’ (Agriculture.55), from /dw/ ‘big’ (see also FoodShort-age.43, 85).

Other constructions include: DEM+ADJ+the AUGMENTATIVE /mi/, e.g. /tʂ^hu-ʂwæ-t-mi-t-zo/ ‘this tall’, where /zo/ is an ADVERBIALIZER (Dog.12); the intensive construction /q^ha-ADJ-MI/ ‘so ADJ’, e.g. /q^ha-dw-t-mi-t-hĩ/ ‘thus huge, extremely big’ (Lake3.28), where /hĩ/ is the RELATIVIZER/NOMINALIZER.

Tonal oppositions are likewise neutralized in the construction ‘as ADJ (as)’, /t^ha-REDUPLICATED ADJECTIVE-gv/: /t^ha-dæ~dæ-gv/ ‘as short’; /t^ha-hwv~hwv-gv/ ‘as broad’; /t^ha-tci~tci-gv/ ‘as small’; and /t^ha-ɬo~ɬo-gv/ ‘as deep’.

7.8 Object and non-prefixed verb

Cross-linguistically, the object is the nominal argument that has greatest solidarity with the verb. This tendency is so strong that it has even been used as a defining property of the notion of object (Creissels 1991: 38). From a morphophonological point of view, it is reasonable to hypothesize that there will be at least as much tonal change in the association of an object and a verb as in the association between a subject and a verb (studied below, §7.10).

The association of an object and a verb could in theory be ambiguous with that between a subject and a verb, since the suffix that forces an interpretation of a noun as subject (/ -nu/) is not compulsory. Different tone rules applying in subject+verb sequences and object+verb sequences could be one of the means to disambiguate, but in practice subject+verb sequences are relatively uncommon, and disambiguation is generally effected through context.

When eliciting object-verb combinations, great care was exercised to avoid occasional reinterpretations as subject-verb combinations. For instance, the as-

Table 7.32: A sample of object plus verb combinations: the verb /do_{Lb}/ ‘to see’.

example	gloss	resulting phrase	tone pattern
bo _L	pig	bo _L do _L	L.M+L
zæ _L	leopard	zæ _L do _L	L.H
la _L	tiger	la _L do _L	M.L
jo _L	sheep	jo _L do _L	L.L
zwæ _L	horse	zwæ _L do _L	M.MH
tʂ ^h æ _L	deer	tʂ ^h æ _L do _L	M.MH

po _L lo _L	ram	po _L lo _L do _L	M.M.L
zwæ _L zo _L # _L	colt	zwæ _L zo _L do _L	M.M.MH
hwɣ _L li _L	cat	hwɣ _L li _L do _L	M.M.MH
kv _L tʂe _L \$	flea	kv _L tʂe _L do _L	M.M.MH
k ^h v _L mi _L	dog	k ^h v _L mi _L do _L	L.L.L
da _L ji _L	mule	da _L ji _L do _L	M.L.L
ō _L dv _L	wolf	ō _L dv _L do _L	L.M.MH
nv _L tʂ ^h i _L # _L	fine chaff	nv _L tʂ ^h i _L do _L	L.M.MH
bo _L mi _L	sow	bo _L mi _L do _L	L.M.L
bo _L ʰa _L	boar	bo _L ʰa _L do _L	L.H.L
hwæ _L tʂæ _L	squirrel	hwæ _L tʂæ _L do _L	M.H.L

sociation of ‘wolf’ and ‘to eat’ immediately suggests agent role for ‘wolf’, for semantic reasons. A subject noun phrase was added to force an interpretation that corresponds to the desired pattern with ‘wolf’ as object: ‘the tiger ate the wolf’, /la_L-ŋw_L | ō_Ldv_L dzw_L-ze_L/.

A sample of the elicited data is shown in Table 7.32: nouns illustrating the various tone classes as objects of the L_b-tone verb /do_{Lb}/ ‘to see’. The same results obtain with disyllabic objects that constitute a phrase, not a lexical word: for instance, /dʑw_L-bæ_L/ ‘something’, made up of the numeral ‘one’ and a classifier for sorts of things, behaves tonally in the same way as disyllabic lexical units carrying the same tone (M), such as /po_Llo_L/ ‘ram’ and /qæ_Ldo_L/ ‘timber’.

7.8.1 The facts

Table 7.33 presents the tone rules that apply in object+verb sequences. Recordings are available online: (i) some combinations between monosyllables: Ob-

jectVerb; (ii) a full set, except for L_b-tone verbs: ObjectVerb2; and (iii) L_b-tone verbs: ObjectVerb3. The resulting tone patterns are the same for lexical disyllables and for numeral-plus-classifier phrases: for instance, combinations with /**ɕu**-**k^hwɿ**/\$/ ‘a piece’ yield the same tone patterns as those with /**dzi**-**h^hɿ**/\$/ ‘clothes’.

The notation adopted in the table requires disambiguation for sequences ending in a M tone, namely M.M and L.M: object+verb sequences realized with one of these patterns in isolation may have different underlying patterns. For instance, /**li** **hwæ**/ ‘to buy tea’ and /**æ** **hwæ**/ ‘to buy chicken’, both with L.M pattern, yield different results with a following PERFECTIVE suffix, /-**ze**/: / ... **li** **hwæ**-**ze**/ ‘... bought tea’, as against / ... **æ** **hwæ**-**ze**/ ‘... bought chicken’. The table therefore contains information on the tonal realization of a following PERFECTIVE suffix, /-**ze**/, where relevant: the tone pattern of ‘to buy tea’, an example of the combination of input tones LH (on the noun) and M (on the verb), is transcribed in the table as L.M+L, and that of ‘to buy chicken’ simply as L.M. The pattern M.M+L is likewise distinguished from M.M+M. The tone of the suffix is preceded by a ‘+’ sign.

On the other hand, in the cases where the tone of the suffix results straightforwardly from the general rules of tone association of Yongning Na (as recapitulated in Chapter 8), no information is indicated in the table. These cases are the following: when the last tone of the object+verb phrase is H or L, /-**ze**/ always receives L tone; and when it is MH, /-**ze**/ receives the H part of the contour.

As in the other tables, a slash separates variants. For instance, for ‘... has sold panthers’ (LH+M_b), it is possible to say /**zæ** **tɕ^hi**-**ze**/, as well as /**zæ** **tɕ^hi**-**ze**/. For L+M_b, two patterns are possible: L.L, and M.M+M: /**jo** **tɕ^hi**-**ze**/ ‘... has sold sheep’ and /**k^hu** **tɕ^hi**-**ze**/ ‘... has sold thread’, as well as /**jo** **tɕ^hi**-**ze**/ and /**k^hu** **tɕ^hi**-**ze**/. For LH+H, two patterns are also possible: L.L, and L.H, e.g. /**di** **dv**-**ze**/ ‘... has dug earth’, and /(**la**-**ŋu** |) **t^ha** **dzu**-**ze**/ ‘(the tiger) has eaten (a) buffalo’, as well as /**di** **dv**-**ze**/ and /(**la**-**ŋu** |) **t^ha** **dzu**-**ze**/.

Finally, a note concerning the L.M.MH variant: examples include /**nv** **tɕ^hi** **do**/ ~ /**nv** **tɕ^hi** **do**/ ‘to see fine chaff’, /**pi** **ti** **do**/ ~ /**pi** **ti** **do**/ ‘to see nuggets (of gold)’, and /**na** **hi** **do**/ ~ /**na** **hi** **do**/ ‘to see (the) Naxi’. The consultant expressed a preference for the L.M.MH realization.

7.8.2 Object-verb combinations bring out the distinction between LM and LH tones on nouns

The LM and LH categories of nouns are neutralized in most contexts. Among object-verb combinations, two contexts distinguish them: their association with

Table 7.33: The tone patterns of object+verb combinations.

tone of noun		tone of verb					
	H	M _a	M _b	L _a	L _b	MH	
LM	L.M+L	L.M+M	L.M+M	L.M+L	L.M+L	L.MH	
LH	L.L / L.H	L.H	L.L / L.H	L.H	L.H / L.L	L.MH	
M	M.M+L	M.M+M	M.M+M	M.L	M.L	M.MH	
L	L.L	M.M+M	M.M+M / L.L	L.L	L.L / M.L	L.L	
H	M.M+L	M.L	M.M+L	M.H	M.MH	M.L	
MH	M.H	M.H	M.H	M.H	M.MH	M.H	

M	M.M.M+L	M.M.M+M	M.M.M+M	M.M.L	M.M.L	M.M.MH	
#H	M.M.M+L	M.M.L	M.M.M+L	M.M.H	M.M.MH	M.M.L	
MH#	M.M.MH	M.M.H (H#)	M.M.MH	M.M.H	M.M.MH	M.M.H	
H\$	M.M.M+L	M.H.L	M.M.M+L	M.M.H	M.M.MH	M.H.L	
L	L.L.L	L.L.H	L.L.L	L.L.H	L.L.L	L.L.H	
L#	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L	
LM+MH#	L.M.M+L	L.M.H	L.M.M+L	L.M.H	L.M.MH	L.M.H	
LM+#H	L.M.M+L	L.M.L	L.M.M+L	L.M.H	L.M.L / L.M.MH	L.M.L	
LM	L.M.M+L	L.M.M+M	L.M.M+M	L.M.L	L.M.L	L.M.MH	
LH	L.H.L	L.H.L	L.H.L	L.H.L	L.H.L	L.H.L	
H#	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L	

a M-tone verb, e.g. /bo↓ hwæ↓-ze↓/ ‘... bought pigs’ vs. /zæ↓ hwæ↓-ze↓/ ‘... bought leopards’, and with a H-tone verb, e.g. /yuu↓ dzuu↓/ ‘to eat skin’ vs. /bo↓ dzuu↓/ ‘to eat pigs’.

7.8.3 About tonal variants

There are interesting fine details in the use of tonal variants. Any L-tone monosyllabic noun acting as object of a L_b-tone verb can yield a L.L pattern: for instance, /fi↓ zi↓/ ‘to grab/seize a roebuck’, /mv↓ zi↓/ ‘to grab/seize (a/one’s) daughter’; and /fi↓ do↓/ ‘to see a roebuck’, /mv↓ do↓/ ‘to see (a/one’s) daughter’. On the other hand, the M.L variant is only observed for some nouns: it is possible to say /fi↓ zi↓/ ‘to grab/seize a roebuck’ and /fi↓ do↓/ ‘to see a roebuck’, but not /*mv↓ zi↓/ (intended meaning: ‘to grab/seize (a/one’s) daughter’) or /*mv↓ do↓/ (intended meaning: ‘to see (a/one’s) daughter’).

In some cases, it is possible to distinguish among variants one that is more common for frequently occurring combinations of words. For instance, with a L-tone object and a LM-tone verb, there are two variants: M.M+M and L.L, but it is customary to say /dzuu↓ tʰuu↓/ ‘to drink water’, and /dzuu↓ tʰuu↓/, though understandable, sounds weird. Conversely, the elicited phrase ‘to grab sheep’ yields /jo↓ zi↓/; the variant /jo↓ zi↓/ carries a hint that this is a common activity, which is slightly weird from a semantic point of view. The latter variant can make sense in the context of sheep shearing, for instance, where sheep-grabbing is part of the shearing process.

7.8.4 Exceptional combinations

Two LH nouns, ‘leopard’ and ‘monkey’, yield a L.M+L pattern in combination with a H-tone verb, instead of the expected L.L pattern: /zæ↓ dzuu↓-ze↓/ for ‘[the tiger] ate panthers’ and /zi↓ dzuu↓-ze↓/ for ‘[the tiger] ate monkeys’, instead of the expected /ʔzæ↓ dzuu↓-ze↓/ and /ʔzi↓ dzuu↓-ze↓/. The combination of ‘to eat’ and ‘panther’ is semantically odd, as panthers are predators rather than game, but that with ‘monkeys’ is fine, and the same result was obtained in several elicitation sessions. This is provisionally considered as an exceptional pattern: another of the complexities that need to be learnt individually.

In Table 7.33, two variants were indicated for the combination of a LH noun and a M_b verb: L.L / L.H. For some combinations, both patterns are acceptable: for ‘... has sold panthers’, it is possible to say /zæ↓ tɕʰi↓-ze↓/, as well as /zæ↓ tɕʰi↓-ze↓/. But some other combinations have apparently lexicalized with one or the other: ‘to bring in the harvest’ can only be /bæ↓ ʂo↓-ze↓/, not /ʔbæ↓ ʂo↓-ze↓/, whereas

‘to eat skin’ (with the same input tones) can only be /**γuɯɯ dzuɯɯ-zeɿ**/, not /**†γuɯɯ dzuɯɯ-zeɿ**/ . It may be that combinations tend to receive a L.H pattern as they lexicalize; sporadic tone change accompanying lexicalization is well-attested cross-linguistically. Or it may be that L.H is an older pattern, and is therefore more common on lexicalized combinations, whereas L.L is an innovative pattern.

Another exception corresponding to a highly lexicalized combination is /**k^hɣɯɯ sɛɿ**/ ‘to hunt’, literally ‘to lead a dog’, from /**k^hɣɯɯ**/ ‘dog’ and /**sɛɿ**/ ‘to lead along’. The productive, regular pattern would yield /**†k^hɣɯɯ sɛɿ**/ . This irregularity may be interpreted as a lexicalized remnant of an earlier tone pattern.

The word /**mvɯ**/ ‘fire’ in association with /**ts^hiɿ**/ ‘to light’ yields /**mvɯ ts^hiɿ**/ ‘to light a fire’, instead of the expected /**†mvɯ ts^hiɿ**/ .

The demonstratives, /**ts^huɯɯ**/ and /**t^hɣɯɯ**/, do not behave like other H-tone words, as shown in example (10).

- (10) **ts^huɯɯ** | **ts^huɯɯ-zeɿ** !
ts^huɯɯ **ts^huɯɯ** **zeɿ**
 3SG to_arrive PFV
 ‘(S)he has arrived!’

The subject and verb belong to distinct tone groups, whereas full lexical words such as /**zwæɿ**/ ‘horse’ yield M.MH: /**zwæɿ ts^huɯɯ**/ ‘the horse arrives’.

The demonstratives are exceptional items in other respects too, as described in §6.4.2.

7.8.5 Nouns plus the copula /**niɯ_a**/ behave tonally like object-verb combinations

Data on the behaviour of the copula after each tonal class of nouns were set out in Chapter 3. It coincides exactly with the behaviour of L_a-tone verbs in object+verb combinations, and not with the behaviour of L_a-tone verbs in subject+verb combinations. This observation about tones provides a strong indication about the morphosyntactic status of the copula.

7.8.6 Interrogative pronoun and verb

The combination of an interrogative pronoun and a verb is a special case of the combination of object and verb. The tonal patterns are not identical, however: see Table 7.34.

Surprisingly, these three interrogative pronouns, which are currently hypothesized to belong in the same lexical tone category (LM), show different tonal

Table 7.34: The tonal behaviour of three interrogative pronouns preceding a verb:
 /ze.lbæ:/ ‘which’, /ze.lgɻ:/ ‘which place’, and /zo.lqo:/ ‘where’.

tone	example	gloss	which	which place	where
H	dzɯŋ	to eat	ze.lbæ: dzɯŋ?	ze.lgɻ: dzɯŋ?	zo.lqo: dzɯŋ?
M _a	hwæ:↓ _a	to buy	ze.lbæ: hwæ:↓?	ze.lgɻ: hwæ:↓?	zo.lqo: hwæ:↓?
M _b	tɕ ^{hi} :↓ _b	to sell	ze.lbæ: tɕ ^{hi} :↓?	ze.lgɻ: tɕ ^{hi} :↓?	zo.lqo: tɕ ^{hi} :↓?
L _a	bæ:↓ _a	to sweep	ze.lbæ: bæ:↓?	ze.lgɻ: bæ:↓?	zo.lqo: bæ:↓?
L _b	↑ ^h u:↓ _b	to drink;	ze.lbæ: ↑ ^h u:↓?	ze.lgɻ: ↑ ^h u:↓?	zo.lqo: ↑ ^h u:↓?
	zɯwɻ:↓ _b	to speak	ze.lbæ: zɯwɻ:↓?	ze.lgɻ: zɯwɻ:↓?	zo.lqo: zɯwɻ:↓?
MH	la↑	to strike	ze.lbæ: la↑?	ze.lgɻ: la↑?	zo.lqo: la↑?

behaviours. These differences between the three pronouns were checked carefully; for instance, it has been verified that /*ze.lbæ: la↑/ is not an acceptable variant, any more than /*ze.lgɻ: la↑/.

7.9 Object and prefixed verb

When an object associates to a prefixed verb, they can form a single tone group, as in (11), or the prefixed verb may be preceded by a tone group boundary, as in (12).

- (11) zɯŋ | dɯŋ-q^hwɻ: t^{hi}ŋ-p^hɻ:↓-tsu:↓-mɻ:↓
 zɯŋ dɯŋ q^hwɻ: t^{hi}: p^hɻ: -tsu: -mɻ:
 wine one clf.bowl DUR to_pour REP AFFIRM
 ‘... it is said that [she] poured a bowl of wine [for her brother].’ (Sister3.41)

- (12) ə↓mɻ:↓-ŋu: | zæ:↓su: | t^{hi}:↓-mɻ:
 ə↓mɻ: -ŋu: zæ:↓su: t^{hi}: mɻ:↓_a
 elder_sibling A coarse_felt DUR to_put_on/to_wear
 ‘the elder brother put on [his] coarse felt cloak’ (Sister3.57)

When the object and prefixed verb are integrated into a single tone group, it seems at first glance as if the adjustment were purely phonological, the computation of tones within the group proceeding from the beginning (‘left-to-right’). In example (11), for instance, it looks as if the MH contour on the numeral-plus-classifier unfolded over the prefixed verb: /dɯŋ-q^hwɻ:/ ‘one bowl(full)’ plus /t^{hi}-p^hɻ:/ ‘to pour’ would be analyzed as yielding /dɯŋ-q^hwɻ: t^{hi}ŋ ... / by unfolding

of the MH contour, the H part of the noun phrase's MH contour reassociating to the syllable /t^hi-/. The final result /**q**uɪ-**q**^hwɪ- t^hiɪ-**p**^hɪ/ would obtain by application of Rules 4 and 5: "A syllable following a H-tone syllable receives L tone", and "All syllables following a HL or ML sequence receive L tone". This type of analysis can be extended to almost all cases – but not quite all of them, leading to the conclusion that the adjustment is not purely phonological. The association of an object and a prefixed verb therefore still belongs within morphophonology, although only a small evolutionary step would be required for it to become a purely phonological process: simplifying the handful of forms that do not currently obtain on the basis of phonological rules. The facts are set out and discussed in detail below.

7.9.1 The facts

The data are arranged by tone. The behaviour of tones M_a and M_b is identical, as is that of tones L_a and L_b; the data presented are therefore limited to one M-tone verb (Table 7.35) and one L-tone verb (Table 7.37). The patterns that do not conform with the regularities discussed below (§7.9.2) are shaded in gray.

Table 7.35: Objects plus M-tone verbs prefixed by the DURATIVE /t^{hi}+/.

tone	head	meaning	hwæ ^{la} ‘to buy’	tone pattern
LM	bo ^l	pig	bo ^l t ^{hi} l-hwæ ^l	L.M.M
LH	mv ^l	daughter	mv ^l t ^{hi} l-hwæ ^l	L.H.L
M	la ^l	tiger	la ^l t ^{hi} l-hwæ ^l	M.M.M
L	jo ^l	sheep	jo ^l t ^{hi} l-hwæ ^l	M.M.M
#H	hī ^l	human being	hī ^l t ^{hi} l-hwæ ^l	M.L.L
MH#	ts ^{hu} l	goat	ts ^{hu} l t ^{hi} l-hwæ ^l	M.H.L
M	po ^l lo ^l	ram	po ^l lo ^l t ^{hi} l-hwæ ^l	M.M.M.M
#H	zwæ ^l zo [#] l	colt	zwæ ^l zo ^l t ^{hi} l-hwæ ^l	M.M.L.L
MH#	hwɣ ^l li ^l	cat	hwɣ ^l li ^l t ^{hi} l-hwæ ^l	M.M.H.L
H\$	kv ^l ʒe ^l \$	flea	kv ^l ʒe ^l t ^{hi} l-hwæ ^l	M.H.L.L
L	k ^h v ^l mi ^l	dog	k ^h v ^l mi ^l t ^{hi} l-hwæ ^l	L.L.H.L
L#	da ^l ʒi ^l	mule	da ^l ʒi ^l t ^{hi} l-hwæ ^l	M.L.L.L
LM+MH#	v ^l ts ^{hu} l	vegetables	v ^l ts ^{hu} l t ^{hi} l-hwæ ^l	M.M.H.L
LM+#H	a ^l mi [#] l	goose	a ^l mi ^l t ^{hi} l-hwæ ^l	L.M.L.L
LM	bo ^l mi ^l	sow	bo ^l mi ^l t ^{hi} l-hwæ ^l	L.M.M.M
LH	bo ^l ʒa ^l	boar	bo ^l ʒa ^l t ^{hi} l-hwæ ^l	L.H.L.L
H#	k ^h v ^l na ^l	dog	k ^h v ^l na ^l t ^{hi} l-hwæ ^l	M.H.L.L

Table 7.36: Objects plus H-tone verbs prefixed by the durative /tʰi-/.

tone	head	meaning	dzuŋ ‘to eat’	tone pattern
LM	bo ↓	pig	bo ↓ tʰi-↓dzuŋ	L.M.H
LH	mv ↓	daughter	mv ↓ tʰiŋ-↓dzuŋ	L.H.L
M	la ↓	tiger	la ↓ tʰi-↓dzuŋ	M.M.H
L	jo ↓	sheep	jo ↓ tʰi-↓dzuŋ	L.L.LH
#H	hī ŋ	human being	hī ŋ tʰi-↓dzuŋ	M.L.L
MH#	tsʰu ↓	goat	tsʰu ↓ tʰiŋ-↓dzuŋ	M.H.L

M	po ↓lo↓	ram	po ↓lo↓ tʰi-↓dzuŋ	M.M.M.H
#H	zwæ ↓zo#↓	colt	zwæ ↓zo↓ tʰi-↓dzuŋ	M.M.L.L
MH#	hwɣ ↓li↓	cat	hwɣ ↓li↓ tʰiŋ-↓dzuŋ	M.M.H.L
H\$	kv ↓sɛ↓\$	flea	kv ↓sɛ↓ tʰi-↓dzuŋ	M.H.L.L
L	kʰv ↓mi↓	dog	kʰv ↓mi↓ tʰiŋ-↓dzuŋ	L.L.H.L
L#	da ↓ji↓	mule	da ↓ji↓ tʰi-↓dzuŋ	M.L.L.L
LM+MH#	v ↓tsʰɣ↓	vegetables	v ↓tsʰɣ↓ tʰiŋ-↓dzuŋ	L.M.H.L
LM+#H	a ↓mi#↓	goose	a ↓mi↓ tʰiŋ-↓dzuŋ	L.M.H.L
LM	bo ↓mi↓	sow	bo ↓mi↓ tʰi-↓dzuŋ	L.M.M.H
LH	bo ↓ʃa↓	boar	bo ↓ʃa↓ tʰi-↓dzuŋ	L.H.L.L
H#	kʰv ↓na↓	dog	kʰv ↓na↓ tʰi-↓dzuŋ	M.H.L.L

Table 7.37: Objects plus L-tone verbs prefixed by the durative /tʰi-/.

tone	head	meaning	do _b 'to see'	tone pattern
LM	bo↓	pig	bo↓ tʰi-↓di↓	L.M.L
LH	mv↓	daughter	mv↓ tʰi↓-di↓	L.L.H
M	la↑	tiger	la↑ tʰi-↓di↓	M.M.L
L	jo↓	sheep	jo↑ tʰi-↓di↓	M.M.L
#H	hi↓	human being	hi↑ tʰi-↓di↓	M.M.H
MH#	tsʰu↑	goat	tsʰu↑ tʰi-↓di↓	M.M.H
M	po↓lo↑	ram	po↓lo↑ tʰi-↓di↓	M.M.M.L
#H	zɥæ↓zo#↓	colt	zɥæ↓zo↑ tʰi-↓di↓	M.M.M.H
MH#	hwɥ↓li↑	cat	hwɥ↓li↑ tʰi-↓di↓	M.M.M.H
H\$	kv↓ʒe↓\$	flea	kv↓ʒe↑ tʰi-↓di↓	M.M.M.H
L	kʰv↓mi↓	dog	kʰv↓mi↓ tʰi↓-di↓	L.L.L.H
L#	da↓ji↓	mule	da↓ji↓ tʰi↓-di↓	M.L.L.L
LM+MH#	v↓tsʰɥ↑	vegetables	v↓tsʰɥ↑ tʰi-↓di↓	L.M.M.H
LM+#H	a↓mi#↓	goose	a↓mi↑ tʰi-↓di↓	L.M.M.H
LM	bo↓mi↑	sow	bo↓mi↑ tʰi-↓di↓	L.M.M.L
LH	bo↓ʃa↓	boar	bo↓ʃa↓ tʰi↓-di↓	L.H.L.L
H#	kʰv↑na↓	dog	kʰv↑na↓ tʰi↓-di↓	M.H.L.L

Examples in texts are abundant: the prefix /tʰi-/ alone appears over 700 times in twenty texts, illustrating a broad range of combinations: see for instance Food-Shortage.71; Funeral.69, 108, 190, 238, 253; Healing.103; Housebuilding.40, 110, 121, 217, 239; Mountains.7, 88, 161; Reward.40, 73; Seeds2.51, 62; and Sister3.41, 95.

7.9.2 Data analysis

The most straightforward cases are presented first, followed by the more complex ones.

7.9.2.1 The tone of the verb expresses itself when the noun phrase has tone LM or M

As observed in §7.9.2 of Chapter 3, M behaves as an inert tone in Yongning Na: it does not spread or otherwise affect following tones. The behaviour of M-tone nouns in association with a prefixed verb is in keeping with this observation:

Table 7.38: Objects plus MH-tone verbs prefixed by the durative /tʰi-/.

tone	head	meaning	tʰæʌ ‘to bite’	tone pattern
LM	boʌ	pig	boʌ tʰi-ʈʰæʌ	L.M.MH
LH	mvʌ	daughter	mvʌ tʰiʌ-ʈʰæʌ	L.H.L
M	laʌ	tiger	laʌ tʰi-ʈʰæʌ	M.M.MH
L	joʌ	sheep	joʌ tʰiʌ-ʈʰæʌ	L.L.LH
#H	hiʌ	human being	hiʌ tʰiʌ-ʈʰæʌ	M.L.L
MH#	tsʰuʌ	goat	tsʰuʌ tʰiʌ-ʈʰæʌ	M.H.L

M	poʌloʌ	ram	poʌloʌ tʰi-ʈʰæʌ	M.M.M.MH
#H	zʷæʌzoʌ#ʌ	colt	zʷæʌzoʌ tʰiʌ-ʈʰæʌ	M.M.L.L
MH#	hwʌliʌ	cat	hwʌliʌ tʰiʌ-ʈʰæʌ	M.M.H.L
H\$	kvʌseʌ\$	flea	kvʌseʌ tʰiʌ-ʈʰæʌ	M.H.L.L
L	kʰvʌmiʌ	dog	kʰvʌmiʌ tʰiʌ-ʈʰæʌ	L.L.H.L
L#	daʌjiʌ	mule	daʌjiʌ tʰiʌ-ʈʰæʌ	M.L.L.L
LM+MH#	vʌtsʰʌʌ	vegetables	vʌtsʰʌʌ tʰiʌ-ʈʰæʌ	L.M.H.L
LM+#H	aʌmiʌ#ʌ	goose	aʌmiʌ tʰiʌ-ʈʰæʌ	L.M.L.L
LM	boʌmiʌ	sow	boʌmiʌ tʰi-ʈʰæʌ	L.M.M.MH
LH	boʌʈaʌ	boar	boʌʈaʌ tʰiʌ-ʈʰæʌ	L.H.L.L
H#	kʰvʌnaʌ	dog	kʰvʌnaʌ tʰiʌ-ʈʰæʌ	M.H.L.L

when the noun phrase has tone M, the prefixed verb surfaces with the same tones as in isolation. The same is true of LM-tone noun phrases.

7.9.2.2 Tonal oppositions on verbs are neutralized after a disyllabic noun phrase with tone L#, LH and H#

Tones L#, LH and H# on disyllables preclude any tone other than L on syllables that follow within the tone group, by application of Rules 4 and 5: “A syllable following a H-tone syllable receives L tone”, and “All syllables following a HL or ML sequence receive L tone”. All tonal oppositions on verbs are therefore neutralized after a disyllabic noun phrase carrying one of these three tones.

7.9.2.3 Patterns that cannot be fully explained by phonological regularities

The patterns discussed in the two preceding paragraphs can be explained fully on the basis of phonological regularities that apply throughout the system. This

is not true of the other patterns, however: while most of them make good phonological sense, others do not. Overall, three combinations out of four follow a set of phonological tendencies; this figure appears high enough to formulate the tentative hypothesis that these tendencies represent the default case, and that the remaining cases are likely to be learnt individually. (Partly regular morphological paradigms are cross-linguistically widespread; this issue will be taken up again in the typological discussion.)

These tendencies are as follows.

- (i) Tone LH on a monosyllabic noun projects its H portion onto the next syllable, /**t^hi**/. In this light, the pattern with L-tone verbs, exemplified by /**mv**↓ **t^hi**↓-**do**↓/ ‘to see (a/the) daughter’, appears as an irregularity.
- (ii) Tones #H and LM+#H do not overtly express their H tone, which remains floating, but is not deleted: this floating H tone lowers the tones of the following syllables to L. The pattern with L-tone verbs is, again, irregular, as well as the pattern for a LM+#H noun and a H-tone verb, where one would expect L.M.L.L, e.g. /†**a**↓**mi**↓ **t^hi**↓-**dzu**↓/ ‘to eat a goose’, instead of the observed L.M.M.H: /**a**↓**mi**↓ **t^hi**↓-**dzu**↓/.
- (iii) Tone H\$ gets docked on the last syllable of the noun phrase, resulting in a lowering of the tone of following syllables to L, by Rules 4 and 5: “A syllable following a H-tone syllable receives L tone”, and “All syllables following a HL or ML sequence receive L tone”.
- (iv) Tones MH# and LM+MH# project their final H level onto the following syllable. The pattern with L-tone verbs is, again, irregular.

7.9.2.4 The behaviour of L-tone verbs: attempting a generalization

L-tone verbs are those that exhibit the greatest proportion of irregular patterns: patterns that do not follow the regularities brought out above. It appears possible to attempt a generalization nonetheless. One way to describe what happens in this particular morphosyntactic context is to say that *when the noun phrase contains a H tone, this H tone moves all the way to the last syllable of the resulting verb phrase, unless it is unmovably fixed to one of the syllables.*

This generalization reflects the identical tonal treatment of the prefixed verb after a disyllable with tone H# or LH. When a H# or LH tone is lexically associated to a disyllabic noun, a H level tone is unmovably attached to the last syllable of the noun. On the other hand, tones #H, LM+#H, H\$, MH# and LM+MH# share

the property of containing a H level tone whose syllabic anchoring depends on context: their H level is not unmovable.

An apparent counterexample to this generalization is tone LH: disyllabic LH-tone nouns yield L.H.L.L, but monosyllabic LH-tone nouns yield L.L.H, e.g. /**mv**l t^hi-l-doŋ/ 'to see (a/the) daughter'. At this point, one may consider that this difference of treatment demonstrates clearly that the tonal morphology at play here is irregular, and that the analyst should refrain from devising clever accounts that are more systematic and neater than the facts. The above regularity would then need to be abandoned.

Experience in learning and speaking the language suggests otherwise, however, and encourages the investigator to venture some more speculations about how the observed patterns relate to one another.

The different treatment of LH tone on monosyllabic and disyllabic nouns could be related to the fact that, although the tonal category is identical, its association to syllables is perceptibly different for monosyllables and disyllables. When the noun has two syllables, the H part of the LH tone is unmovably attached to the second syllable, making this tone category an easy one for the language learner. In the case of monosyllables, on the other hand, for want of a sufficient number of syllables (the relevant tone-bearing unit in Yongning Na), there is some pressure for the H part to reassociate to a later syllable. In various morphosyntactic contexts, the H part of LH does not surface on the noun to which it is lexically associated. To sum up: there is a hard-and-fast syllabic anchoring for tone LH when it associates to a disyllable, whereas on a monosyllable its anchoring feels looser.

Viewed in this light, it does not come as a great surprise that LH on a monosyllabic noun should pattern as one of the movable H tones – alongside with #H, LM+#H, H\$, MH# and LM+MH# – rather than as one of the unmovable H tones.

This generalization is ad hoc, in the sense that it is simply based on the data for this specific morphosyntactic context. But it does not appear absurd to consider that it has psychological reality, allowing learners to memorize the patterns for tones #H, LM+#H, H\$, MH# and LM+MH# – plus LH-tone monosyllables – all at one go.

Still on a highly speculative note, this analysis predicts high cross-dialect variation for L-tone verbs: cases that do not conform to regularities (i-iv) as set out in §7.9.2.3 are especially numerous for L-tone verbs; the force of analogy would tend to simplify the system by eliminating these irregularities. This is an empirical question to investigate on the basis of data from other dialects.

7.10 Subject and verb

Tonal interaction between subject and verb is illustrated by (13–14).

- (13) a. bi↑ gi↑-ze↓.
 bi↓ gi↓ -ze↓
 snow to_fall PFV
 ‘It is snowing./It’s beginning to snow.’
- b. hi↓ gi↓-ze↓.
 hi↓ gi↓ -ze↓
 rain to_fall PFV
 ‘It is raining./It’s beginning to rain.’
- (14) a. hī↑bæ↑ ts^hu↑-ze↓.
 hī↑bæ#↓ ts^hu↓ -ze↓
 guest arrive PFV
 ‘The guest has arrived./The guests have arrived.’
- b. da↑pɣ↑ ts^hu↓-ze↓.
 da↑pɣ↑ ts^hu↓ -ze↓
 priest arrive PFV
 ‘The priest has arrived./The priests have arrived.’

Subject-plus-verb sequences are relatively infrequent in Na. This is due in part to the high frequency of nominal suffixes and verbal prefixes, and, for transitive verbs, to the subject-object-verb word order. When the verb is preceded by a particle, such as the accomplished /le↑-/ or the durative /t^hi↑-/, the noun and the verb belong to two different tone groups, and they do not interact. Compare, for instance, the realizations of the MH-tone verb /qæ↑/ ‘to burn’ in /mv↓ | le↑-qæ↑-ze↓/ ‘the fire burned’ and /mv↓ qæ↓/ ‘the fire burns’.

The elicited data analyzed in this section are based on intransitive verbs, so as to avoid possible confusions between subject+verb and object+verb constructions. Following the same procedure as for nouns, two contexts were used to arrive at underlying tone categories: subject+verb, and subject+verb+PFV. For instance, (14a) without the PFV yields /hī↑-bæ↑ ts^hu↑/; the tone pattern obtained through this combination of subject and predicate can therefore be described as M.M.MH, and further analyzed as MH#: a MH contour associating to the last syllable.

7.10.1 The facts

For systematic elicitation, the following verbs were used: /**ʂu**ɬ_a/ ‘to die’; /**tsʰo**#ɿ/ ‘to dance’; /**se**ɿ/ ‘to walk’; /**tsʰu**ɿ_a/ ‘to arrive’; /**zɰwɣ**ɿ_b/ ‘to speak’; and /**bæ**ɿ/ ‘to run’. The nouns used were kinship terms and animal names. Table 7.39 presents the results. The LM and LH patterns on monosyllables always yield the same output; they are pooled together in the table.

When the subject-plus-verb combination ends in a H or L tone, the PERFECTIVE suffix carries L tone. When it ends in a MH tone, the suffix receives the H part of the contour. When it ends in a M tone, the tone of the suffix cannot be predicted; in those cases, it is indicated in the table, preceded by a ‘+’ sign.

The recording SubjectVerb contains all of the combinations in Table 7.39.

About one fourth of the tone patterns for subject-plus-verb structure differ from the corresponding object-plus-verb combination. Among identical combinations are those where the noun has a L# or H# tone, since these fixed-position tones lower the tones of all following syllables to L.

As with other types of combinations, such as numeral plus classifier and object plus verb, the tone patterns in Table 7.39 cannot be obtained on the basis of a set of phonological tone rules. Among the more surprising patterns is LH plus LM, as in /**bo**ɿ_aɿ **ɰu**ɿ_a **ze**ɿ/ ‘the boar drank’. The noun has a LH tone, after which one would expect to observe neutralization of all tonal contrasts on the verb. The five other combinations do indeed yield L.H.L, but that with a LM-tone verb yields L.M.MH. This pattern is conspicuously unrelated to the phonological tendencies observed in the language.

In subject-verb combinations as elsewhere, the L.M and L.H sequences are neutralized on the surface. Notation as //L.H// is interchangeable with //L.M+L//; the former was chosen for the sake of descriptive simplicity: it only requires two tone symbols, and it corresponds to one of the tones attested on disyllabic nouns. (The argument for using //L.H// rather than //L.M.L// as a label for this category of disyllabic nouns was set out in 3.3.5.)

7.10.2 How the suffix acquires its tone after a M-tone verb

A challenge raised by the data in Table 7.39 concerns the analysis of how the suffix /-zeɿ/ acquires its L, M or H tone after a M-tone verb. Three different types of sequences are observed: ending in M+L, as in /**la**ɿ **se**ɿ **ze**ɿ/ ‘the tiger walked’ (input: M and H); ending in M+M, as in /**la**ɿ **ʂu**ɿ **ze**ɿ/ ‘the tiger died’ (input: M and M); and ending in M+H, in one single case: the combination of a H\$-tone subject and a #H-tone verb, as in /**hwɣ**ɿ_a **mi**ɿ **tsʰo**ɿ **ze**ɿ/ ‘the she-cat jumped’.

Table 7.39: The tone patterns of subject-plus-verb combinations, in surface-phonological transcription.

		tone of verb				
tone of noun	H	M _a	M _b	L _a	L _b	MH
LM, LH	LH	L.M+M	L.M+M	L.H	L.H	L.MH
M	M.M+L	M.M+M	M.M+M	M.L	M.L	M.MH
L	M.M+L	L.L	M.M+M	L.L	L.L / M.L	L.L
H	M.M+L	M.M+L	M.M+L	M.MH	M.MH	M.L
MH	M.H	M.H	M.H	M.MH	M.MH	M.H
M	M.M.M+L	M.M.M+M	M.M.M+M	M.M.L	M.M.L	M.M.MH
#H	M.M.M+L	M.M.M+L	M.M.M+L	M.M.MH	M.M.MH	M.M.L
MH#	M.M.MH	M.M.MH	M.M.MH	M.M.MH	M.M.MH	M.M.H
H\$	M.M.M+L	M.M.M+L	M.M.M+L / M.M.M+H	M.M.MH	M.M.MH	M.H.L
L	L.L.L	L.L.L	L.L.L	L.L.L	L.L.L	L.L.H
L#	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L	M.L.L
LM+MH#	L.M.M+L	L.M.M+L	L.M.M+L	L.M.MH	L.M.MH	L.M.H
LM+#H	L.M.M+L	L.M.M+M	L.M.M+M	L.M.L	L.M.MH	L.M.MH
LM	L.M.M+L	L.M.M+M	L.M.M+M	L.M.L	L.M.L	L.M.MH
LH	L.H.L	L.H.L	L.H.L	L.H.L	L.H.L	L.H.L
H#	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L	M.H.L

This issue will be addressed from a dynamic point of view, proposing that the pattern ending in M+H is an innovation.

Among the three cases found in subject-verb constructions (M tone, H tone and L tone), that in which the suffix carries M tone is the simplest: the suffix does not receive any tone assignment from what precedes, and surfaces with its lexical M tone. The underlying tone category for the subject+verb combination can therefore be analyzed as M in the case of M.M+M (for monosyllabic nouns) and M.M.M+M (for disyllabic nouns); and as LM in the case of L.M+M (for monosyllabic nouns) and L.M.M+M (for disyllabic nouns).

Cases where the suffix receives H tone look like typical examples of the floating H tone, #H. This tone, which does not surface in isolation but can be manifested on a following syllable, is frequently observed in Na; it is the lexical tone of the class of nouns to which ‘little brother’ belongs (realization of the noun in isolation: /gi+zuu/ ‘little brother’, realization of the noun when followed by the copula: /gi+zuu ji/ ‘... is little brother’, as explained in 3.3.1).

It was already noted above that tone H\$ shows signs of variability: it is the lexical tone for which there is the greatest number of variants in its combinations with other tones, in various morphosyntactic contexts. In subject+verb combinations, its association with a #H-tone verb allows for two possibilities, M.M.M+L and M.M.M+H. The latter tonal string, M.M.M+H, is not attested in any of the other subject-verb combinations. A hypothesis suggested by this distribution is that this variant is an innovation: it filled a slot that was empty in the surface-phonological forms.

Such structural gap-filling causes a change in the phonological system, as when an allophone has drifted far enough away from its original pronunciation for a new combination to settle in. For instance, in Narua the sound [ɣ] was originally an empty-onset filler. The /ɣo/ in /a.ɣo/ ‘house’ is reconstructed as a simple *o at the proto-Naish stage; it remains phonemically onsetless to this day in Laze ([aɭwu], phonemically /aɭu/) and in Naxi ([mi+wu], phonemically /mi+u/). The hardening of the phonetic onset of /o/ in Na (2.3.1.3) resulted in the creation of the combination [ɣo] in surface forms, at which point there remained no [o] or [wo] syllables. Later, this phonetic slot was filled by syllables with other origins (e.g. the 1st-person associative pronoun [wo+ɣ], phonemically /o+ɣ/). This resulted in the phonemicization of what was originally an empty-onset-filler: the /ɣo/ in /a.ɣo/ ‘house’ must now be analyzed as composed of two phonemes, initial /ɣo/ (now contrasting with the absence of an initial consonant) and the vowel /o/.

Returning to the variant tone pattern M.M.M+H on subject+verb+PERFECTIVE

combinations, under the hypothesis that it represents an innovation, prior to this innovation the /M.M.M+L/ pattern could be analyzed as // #H //, where the floating H tone was not manifested directly but triggered a lowering of following tones – in this instance, a lowering of the tone of the PERFECTIVE suffix. This state of affairs is reflected in the analysis in Table 7.40, which leaves out the problematic variant /M.M.M+H/ for the H\$-plus-#H combination.

Table 7.40 can be said to constitute a reconstruction of the set of tone rules that applied in subject+verb constructions before the appearance of the M.M.M+H variant. If it represents a historical reality, this reconstructed stage is likely to have shallow time depth: the amount of observed idiolectal and dialectal diversity suggests that such a change can take place within a couple of generations. At the reconstructed stage represented in Table 7.40, a tone rule must be specified, to the effect that #H tone in subject-verb combinations does not surface, but depresses following tones to L. In view of the general architecture of the Na tone system, this rule is not an ad hoc device to explain away an unaccountable observation: a rule to the same effect operates in other morphosyntactic contexts.

In the present state of the language, on the other hand, the /M.M.M+H/ variant has settled in, and its simplest phonological interpretation is as the manifestation of a floating H tone – an interpretation that conflicts with the earlier system. Interpretation of the /M.M.M+H/ pattern as underlying // #H // causes an in-depth modification in the system: as the #H slot in the (underlying) system comes to be occupied by the new, innovative form, the surface pattern ending in M+L (in full: /M.M.M+L/), which could previously be analyzed as resulting from an underlying #H, requires a new interpretation. A possible reanalysis in view of the entire system would be as #L (a floating L tone), which would thus enter the language's tone system. The surface-phonological patterns in subject-verb-PERFECTIVE combinations would then be interpreted as in Table 7.41. The #L category is highlighted, bringing out its relatively extensive presence in the table.

Devoting the whole of the present section to the discussion of one isolated tonal variant may seem disproportionate. This variant appeared highly interesting, however, insofar as it illustrates the constant tension between underlying forms and surface-phonological forms, shedding light on types of evolution taking place in level-tone systems. From the point of view of surface-phonological forms, the innovative form discussed here can be viewed in the light of a simplification: at the (hypothetical) conservative stage presented in Table 7.40, for the H\$ plus M_b combination there is a H tone in the input, and none in the output; by contrast, in the innovative form there is an output H tone reflecting the input H, creating a better fit between input and output. From the point of view of

Table 7.40: Analysis of the tones of subject-verb combinations, positing that tone #H is reflected in the lowering of the tone of the suffix, and leaving aside the M.M.M+H variant of the H\$-plus-#H combination.

		tone of verb					
tone of noun	H	M _a	M _b	L _a	L _b	MH	
LM, LH	LM	LM	LH	LH	LH	LM+MH#	
M	M	M	#H	M.L	M.L	M.MH	
L	L	M	#H	L	L	L	
H	#H	#H	#H	MH#	MH#	L#	
MH	H#	H#	H#	MH#	MH#	H#	
M	M	M	#H	#H	#H	MH#	
#H	#H	#H	#H	MH#	MH#	#H	
MH#	MH#	MH#	MH#	MH#	MH#	#H	
H\$	#H	#H	#H	MH#	MH#	H#	
L	L	L	L	L	L	L+H#	
L#	L#°	L#°	L#°	L#°	L#°	L#°	
LM+MH#	LM°+#H	LM°+#H	LM°+#H	LM+MH#	LM+MH#	LM+H\$	
LM+#H	LM°	LM°	LM°+#H	LH°	LM+MH#	LM+MH#	
LM	LM°	LM°	LM°+#H	LH°	LH°	LM+MH#	
LH	LH°	LH°	LH°	LH°	LM+MH#	LH°	
H#	H#°	H#°	H#°	H#°	H#°	H#°	

underlying forms, on the other hand, the new combination creates an analytical puzzle for linguists – and most probably for language learners too. Cases like this one allow for several analytical options and hence hold potential for diachronic change.

7.10.3 Variants resulting from a division into two tone groups

Some deviant patterns are observed in recorded data when the association of subject and verb is, as it were, incomplete: both the subject and the verb receive the tone that they would have in isolation, e.g. ‘the tiger jumped’ can be realized as /**la** | **ts^ho**-**ze**/ (tone pattern: M.M+M) instead of the regular /**la** **ts^ho**-**ze**/. This amounts to a division into two tone groups, as transcribed by the vertical bar |. These are borderline cases, however, without a true division into two tone groups: if the two parts (the subject on the one hand, the verb plus its prefixes on the other) were really treated as two tone groups, a postlexical H tone would be added to all-L groups such as the subject /**bo**/ in /**bo** | **ts^ho**-**ze**/ ‘the pig jumped’ and the verb phrase /**ts^hu**-**ze**/ in /**jo** | **ts^hu**-**ze**/ ‘the sheep arrived’.

Such variants exist for all combinations. When subject and verb are thus separated, it is possible to make a pause before the verb. The stylistic effect is to emphasize the subject. The topic of stylistic options in the division of the utterance into tone groups, which has considerable importance in Na prosody, is addressed in Chapter 8.

7.10.4 Nouns plus the existential verb /**dzo**_{L_b}/ behave tonally like subject-verb combinations

The existential verb /**dzo**_{L_b}/ patterns like other L_b-tone verbs. The association of a noun and the existential behaves tonally like the combination of a subject and a verb (shown in Table 7.39 above). The data are shown in Table 7.42.

A subtle difference between the existential verb /**dzo**_{L_b}/ and other L_b-tone verbs is that the association of other verbs with a L-tone subject noun yields L.L, with a M.L variant for some nouns only, whereas the existential verb only allows the M.L pattern (for all nouns carrying lexical L tone).

Table 7.41: Analysis of the tones of subject-verb combinations, positing floating L tones.

		tone of verb					
tone of noun	H	M _a	M _b	L _a	L _b	MH	
LM, LH	LH	LM	LM	LH	LH	LM+MH#	
M	#L	M	M	M.L	M.L	M.MH	
L	#L	L	M	L	L	L	
H	#L	#L	#L	MH#	MH#	L#	
MH	H#	H#	H#	MH#	MH#	H#	
M	#L	M	M	#L	#L	MH#	
#H	#L	#L	#L	MH#	MH#	#L	
MH#	MH#	MH#	MH#	MH#	MH#	#L	
H\$	#L	#L	#H / #L	MH#	MH#	H#	
L	L	L	L	L	L	L+H#	
L#	L#°	L#°	L#°	L#°	L#°	L#°	
LM+MH#	LM°+#H	LM°+#H	LM°+#H	LM+MH#	LM+MH#	LM+H\$	
LM+#H	LM°+#H	LM°	LM°	LH°	LM+MH#	LM+MH#	
LM	LM°+#H	LM°	LM°	LH°	LH°	LM+MH#	
LH	LH°	LH°	LH°	LH°	LM+MH#	LH°	
H#	H#°	H#°	H#°	H#°	H#°	H#°	

Table 7.42: The tone of the existential verb /dzo_b/ in association with a noun.

example	meaning	tone	with existential	tone pattern
bo _l	pig	LM	bo _l dzo _l (-ze _l)	L.H
zæ _l	leopard	LH	zæ _l dzo _l (-ze _l)	L.H
la _l	tiger	M	la _l dzo _l	L.M
jo _l	sheep	L	fi _l dzo _l	M.L
zɰwæ _l	horse	H	zɰwæ _l dzo _l	M.MH
tʃ ^h æ _l	deer	MH	tʃ ^h æ _l dzo _l	M.MH
ɕɰ _l mi _l	fox	M	ɕɰ _l mi _l dzo _l	M.M.L
zɰwæ _l zo _{#l}	colt	#H	zɰwæ _l zo _l dzo _l	M.M.MH
hwɰ _l li _l	cat	MH#	hwɰ _l li _l dzo _l	M.M.MH
hwɰ _l mi _l \$	she-cat	H\$	hwɰ _l mi _l dzo _l	M.M.MH
k ^h v _l mi _l	dog	L	k ^h v _l mi _l dzo _l	L.L.L
da _l ji _l	mule	L#	da _l ji _l dzo _l	M.L.L
õ _l dv _l	wolf	LM+MH#	õ _l dv _l dzo _l	L.M.MH
na _l hi _{#l}	Naxi	LM+#H	na _l hi _l dzo _l	L.M.MH
bo _l mi _l	sow	LM	bo _l mi _l dzo _l	L.M.L
bo _l fa _l	boar	LH	bo _l fa _l dzo _l	L.H.L
hwæ _l tsu _l	rat	H#	hwæ _l tsu _l dzo _l	M.H.L

8 Tone assignment rules and the division of the utterance into tone groups

The present chapter is devoted to a recapitulation of (i) the rules of tone assignment, whereby surface-phonological tones can be derived from the underlying tones, and (ii) the principles underlying the division of the utterance into tone groups, a key unit for tonal processes.

The unit within which tonal processes apply is referred to here as a *tone group*. Tonal computation takes place independently for successive tone groups. Tone groups are indicated by means of the International Phonetic Alphabet symbol [|]. Successive tone groups are entirely independent from the point of view of their phonological tones: tones never spread or otherwise influence one another across tone-group boundaries.

In a model of prosodic hierarchy such as the universal model proposed by Selkirk (1986) and Nespor & Vogel (1986), made up of Utterance Phrase → Intonational Phrase → Phonological Phrase → Phonological Word → Foot → Syllable → Mora, tone groups may be considered as constituting one *phonological phrase* each. The term ‘tone group’ is nonetheless used here in preference to ‘Phonological Phrase’, for several reasons. One is that the defining characteristic of this phonological unit is that it serves as the domain of tonal processes. Another is that special care needs to be exercised when attempting cross-language identification of prosodic domains: ‘Phonological Phrase’ carries precise expectations which do not clearly fit the situation observed in Na, where two levels are plausible candidates for identification with the level of the ‘Phonological Phrase’: the tone group, and the tonal phrase, about which more below.

In Na, the tone group is the highest relevant unit for tonal computation, and the syllable is the smallest unit: the tone-bearing unit at the surface-phonological level. In-between these two levels, one may propose to distinguish additional levels, such as:

- the lexical word, to which tone categories are lexically associated

8 *Tone assignment rules and the division of the utterance into tone groups*

- the tonal word: a combination of lexical words, such as noun plus verb in S+V or O+V combinations, and noun plus noun in compounds
- the tonal phrase: a tonal word plus any added clitics and affixes

The only morphophonological processes observed in Na are tonal. Na does not have segmental rules such as the lenition of word-medial consonants observed in other languages of the area, e.g. Qiang (LaPolla & Huang 2003: 31–32) and Shixing (Chirkova 2009: 12–13), which provide evidence for the phonological word as a prosodic domain. This is a reason for favouring the labels ‘tonal word’ and ‘tonal phrase’ over ‘phonological word’ and ‘phonological phrase’.

Another possibility would be to use “prosodic stem” instead of ‘tonal word’, and “prosodic word” instead of ‘tonal phrase’. This would clear the way for use of “phonological phrase” instead of ‘tone group’. An issue here is that the ‘tonal word’ as characterized here tends to include more materials than the “prosodic stem”, which “usually coincides with the morphological stem” (Van de Velde 2008a: 17; see also Downing & Kadenge 2015). It is hoped that the description proposed in this volume is explicit enough to be fully intelligible and translatable, as it were, into various frameworks for prosodic description.

From a phonetic point of view, successive tone groups are linked through a variety of phonetic factors, such as declination and tonal coarticulation. The fundamental frequency value at the beginning of a tone group (say, for a group-initial Mid-tone) is influenced to some extent by the fundamental frequency value reached at the end of the preceding tone group. But these intonational phenomena do not interact with the (phonological) tonal string of the utterance, and need to be distinguished from the processes whereby the surface-phonological string of a tone group obtains. Intonation is discussed in Chapter 9.

The Yongning Na tone system comprises a host of rules that are specific to certain morphosyntactic contexts, as set out in the preceding chapters. This large set of rules constitutes the core of the tonal morphology of Yongning Na, and represents the bulk of what language learners must acquire to master the tone system of Na. Different rules apply in the association of a verb with a subject or an object, the association of two nouns into a compound, that of a numeral and classifier, or that of a word and its affixes, for instance. Several of these rules may come into play to determine the surface pattern of a tone group, as in (1):

- (1) dzur | dʉr-q^hv-t^hv-t^hi-k^hur
 dzur dʉr-q^hv-t^hv# t^hi- k^hur
 water one-CLF:hornful DUR to_put
 ‘[People who travel all day] put a horn of water [in their bag, so as to have

something to drink]’ (Tiger2.51)

In example (1), the noun ‘water’ constitutes a tone group on its own. The second tone group contains five syllables: /**ɗ**u-**ɓ**^hv-**t**^hv-**t**^hi-**k**^hu.]. First, the tone of the numeral-plus-classifier phrase is determined, following the table-lookup rules set out in Chapter 5. This yields /**ɗ**u-**ɓ**^hv-**t**^hv-#]/ ‘one hornful’ (ox horns used to serve as containers for water). Association of this object with the prefixed verb /**t**^hi-**k**^hu.]/ ‘to put (into)’ yields the final, M.M.M.L.L pattern, again on the basis of table lookup: see Chapter 7. Thus, the tone group does not consist simply of one main building-block, assembled with the rest of the group on the basis of general phonological rules: the tone assignment process refers to its internal morphosyntactic structure.

The division of the utterance into tone groups is a central part of Na prosody; several options are generally open, and the choice among them has important implications in terms of the utterance’s information structure.

8.1 A summary of tone-to-syllable association rules

This paragraph summarizes the tone-to-syllable association rules of Yongning Na.

The present description is based on the notion of derivation, from an underlying level to a surface-phonological level. For instance, the LM and LH lexical tone categories are underlyingly distinct, but when a word is spoken in isolation, the opposition of LM and LH is neutralized at the surface-phonological level due to a contextual neutralization of the M and H levels (in contexts where they appear in tone-group-final position and are preceded by a L tone). In the few places where there is a potential for confusion between underlying phonological level and surface phonological level, double slashes will be used for transcriptions at the //underlying phonological level//, as against simple slashes for the /surface phonological level/. This is visually unattractive, but desperate tones call for desperate measures.

The tone-to-syllable association rules yield the surface-phonological tones of a given tone group, on the basis of its underlying tones.

8.1.1 A list of tone rules

The tone association rules for each of the tone categories were set out in the course of the discussion, e.g. describing the tone-to-syllables association for the various types of High tones: H#, #H and H\$. The same rules hold for the

tones of nouns and verbs and for the tones of more complex entities such as compound nouns or numeral-plus-classifier phrases: these receive an underlying tone through the rules presented in table form in the previous chapters. To venture a label for this level in the prosodic hierarchy, it could be referred to as the tonal phrase, as distinct from the level of the lexical word. Another possibility, inspired by proposals by Downing & Kadenge (2015), would be to refer to it as a “prosodic word”, itself defined as a unit of higher level than the “prosodic stem”.

Unless otherwise specified, the tone pattern associates to the tonal phrase syllable by syllable (‘left-to-right’), one tone level after another. When there are fewer syllables than tone levels, two levels associate to the last syllable.

Thus, L tone and M tone associate to the first syllable of the tonal phrase; for LM tone, the first syllable receives L, and the second receives M; for LH, the first syllable likewise receives L, and the second receives H. These four tonal categories (L, M, LM and LH) are the simplest in terms of tone-to-syllable association. The other tone categories (#H, MH#, H\$, L#, LM+MH#, LM+#H, and H#) all have a specific syllabic anchoring, reflected by the special symbols used in the present transcription. The pound symbol # indicates anchoring relative to the last syllable of the tonal phrase. The tone transcribed as H\$ is most complex and warrants separate description.

In the case of the mixed tone categories LM+MH# and LM+#H, their first part (LM) attaches to syllables following the usual rules (the same as for a simple LM tone), and their second part (MH# or #H, respectively) attaches as indicated by the added diacritic. Thus, for tone LM+MH#, the first syllable receives L, the second receives M, and the last receives a MH contour. In the special case where only two syllables are available, the MH contour associates to the second syllable, overriding its M tone. In the case of tone category LM+#H, the first syllable likewise receives a L tone and the second a M tone; the H level associates to the first syllable following the tonal phrase, if a suitable carrier is available. (These two tone categories never associate to a monosyllable.)

At this point in the tone-to-syllable mapping process, some syllables remain toneless. For instance, the lexical disyllable /**da.ji**l/ ‘mule’, the compound /**po.lo-ŋi.pi**l/ ‘ram’s ear’, the numeral-plus-classifier /**gy-ŋu**l/ ‘nine times’, and the object-plus-verb combination /**ɖy.mi zi**l/ ‘to grab a fox’, all of which have tone L#, are only specified for tone on their last syllable. Tonal nuclei carrying L tone are only specified for tone on their first syllable, e.g. /**v**l**dze**/ ‘bird’, the compound /**k^hy**l**mi-hṽ**/ ‘dog’s hair’, the numeral-plus-classifier /**so**l**dze**/ ‘three pairs’, and the object-plus-verb combination /**li**l **tɕ^hi**/ ‘to sell tea’. These toneless syllables

receive tone through the assignment rules set out below.

First, L tone spreads, and toneless syllables receive M tone by default.

Rule 1: L tone spreads progressively ('left-to-right') onto syllables that are unspecified for tone.

Rule 2: Syllables that remain unspecified for tone after the application of Rule 1 receive M tone.

The phrasing of Rule 2 makes it explicit that these rules need to be ordered: if Rule 2 applied before Rule 1, there would be no tonally unspecified syllables left for L tone to spread over.

This is the stage where the syllables that remained unspecified for tone receive a tonal specification. This yields: /**da.ji**/ > /**da**↓**ji**/ 'mule', /**po.lo-ti.pi**/ > /**po**↓**lo**↓**ti**↓**pi**/ 'ram's ear', /**gv.-šuu**/ > /**gv**↓**šuu**/ 'nine times', and /**dx.mi zi**/ > /**dx**↓**mi**↓**zi**/ 'to grab a fox', through application of Rule 2; and /**v**↓**dze**/ > /**v**↓**dze**/ 'bird', /**k^hv**↓**mi**↓**h^hv**/ > /**k^hv**↓**mi**↓**h^hv**/ 'dog's hair', /**so**↓**dze**/ > /**so**↓**dze**/ 'three pairs', and /**li**↓**tɕ^hi**/ > /**li**↓**tɕ^hi**/ 'to sell tea', through application of Rule 1.

The rules that apply next refer to the boundaries of the tone group: tonal oppositions are neutralized in certain positions within the tone group (Rules 3-6), and a repair rule adds a H tone on the last syllable of the tone group if it only contains L tones.

Rule 3: In tone-group-initial position, H and M are neutralized to M.

Rule 4: A syllable following a H-tone syllable receives L tone.

Rule 5: All syllables following a HL or ML sequence receive L tone.

Rule 6: In tone-group-final position, H and M are neutralized to H if they follow a L tone.

Rule 6 entails that there is no opposition between H and M on a tone-group-final syllable when the tone(s) that precede are L. It also applies to contours: LH and LM contours are neutralized to LH in tone-group-final position. Thus, a tone-group-final syllable following a L-tone syllable can only have one of the following tones at the surface-phonological level: L, H, LH, or MH.

A phonological reason for transcribing the product of the neutralization of H and M in this context as H (rather than M) is that it appears more appropriate to transcribe a two-term opposition by means of the two extreme values of the tone

scale (L and H). A drawback is that, in transcriptions, the same word will appear with L.M tones in certain positions, and with L.H in others: for instance the word //moJkv-// in Mushrooms.149: /| moJkv- t^hv-|kvJ-zeJ. | moJkv! |/. The alternative here would be to transcribe as /| moJkv- t^hv-|kvJ-zeJ. | moJkv! |/ (with final M), leaving it to the reader to apply Rule 6 and thus figure out that the final M tone here is no different, at the surface-phonological level, from the H tone in /gvJ-4iJmiJ-qoJ |/. While both options can cause some initial perplexity, it appeared advisable to adhere to the principle of providing a surface transcription of tone, with no more tonal oppositions than are really present at the phonological surface.

Rule 7: If a tone group only contains L tones, a post-lexical H tone is added to its last syllable.

The addition of a post-lexical H tone (through Rule 7) to a syllable that already carried a L tone results in a LH contour on that syllable. It is through application of this rule that L-tone expressions receive a final rising contour when spoken in isolation: using the same examples as above, /vJdzeJ/ > /vJdzeA/ ‘bird’; /k^hvJmi-hvJ/ > /k^hvJmiJ-hvA/ ‘dog’s hair’; /soJ-dzeJ/ > /soJ-dzeA/ ‘three pairs’; and /liJ tɕ^hiJ/ > /liJ tɕ^hiA/ ‘to sell tea’.

The added tone was originally analyzed as M (Michaud 2008b) on the analogy of the contour of the ‘pig’ tone category, LM, and under the assumption that the language had no LH contours. This may seem to be a non-issue, since LM and LH are neutralized: in a practical orthography, for instance, choosing one or the other consistently would seem to be equally acceptable. However, the M tone in Na is not phonologically active: it does not spread over other tones, or reassociate to other syllables. The H tone, on the other hand, is active and, therefore, appears more likely than M to be involved in a tone rule such as that which affects all-L tone groups.

In two-tone systems, addition of a final H tone in domains having /L/ tone is common. It is attested in languages as genetically diverse as Tibetan (Sun 1997: 499), Japanese (Haraguchi 1999: 19), the Bantu languages Matengo and Kimatuumbi (Odden 2005: 415), and Shixing (Chirkova & Michaud 2009). In a three-tone system, describing the added tone as M is not unlikely to cause some confusion in cross-language comparisons and typological generalizations: counting Yongning Na among languages with addition of postlexical M rather than H would be slightly misleading, since H and M are neutralized in this context (there is no contrast between L..L.LH and L..L.LM) and the tone could just as well be described as H.

These are the reasons why the postlexical tone of Yongning Na is analyzed here as a H tone.

8.1.2 Some comments about the tone rules

8.1.2.1 About the ordering of rules

As mentioned above, the rules need to be ordered. If Rule 7, which adds a H tone to all-L sequences, applied before Rule 2, which assigns M tone to toneless syllables, a sequence such as ‘... has not arrived’, made up of the negation, /mɣʔ-/ , and the verb /ts^hu/ ‘to arrive’, would have only L tones (/mɣʔ-ts^hu/) when Rule 7 applied, and would receive a final H tone (/... ts^hu/). Its realization as /mɣʔ-ts^hu/ illustrates the fact that Rule 7 only applies after all the other rules. Rule 2 also applies before Rule 5, as shown by the sequence /mɣʔ-ts^hu-su/ ‘... has not arrived yet’, made up of the negation, /mɣʔ-/ , the verb /ts^hu/ ‘to arrive’, and /su/ ‘yet; first’. The levelling-down of the M tone of /su/ is a result of the application of Rule 5, “All syllables following a HL or ML sequence receive L tone”; at the point where it applies, the negation must therefore be supposed to bear a M tone.

Rules 3 (“H and M are neutralized to M in tone-group-initial position”) and 4 (“A syllable following a H-tone syllable receives L tone”) likewise need to be ordered. If Rule 4 applied first, an underlying sequence such as //dzu^l-bi// ‘will eat’ would have its second syllable lowered to L, yielding /dzu^l-bi/, and finally /dzu^l-bi/, by application of Rule 3. The observed surface-phonological pattern is actually /dzu^l-bi/, with M tone on the second syllable, not L tone.

8.1.2.2 A discussion of alternative formulations

In the case of H tone, it may seem more simple to collapse Rules 4 and 5 into one single rule to the effect that “H tone can only be followed by L tones”: by the application of that rule, all syllables following a H-tone syllable would receive L tone. But a further rule would then have to be proposed specifically for the ML sequence: “All syllables following a ML sequence receive L tone”. The choice to adopt the present formulation for Rule 4 (“All syllables following a HL or ML sequence receive L tone”) is based on the intuition that the same mechanism is at play in both cases: H.L and M.L are both stepping-down sequences, from a higher tone level to a lower one; the generalization is that stepping-down sequences can only be followed by L tones.

This could also be phrased as a static constraint: “There can be no trough within

a tone group”, or “A tone cannot be surrounded by higher tones within a tone group”. This would rule out sequences such as *MLH, *MLM or *MHLM. However, such a static constraint would not provide any information on how the offending sequences are avoided or repaired in Na, whereas Rule 5 is fully explicit on this point: the tones which would result in such sequences are all lowered to L.

Rule 4 precludes ... H.H ... sequences, so the H tone can be said to be culminative. In this light, the H tone could also be described as a HL contour. I once attempted an account of Yongning Na tone in which the underlying phonological entities are steps up and down the three-level tonal score, rather than tones: up one level, from L to M or M to H; or down from H or M to L. Proposals in this vein have been made for Tokyo Japanese, where the fall from H to L can be considered as a unitary tonal accent, rather than a succession of two distinct phonological entities. Under a tonal account, the tonal accents of Japanese dialects have to be represented as a sequence of two tones, rather as one single entity; this is a slight drawback of representations in terms of sequences of level tones. A “dynamic treatment of tone” was also attempted for Igbo: such is the title of Mary Clark’s dissertation (Clark 1976). In the case of Yongning Na, if HL were reinterpreted as a ‘high fall’, ML could be called a ‘low fall’; LM would be a ‘low rise’, and MH a ‘high rise’. However, the existence of contours on a single syllable argues in favour of a tonal analysis of the Yongning Na system; the dynamic treatment, which was abandoned for Igbo, does not appear promising for Yongning Na either. (This is of course not to say that it may not prove useful for other languages.)

Rule 4 above also precludes ... H.M ... sequences; this can be described as a neutralization (to H.L) of the contrast between H.M and H.L, or simply as an absence of H.M sequences within a tone group.

8.1.2.3 Implications for the tones of sentence particles

In Yongning Na as in numerous East Asian languages, sentence-final particles play a major role in conveying evidentiality and speaker attitude. Their position at the end of a sentence, and hence of a tone group, exerts a special influence on their tone patterns: the tone of the sentence particle is often determined by the tones that precede. If the tone group contains a H tone, or a M.L sequence, all following tones are lowered to L, through Rules 4 and 5. For instance, the tone of final particle //mæ˥// (expressing obviousness) is lowered to L in /tʂe˥-tʂʰu˥ | le˥-ræ˥-ni˥-mæ˥/ ‘the earth is fertilized’ (Agriculture.54) because all tones following the M.L sequence /le˥-ræ˥/ (ACCOMP+ ‘rich’) are lowered to L by a phono-

logical rule. This appears to be the majority case. The final particle may also receive a H tone projected by a contour tone lexically attached to the preceding syllable, as in /zæ]su/ | dzo] | tʃ^hu+ni/ | t^hi+-mɣ+-ky+-mæ/ (Sister3.74) ‘This is how we used to wear felt’, where the high tone on the affirmative /mæ/ results from reassociation of the H part of the MH contour of the ABILITIVE /ky/.

It is only after transcribing ten texts, containing more than 150 examples of //mæ+//, that this particle was finally observed in a context where the preceding syllables do not impose a tone on it: /ho+mi+-tʃ^hæ+ɣu+ t^hu/ | le+-q^hwɣ+-ze+-mæ+ | / ‘[nowadays, the diseased person] drinks medicines for the stomach, and [they] are healed, aren’t they!’ (Healing.66). The phrase /le+-q^hwɣ+-ze+/ (ACCOMP-to_heal-PFV) does not contain any contour or floating tone that would project itself on a following syllable, and it does not contain a H tone, or a M.L sequence, which would impose a L tone on following syllables. The tone carried by the sentence particle //mæ+// in this context is M; this makes it clear that it does not carry a L, H or MH tone, and is to be interpreted as carrying M tone.

Likewise, the tone of the reported-speech particle //tsu/ is affected by the tones that precede it within the tone group in a vast majority of cases. In a set of ten narratives, its realization with MH tone on the surface is observed in only eight cases out of more than three hundred. As for the affirmative final particle //mv+//, in almost all examples it follows the reported-speech particle //tsu+//, which determines its surface-phonological tone.

To determine the lexical tone of sentence particles, elicitation proved a valuable complement to observations from recorded texts. Here is an example: that of the final particle //mo]/, conveying invitation. This particle cannot appear right after the verb, in a /V+mo]/ construction. Invitation is expressed as /dɥ+-V-ɽ] mo]/: DELIMITATIVE+V+INCHOATIVE+final particle. This can be translated as: ‘Please go ahead and V a little!’ For instance: /dɥ+-dzɥ+-ɽ] mo]/ ‘Please have some/please eat some [of it]!’ Table 8.1 shows a set of elicited data.

The particle //mo]/ carries L tone in all six cases. With verbs with H, L and MH tones, this L tone carried by the particle derives phonologically from the tonal sequence that precedes. Within a tone group, a syllable following a H tone can only have L tone (as is the case after H and MH tones); likewise, a syllable following a M.L sequence can only carry L tone. In the case of M tones, however, the preceding tone sequence (M.M.M) does not impose such a phonological constraint: it allows any of L, M, H or MH on the final syllable. The L tone observed on the surface is therefore to be attributed to the lexical specification of the particle, hence its analysis as carrying a lexical L tone.

Table 8.1: The tone patterns of the /**ɖuɪ-V-ɹ̩ mo**/ construction.

tone	example	gloss	/ ɖuɪ-V-ɹ̩ mo /
H	dzuɪ	to eat	ɖuɪ-dzuɪ-ɹ̩ mo
Ma	hwæɪa	to buy	ɖuɪ-hwæɪ-ɹ̩ mo
Mb	tɕ^hiɪb	to sell	ɖuɪ-tɕ^hiɪ-ɹ̩ mo
La	bæɪa	to sweep	ɖuɪ-bæɪ-ɹ̩ mo
Lb	zɯɹɹɪb	to speak	ɖuɪ-zɯɹɹɪ-ɹ̩ mo
MH	laɪ	to strike	ɖuɪ-laɪ-ɹ̩ mo

8.1.3 A simple application: deriving the surface tone pattern of words spoken in isolation

A simple application of the tone rules consists in deriving the tones of words spoken in isolation from their underlying tone category.

The disyllable /**k^hɿ.mi**/ ‘dog’ has underlying L tone. By the rule governing tone-to-syllable mapping, this L tone associates to the first syllable, yielding /**k^hɿɹ̩mi**/. This tone then spreads onto the second syllable by application of Rule 1: “L tone spreads progressively onto syllables that are unspecified for tone”. This yields /**k^hɿɹ̩mi**/; note that this is how disyllables with L tone are transcribed in the present system, which is slightly redundant in this respect, using two tone marks. Finally, the post-lexical rule adding a final H to all-L tone groups (Rule 7) applies, yielding the surface-phonological tone sequence /**k^hɿɹ̩mi**/.

8.2 The division of utterances into tone groups

Tone groups can be of highly different syntactic composition. A tone group may consist of a single syllable: monosyllabic nouns and verbs spoken in isolation constitute a tone group on their own. Personal pronouns can associate with other words but often appear on their own; examples are numerous, e.g. Reward. 128 /**njɹɪ | tsoɪ-biɪ-zoɪ-ji**/ ‘I will build [a bridge]’ (Renaming.13). Tone groups are typically longer, however: e.g. compound noun and numeral-plus-classifier phrase, as in (2); noun phrase and affixed verb, as in (3); or numeral-plus-classifier phrase and affixed verb, as in (4).

- (2) ə́mɪ́-ɪmvɹ̩ ɲɪ́-ɪkvɹ̩
 ə́mɪ́ ɪmvɹ̩ ɲɪ́-ɪkvɹ̩
 mother daughter two-CLF:persons
 ‘the mother and the daughter, the two of them’ (Lake4.93)
- (3) dzɯ́-ɪdi ɪmɻ́-ɪdzoɹ̩
 dzɯ́ -ɪdi ɪmɻ́ dzoɹ̩
 to_eat NMLZ NEG EXIST
 ‘there was no food’ (Seeds2.69)
- (4) dzoɹ̩ | dɻ́-ɪpɻ́ tsoɹ̩ əɹ̩-ɪbiɹ̩?
 dzoɹ̩ dɻ́-ɪpɻ́ tsoɹ̩_a əɹ̩ -ɪbiɹ̩
 bridge one-CLF to_build INTERROGATIVE IMM_FUT
 ‘will (you) build a bridge?’ (Renaming.10)

Although there exist some general tendencies in the division of utterances into tone groups, and a few hard-and-fast rules, there are often several possibilities open to the speaker; different divisions into tone groups have different implications in terms of prominence of the various components. Prominence (conveying information structure) and phrasing (reflecting syntactic structure) interact in the division of an utterance into tone groups. There is therefore no one-to-one correspondence between syntactic structure and the division into tone groups.

The present description starts with the simplest case: that of elements which always constitute a tone group on their own.

8.2.1 Some elements always constitute a tone group on their own

Some words always constitute a tone group on their own. These include the gap-filler /t^hi/ ‘(and) so, (and) then’; /wɻ/ ‘again’, which in quite a few cases does not have its full lexical meaning and is close to a simple gap-filler; the intensifier /dɻwæ/ ‘very’; and the contrastive topic marker /-noɹ̩/. (Three of these happen to appear in succession in Housebuilding.144: / | t^hi | -noɹ̩ | wɻ | /.)

One could speculate that /t^hi/ ‘(and) so, (and) then’ and /wɻ/ ‘again’ are favoured as gap-fillers because of their properties with respect to tone-group divisions. The gap-filler /t^hi/ appears in most sentences in the narratives told by consultant F4: more than 1,500 occurrences among 20 narratives. The gap-filler /wɻ/ appears more than 120 times among the same 20 narratives. These two items may owe part of their conspicuous success as gap-fillers to the phonological fact that they demarcate tone groups clearly. Since they always constitute

8 Tone assignment rules and the division of the utterance into tone groups

Table 8.2: The tone patterns of phrases made up of the adverb ‘continuously, ceaselessly’ followed by a verb.

tone	example	gloss	result	tone pattern
H	dzu ↓	to eat	ɖu ↓- njɣ ↓ dzu ↓	M.M.M
M _a	hwæ ↓ la	to buy	ɖu ↓- njɣ ↓ hwæ ↓	M.M.L
M _b	tɕ ^{hi} ↓ lb	to sell	ɖu ↓- njɣ ↓ tɕ ^{hi} ↓	M.M.M
L _a	dze ↓ la	to cut	ɖu ↓- njɣ ↓ dze ↓	M.M.MH
L _b	zɣwɣ ↓ lb	to speak	ɖu ↓- njɣ ↓ zɣwɣ ↓	M.M.MH
MH	la ↑	to strike	ɖu ↓- njɣ ↓ la ↑	M.M.MH

a tone group on their own, they create a pause in the computation of tone sequences.

But one may just as well hypothesize the inverse causal link: that these words tended to be set off from the rest of the utterance due to their function as gap-fillers, eventually resulting in the present situation where they systematically constitute tone groups on their own. An argument in favour of this hypothesis is provided by items that are in the process of entering the set of “tonal standalones”. The adverb ‘continuously, ceaselessly’ is a case in point. It was elicited in association with verbs exemplifying the six tone categories of verbs, yielding the results shown in Table 8.2.

But in narratives, the adverb is always followed by a tone-group boundary, as in (5), where //**ɖu**↓ **njɣ**↓// ‘continuously, ceaselessly’ and //**zɣwɣ**↓_b// ‘to say’ are not integrated in the same tone group. (There are more than thirty examples in the first twenty texts recorded.)

- (5) hī↓mo↓ = ɣæ↓-ŋu↓ | ɖu↓-njɣ↓ | zɣwɣ↓-kv↓ | mæ↓
 hī↓mo↓ = ɣæ↓-ŋu↓ ɖu↓-njɣ↓ zɣwɣ↓_a kv↓ mæ↓
 elders=PL-A constantly to_say ABILITIVE AFFIRM
 ‘The elders would always say ...’ (Dog2.32)

Using the context of this narrative, it was attempted to combine the adverb with the verb, but the consultant judged this wrong, even when truncating the sentence after the main verb: /***ɖu**↓ **njɣ**↓ **zɣwɣ**↓/. This judgment highlights the fact that the data in Table 8.2 were elicited at a push: in the present state of the language, they verge on the incorrect, and the adverb is well advanced on its way towards the status of “tonal standalone”. This example illustrates how easily different data collection methods can lead to different conclusions; the combination

of different types of data, collected with suitable precautions, appears indispensable for cumulative progress in research.¹

A discourse factor that arguably plays a leading role in the evolution of the adverb //**ɗuɗ njɔ**// ‘continuously, ceaselessly’ is the emphasis that is associated with ‘ceaselessly/constantly’ (from a semantic-pragmatic point of view). The word sometimes carries emphatic stress in narratives. The scenario would thus be one of generalization (lexicalization) of what originally constitutes intonational emphasis.

8.2.2 A tone group boundary is always found after topicalized phrases

A tone group boundary is always found after topicalized phrases. In detail, the situation is as follows:

- the topic marker /-**dzo**ɔ/ always terminates a tone group. No exception has been found to date, among some 2,000 examples from narratives.
- the topic marker /-**tʂ**^h**u**/ likewise terminates a tone group, except in the many cases where it is followed by the topic marker /-**dzo**ɔ/.
- the contrastive topic marker /-**no**ɔ/ always constitutes a tone group on its own, as mentioned above and illustrated by (6).

- (6) hwɔɔ-liɔ | -noɔ | zɔɔ-k^hvɔ-ŋwɔɔ-k^hvɔ. |
 hwɔɔ-liɔ -noɔ zɔɔ-k^hvɔ ŋwɔɔ-k^hvɔ
 cat CNTR.TOP four.years five.years

‘As for the cat, [it has a lifespan of] four, five years.’ (Dog2.84; context: the previous discussion hinges on the dog’s lifespan, and the speaker now moves on to the topic of cats.)

8.2.3 Options left to the speaker in the division into tone groups

Apart from the cases presented above, where the speaker has no choice as to the division into tone groups, the speaker generally has several options. They may choose to integrate large chunks of speech into a single tone group; or they may

¹ See the methodological papers on *How to Study a Tone Language* grouped into a set of articles edited by Steven Bird and Larry Hyman, in volume 8 of the journal *Language Documentation and Conservation* (2014). A case of diverging notations in a level-tone language is analyzed by Roux (2003), leading to similar recommendations for precautions in the investigation method. This author’s views on this topic are set out in Niebuhr & Michaud (2015).

divide the utterance into a number of tone groups, with the stylistic effect of emphasizing these individual components one after the other. This parallels observations about the intonation of Russian and German by Karcevskij (1931: 204): “Within certain limits, it is possible to change the position of the rhythmic breaks that separate a sentence into parts”.² An interesting characteristic of Yongning Na is that this division exerts a direct influence on tonal morphology, since tonal processes never apply across tone-group junctures.

For instance, /dzɯɹ-t-di/ ‘things to eat; food’, from /dzɯɹ/ ‘to eat’ and the nominalizer /-di/, can combine with /mɣɹ-t-dzo/ ‘there isn’t’ to mean ‘there isn’t any food, there is nothing to eat’; the noun and the negated verb can either be integrated into a single tone group, as /dzɯɹ-t-di mɣɹ-t-dzo/, or separated, as /dzɯɹ-t-di | mɣɹ-t-dzo/. The latter option is illustrated by (7):

- (7) dzɯɹ-t-di | mɣɹ-t-dzo, | tʰuɹ-d-i | mɣɹ-t-dzo
 dzɯɹ -di mɣɹ dzo tʰuɹ_b -di mɣɹ dzo
 to_eat NMLZ NEG EXIST to_drink NMLZ NEG EXIST
 ‘[Before mankind had learnt to grow crops], there was nothing to eat and nothing to drink!’ (Seeds2.67)

The noun phrase /dzɯɹ-t-di/ ‘food’ and the negated existential verb /mɣɹ-t-dzo/ ‘there isn’t’ can be separated into two tone groups, as in (7). This has the effect of emphasizing the two noun phrases, /dzɯɹ-t-di/ ‘food; things to eat’ and /tʰuɹ-d-i/ ‘drink; beverage’. This could be analyzed as a case of focalization, and transcribed as /dzɯɹ-t-di F | mɣɹ-t-dzo, | tʰuɹ-d-i F | mɣɹ-t-dzo/, where the symbol ‘F’ indicates intonational focalization. The presence of a tone-group boundary before the negation could then be interpreted as a consequence of focalization.

The following sentence in the story repeats the statement ‘There was no food’, continuing the same strategy of bringing out the noun phrase ‘food’, this time with the topic marker /-dzo/: /dzɯɹ-t-di | -dzo, | mɣɹ-t-dzo-tɣi-tsu | -mɣɹ/ ‘As for food, it’s said that there was none!’ (Seeds2.68). Then the narrator recapitulates, and moves on to (8):

- (8) dzɯɹ-t-di mɣɹ-t-dzo | -dzo, | tʰi ...
 dzɯɹ -di mɣɹ dzo -dzo tʰi
 to_eat NMLZ NEG EXIST TOP so/then
 ‘As there was nothing to eat, ...’ (the narrative moves on to: ‘there were some exceptional, smart people, who stood up and did something about

² *Original text*: Dans certaines limites, nous pouvons déplacer les anti-cadences séparant les membres de la phrase.

it') (Seeds2.69)

At this juncture, 'there was no food' is integrated into a single tone group, and followed by the topic marker /-dzoʔ/. This provides an exemplary illustration of the integration of larger chunks of information into a single tone group as this information changes its status from new to old and backgrounded.

Long tone groups within which morphosyntactic tone rules are allowed full play, undisturbed by local intrusions of pragmatic phenomena of emphasis, yield a stylistic effect of carefully constructed, poised, stately speech. The more tightly constructed an utterance, the fewer tone groups it contains. Conversely, in lively speech, tone-group boundaries are inserted, highlighting the word or phrase that precedes. Even function words can be emphasized in this way. Consider (9):

- (9) ʔo-ʔpɿʔ-tiʔ-kɿʔ | -tsuʔ | -mɿʔ!
 ʔo-ʔpɿʔ tiʔ kɿʔ -tsuʔ -mɿʔ
 kow-tow to_hit ABILITIVE REP AFFIRM
 'It is said that [on that occasion, the whole family] will kow-tow!' (Sister3.138)

A simpler formulation would be /ʔo-ʔpɿʔ-tiʔ-kɿʔ-tsuʔ | -mɿʔ/. The formulation in (9) emphasizes the reported-speech particle. This evidential particle is used over and over again by the consultant when telling narratives: it is used whenever the speaker only has indirect knowledge of the situation at issue. But in the context of (9), it takes on its full meaning, because the narrator never witnessed the ritual that she describes. The emphasis laid on the evidential particle in the context of this sentence is one of the manifestations of speaker F4's efforts to adhere to truthfulness and precision.

The stylistic choices made by a speaker can be appraised against a background of general tendencies, outlined below.

8.2.4 Some general tendencies in the division into tone groups

8.2.4.1 The role of the morphological complexity of constituents

The degree of internal complexity of the successive constituents of an utterance is an important parameter in determining its division into tone groups. A verb without prefixes or suffixes is usually just one syllable long, and easily associates with a preceding element – an adverb or a noun. For instance, /k^hu-ʔts^hɿʔ ʔs^he-ʔ/ 'to stretch out [one's] leg', from /k^hu-ʔts^hɿʔ/ 'leg' and /ʔs^he-ʔ/ 'to stretch out', constitutes a single tonal phrase, whose output tone is determined by the tone rules that

apply in subject+verb phrases (see §7.10). When an adverb is inserted, it can be integrated into the tone group, e.g. yielding /k^hu-tsh^hɣ-t mvltɕo-t tʂ^he-t/ ‘to stretch (one’s) leg down’ through addition of /mvltɕo-t/ ‘downward’. Often, though, the adverb marks the beginning of a new tone group: /k^hu-tsh^hɣ-t | mvltɕo-t-tʂ^he-t/ ‘to stretch [one’s] leg downward’ (two tone groups; the word ‘leg’ therefore surfaces with its lexical tone, MH).

Like directional adverbs, numeral-plus-classifier phrases often mark the beginning of a new group, e.g. /ʂv-t~ʂv-t | dɰ-t-p^hæ-t/ ‘a sheet of paper’ (from /ʂv-t~ʂv-t/ ‘paper’), but they can also be integrated into a single tone group with a preceding noun. For instance, ‘the mother and her daughter’ can be phrased as /ə-tmi-t-mv-t ni-t-kv-t/, literally ‘mother and daughter, the two’ (Tiger.11, 51, and Lake.93, 96-98, 125), from /ə-tmi-t-mv-t/ ‘mother and daughter’ and /ni-t-kv-t/, ‘2’ plus the classifier for persons. This is a special case: obviously not an instance of counting over mother-and-daughter pairs. The numeral-plus-classifier phrase does not serve the usual purpose of counting over the referent of the preceding noun: in this context, it serves an anaphoric function (paraphrase: ‘these two: the mother and the daughter’). No example was found of pairs of phrases in which the same noun plus numeral-plus-classifier combinations yield one tone group vs. two.

Demonstrative-plus-classifier phrases are commonly integrated with a preceding noun: for instance, in the first version of the Lake story, the same two characters, a mother and her daughter, are referred to in (10) as /ə-tmi-t tʂ^hu-t-v-t-la-t | mv-t tʂ^hu-t-v-t/, ‘that mother and that daughter’. (On this topic, see the discussion of classifiers in Chapter 5.)

- (10) ə-tmi-t tʂ^hu-t-v-t-la-t | mv-t tʂ^hu-t-v-t
 ə-tmi-t tʂ^hu-t-v-t -la mv-t tʂ^hu-t-v-t
 mother DEM-CLF:individual and daughter DEM-CLF
 ‘that mother and that daughter’ (Lake.52).

8.2.4.2 The role of information structure: considerations of prominence

Information structure also influences the division into tone groups, in a way which is often difficult to disentangle from the influence of morphological complexity. Consider (11):

- (11) k^hv-tmi-t-ʂe-t, | dzu-t-mɣ-t-dɔ-t-pi-t-zo-t!
 k^hv-tmi-t-ʂe-t dzu-t mɣ-t dɔ-t pi-t zo
 dog-meat to_eat NEG ought_to to_say ADVB
 ‘It’s said that one mustn’t eat dog meat! / It’s said that dog meat is some-

thing one must not eat!’ (Dog2.37)

In (11), the noun phrase ‘dog meat’ is set into relief by constituting a tone group on its own. Despite the absence of a morphemic indication that it is topicalized – such as use of a topic marker /-tʂ^hu^l/ or /-dzo^l/ – it clearly has the status of topic. In this context, tonal integration with a following verb would not be stylistically appropriate.

Likewise, in (12), the adverbial ‘outside’, /ə^lp^ho^l/, constitutes a tone group on its own; another option would be to integrate it tonally with the following verb. (The tone rules in *spatial adverbial+verb* combinations are set out in Chapter 7.) In this context, integration into a single tone group would be stylistically acceptable; it would reflect a higher degree of linguistic elaboration. Separation into two tone groups has the effect of providing the information gradually, giving the impression that the speaker is constructing the utterance as she is saying it, rather than delivering long, carefully preplanned chunks of speech.

- (12) ə^lji^l-sɯ^lji^l-dzo^l, | k^hv^l-tʂ^hu^l-dzo^l, | dzɣ^l | ə^lp^ho^l | k^hu^l-mɣ^l-kv^l!
 ə^lji^l-sɯ^lji^l dzo^l k^hv^l -tʂ^hu^l -dzo^l dzɣ^l ə^lp^ho^l k^hu^l mɣ^l
 in_the_past TOP dog TOP TOP INTS outside to_let NEG
 kv^l
 ABILITIVE

‘In the old times, one wouldn’t usually let dogs go outside! / In the old times, dogs weren’t usually allowed to leave the house!’ (Dog2.75)

It is uncommon for a verb preceded by the accomplished /le^l-/ to interact tonally with a preceding noun phrase. In Caravans.191, for instance, ‘the uncle comes back’ is realized as /ə^lv^l | le^l-ts^hu^l/, not as /ə^lv^l le^l-ts^hu^l/, although the latter form is also acceptable. Cases where tonal interaction does take place are characterized by a strong degree of semantic givenness, as in (13):

- (13) dɯ^l-v^l le^l-ts^hu^l, | ni^l-kɣ^l le^l-ts^hu^l, | so^l-kɣ^l le^l-ts^hu^l
 dɯ^l-v^l le^l- ts^hu^l ni^l-kɣ^l so^l-kɣ^l
 one-CLF:individual ACCOMP to_arrive two-CLF three-CLF

‘There arrived one person, then two, then three’ (field notes: explanation proposed by consultant F4 during a discussion of Lake4.126)

It would not be incorrect to say /dɯ^l-v^l | le^l-ts^hu^l, | ni^l-kɣ^l | le^l-ts^hu^l, | so^l-kɣ^l | le^l-ts^hu^l/, but this would be inappropriate in a context where the emphasis is on the incrementation of the figure: one person, then two, then three. There would be no point in setting the subject apart from the verb, hence the division into three tone groups, rather than six.

When an explanation is added as an afterthought, a relatively long sequence of syllables can be integrated into a single tone group, as in (14), where the last tone group contains ten syllables.

- (14) *jɣŋɣŋ-dzoŋ*, | *əŋjiŋ-ʂuŋjiŋ*, | *hǎŋ-baŋlaŋ!* | *hǎŋ-baŋlaŋ-baŋlaŋ leŋ-poŋ-joŋ-kyŋ-mǎŋ!*
jɣŋɣŋ *dzoŋ* *əŋjiŋ-ʂuŋjiŋ* *hǎŋ-baŋlaŋ* *hǎŋ-baŋlaŋ-baŋlaŋ* *leŋ-*
 Chengdu TOP in_the_past silk silk_clothes ACCOMP
poŋ *joŋ* *kyŋ* *mǎŋ*
 to_bring to_come ABILITIVE AFFIRM
 ‘From Chengdu, in the past ... Silk!! [The people who went on caravans] would bring back silk [from their journeys to Chengdu]!’ (Caravans104-105)

In a context where the narrator is explaining which goods used to be transported by caravan, the essential information is already given in the word ‘silk’. The portion of sentence /... *leŋ-poŋ-joŋ-kyŋ-mǎŋ*/ ‘[they] would bring back’ is added as an explanation; its integration with the preceding noun, ‘silk’, into a single tone group, results in a levelling down of all of its tones to L, reflecting its status as backgrounded information.

In Elders3.11, as many as twelve syllables are bunched together: /*əŋziŋ*, | *ɕuŋmaŋ-tɕaŋtsʰoŋ piŋ-hiŋ ɕuŋ-ŋŋ dzoŋ-ŋiŋ-tsuŋ-mŋ*/ ‘[Among] women elders, it is said that there was one by the name of *ɕuŋmaŋ-tɕaŋtsʰoŋ*.’ The speaker lays considerable emphasis on the person’s name, /*ɕuŋmaŋ-tɕaŋtsʰoŋ*/; all the rest of the sentence follows as a strongly backgrounded accompaniment to this name. Phonologically, the name and all that follows are integrated into a single tone group, with the result that all the syllables from the third to the twelfth and last are lowered to L.

As a last example, in Renaming.17, the same syntactic structure, ‘you came along’, is realized as two tone groups: /*noŋ* | *leŋ-tsʰuŋ-ŋiŋ-zeŋ-mǎŋ*/, then repeated as a single tone group: /*noŋ leŋ-tsʰuŋ-ŋiŋ-zeŋ-mǎŋ*/, providing a striking illustration of how sentences tend to be integrated into broader chunk when the speaker assumes that the semantic content is already familiar to the listener.

8.2.5 Extreme cases of tonal integration: set phrases and proverbs

8.2.5.1 Tonal integration in set phrases

Set phrases constitute an extreme case of integration. For instance, there exist formulae that recapitulate which of the animals symbolizing the twelve Terres-

trial Branches have special affinities with one another. This is one of the bases for fortune-telling: the year of birth is used as a basis from which to predict whether or not an individual will be able to relate harmoniously with another, in marriage or various other important circumstances. Among the animals that succeed one another in the twelve-year cycle, there are four sets of three, indicated below in surface-phonological notation:

- /**bv**†**zɣ**† | **ji**† | **æ**†/ are grouped as /**bv**†**zɣ**†, **ji**†, | **æ**†-**so**†-**k^hv**†/ ‘the three years of the Serpent, the Ox, and the Rooster’;
- /**mv**†**gv**† | **zi**† | **hwɣ**†/ are grouped as /**mv**†**gv**† **zi**† | **hwɣ**† **so**†-**k^hv**†/ ‘the three years of the Dragon, the Ape, and the Rat’;
- /**t^ho**†**li**† | **bo**† | **jo**†/ are grouped as /**t^ho**†**li**†-**bo**† | **jo**†-**so**†**k^hv**†/ ‘the three years of the Rabbit, the Pig, and the Sheep’;
- /**la**† | **zɣwæ**† | **k^hv**†/ are grouped as /**la**†, | **zɣwæ**†, | **k^hv**† | **so**†-**k^hv**†/ ‘the three years of the Tiger, the Horse, and the Dog’.

The tone grouping is not exactly the same in all of these four phrases. In the first three cases, the first two animal names are integrated into one tone group, and the third is integrated together with the phrase ‘three years’. Each of these three set phrases only comprises two tone groups, half the number than if each animal name were said separately. In the fourth phrase, however, the three animal names do remain separate, each constituting a distinct tone group, hence yielding four tone groups in total.

8.2.5.2 Tonal integration in proverbs

Proverbs are also typical instances of tightly-knit tonal integration. An example is shown in (15).

- (15) hī†dza† | dze† t^ha†-ji† | ʃ†ko† mi† t^ha†-t^hv†
 hī† dza† dze† t^ha†- ji† ʃ†ko† mi† t^ha†-
 person poor money PROH to_borrow shinbone wound PROH
 t^hv†
 to_get

‘The poor must not borrow money; the shinbone must not receive wounds.’

The proverb’s argument is that one must beware of hitting fragile spots. The listener is presumed to know that a blow to the shin is especially painful; and

to imagine, by analogy, how hard it is for a poor person to reimburse a loan plus added interest. The sequence /ʃi˥ko˥ mi˥ tʰa˥-tʰv˥/, ‘the shinbone must not receive wounds’, is integrated into a single tone group, with the stylistic effect of presenting it as a self-evident fact (an established truth), not a statement coined on the fly by the speaker, in which case the tone pattern would have been /ʃi˥ko˥ | mi˥ | tʰa˥-tʰv˥/.

It is highly revealing that, even in the case of proverbs and set phrases, the speaker retains a latitude of choice in the division of the utterance into tone groups. The comparison of different versions of the same story by the same speaker yields a wealth of examples. For instance, the saying /la˥ do˥ ə˥da˥ ɣu˥/, | zæ˥ do˥ ə˥mi˥ ɣu˥/ ‘If you see the tiger, it means your father is going to die; if you see the panther, it means your mother is going to die’, which is at the heart of the narrative *Tiger*, is divided into two tone groups. However, a realization as four tone groups is found in four of the eight occurrences: /zæ˥ do˥, | ə˥mi˥ ɣu˥; | la˥ do˥, | ə˥da˥ ɣu˥/. An intermediate case, with a division into three tone groups, is also attested: /zæ˥ do˥ | ə˥mi˥ ɣu˥, | la˥ do˥ ə˥da˥ ɣu˥/ (*Tiger*.50). As in the examples described above, the stylistic nuance is that, the greater the number of tone groups, the more attention is drawn to the individual components of the sentence.

As a final example, let us examine the saying ‘What remains unseen by humans is nonetheless seen by the heavens!’, used as a reminder that other people’s gaze is not the touchstone of good conduct, and that one’s actions should be guided by the same rules whether seen or unseen. The most common realization of this saying is: /hi˥-tʰu˥ mɤ˥-do˥, | mv˥-tʰu˥ | do˥/, where the first part (‘What people do not see’) is integrated into a single tone group, whereas the second is divided into two. This emphatically brings out the verb /do˥/ ‘to see, to observe’, which being on its own in the tone group receives a final H tone and is realized on a rising pitch, LH, following Rule 7: “If a tone group only contains L tones, a post-lexical H tone is added to its last syllable”. (Variants are found in the narrative *Reward*.28, 36, 62, 114.)

8.2.6 A case of resistance to tonal integration

This paragraph discusses the case of compounds that resist the tendency towards integration into a single tone group. The most frequently occurring example is ‘Lugu Lake’, /lo˥-ʃv˥ | -hi˥na˥-tʰmi˥#˥/, literally ‘the lake of lo˥-ʃv˥’, from /hi˥na˥-tʰmi˥#˥/ ‘lake’ and /lo˥-ʃv˥/ ‘Luòshuǐ 落水’, the name of a village on the shore of Lugu lake. As mentioned in §4.3, the noun phrase /lo˥-ʃv˥ | -hi˥na˥-tʰmi˥#˥/ must be analyzed as consisting of two tone groups; if it constituted a single tone

group, its tone pattern would be */*lo-ɣvJ-hiJnaJmiJ/*, by application of Rule 5: “All syllables following a HL or ML sequence receive L tone”.

Likewise, the word */sa- | zoJbyJlɯJ/*, meaning ‘the universe, the whole world’ (Mountains.69), resist the tendency towards tonal integration. This word is perceived as composed of two parts, */sa-/* and */zoJbyJlɯJ/*, even though the first syllable, */sa-/*, is no longer intelligible by itself, and cannot be used on its own. The trisyllable */zoJbyJlɯJ/*, though, can be employed on its own, to mean ‘the universe’, like the four-syllable word; the existence of this trisyllabic form may partially explain why the four-syllable word */sa- | zoJbyJlɯJ/* ‘the universe’ does not get integrated into a single tone group. If such integration took place, this would yield a M.L.L.L tone pattern, */*sa-|zoJbyJlɯJ/*, again by application of Rule 5: “All syllables following a HL or ML sequence receive L tone”.

A third example is ‘field penny-cress’, a foetid plant with round flat pods (*Thlaspi arvense*). It is called */ɣv-|bv | vJtsʰɣA/* in Na, literally ‘the crane’s vegetable’. The fact that the name can still be transparently analyzed as a possessive construction probably contributes to slowing down its phonological integration into a single tone group.

8.2.7 Illustrations: morphotonological samples

This section recapitulates the mechanisms presented above by giving examples.

8.2.7.1 Movement and unfolding of the MH tone

The derivation of the tone group */gɣJ-pʰi | le-|tsʰu | -tsu |* in (16) can be presented as follows:

- (i) Lexical tones: */gɣJ- pʰi | le-| tsʰu | -tsu |*
 - (ii) First level of grouping: */gɣJ-pʰi | le-|tsʰu | -tsu |*
 - (iii) Left-to-right computation: the MH pattern of */pʰi |* spreads rightwards, up to the syllable */tsʰu |*: */gɣJ-pʰi | le-|tsʰu | -tsu |*
 - (iv) Unfolding of the MH contour, overriding (replacing) the lexical tone of the final particle: */gɣJ-pʰi | le-|tsʰu | -tsu |*
- (16) *æJɣv | gɣJ-pʰi | le-|tsʰu | -tsu |*
æJɣv | gɣJ- pʰi | le- tsʰu | tsu |
 egg upward to_spit ACCOMP to_come REP
 ‘It is said that [she] spat out the egg!’ (BuriedAlive2.143)

8.2.7.2 Derivation of an entire sentence: Sister.49

- (17) ə-tmɣʌ | le-tshuɿ | tʰiʌ, | go-mi-t-ŋuɿ | ə-tmɣʌ | mɣ-t-suɿ-tsuɿ-mɣ | |
 ə-tmɣʌ le-t tshuɿ tʰiʌ go-mi-t ŋuɿ
 elder_sibling ACCOMP arrive gap_filler:well younger_sister A/TOP
 ə-tmɣʌ mɣ-t suɿ -tsuɿ -mɣ-t
 elder_sibling NEG to_know REP AFFIRM
 ‘[When] the big brother came back, the younger sister didn’t recognize him!’ (Sister.49)

In example (17), the group | ə-tmɣʌ-t | ‘elder sibling’ consists of a single noun; the levels of the tonal phrase and tone group coincide. In the absence of suffixes or final particles, its lexical tone, MH, is realized on the last syllable of the tonal phrase, which is also the last syllable of the tone group.

In the group | ə-tmɣʌ-t-ŋuɿ | ‘by the elder sibling’, the rising contour (MH) of /ə-tmɣʌ/ ‘elder sibling’ projects its H part onto the suffix.

The word /tʰiʌ/ ‘(and) then, (and) so’ always constitutes a tone group on its own.

In the group | mɣ-t-suɿ-tsuɿ-mɣ | ‘... didn’t know/recognize’, the verb ‘to know’, /suɿ/, is flanked by the negative prefix /mɣ-t-/ and the sentence particles /-tsuɿ/ (reported speech) and /-mɣ-t/ (affirmative). The negative prefix /mɣ-t-/ surfaces with its lexical M tone, and the sentence particles receive L due to the fact that they are preceded by a H tone (through Rules 4 and 5).

8.3 Cases of breach of tonal grouping, and consequences for the system

This section describes how non-final syllables can come to carry a contour, in which case the following syllables tend to become extrametrical.

8.3.1 The stylistic option of realizing a contour on a word in non-final position

Syllables that are not in final position within the tone group do not carry a contour (MH, LM or LH, the latter two being neutralized to LH at the surface-phonological level). This is an important part of the definition of the phonological unit of tone group. But this rule is at odds with a stylistic device whereby a word is emphasized by cutting short the tone group immediately after it. This device

8.3 Cases of breach of tonal grouping, and consequences for the system

suspends tonal calculation, and allows the realization of a contour on the emphasized word, as in (18).

- (18) le¹-tsa¹, | le¹-tsa¹, | le¹-tsa¹ | -kwɣ¹-tɕuɿ, | le¹-ly¹!
 le¹- tsa¹ -kwɣ¹-tɕuɿ | le¹- ly¹
 ACCOMP to_row because ACCOMP to_escape

‘By rowing, rowing, rowing, they escaped/they managed to escape!’ (Lake3.59)

The context to this example is highly emotional: a mother and her daughter are rowing for their lives, struggling against the flood that has come over the plain where they lived, now suddenly become a lake. The verb ‘to row’ is repeated, and the sentence chopped into short tone groups. The verb is strongly articulated, each time with its lexical rising tone; the conjunction /-kwɣ¹-tɕuɿ/ is tacked on as if it were an afterthought. (The hyphen after the tone group boundary (/... | -kwɣ¹-tɕuɿ/) serves as an indication that the syllables at issue are extrametrical, and do not constitute a full-fledged tone group on their own.) It would be possible to say /le¹-tsa¹-kwɣ¹-tɕuɿ/ for ‘... because [they] rowed ...’, with the expected unfolding of the MH contour over the verb and the first syllable of the conjunction, but this deliberate, neatly structured variant would be stylistically inappropriate in this context.

An example using the same conjunction as above, but where the expected division into tone groups is respected, and where the expected process of unfolding of a contour tone takes place, is found in BuriedAlive2.48, reproduced here as (19):

- (19) loɿdzɔɿ | tʂʰu¹ni¹ | mɿ¹tɕo¹ pʰɿ¹-kwɣ¹-tɕuɿ-ŋuɿ, | “qʰhh...ə!”pi¹-tsuɿ-
 mɿ¹. |
 loɿdzɔɿ tʂʰu¹ni¹ mɿ¹tɕo¹ pʰɿ¹ -kwɣ¹-tɕuɿ -ŋu qʰhh...ə!
 bracelet thus downward take_off because TOP onomatopoeia:burp!
 pi¹ -tsuɿ¹ -mɿ¹
 to_say REP AFFIRM

‘When [the man] took off [the buried woman’s bracelets], like this, [the corpse made a gurgling sound]: Buuurp!’

This is the only example found so far where the H part of a verb’s MH contour reassociates to the conjunction // -kwɣ¹-tɕuɿ //, as against 14 examples where this contour surfaces as such on the verb prior to this conjunction (Dog.49, Tiger.46, BuriedAlive3.65, Caravans.80, Sister.50, Sister3.133, Seeds2.34, Renaming.18, 41, Funeral.51 ...). Example (19) is just enough evidence to show that a realization with contour spreading is possible. Contour unfolding might once have been

the norm, and the realization with a contour on the verb might have originally been a conspicuous stylistic effect; but the latter is now much more common than the former, to the point that the realization with contour unfolding is now a stylistically marked option.

Realizations of a contour in non-final position are common; examples include Tiger.51 and Housebuilding.71, 98, 100.

Another construction for which the set of narratives contains examples without the unfolding of a rising contour is $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}]$, combining the adverb ‘thus, in this way’ with the verb ‘to take place, to occur (event)’, as in (20).

- (20) $[\text{ʂ}^{\text{h}}\text{u}+\text{zi}] \mid -\text{dzo}$, $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}] \mid -\text{ni}] \mid \text{t}^{\text{h}}\text{v}+\text{zi}] \mid -\text{dzo}$, $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}] \mid -\text{ni}]$
 $[\text{ʂ}^{\text{h}}\text{u}+\text{zi}] \quad -\text{dzo}$ $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}] \quad \text{gv}$
 DEM.PROX-CLF:household TOP thus.to_take_place CERTITUDE
 ni $\text{t}^{\text{h}}\text{v}+\text{zi}$
 DEM.DIST-CLF:household

“This is what happened to this household! And this is what happened to that household!” (Elders3.44; context: the narrator reports how her grandmother used to teach children how to behave by taking real-life examples from events that had occurred within the community.)

At both occurrences in this example, a tone-group boundary is found after the phrase $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}]$. The effect is to emphasize this phrase. The following morpheme, $[-\text{ni}]$ (the copula, in a bleached use in which it serves to emphasize assertion), also stands out by not being incorporated within the same tone group. The context helps clarify what happens here: this is a passage in reported speech, in which the narrator adopts her grandmother’s tone of voice. “My grandmother knew about everything! In the old times, she would also tell us stories about people in the village, and what we must learn from them: ‘This household, this is what happened to them! That household, this is what happened to them! One must develop habits of doing good! One mustn’t do wrong!’ ” (Elders3.44-45) Use of the bleached copula here is clearly that of “an epistemic strategy that marks a high degree of certitude” (Lidz 2010: 497). This stylistic choice conveys the assertiveness of the character to whom this passage in reported speech is assigned. Realization as $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}] \mid -\text{ni}]$ rather than $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}+\text{ni}]$ reflects a deliberate, authoritative attitude.

On the other hand, when the phrase ‘This is how it happened’ is told more casually, as an introduction to a narrative, it constitutes one single tone group, as $[\text{ʂ}^{\text{h}}\text{u}+\text{ne}+\text{gv}+\text{ni}+\text{tsu}+\text{mv}]$ (with following REPORTED-SPEECH particle $[\text{tsu}]$ /

and AFFIRMATIVE /mɿ/), as in BuriedAlive.1. A related phrasing is /tʂʰu-ne-ɣɿ-kv/, ‘This is how it would happen’ (as in Sister3.149), which is similarly a set phrase and hence integrated into a single tone group (also with following particles such as /-tsu-ɿ-mɿ/), as in Tiger.2).

8.3.2 Consequences for the tone system: the emergence of extrametrical syllables

The phenomenon whereby a tone group is cut short after a certain word (noun or verb) has some consequences for the general architecture of the tone system. In cases where the portion of tone group that is cut off from the verb can stand on its own as a tone group, the tenets of the system remain unaffected, such as in example (21).

- (21) hæɿ, | kʰvɿmiɿ-ʂeɿ | dzuɿ-kvɿ!
 hæɿ kʰvɿmiɿ-ʂeɿ dzuɿ kvɿ
 Chinese dog_meat to_eat ABILITIVE
 ‘The Chinese (Han) eat dog meat!’ (Field notes, 2012)

Example (21) lays emphasis on ‘dog meat’: in the Na world view, dogs and men are close friends – the dog agreed to exchange its 60-year lifespan with the 13-year lifespan that had initially been granted to man (see the narrative “Dog”). Eating dog meat is therefore taboo among the Na, and the fact that some other ethnic groups do eat dog meat comes to them as a shock. An unmarked phrasing of (21) would be /hæɿ | kʰvɿmiɿ-ʂeɿ dzuɿ-kvɿ/, in which a single tone group spans the object and verb, and tonal computation takes place.

Example (22) shows that this phenomenon can take place as early as the first syllable of a sentence.

- (22) pʰoɿ | huɿ-kwɿ-tɕuɿ-laɿ | tʰiɿ, | goɿmiɿ tʂʰuɿ-ɿ-dzoɿ, | leɿ-ŋɿ, | leɿ-
 ŋɿ, | leɿ-ŋɿ, | leɿ-ŋɿ, | leɿ-ŋɿ-zoɿ!
 pʰoɿ_a huɿ_c -kwɿ-tɕuɿ-laɿ tʰiɿ goɿmiɿ
 to_flee/to_rush to_go.PST after then younger_sister
 tʂʰuɿ ɿ -dzoɿ leɿ- ŋɿ -zo
 DEM.PROX CLF TOP ACCOMP to_cry ADVB
 ‘After he rushed away, [his] younger daughter cried her eyes out!’ (Sister3.68)

A more strongly integrated formulation would be: /pʰoɿ-huɿ-kwɿ-tɕuɿ-laɿ/, without any special emphasis on the verb.

8 *Tone assignment rules and the division of the utterance into tone groups*

On the other hand, when particles or conjunctions are left stranded, as in (18), they do not constitute a tone group on their own. The rules recapitulated in §1, such as the addition of a final H tone to all-L sequences, do not apply to them – otherwise one would expect a final rising contour: */*le-tsa¹ | -kwɔ¹-tɕu¹/**. Nor are these stranded syllables integrated into the following tone group.

Several options for modelling are open here. One option would be to consider that, at some phonological level, the division into tone groups is in fact left unchanged. This would entail that a contour can be realized in non-final position within a tone group, an option which seems to run into insuperable difficulties. A preferred option is to consider that the emphasis laid on a word, and the consequent realization of a contour on that word, modifies the utterance’s division into tone groups, and that the syllables left stranded acquire extrametrical status. The notion of extrametricality supersedes the general rule which serves as one of the key criteria for the definition of the tone group as a phonological unit, i.e. that contours only appear tone-group-finally. There exists additional evidence for resorting to the concept of extrametricality in the description of the Na tone system: this concept also applies to the affirmative particle *//mv¹//*. This particle cannot host a H level from a preceding reported-speech particle *//tsu¹//*: the sequence is realized as */-tsu¹-mv¹/*, not */*-tsu¹-mv¹/*.

At this point, it is useful to examine a further example: (23).

- (23) pv¹[u¹] | dzy¹ | -ki¹-tsu¹-mv¹. |
 pv¹[u¹] dzy¹ ki¹ -tsu¹ -mv¹
 button to_pluck to_give REP AFFIRM

‘It is said that [he] plucked a [button from his jacket] and gave it [to the child]. He plucked one, and gave it [to the child].’ (Renaming.23)

Three stylistic options are open here. The most tightly-knit would involve a single tone group: */dzy¹-ki¹-tsu¹-mv¹/*. The most analytic would involve two full-fledged tone groups: */dzy¹ | ki¹-tsu¹ | -mv¹/*, with the added complexity (analyzed further below) that the second tone group contains a contour, MH, on a non-final syllable. The third one, found in the recorded narrative, is intermediate: the verb */dzy¹/* ‘to pluck’ is realized with its lexical MH contour, as if it were tone-group-final, and the syllables that follow are all lowered to L, as if they belonged to the preceding tone group. In the transcription, the hyphen after the tone group boundary (*/... | -ki¹-tsu¹-mv¹/*) serves as an indication that the syllables at issue are extrametrical, and do not constitute a full-fledged tone group on their own.

8.3 Cases of breach of tonal grouping, and consequences for the system

This range of stylistic variation is a salient characteristic of Yongning Na. Among other potential consequences for the evolution of the tone system, extrametrical syllables at the end of a tone group may tend to become affiliated to the following tone group instead, in cases where the sequence of (surface) tones allows for this reinterpretation. A case in point is the highly frequent sequence of the topic marker //dzoŋ// and the discourse marker //tʰi// ‘so, then’. The latter makes up a tone group on its own, as was mentioned in §8.2.1. However, in the narratives recorded by consultant F4, it is not preceded by any perceived pause; there tends to be a pause before the topic marker, and the two syllables /-dzoŋ/ and /tʰi/ are then pronounced in quick succession. There is thus a discrepancy between two levels: that of the division into tone groups, on the one hand, and that of linguistic rhythm, on the other. From a phonological point of view the sequence of /-dzoŋ/ and /tʰi/ would constitute a well-formed tone group: L.LH is the way a disyllabic tone group with underlying L tone is realized. One may speculate that the high discourse frequency of the (phonetically) tightly-knit /dzoŋ.tʰi/ sequence paves the way for its reinterpretation as a single tone group. A typical example is the sequence /gi | -dzoŋ | tʰi/ (Mountains. 58), ‘really-TOP-so/then’. Here, /gi/ is realized with a rising contour, unambiguously signalling the end of a tone group, and leaving the topic marker stranded (i.e. with extrametrical status). While /dzoŋ/ does not constitute a well-formed tone group, the sequence /dzoŋ tʰi/ would constitute one.

8.3.3 Further examples of extrametrical elements

The expression /əJ-gi/ ‘isn’t it!’, ‘right!’ is commonly tagged at the end of an utterance. A preceding LH or MH contour does not unfold over it, as would be expected within a tone group (Caravans.257, 287; Housebuilding.113; Mountains. 159; Sister3.86). It is often preceded by a short (perceived) pause. These two observations suggest that /əJ-gi/ constitutes a tone group on its own. On the other hand, the fact that the expression /əJ-gi/ contains only L tones implies that it does not constitute a tone group on its own, otherwise it would be realized as /əJ-gi/. The latter, /əJ-gi/, is well-formed and attested in the narratives, but it is a full-fledged question (‘Is it true?’), whereas /əJ-gi/ is more phatic – almost a gap-filler. The expression /əJ-gi/ is here treated as extrametrical; in the transcriptions, it is preceded by a tone group boundary, to reflect the fact that it does not interact tonally with what precedes it.

To summarize the above discussion: the tone group may be interrupted after the last syllable of a word (verb or noun), leaving some syllables stranded. These syllables are described as having extrametrical status.

8.3.4 Do extrametrical elements facilitate the introduction of Chinese loanwords consolidate

The phenomena described above are clearly marginal. Yet they may pave the way for increasingly significant changes to the tone system as a whole. They introduce unusual tone patterns which may become consolidated through loanwords: once a pattern exists in the language, however marginally, it is available for accommodating foreign combinations of sounds. For instance, the gap-filler *jiùshi* 就是, ‘quite right; exactly, precisely, just’ is borrowed as /tɕoʔɿsu˥/, with a word-internal MH contour. At first blush, this contravenes a basic phonotactic rules of Na. On the other hand, the process of emphasis described in §8.3.1 introduces tone-group-internal contours, which have now become habitually associated with some morphemes. The existence of these rising contours arguably facilitated the introduction of Chinese loanwords with this tone pattern; in turn, loanwords contribute to the gradual expansion of the previously deviant phonotactic pattern.

To carry the argument one step further, assuming that the emphatic value of tone-group-internal contours predates the borrowing of the gap-filler *jiùshi* 就是 ‘exactly’ as /tɕoʔɿsu˥/, this expressive value may well have facilitated the retention of the rising tone at borrowing. Emphasis is well-suited to this item. When it is used as a gap-filler, a hint of emphasis or insistence is not inappropriate for a speaker who wishes to keep a speech turn open. The word /tɕoʔɿsu˥/ is also used as a rejoinder (‘Exactly!’), in Na as in Chinese; in this usage too, a touch of emphasis is welcome, highlighting the intended message of convergence of viewpoints between the interlocutors. Said differently, the item’s lexical tone in Chinese is congruent with its expressive interpretation in terms of Na prosody.

There are cross-linguistic analogues to this situation, for instance the success of the Vietnamese loanword *nhà què* in French. The original Vietnamese is a derogatory term: ‘yokel, hayseed, backwoods person’. It was borrowed into French as *niakoué* (also spelt as *niacoué*) as a derogatory term for the Vietnamese, and later also for the Chinese. Lexical tones were lost in the process of borrowing, but the vowels and consonants match exactly: Vietnamese /ɲa.kwe/ was borrowed as /ɲa.kwe/. Initial **ɲ** has expressive value in French, as shown by a quick list of items that contain it: *gniaf* ‘cobbler’, *gnan-gnan* ‘mawkish, mushy’, *gn(i)ard* ‘child’, *gn(i)ouf* ‘prison’, *gnognot(t)e* ‘worthless stuff’, *gnolle* ‘futile person’, *gnôle* ‘alcohol’, *gnon* ‘blow’, *niaque (gnaque)* ‘combativeness’ are all slang words. The bad guy in Lyon’s puppet theatre, Guignol, is revealingly named *Gnafron*. The only exception in the list is an Italian loanword, *gnocchi*, which apparently managed to gain integration despite the strong slangy flavour of its initial **ɲ**. Seen in

this light, Vietnamese *nhà quê* /**na.kwe**/ presumably owes some of its success in French to the overtones of its initial consonant.

8.4 Concluding remark

The division of an utterance into tone groups plays a central role in conveying phrasing and prominence. In this respect, the Na facts appear closely parallel to the division of sentences into intonational groups in English (or French) – extensively studied languages, for which a wealth of references are available (on French, see for instance Vaissière 1975; Di Cristo 1998; Rossi 1999; Vaissière & Michaud 2006; Martin 2009). A striking characteristic of Na is the constant interaction between these intonational choices and the language's tonal processes.

9 From surface-phonological tone to phonetic realization

If, as seems to be the case, the complexity of intonation is typical of human complexity, then there is still a long way to go before (...) intonation yields all of its secrets.

(Vaissière 2004: 256)

9.1 Introduction

The established order of business when describing a language consists in establishing the phonological and morphophonological facts first, and addressing issues of phonetic implementation later. In practice, tones and intonation are necessarily studied together, since they share an all-important phonetic correlate: voice fundamental frequency (F_0). This is especially true in languages such as Na, where tones are phonetically specified only in terms of pitch: they do not have length or phonation-type characteristics as part of their phonological definition, unlike in Tamang, Vietnamese and other East/Southeast Asian languages.

This chapter contains observations about the phonetic implementation of tone, and intonation in general: all that happens when surface-phonological tone translates into a concrete phonetic realization.

As an introduction to this domain, Figure 9.1 shows one token of /**boJ-ɬv**/ ‘pig’s brains’ and /**boJ-ɬv** ni/ ‘is (a/the) pig’s brains’. The time scale of both spectrograms is the same (70 centiseconds).

The clear rise in F_0 on the rhyme /v/ in the top part of the figure is consistent with phonological description as a MH tone; and the flatter shape on that same rhyme in the bottom part of the figure, followed by higher F_0 on the copula, is consistent with phonological description as a sequence of M on one syllable and H on the next.

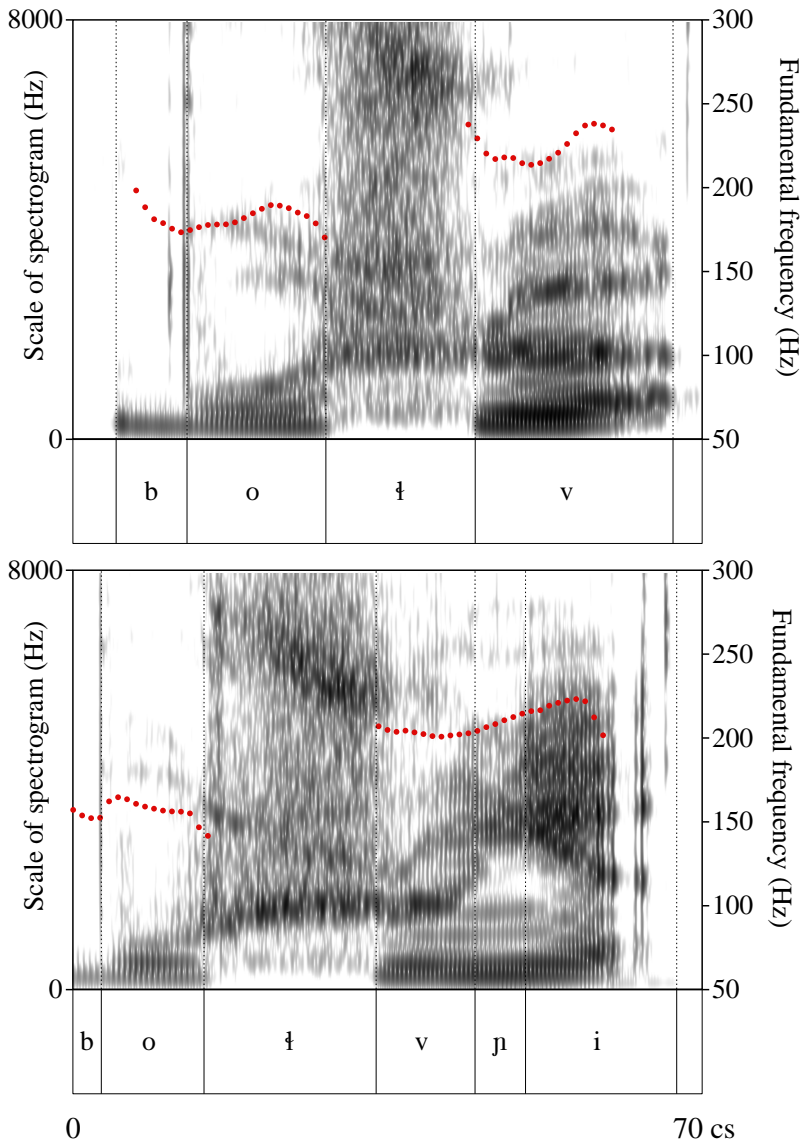


Figure 9.1: Spectrogram and F₀ tracing of 'pig's brains' and 'is (a/the) pig's brains', illustrating the wealth of phonetic detail in the realization of tones.

On the other hand, a fundamental point is that there is no way to read phonological tones off F_0 tracings (as emphasized e.g. by Cruz & Woodbury 2014 and Morey 2014). Figure 9.1, like any piece of experimental evidence, illustrates variability in the realization of tone. For instance, glottalization is found at the end of both tokens, exerting a detectable (lowering) influence on F_0 towards the offset of voicing: /**bo**ɭ-ɬvɭ/ ‘pig’s brains’ and /**bo**ɭ-ɬvɭ **ni**ɿ/ ‘is (a/the) pig’s brains’ are both found in absolute final position (constituting entire sentences on their own), and glottalization is common in Na at this juncture of an utterance. Also, /**bo**ɭ/ ‘pig’ is realized with noticeably different F_0 in the top part of the figure and in the bottom part. Tonal realizations have some range of variation within tonal space (F_0), like vowels have some range of variation within the acoustic space (as characterized essentially by the first three formants, F1-F2-F3). The linguistic comment that can be proposed about the slight initial rise in the realization of the L tone of /**bo**ɭ/ ‘pig’ in the top part of Figure 9.1 is based on a phonological observation: in Na, rising tones are never found in initial position within a tone group (phonological phrase), and hence the identification of an initial L tone is not jeopardized by its realization with a slight rise as in the top part of Figure 9.1. Seen in this light, the existence of slightly rising ‘allotones’ does not come as a surprise: it makes sense in view of the phonological system – in the same way as, in a language that does not have contrastive aspirated consonants, plain (unaspirated) unvoiced consonants may sometimes be realized phonetically with some aspiration.

Back in the 1970s, at a time when F_0 tracings were difficult to obtain – requiring help from a specialized engineer –, a specialist of Bantu tone asked Jacqueline Vaissière to create an F_0 tracing from a recording illustrating a specific phonological phenomenon. After receiving the desired tracing, this famous specialist of tonology said that there must be a mistake, as the F_0 tracing did not correspond to the tone pattern that his trained ear discerned clearly in the recording. In fact, there was no error in F_0 detection; the issue lay in this colleague’s expectation of a neatly binary F_0 tracing, straightforwardly reflecting the phonological tone sequence. Experimental examination of spoken language reveals that, even in languages with relatively straightforward prosodic systems, such as Standard Japanese, F_0 curves are shaped by a number of factors, and do not reflect phonological tone in a crystal-clear, transparent way. Without the help of a language consultant it is simply impossible to know for sure, for a given utterance that has, for instance, a lowering of F_0 on its last syllable, whether this is due to a L tone on that syllable or to intonational final lowering of a M-tone syllable. Arriving at tonal contrasts requires factoring out intonation, and vice versa.

The following paragraphs presents salient characteristics of Na intonation. But some concepts need to be discussed first.

9.1.1 Definition of terms

Prosody as defined here consists of (i) nonphonemic lexically distinctive properties: stress, as in English; tone, as in Na, Mandarin or Yorùbá; tonal accent, as in Japanese and Swedish; phonation-type register, as in Mon (Mon-Khmer family); (ii) intonation; and (iii) performance factors, including rhythm.

Intonation, which is often (and perhaps somewhat abusively) identified with the parameters whereby it manifests itself – and especially with fundamental frequency –, is a complex, abstract structure, that can usefully be divided into (i) two sub-systems of structuration: syntactic intonation (phrasing), which essentially reflects syntax in the broader sense, and pragmatic intonation (prominence), which reflects information structure; (ii) attitudinal and emotional dimensions, that convey speaker attitudes and emotions.

Intonation is, in Bolinger's phrase, a "half-tamed savage" (Bolinger 1978: 475). *Phrasing* is on the tamer, more intellectual side; it surfaces at its clearest in deliberate oral renderings of elaborately composed texts. *Prominence* is a less tame dimension of intonation: it can still be described in terms of a linguistic system, with clear cross-linguistic differences, but the intrusion of the stronger manifestations of prominence can interfere with phrasing as determined by syntactic structure. As for the expression of attitudes and emotions, it can partly be described in terms of ethological principles, such as the "Frequency Code" (Ohala 1983).

These definitions, taken up from a publication about prosodic constituents in French (Vaissière & Michaud 2006), elaborate on earlier proposals (Coustenoble & Armstrong 1937; Delattre 1965; Martin 1977; Rossi 1999). Usage still varies considerably between authors (a detailed discussion of various definitions is proposed by Di Cristo 1998).

As defined here, tone has the function of lexical and morphological differentiation, and intonation the functions of speech phrasing, of coding prominence and sentence mode, and of expressing emotions and attitudes towards the listener. Intonation is, in Bolinger's phrase, a "half-tamed savage" (Bolinger 1978: 475). *Phrasing* is on the tamer, more intellectual side; it surfaces at its clearest in deliberate oral renderings of elaborately composed texts. *Prominence* is a less tame dimension of intonation: it can still be described in terms of a linguistic system, with clear cross-linguistic differences, but the intrusion of the stronger manifestations of prominence can interfere with phrasing as determined by syntactic

structure. As for the expression of sentence mode, attitudes and emotions, it can partly be described in terms of ethological principles, such as the “Frequency Code” (Ohala 1983).

The phrase “syntactic intonation” may appear as somewhat of a misnomer, insofar as syntax and intonational phrasing do not stand in a strict, one-to-one relationship with syntactic units, as was already noted in the early classics of phonetics (Grammont 1933) and confirmed by later work (Selkirk 1972; Selkirk 2000: 231; Martin 1981). The phrase “syntactic intonation” is nonetheless retained in view of the fact that knowledge of a sentence’s syntax offers a sufficient basis for the synthesis of an acceptable fundamental frequency contour (Vaissière 1971).

The acoustic correlates of prosody are many. They include the variations in fundamental frequency, duration and intensity and phonation type, but also the allophonic variations in the realization of the phonemes. Said differently, prosody has correlates at the respiratory level, at the glottis, and at the supra-glottal level. All parameters take part in prosody simultaneously, to a greater or lesser extent.

9.1.2 The absence of fully satisfactory tools for intonational transcription

There does not yet exist a standardized system for transcribing intonation; this is easy to understand in view of the above overview of the complexity of this field. One orientation consists in describing them as if they were tonal, on a par with lexical tones. Numerous researchers, some of whom initially argued against the modelling of intonation into discrete levels (Ladd 1978), now advocate models whose basic tenets are familiar concepts of autosegmental tonology, such as level tones, downstep and tone spreading (witness the following textbooks: Ladd 1996; Gussenhoven 2004). This approach is known as ‘autosegmental-metrical’, and has dominated discussions of intonation since the 1980s (see Silverman et al. 1992, and the critical assessments by Wightman 2002 and Martin 2001; Gussenhoven 2004; and the textbook by Ladd 1996). Pitch accents, organized in a linear sequence, are considered as the building blocks of an intonation contour. For the description of tonal languages, autosegmental-metrical models seem to answer the long-identified need for “some means for describing intonational processes independently of tonal patterns, as well as a procedure for integrating the two structures” (Clements 1979: 547).

If one stands back to take a global view of tonal models of intonation, they appear as hybrid and somewhat perplexing systems, however. The posited ‘intonational tones’ are highly abstract entities, but the labels are often used as

a phonetic transcription reflecting linguistically significant aspects of F_0 curves as they are actually observed. Also, tonal labels are assigned from an acoustic rather than perceptual point of view, whereas “boundary tones” are meant to reflect the perceived cohesion between successive words, and are thus grounded in perception rather than on the observation of F_0 curves. “To be fair to the original spirit of Janet Pierrehumbert, who intended to describe American English and carefully avoided generalization in her thesis, applying ToBI symbols to a new language requires a prior re-evaluation of the underlying principles” (Vaissière 2002).

Alternatives to tonal models of intonation include the Kiel Intonation Model and its developments (Niebuhr & Kohler 2004; Kohler 2005; Niebuhr 2007; 2010), superpositional approaches (Vaissière 2002; 2004; Vaissière & Michaud 2006; Grønnum 1991; 1998b; Lindau 1986; Grønnum 1998a; Ladd 1998), and other approaches that have pre-generative roots (Delattre 1966; Fónagy 1989; Rossi 1999; Martin 1977; Hirst & Di Cristo 1998). These approaches are currently outside the mainstream of intonation studies, in the same way as non-autosegmental analyses of tone systems fall outside mainstream (generative) phonology (some reflections on this situation are set out in Michaud 2008c; Zerbian 2010; Michaud 2012; Michaud & Vaissière 2015). My evaluation of the available evidence is that tonal accounts of intonation in tone languages run into considerable difficulties, and that it is better to adopt a vocabulary which suits the data, even if it is not mainstream at present, rather than force the data into inadequate models.

Rossi uses the notion of ‘intoneme’, parallel to ‘phoneme’ and ‘morpheme’; this ensures a clear distinction between an abstract level of description, on the one hand, and the level of phonetic realizations, on the other.¹ The present description aims to contribute to this strand of research, adopting a functional perspective.

As a final remark about terminology, the term ‘sandhi’ is not used here, because it appears advisable to restrict its use to categorical phenomena of context-conditioned tone change, and Na does not have any such phenomena.

¹ This distinction is threatened in models that consider ‘tone’ as synonymous with F_0 . Hyman & Monaka (2008) define the term ‘tonal’ in a phonetic sense, to mean ‘realized by F_0 ’, and ‘non-tonal’ to mean ‘realized by parameters other than F_0 ’ (such as phonation types). The equation between ‘tone’ and ‘ F_0 ’ (and its perceptual counterpart: pitch) appears so self-evident that it could seem unnatural to try to define tone in any different way. But from a classical linguistic perspective, it appears crucial to make a distinction between F_0 , which is an acoustic parameter, and linguistic tone, which is a functional concept.

9.1.3 Intonation in level-tone languages: a review

Expert auditory observations on phonetic realizations of tone in a two-tone language (Lingala) are proposed by Guthrie (1940). He notes that

... the only possible variations in the intonation of a word or sentence are these:

- (a) A widening or narrowing of the interval between the high and the normal tones.
- (b) A raising or lowering of the pitch of voice, i.e. a change of key.
- (c) A gradual rise or fall of the pitch of voice, i.e. a continuous change of key.

In Lingala the only two variations that seem to exist are (a) and (b). The gradual fall of the pitch of the voice during a sentence is so slight as to be almost imperceptible. There is, however, another modification which affects the last syllable of a phrase or sentence only. This may be called the final cadence, and means that a high tone becomes a high-falling, while a tone that is normal becomes normal falling to low. (Guthrie 1940: 472–473)

Parameter (a) is considered to possess three degrees of variation: Guthrie proposes that there are four phonetic ranges, minor third (considered as the “normal range”), major third, major fourth, and major fifth. Interestingly, Guthrie considers the tonal range to be set at the level of the sentence. This arguably reflects a characteristic of the language: successive level tones hang together much more closely than in complex-tone systems, where attention is drawn to *local* phenomena of F_0 range expansion: in Mandarin Chinese, “focus is usually related to F_0 -range-expansion of focused words that are not in the final position of an utterance and F_0 -range-suppression of post-focus words” (Zhang & Hirose 2004: 449). To venture an impressionistic description of the difference between the two types of systems, level tones make sense as part of a sequence, whereas complex tones each have a stronger identity. Needless to say, this does not entail that successive complex tones are independent of one another: tonal coarticulation phenomena in Chinese, Vietnamese or Thai are strong, and they tend to harden diachronically into sandhi patterns (Abramson 1979; Gandour & Potisuk 1992; Brunelle 2003; 2009b; Zhang & Liu 2011). Still, Africanists attention seems to be regularly drawn to sentence-level rather than local phenomena, suggesting that local variations of the sort observed in complex tone systems (as exemplified

by Vietnamese, Thai and Chinese) is not salient in level tone systems as exemplified by Bantu languages. In addition to Guthrie's study about Lingala, a study of Chichewa intonation likewise focuses on sentence mode, specifically on the differences in F_0 between questions and statements: questions have a final rise; they do not display the strong downdrift found in statements; and they are produced in a higher pitch range than statements (Myers 1996).

Guthrie describes the intonation of Lingala in terms of five different levels.

Although there are actually five different levels used the language remains essentially two-tone, as in learning forms the only thing to be noticed is whether any syllable has a high or a normal tone. It is, moreover, interesting to notice how regular is the system of tone ranges. Emphasis shifts the intonation to the next higher range. Interrogation move the tones two ranges higher, while the use of the subjunctive reduces the pitch to the next lower range. (Guthrie 1940: 475–476)

Description of intonation in terms of a finite number of levels was a trend of the time in American structuralist approaches to intonation. Analyses of English intonation published shortly after Guthrie's study assume that there are four relevant levels of pitch: extra high, high, mid and low (Pike 1945; Trager & Smith 1951: 42). In Trager and Smith's system, the four levels combine with four relevant levels of stress (primary, secondary, tertiary, and weak), yielding a symmetrical system of no less than sixteen "pitch allophones". This is an unwieldy inventory, and the sixteen units' links to linguistic functions look really tenuous. Fortunately, their analysis is about English, and informed native speakers will provide articulate critical feedback:

... this reviewer, at least, simply does not hear the neatly symmetrical distribution of pitch allophones with phonemes of stress as Trager and Smith describe it, he often hears nothing to justify the writing of plus junctures where his colleagues write them, he is sometimes in serious doubt whether to write primary or secondary stress, and he is openly astonished at the apparent claim by Trager and Smith that in final position they can distinguish four allphones of each of four pitch phonemes before each of three terminal junctures. (...) Readers dislike being told that they can 'easily supply other examples' when the most patient effort leaves them utterly baffled. (Sledd 1955)

Writing about intonation in Yongning Na, Japhug or Lingala is a bigger responsibility, as few native speakers are likely to examine the linguist's claims in such detail.

A general issue here is that the framework proposed by Trager and Smith to study intonation appears to suffer from the same immoderate ambition that is apparent in Hall and Trager's framework for the *Analysis of culture*: "a hypothesis and methodology for the analysis of culture as a whole and specific cultural systems ... a general analytic scheme into which all cultural activities, at all levels of integration and complexity, can be fitted" (Hall & Trager 1953: 57). By contrast, Guthrie's proposals have much to commend them. Guthrie clearly distinguishes the two level tones from the intonational factors that influence their realization. Moreover, although the four proposed phonetic ranges are presented in an order based on form, from narrowest to widest, the analysis hinges on the linguistic functions associated to variations in tone range: this is a fruitful approach, which brings out a wealth of interesting observations. Less positively, Guthrie's proposal that the tonal levels constitute a closed set (five in all) is hard to reconcile with the observed diversity of intonational patterns. It is understandable that linguists should wish to operate with a finite set of basic units in all fields of linguistic description, as they do at the phonemic level, and in the study of tonal phenomena. But these tools are less than fully appropriate in the field of intonation; linguistic models that treat intonation systems on the analogy of phonemic systems fail to capture their object.

This phenomenon [=intonation] has considerable importance in oral communication, but has specificities that make it really troublesome to the linguist, since the methods that have been tried and tested in other areas do not seem truly adequate for the analysis of intonation. (Creissels 1994: 173)²

It now seems clear that there is no fixed number of levels to be distinguished in tonal representations (Creissels 1994: 217). On the basis of expert listening, Creissels proposes stylized representations of the phonetic realizations of certain sequences of tones (in a two-tone system) which clarify that tone implementation is language-specific. For instance, Figure 9.2 illustrates an observation made in some tonal languages of Sub-Saharan Africa: the first in a sequence of L tones following a H tone carries pitch that is intermediate between that of the preceding H tone and that of the following L tones. "Such realizations can be seen as the inception of a phenomenon of propagation: if the raising of the first in a se-

² *Original text*: L'importance de ce phénomène [=l'intonation] dans la communication orale est considérable, mais sa spécificité gêne beaucoup le linguiste, car les méthodes d'analyse qui ont fait leurs preuves dans d'autres domaines ne semblent pas convenir vraiment pour l'analyse de l'intonation.

9 From surface-phonological tone to phonetic realization

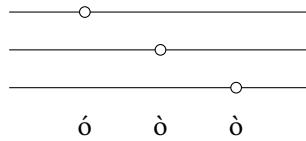


Figure 9.2: Stylized representation of a phonetic realization of a H.L.L sequence as a gradual decrease in pitch from the first syllable to the third, after Creissels (1994: 217).

quence of L tones following a H tone becomes more noticeable, it can result in misperception as a H tone (...)" (Creissels 1994: 215–216)³

This insightful observation brings out the tonal coarticulation pattern's evolutionary potential. On the other hand, readers with an interest in experimental phonetics may want more detail than the highly schematized representation in Figure 9.2 can encapsulate. If there are three L tones in a row, are the second and third realized on the same phonetic level? Or is the decrease in pitch gradual from one syllable to the next, arranged along a scale of four levels rather than three? Is this decrease linear or asymptotic?

Experimental-phonetic studies of level tones remain relatively few. A remarkable example is Myers (2003), who proposes a model of tonal implementation in the Bantu language Kinyarwanda. The study addresses key issues in Kinyarwanda tonology: in Kinyarwanda, a H tone can occur on either the first or the second mora of a syllable; Myers's study accordingly focuses on the timing of F_0 curves relative to segmental landmarks. The study also addresses the issue of tone anticipation: the raising of pitch in a syllable before a high tone. This state-of-the-art phonetic study confirms that issues of tone realization are conditioned by a host of language-specific parameters. The present chapter aims to bring out such parameters of the Yongning Na prosodic system. No experimental phonetic tools are deployed to explore these issues: the approved order of business is that "the linguistic analysis, which may perfectly well be made on auditory basis, must come first" (Fischer-Jørgensen 1949: 4). The prospect of future experimental verification was constantly kept in mind, however: the observations proposed below are intended as a basis for phonetic experiments.

³ *Original text:* On observe par exemple dans certaines langues que, sans que son identification comme ton bas soit remise en cause, le premier d'une séquence de tons bas succédant à un ton haut est réalisé à un niveau intermédiaire entre celui du ton haut qui le précède et celui des tons bas suivants. (...) On peut voir dans de telles réalisations l'amorce d'un phénomène de propagation : en effet, si le réhaussement du premier d'une séquence de tons bas succédant à un haut s'accroît, on peut aboutir à la confusion avec un ton haut (...).

9.2 Syntactic intonation: phrasing and junctures

The most important unit in the prosodic organization of Na speech is the tone group. But from the point of view of phonetic implementation, successive tone groups are not entirely independent. Tone groups are part of higher-level prosodic units which can be defined in various ways; two units which appear especially useful as cross-linguistic descriptive concepts, though their definition is not without problems, are the prosodic paragraph and the sentence (also referred to as ‘utterance’, with a view to bringing out its grounding in a communicative context). Here is a brief characterization of these levels, adapted from (Vaissière & Michaud 2006: 50–52).

The highest F_0 value in a sentence tends to decrease from the first to the last sentence in a paragraph (Lehiste 1975). The end of the paragraph typically ends on an extra-low F_0 (often leading to a change in phonation type) and intensity. The term ‘paragraph’ is open to criticism on the part of linguists who object to the transfer of concepts from the study of written texts to that of oral speech; it is a convenient term nonetheless, as there is a real similarity between the division of a written text into paragraphs and that of speech into prosodic paragraphs, with a broad range of stylistic variation in both cases.

The sentence level is the next unit. The neutral, affirmative statement is taken as the basic, archetypal pattern, from which other sentence modes depart (Thorsen 1980). The F_0 curve for the sentence rises to a peak located on one of the sentence’s first syllables, typically within the first lexical word. In the course of the sentence, a phonetic, gradual, noncategorical decrease in fundamental frequency takes place: declination in the course of the utterance. Fundamental frequency therefore fluctuates within a gradually narrowed range. A final lowering marks the end of the sentence. (This corresponds to Tune 1 as described for English by Armstrong & Ward 1926.) Final lowering is a more local phenomenon, typically affecting the last syllable in declarative utterances.

Declination and final lowering are common across languages, as is their suspension to convey non-assertiveness (in questions, or to convey nuances of doubt and uncertainty).

In Na, declination is most transparently observed in sentences that have sequences of like tones, all-M or all-L.

From a phonetic point of view, these phenomena interact with phonological tones: the phonetic realization of a phonological H, M or L differs considerably depending on the position of the syllable in terms of the breath-group, the utterance, and the prosodic paragraph. In my first notes, I transcribed the 1st, 2nd and

3rd-person pronouns with H tone, as [njɣ̃], [nõ] and [tʂ^hũ]; this was due to their realization on a high pitch in breath-group-initial position, in cases where they constitute a tonal group on their own. In that context, their pitch is noticeably higher than that of a M tone in tone-group-initial position later on in the breath group: see, among other examples, the contrast between the phonetic realization of /njɣ̃/ ‘I’ and /ə̃tsi/ ‘grandmother’ in /njɣ̃ | ə̃tsi/ ‘my grandmother’, in the narrative Dog.56. Moreover, since the opposition between M and H is neutralized in tone-group-initial position, a phonetically very high realization runs no risk of being misinterpreted by native listeners. As a consequence, M tones in that position have the entire upper part of the tonal phonetic space as their range of intonational variation. In my first field notes, I transcribed ‘I don’t eat’ as /*njɣ̃ | mɣ̃-dzũ/; this is phonologically inappropriate, since M and H are neutralized to M in this context; but it is understandable, in view of the considerable phonetic difference in pitch between the first and second syllables, and of the similarity in pitch between the first and last syllables of this short sentence.

These intonational facts had to be brought to light before a correct transcription of the surface-phonological form of the pronouns could be arrived at: [njɣ̃], [nõ] and [tʂ^hũ], respectively. These pronouns all have M tone in isolation due to the neutralization, in this position, of the lexical categories L, M and H; their underlying phonological form is the following: /njɣ̃/, /nõ/, and /tʂ^hũ/.

9.3 Pragmatic intonation

9.3.1 Emphatic stress, and its toned-down avatars

Martine Mazaudon’s use of an ‘up’ arrow ↑ to mark “intonational emphasis on the preceding syllable” (Mazaudon 2004) is adopted for the Na data, as in (1).

- (1) t^hi/ | ə̃tmṽ-jĩ-hĩ | -dzõ, | ↑zõ-jĩ-tsũ | -mṽ.
 t^hi/ ə̃tmṽ jĩ -hĩ dzõ zõ jĩ -tsũ -mṽ
 then older_sibling to_do REL TOP boy/son COP REP AFFIRM

‘The elder [of the two siblings] was a boy.’ (Sister.5)

In my first field notes, I jotted down ‘This is a man’s job!/This type of work [viz. plowing] is men’s part!’ as /*zõ-ŋũ-jĩ/. The correct notation is in fact /zõ-ŋũ | jĩ/: the first two syllables, which constitute a tone group, carry the

same surface-phonological tone (M). My initial notation was influenced by the intonational emphasis carried by the first syllable, which resulted in a much higher pitch on /zo-ɪ/ than on the following syllable; to boot, that syllable is a grammatical word and hence prone to intonational backgrounding, a phenomenon studied in §9.3.3.

9.3.1.1 Emphatic stress as a language universal

Emphatic stress in Na appears to be essentially the same as in English and French, hence the choice to use this label (proposed by (Coustenoble & Armstrong 1937). Prototypical realizations of emphatic stress have been shown to involve supplementary activity of the expiratory muscles, resulting in a sudden increase in subglottal pressure during the articulation of a consonant (Benguerel 1973; Carton et al. 1976; Ohala 1978; Fant, Hertegård & Kruckenberg 1996), hence the term “force-accent” used by Kohler (2003). This category has been somewhat neglected in intonation studies, as tonal models of intonation led researchers to focus their attention mostly on the acoustic parameter of fundamental frequency. But it is a good candidate for the status of universal of human language. Its linguistic functions range from the attitudinal and emotional to the pragmatic: it is the most extreme manifestation of intonational emphasis. It is most often encountered in toned-down versions, physiological effort at a subglottal level being mimicked through such strategies as F_0 excursions and consonant lengthening. Needless to say, its description as a language universal by no means implies that it is uniformly present in different languages and different oral genres. Like other linguistic phenomena, it comprises important language-specific and speech-style-specific dimensions: its frequency of use varies greatly from language to language, from speaker to speaker, and from style to style; its stylistic effect is inversely proportional to its frequency of use.

9.3.1.2 The superposition of lexical tone and intonation

The general approach adopted here is superpositional, distinguishing different levels: in particular, tone on the one hand, and intonational modifications (reflecting boundaries/junctures and information structure), on the other. Great care must be exercised in the analysis of these phenomena, maintaining the functional distinction between lexical tones and intonation. For instance, when picking up the phone, speakers of Mandarin say “喂”, lexically a tone-4 syllable (Pinyin transcription: wèi), i.e. realized with sharply falling pitch; but in this context, the lexical tone is overridden by interrogative intonation, and the pitch

is typically rising. One interpretation would be that the initial tone, tone 4, becomes another tone: say, tone 2, the rising tone. But rather than treating this case as an instance of tone change, it makes better sense to consider it as an extreme example, where the lexical tone has so little communicational relevance, and the expression of sentence mode and speaker attitude such an importance, that their superposition leaves little trace (if any) of the lexical tone.

A compromise has to be found, in each speech act, between the competing demands of clarity, on the one hand, and expressivity, on the other. It seems clear that Na speakers are careful to avoid too great a distortion to the tonal string due to intonational emphasis. While no specific phonetic study has so far been conducted on Yongning Na data, it seems reasonable to assume that the situation is comparable to Naxi, where a study of the three basic tones (H, M and L) under emphasis reveals a relatively milder effect of emphasis on F_0 than on intensity, as compared to English data (Michaud 2005: 107–167).

9.3.1.3 Cases where intonation interacts with the tonal string

In some marginal cases, intonational modifications go so far as to affect the string of tones for the utterance, however. In its most vehement manifestations, emphatic stress intrudes into a sentence's prosody, wreaking havoc on tonal contrasts. Example (2) is a case in point.

- (2) $p^{h\nu}J-t\check{a}eJ\grave{I}a\grave{e}J-gvJ-kv\uparrow -ze\downarrow -m\check{a}e\downarrow$
 $p^{h\nu}J-t\check{a}eJ\grave{I}a\grave{e}J\quad gvJ\quad -kv\uparrow\quad -ze\downarrow\quad -m\check{a}e\downarrow$
 very_white to_prepare ABILITIVE PFV AFFIRM
 '[after boiling, linen thread] can become really white!' (FoodShortage.73)

The usual pronunciation is $/p^{h\nu}J-t\check{a}eJ\grave{I}a\grave{e}J/$ 'very white'. In (2), the second syllable is realized phonetically with extremely high fundamental frequency on the syllable $/t\check{a}eJ/$, which is considerably lengthened. From a phonetic point of view, its phonetic L tone is conspicuously disregarded. One way of looking at this modification would be to describe it as due to an intonational overlay: functionally, one could consider transcribing as $/p^{h\nu}J-\uparrow t\check{a}eJ\grave{I}a\grave{e}J-gvJ/$, where the arrow \uparrow indicates emphatic stress, and the underlying tonal string is unchanged.

This forcible intonational modification does interact with the phonological tone string of the tone group, however. If the modification of the second syllable in $/p^{h\nu}J-t\check{a}eJ\grave{I}a\grave{e}J-gvJ/$ only took place on an intonational level, one would expect the underlying tonal string to remain unchanged, in which case the third syllable would retain its phonological H tone. But what is observed is that the

third and fourth syllables in (2) are lowered to L: /ɿæJ-gvJ/. This is precisely what is expected if the second syllable carries H tone. This phenomenon is therefore analyzed as involving a categorical tone change, from a L.L.H sequence, /p^hvJ-tɕæJɿæJ/, to a L.H.L sequence, /p^hvJ-tɕæJɿæJ/.

9.3.2 Focalization through local intonational modification of tone

In Yongning Na, there can be focalization through local intonational modification of tone: changing a H or M level to a dipping contour, or expanding the phonetic range of a MH or LH rising contour.

9.3.2.1 The main facts

In Yongning Na, one means of emphasizing a word within a sentence consists in a rapid dipping contour, as in example (3).

- (3) hī+ki+ | ɕw+^hwɣ+ F | mɣ+pi+
 hī+ -ki+ ɕw+^hwɣ+ mɣ+ pi+
 person to 1-CLF:pieces NEG say
 ‘(S)he did not say anything to the people present! / (S)he did not greet anyone!’ (Field notes, 2009)

The classifier /k^hwɣ+/ is realized phonetically with a noticeable fall, and is lengthened. This phenomenon takes place in rapid speech as well as in slow repetitions, which shows that it is independent of speech rate.

It was later realized that the same type of prominence-lending local intonational modification could also be found for the two rising contours: high-rising (MH) and low-rising (LH). For these contours, the modification consists in F₀ range expansion, and lengthening. Due to the phonetic fact that these are phonological contours, which by themselves have greater duration than simple levels, the intonational modification is less salient than for the M and H levels.

This phenomenon will be referred to, for short, as *intonational focalization*. The notation adopted is ‘F’ (for ‘Focalization’), written after the syllable at issue. This may seem inconsistent with the choice to place the upward arrow for emphatic stress (↑) *before* the syllable that receives emphatic stress. There is a phonetic basis for this different treatment, however: although both phenomena affect entire syllables, emphatic stress is strongest at the *beginning* of the syllable, whereas intonational focalization is implemented through a modification that strongly affects the syllable *rhyme*.

On the analogy with Naxi, where a reduced M- or L-tone syllable can result in the creation of similar contours (Michaud & Xueguang 2007), it was first hypothesized that there must be a reduced syllable in examples such as (3): /***ɕu**-**k^hwɿ**-əɭ **mɿ**-**pi**ɭ/. Likewise, the polite invitation to eat, /əɭ-**dzɿ**-**dzɿ** F | **dzu**-/, (literally ‘Eat slowly!/Take your time!’) was initially transcribed as /*əɭ-**dzɿ**-**dzɿ**-əɭ **dzu**-/. Subsequent investigation showed that this was not the case, however. The dip in fundamental frequency, accompanied by lengthening and formant movement towards a central vowel, is a purely intonational device to set part of the utterance into relief.

The realization of focalization is sufficiently specific – involving a movement in fundamental frequency, a slight lengthening, and a slight change in the vowel: a difference in the time course of formant frequencies – to avoid interference with lexical tone. Emphatic tone is likewise identifiable as such, from cues other than fundamental frequency. This greatly limits the possibility of a misperception of lexical tone caused by these intonational phenomena.

9.3.2.2 Borderline cases, and the issue of lost allusions

About two hundred instances of intonational focalization are indicated in the first twenty transcribed texts. Some cases are clearer than others. For one thing, cases where this focalization is superimposed on rising contours appear less salient – for phonetic reasons, as outlined above. For another, there are borderline cases, where it is not crystal-clear whether to add a ‘F’ in the transcription or not. Borderline cases do not by themselves cast down on the categorical nature of the phenomenon. Intonational focalization can be toned down, in the same way as emphatic stress has toned-down avatars shading into non-emphatic realizations; this is a common situation in the field of intonation. On the other hand, it should be borne in mind, when consulting the texts, that the ‘F’ and ‘↑’ symbols (for intonational focalization and emphatic stress, respectively) often cannot be assigned with the same degree of certainty as consonants, vowels and tones. When transcribing narratives, one way to check with the speaker whether to classify a given case as having intonational focalization or not consists in playing the passage at issue, then repeating it with and without the telltale fall in pitch and lengthened rhyme, and asking the consultant to indicate which of the two realizations fits better. This entails no guarantee, however, as the consultant can choose a repetition which they consider (in retrospect) would have been more suitable in that context.

Pending experimental verification by perceptual tests, it seems likely that different speakers have different degrees of sensitivity to intonational detail. Toned-

down versions of intonational focalization may go unnoticed by some speakers. It is a fact of life that hearers can fail to pick up intended clues. A linguist's aphorism has it that, in human communication, misunderstanding is the general case, and mutual understanding is a special case ("la compréhension est un cas particulier du malentendu": Culioli 1990: 39). Lost allusions are often staged in literary works, among them *In Search of Lost Time*: the grandmother's sisters design allusions that are so carefully veiled that they are not intelligible to the intended addressees.⁴ The world is a cemetery of cultures; and each text is a tomb for allusions. The exact nuance of emphasis that the speaker placed on this word or that is best appreciated on the basis of a global interpretative process; judgments on the presence or absence of emphatic stress and intonational focalization may prove useful in this interpretative process, but it will be clear to all concerned that they are not the full picture, far from it.

9.3.2.3 A case in which intonational focalization has become habitual

This paragraph presents a case of habitual association of intonational focalization to a phrase. The classifier /saŋ/ 'thing' only appears in the phrase /dʒuŋ-saŋ/ 'anything', itself restricted to negative contexts: typical examples are /dʒuŋ-saŋ F | mɔŋ-dzoŋ/ 'there isn't anything' and /dʒuŋ-saŋ | mɔŋ-tʃi/ '(people) do not do anything/do not work at all'. Out of 30 examples found in 25 transcribed narratives, all except one are accompanied by intonational focalization. The existence of one example without intonational focalization (TraderAndHisSon.24) is enough to demonstrate that the association of this focalization with /dʒuŋ-saŋ/ is habitual, and should not be considered a lexicalized characteristic of this expression in F4's speech.

9.3.2.4 Intonational focalization and the division of the utterance into tone groups

As discussed in Chapter 8, the division of the utterance into tone groups is a fundamental dimension of Yongning Na prosody. The sifting of examples reveals that intonational focalization does not necessarily entail the presence of a following tone-group boundary, as shown by BuriedAlive3.143. In the vast majority

⁴ "... they, in their horror of vulgarity, had brought to such a fine art the concealment of a personal allusion in a wealth of ingenious circumlocution, that it would often pass unnoticed even by the person to whom it was addressed." Revised edition of the Scott Moncrieff and Kil-martin translation, Start Publishing, 2012. *Original text*: "Celles-ci par horreur de la vulgarité poussaient si loin l'art de dissimuler sous des périphrases ingénieuses une allusion personnelle qu'elle passait souvent inaperçue de celui même à qui elle s'adressait."

of examples, such a boundary is present, however. Moreover, there are examples where the intonational focalization is associated to the insertion of a tone-group boundary at a place where it would otherwise be highly unexpected, as in BuriedAlive3.161: /zoʔF | əʔmiʔ-ŋuʔ-/ ‘the boy’s mother’ (emphasis on ‘boy’). The presence of a tone-group boundary results in a different sequence of tones than is found in the phrase ‘the boy’s mother’, which, outside this context, is /zoʔ-əʔmiʔ/: the division into two tone groups results in the non-application of the tone rules which hold in determinative compounds, since tone rules never apply across tone-group boundaries. In this example, intonational focalization and the presence of a tone-group boundary converge to set /zoʔ/ ‘boy’ in relief.

9.3.3 Intonational backgrounding of particles

It is a well-established cross-linguistic observation that grammatical words are less strongly articulated than lexical words. In languages that have distinctive stress, many grammatical words do not carry lexical stress, and those that do are sometimes destressed in discourse; in some languages that have tone, there are cases of toneless grammatical words, for instance in Mandarin Chinese. Even in cases where there is no phonological difference between lexical words and grammatical words – e.g. in French, which does not have lexical stress, and in Vietnamese, which has tone on all syllables including grammatical morphemes –, the phonetic difference between these two categories is noticeable salient.

The strength of this tendency appears to vary across languages. Marc Brunelle (p.c.) hypothesizes that it is relatively weak in Vietnamese: that is, there would be less hypo-articulation of grammatical words in Vietnamese than in English or French. There also exist reports that the phonetic realization of tone sequences in some Subsaharan languages is unaffected (or almost unaffected) by the nature of the syllables that act as tone-bearing units, so that a M tone on a grammatical morpheme will be realized in the same way as if the tone-bearing syllable were a verb or a noun (Jacqueline Leroy and Larry Hyman, p.c.). In Na, on the other hand, the intonational backgrounding of grammatical words such as particles is highly salient. Direct comparison is possible between the possessive /bɣ-/ and the word /bɣ-/ ‘intestine’ (in sequences such as /hwɣ-li-bɣ | bɣ-/ ‘cat’s intestine’: there are examples in the recordings 7, 8–10, 11 and 13 of the *BodyPartsOfAnimals* set), or between the relativizer /hɪ/ and the word for ‘person, human being’, /hɪʔ/.

9.4 Expressive and iconic phenomena

The observations grouped in this section are simply offered as introductory guidance for the study of expressive and iconic phenomena in Na. Needless to say, a systematic experimental investigation into patterns of tonal coarticulation and intonational modifications of tone in Yongning Na would yield a more fine-grained picture than could be presented here.

9.4.1 Towards the loss of lexical tone on some grammatical words through habitual intonational modifications

The extra distal locatives /**dx̣ɹ̥-t̥-qo̥**/, /**dx̣ɹ̥-t̥ʂ^hu̥-t̥-qo̥**/, /**dx̣ɹ̥-t̥^hv̥-t̥-qo̥**/ and /**dx̣ɹ̥-t̥^hv̥-t̥-gi̥#**/ share the same intonation.

There exists a parallel set with /**gɹ̥**/ as its first syllable, from /**gɹ̥**/- ‘upward’: /**gɹ̥-t̥-qo̥**/, /**gɹ̥-t̥ʂ^hu̥-t̥-qo̥**/ and /**gɹ̥-t̥^hv̥-t̥-qo̥**/ ‘way up there’, and /**gɹ̥-t̥^hv̥-t̥-gi̥#**/ ‘way up, in that direction’.

For both sets, the realization of the first syllable is highly expressive and allows variants. Either it starts on an extra-high pitch and glides downward, at a slope left to the speaker’s discretion: a sharp fall or a prolonged one. Or it is rising, the details of the rise (duration and slope/maximum peak) being again left to the speaker’s discretion. As far as could be ascertained, the sharply falling variant insists on the great distance to the place at issue (paraphrase: ‘in a place far, far away’), whereas the rising variant is used to direct the speaker’s attention to the place at issue, against a background of shared knowledge (paraphrase: ‘that faraway place, you know’). Use of tone marks to stylize the perceived pitch of this syllable, such as /**dx̣ɹ̥**/ or /**dx̣ɹ̥**/, would introduce a potential for confusion between lexical tone and intonational phenomena, hence the choice to use an exclamation mark instead, even though this is under-specific in phonetic terms. Devising a set of symbols for more detailed transcription would require a full-fledged study of expressive phenomena in Na, which could propose a division into types, each of which may further allow for parametric variation, e.g., for a falling contour, the temporal position of the peak, its position within the speaker’s F_0 range, and the slope of the following fall.

It is an issue how to transcribe tone on the initial syllable of these extra-distal locatives. Identification of the morpheme /**gɹ̥**/- ‘upward’ is not problematic, as it is attested elsewhere in the language with the same meaning that it has in the extra-distal locatives. On the other hand, the syllable /**dx̣ɹ̥**/ is peculiar not only in its intonational realization, but also in its segmental composition. This syllable is only unattested in Na (i) in these extra-distal locative expressions, and (ii) fol-

lowed by /ɿ/, in /hṽ+dv+ɿ#/ ‘clumsy’ and /õ+dv+ɿ+/ ‘fundamental(ly)’. The two sets of extra-distal locatives (beginning with /gɾJ-/ and /dv+/-) share essentially identical intonation; but this intonation is so distant from what one would expect on the basis of the lexical L tone of /gɾJ-/ ‘upward’ that it looks like a case of neutralization of tonal oppositions (on the first syllable of these locatives), and it would be unwise to posit an initial lexical L tone in /dv?-qo+/, /dv?-tṣ^hu+qo+/, /dv?-t^hv+qo+/ and /dv?-t^hv+gi#/ on the analogy of the /gɾJ-qo+/, /gɾJ-tṣ^hu+qo+/, /gɾJ-t^hv+qo+/, and /gɾJ-t^hv+gi#/ set. A notation of /dv-/ with M tone is provisionally adopted, on the basis of the impression that its rising realizations appear to have a somewhat higher starting-point than those of rising realizations of /gɾJ-/. The considerable intonational modification of these syllables is transcribed in narratives through the addition of the mark for emphatic stress ↑; this mark does not tell the full story, but has the advantage of bringing attention to the presence of a strong intonational modification resulting in a gap between the hypothesized lexical tone and the surface realization. Such situations hold a potential for the neutralization of lexical tone oppositions. The prefix /gɾJ-/ in these expressions is still recognizable as a distinct morpheme meaning ‘above’, attested in a number of productive constructions; this contributes to maintaining an awareness of its lexical tone (a L tone). On the other hand, /dv?-/ is synchronically orphaned, and its tone is likely to be as unclear to the speakers as it is to this author. This is an example where there is potential for change, e.g. by treating /dv?-/ as a L-tone item by analogy with the only morpheme with which it can commute: /gɾJ-/ ‘above’.

9.5 Key factors in the phonetic implementation of tone

The following section sets out key factors in the phonetic implementation of tone.

9.5.1 The weak realization of grammatical words

Following a well-attested cross-linguistic tendency, the lighter semantic weight of grammatical words relative to lexical words is reflected in a weaker phonetic realization. To use a concept proposed by Shih Chilin for speech synthesis, grammatical words have a lower strength coefficient. In Shih Chilin’s model, the tones of syllables with a high strength coefficient are realized close to their lexical tone template, whereas the lower the coefficient, the stronger the coarticulation with following tones (Kochanski & Shih 2003).

A case in point is the prohibitive prefix /t^ha+-. When it is followed by a redu-

plicated verb of tone class M_a , the tone pattern is M.H.L, e.g. / $t^h\alpha\downarrow\sim ki\downarrow$ / ‘do not give away, do not distribute’. Phonetically, the syllable / $t^h\alpha\downarrow$ / is realized with rising fundamental frequency. Averaging across eight tokens, there is a 6.7% rise in F_0 (standard deviation: 3.6). This rise is probably too small to be perceived as such: glissandos need a minimum slope of about 14% over a long tone-bearing unit (over 300 ms) or 18% over a short tone-bearing unit (100 ms) (Rossi 1971; Gsell 1979). The amplitude of the rise during / $t^h\alpha\downarrow$ / can be compared with the 16% jump in F_0 (standard deviation: 5.0) between the prefix and the H-tone syllable that follows.

The anticipatory rise in the course of the prefix / $t^h\alpha\downarrow$ / is interpreted as a typical example of coarticulation between a M-tone syllable with a low strength coefficient and a following H-tone syllable with high strength coefficient.

9.5.2 The absence of oppositions between L.M and L.H, or between H.M and H.L

A key phonological fact about Yongning Na tone is that there exists no contrast between *H.M and H.L sequences (only H.L is observed), and that the contrast between L.M and L.H, which is postulated at the under-lying phonological level, is neutralized in the surface-phonological forms. This leads to the following generalization: in Yongning Na, there exists no context where a two-step shift on the tone scale (i.e. from L to H, or from H to L) contrasts with a one-step shift (i.e. from L to M, or from H to M).

Said differently, for any pair of successive syllables within a tone group, it is enough to identify the tone of the second as being (i) higher than the preceding tone, (ii) identical to the preceding tone, or (iii) lower than the preceding tone.

This is unlike the closely related language Naxi, where all combinations of tones in disyllables are attested, so that L.H and L.M need to be distinguished, as do H.M and H.L.

9.5.3 Tonal coarticulation: anticipatory phonetic dissimilation in M.L and M.H sequences

In some languages, phonetic anticipation of following tones takes place: in a L.L.H sequence, the second L tone is realized higher than the first, in a gradual progression towards the H tone (Creissels 1994: 216). The opposite happens in Yongning Na. If a M tone is followed by L, it is realized with a higher fundamental frequency than when followed by H. This has the effect of bringing out the contrast in pitch between M and the following tone. The M tone can be said to have three

allotones: that found in front of L is the highest; that found in front of M is in a central phonetic range of F_0 ; and that found in front of H is the lowest.

Likewise, a L tone is realized lower in front of M or H than when followed by another L. Using the vertical position of letters to indicate relative pitch, an approximation of the phonetic realization of a M.M.L sequence would be [M.M.L], and a L.L.H sequence could be approximated as [L.L.H].

This links up with observations about the realization of like-tone sequences, L.L.L.. and M.M.M.. (*H.H.H.. sequences are never observed, since a H tone is always followed by Ls). Sequences of L tones decline gradually towards a final L target that is clearly low. The first L tone in such a sequence may be realized in a relatively high range of fundamental frequency: extracted from context, it may sound like [M]. This does not threaten its correct identification within the tone sequence: a sequence such as L.L.L cannot be mistaken for M.M.L, because the latter sequence has to be realized with a significant phonetic drop from M to L (approximation: [M.M.L]). In the absence of this slight upward jump in fundamental frequency, and of any sudden drop from one syllable to the next, the sequence is perceived as consisting of like tones. Likewise, a M.M.M like-tone sequence cannot be mistaken for M.M.L even if its last tone is depressed by intonational factors such as final lowering. Final lowering affects the last syllable, but does not raise the previous one (schematic representation: [M. M.M]), whereas a M.M.L sequence would comprise a noticeable raising of the syllable before last: [M.M.L].

These pieces of information are summarized in Table 9.1, where the symbol σ is used to stand for syllables.

Grasping the phenomenon of anticipatory phonetic dissimilation in M.L and M.H sequences is crucial to the recognition of tones in Yongning Na. This dissimilation allows for a great range of phonetic variation in sequences of L tones or M tones. L-tone sequences may start from a relatively high pitch, as long as they descend clearly towards a phonetic low target without intervening upward jumps in pitch. M-tone sequences may be strongly affected by declination (a phonetic, gradual, noncategorical decrease in fundamental frequency in the course of the utterance: see §9.2) without risk to their correct identification. Listeners confronted with a sequence of syllables of decreasing fundamental frequency, without noticeable upward jumps in fundamental frequency, can safely interpret this sequence as carrying M.M.M.. or L.L.L.. tones; the overall slope of the decrease in F_0 , and the range of F_0 reached at the end of the sequence, allow the hearer to decide between M.M.M.. and L.L.L..

The anticipatory phonetic dissimilation in M.L and M.H sequences is especially

Table 9.1: A schematic representation of the realization of some tone sequences in Yongning Na.

phonetic sequence	interpretation	elements used in identification
[σ.σ.σ.σ.σ]	M.M.M.M.M	gentle decline in F ₀ ; overall mid range of F ₀
[σ.σ.σ.σ.σ]	L.L.L.L.L	slightly steeper decline in F ₀ than for all-M sequences; slightly lower endpoint
[σ.σ.σ.σ]	M.M.M.L	raising of the third syllable, and clear difference in pitch between the last two syllables
[σ.σ.σ.σ]	L.L.L.H	lowering of the third syllable, and clear difference in pitch between the last two syllables

salient, but preplanning in tone production is also noticeable at the level of the entire tone group. For instance, a group whose tones consist of the sequence M.M.H begins on a lower pitch than one with a M.M.M sequence, which itself begins lower than one with a M.M.L sequence. A striking example was unintentionally recorded by eliciting verbs in the frame /no-t-ŋu-t | ___-zo.ho/ ‘you are going to ___’: the sequence ‘you are going to eat’, /no-t-ŋu-t | dzu-t-zo-t-ho-t/, was realized with very high pitch on the two M-tone syllables of the utterance-initial tone group, /no-t-ŋu-t/ (2sg-A), whereas the two next M-tone syllables, /dzu-t-zo-t/, were realized lower than average so as to maximize the contrast with the H tone that follows them. The result is a considerable drop in F₀ from /ŋu-t/ to /dzu-t/, despite their identical phonological tone. Like-wise, in the elicited sentence /tʂ^h-u-t | zɰæ-t-zo-t-bv-t | ho-t-mi-t ŋi-t/ (‘This is the stomach of a colt’; document BodyPartsOfAnimals7.140), /ho-t-mi-t/ is realized distinctly lower than /zɰæ-t-zo-t-bv-t/.

Similar evidence comes from narratives. In Funeral.216, the sequence /ɰæ-t-bæ-t-ɰo-t-ŋu-t/ was initially transcribed /*ɰæ-t-bæ-t-ɰo-t-ŋu-t/, misinterpreting the phonetic raising of the M tone in front of L as a phonological difference from the preceding two M tones. In the same sentence, /ɰu-t-ɰæ-t-bæ-t/ was initially transcribed as /*ɰu-t-ɰæ-t-bæ-t/: due to final lowering, the phonetic drop in F₀ from /ɰæ-t/ to /bæ-t/ may be as salient (or even more salient) than that from /ɰu-t/ to

/xæ]/.

These examples bring us to the topic of the resetting of reference values for tones at junctures between tone groups.

9.5.4 Resetting of reference values for tones at junctures between tone groups

A return to the baseline does not take place at each juncture between two tone groups. On the other hand, there is a resetting of reference values for tones at each juncture between tone groups, such that a M tone in final position within a tone group and another M tone in initial position within the following tone group can have widely different fundamental frequency values. This also relates to the fact that M tone in final position within a tone group contrasts with L, H, MH, and LH, which places great constraints on its position within the tonal space (from an acoustic and perceptual point of view), whereas a M tone in initial position within a tone group only contrasts with L – except in the special case of a monosyllabic tone group, of course.

9.5.5 The realization of /LM/, /LH/ and /MH/ contours

It was pointed out in Chapter 3 that there only exist two types of contours on monosyllables at the surface-phonological level: low-rising and mid-rising. At the surface-phonological level, there is no opposition between /LM/ and /LH/ contours. Phonologically, the product of the neutralization is labelled LH, for a structural reason set out in Chapter 3. Phonetically, it is a low-rising contour whose endpoint is not as high as that of the /MH/ contour. To approximate phonetic realizations in terms of three levels, they are closer to [LM] than to [MH]. This makes sense both in terms of production and in terms of perception. In production, reaching as high a phonetic target for the low-rising contour as for the mid-rising contour would require extra effort, as the rise in F_0 would have to be greater. In perception, this rise to a final target similar to that of the MH contour could make it more difficult to distinguish the (phonologically contrastive) low-rising and mid-rising contours. There are thus phonetic reasons why the product of the neutralization of /LM/ and /LH/ should be phonetically closer to [LM] than to [LH].

From the point of view of the tone system, this creates a tension between phonological categories and phonetic realizations. Such discrepancies between lexical-phonological categories and phonetic realizations hold a potential for re-analysis of the system by language learners – especially in the present social

context, where exposure to Na is made more limited by the pervasive presence of Mandarin, so that children appear not to acquire the tonal system in its full complexity. This issue will be taken up in Chapter 11.

9.6 As a conclusion: examples of mistaken tonal identification

In this section, the above observations about intonation and tone implementation are recapitulated through examples of early, mistaken notations: cases where tone identification was erroneous for want of being aware of the language-specific factors that go to shape the final prosodic form of utterances. These examples shed light on the process of categorical interpretation of the pitch of successive syllables.

9.6.1 Anticipatory dissimilation before a L tone

The tone sequence M.M.L was often mistakenly transcribed as M.H.L, for instance in the determinative compound ‘tiger’s ear’, /**la**†**hi**†**pi**↓/, initially transcribed as /***la**†**hi**†**pi**↓/. This is because the pitch of /**hi**†/ is higher than that of /**la**†/, due to anticipatory dissimilation before a L tone; successive pitch levels can be stylized as follows: [M.M.L]. This difference in pitch is a cue to the M.L sequence; it is important to the identification of the tone of the third syllable as L, instead of a M tone lowered by declination or final lowering. But it must be factored out when determining the tone of the syllable /**hi**/ itself.

9.6.2 The interplay between morphosyntactic information and phonological information

The tone sequence M.L.L.L was initially transcribed as LM.M.L.L in /**le**†**mv**†**p**^h**æ**↓**ze**↓/ ‘... have forgotten’ (ACCOMP-to_forget-PFV), mistakenly transcribed as /***le**†**mv**†**p**^h**æ**↓**ze**↓/ on my first field trip. This transcription is relatively close to the phonetic realization, with a slight rise during the first syllable, and a gradually declining fundamental frequency during the three syllables that follow, with a clearly low phonetic target on the last syllable. In order to identify the correct tone sequence, a crucial piece of information consists of the overall higher fundamental frequency on the first syllable. Details in its phonetic contour must be overlooked: whether it is flat, rising or falling is phonologically irrelevant in this context, since phonological contours are only found in tone-group-final

position. This piece of information points to a difference in phonological level between the first syllable and those that follow. Since the first tone in a tone group can only be M or L on the surface-phonological level, the first tone must be M, and those that follow can only be L. This example illustrates the interplay between morphosyntactic information and phonological information in speech comprehension: the identification of this sequence as one syntactic phrase (a verb phrase) helps identify it as one single tone group, which in turn provides precise guidance in tone identification.

9.6.3 Resetting at junctures between tone groups

At a stage when I had not yet worked out clearly the existence of tone groups, the sentence /*njɣ*-*ŋu*+ | *hwæ*-*bi*-*ze*+/ ('I'm paying for it! / I'm the one who's buying [it]!'), was transcribed as /**njɣ*-*ŋu*+ | *hwæ*-*bi*-*ze*+/: the sequence of three M tones on the last three syllables was identified correctly, but it seemed obvious that the tone of the first two must be higher, hence the choice to transcribe them as H. Once it was recognized that there were two tone groups here, the considerable phonetic difference in pitch between the two groups could be interpreted as due to a difference in their baseline; indeed, this difference may serve as a cue to listeners that there are two tone groups here. There is no risk that a proficient speaker of Yongning Na will interpret the high pitch on /*njɣ*-*ŋu*+/ as the realization of a H,H sequence, since such sequences are never found in Na (due to Rule 4 and 5: within a tone group, a H tone can only be followed by L tones).

Similar examples include /**no*+ | *hwæ*-*hō*+/ 'You go and buy [it]!' instead of /*no*+ | *hwæ*-*hō*+/: /**njɣ*-*ŋu*+ | *ɬu*-*k^hwɣ*+ | *dze*+/ 'I cut a piece' instead of /*njɣ*-*ŋu*+ | *ɬu*-*k^hwɣ*+ | *dze*+/: /**tʂ^hu*+ | *ɣwɣ*+ | *ni*+/ 'This is a mountain' instead of /*tʂ^hu*+ | *ɣwɣ*+ | *ni*+/: /**ɣwɣ*+ | *ɬu*-*lɰ*+/ 'one mountain' instead of /*ɣwɣ*+ | *ɬu*-*lɰ*+/: /**dzu*+ | *ɬ^hɣ*+/ 'a drop of water' instead of /*dzu*+ | *ɬ^hɣ*+/: and /**mv*+ | *t^hi*-*ts^hi*+/ 'to light a fire' instead of /*mv*+ | *t^hi*-*ts^hi*+/. In all of these cases, I based my transcription on the perceived similarity in pitch between successive syllables, overlooking the fact that this comparison must not be made across tone groups, as the baseline is modified from one tone group to the next.

9.6.4 The effects of pragmatic intonation

In my first field notes, 'to play erhu (Chinese violin)' was transcribed as /**ku*-*lɰ*+ | *tɣ*+/, instead of /*ku*-*lɰ*+ | *tɣ*+/, due to an intonational strengthening of the verb: the phrase was provided as an answer to the question of which verb is associated

9.6 As a conclusion: examples of mistaken tonal identification

with ‘erhu, Chinese violin’ (I began a sentence, /tʂ^huɪ-ŋuɪ | kuɪɿ ... /, ‘(S)he ... the violin’, while making the gesture of playing), so that the consultant emphasized the verb in her answer.

Likewise, the sentence ‘It’s not the same!’, /ɕuɪ-bæɪ | mɻ-tɕɻɿ/, was initially transcribed /*ɕuɪ-bæɪ | mɻ-tɕɻɿ/, with H tone on the verb; I believe that this was because the verb /tɕɻɿ/ is realized phonetically with higher fundamental frequency than the preceding negation, which as a grammatical morpheme is intonationally weaker.

‘The sky is cloudy’ was transcribed as /*mɻɿoɿ tɕuɪ/ instead of /mɻɿoɿ | tɕuɪ/; the final syllable has a high informational load, and received some intonational emphasis.

10 Areal and typological discussion

This chapter groups discussions of issues pertaining to Yongning Na in its broader areal context, and in a more general typological perspective.

10.1 Introduction: synchronic and diachronic typology

10.1.1 Typology and universals

Linguistic typology is central to the series entitled “Studies in diversity linguistics”, which hosts this volume. The “Aims and scope” of the series summarize neatly the approach adopted here:

This book series will publish book-length studies on individual less-widely studied languages (especially, but not only reference grammars), as well as works in broadly comparative typological linguistics that takes into account the world-wide diversity of human languages. Work on individual languages and broadly comparative work is of a different nature, but this book series sees the two as closely related: Comparative studies need in-depth work on individual languages from around the world to build on, and descriptive work is done best in a comparative perspective.

As to the nature of the comparative perspective, the following statement sets the stage for the synchronic dimension of the work:

... languages may differ at virtually all levels in their process of categorisation – not only in how they group sounds into emic categories (phonemes) but also in the way their particular constraints group these phonemes into meta-categories (classes of phonemes). These constraints, in turn, have to be defined system-internally, even when they derive from such supposedly universal parameters as sonority. Haspelmath (2007: 129) reminds us that “structural categories of language are language-particular, and we cannot take pre-established, a priori categories for granted”. Such a stance does not rule out the possibility of universal generalisations, but entails

that they can only be based on the empirical study of language-internal structures, and the acknowledgment of cross-linguistic diversity. (François 2010)

These views by no means amount to a relativistic claim that each language is different and calls for a distinct approach and distinct concepts. On the contrary, they open into a programme for comparative work that emphasizes cross-language similarities in functional terms, and in terms of evolutionary potential, instead of static characteristics. This aspect is developed in the following paragraph under the heading of *panchronic phonology*.

10.1.2 Panchronic phonology

Panchronic phonology, a research programme formulated by Haudricourt, is described below in a brief discussion of evolutionary phonology and structural approaches to diachronic phonology.

Evolutionary phonology, building on Ohala (1989), considers phonetic variation to be the primary source of phonological change (Blevins 2004; Blevins & Garrett 2009; also Smith & Salmons 2008). This emphasis on phonetic bases of change encourages a continuous and mutually profitable dialogue between experimental phonetics and historical phonology. However, the role played by phonetic factors may be slightly overestimated by this approach. Hypothesized universals of language change based on phonetic properties seldom stand close scrutiny. Competing phonetic tendencies exist, and they do not have explanatory or predictive power when it comes to individual cases (Labov 1994: 601; see the critical assessment of evolutionary phonology by Andersen 2006: 168–171). Clearly, the existence of a pool of phonetic variation is only part of the thoroughly complex story of diachronic sound change. Structural approaches to diachrony study the way in which phonological systems respond to the causes of change (in particular Martinet 2005). A major source of change is the constant competition between the tendency towards phonological integration on the one hand and the tendency towards phonetic simplicity on the other. Phonological integration tends to fill structural gaps in phonological systems, while phonetic economy tends to create phonological gaps. A simple example can be drawn from tones: having five level tones (Top, High, Mid, Low, Bottom) is phonologically economical, as tone alone allows for numerous lexical distinctions, and the combinations of the five levels open up immense morphophonological possibilities. But this is phonetically uneconomical, because the distinction between a large

number of tones is perceptually difficult, e.g. distinguishing sequences such as Top+High, Top+Mid, and High+Mid.

Out of the pool of potential changes, the actual direction of evolution observed in a given language depends in part on the state of its phonological system, e.g. – again taking tone as an example – which tones it possesses, which phonotactic constraints they are subject to, and what functional load they have in the system.

Ultimately, what is needed is an approach that attempts to formulate generalizations about sound change that are independent of any particular language or language group. The aim is to build an inventory of common types of sound change and arrive at an improved understanding of the conditions under which they occur. Haudricourt labels such an approach *panchronic phonology* (Haudricourt 1940; 1973; see also Hagège & Haudricourt 1978). Panchronic laws are obtained by induction from a typological survey of precise diachronic events whose analysis brings out their common conditions of appearance. In turn, these laws can be used to shed light on individual historical situations.

Let us consider an example of panchronic regularity: the transphonologization of the voicing opposition among initial consonants (Haudricourt 1965; Ferlus 1979). After evolving into an opposition between phonation types on the following vowel (breathy voice vs. modal voice), this opposition becomes tonal if the language already had tones (creating a split in the tone system); otherwise it becomes a vowel quality opposition, creating a two-way split in the vowel system. This model is verified in numerous East and Southeast Asian languages.

The explicit research programme defined by Haudricourt holds promise of an increasing degree of precision and explicitness in modeling historical change. The aims and methods of many researchers in historical phonology are actually close to this programme (see, e.g. Jacques 2011a; and the detailed epistemological discussion by Mazaudon & Michailovsky 2007). 's generalization that "(i)n chain shifts, peripheral vowels become more open and nonperipheral vowels become less open" (1994: 601) can be considered as a panchronic statement: it aims to explain synchronic states in terms of the processes that lead up to them, and to arrive at general laws of sound change. I believe that, in practice, these common goals are more important than theoretical differences, and that practitioners of panchronic phonology, evolutionary phonology or other approaches to the typology of sound systems and sound change would draw essentially the same conclusions from the data and analyses in the present book.

10.2 A comparison with other Sino-Tibetan languages

10.2.1 A point of similarity with Pumi: the tone group and its role in conveying information structure

It has been observed that “the same phonological processes such as tone sandhi and lengthening obviously make reference to different prosodic domains within the same language family (Bantu)” (Zerbian 2006a: 132). In view of this strong cross-linguistic diversity, it is remarkable how close the prosodic system of Na is to that of Pumi, a neighbouring Sino-Tibetan language. In Wadu Pumi as in Yongning Na, there exist *tone groups*, likewise defined by a tonal criterion:

Within a tone group, the underlying tone of one lexical element (usually the left-most element) spreads (usually rightwards) to the adjacent morphemes in the same tone group (...). The remaining (...) elements in a tone group are assigned default low surface tone. Tone does not spread across tone group boundaries. (Daudey 2014: 66)

As in Yongning Na, the tone group plays a key role in conveying information structure:

...some elements always combine with others into a single tone group, some elements always form a tone group by themselves, and for some elements, speakers can decide to combine or not combine them into tone groups. The latter elements are the most interesting, in that they allow the speaker to express pragmatic differences through the choice of combining them or not. (Daudey 2014: 68)

This is strikingly parallel to the observations about Na set out in Chapter 8. Language contact probably plays a role here, as the variety of Pumi studied by H. Daudey is spoken in the plain of Yongning, where the two groups have lived together on good terms for at least eight centuries (see the Introduction to this volume). The two groups “frequently intermarry and so a fair amount of Pumi speak or understand Yongning Na to some degree. The reverse is not necessarily true” (Daudey 2014: 5). This suggests that detailed comparison of Na and Pumi could be highly revealing, aiming at the degree of depth and precision reached by Wagner & McCurdy (2010) for English, and Lahiri & Plank (2010) for Germanic.

10.2.2 A point of difference with Laze: tone change occurs in syntagms, not at lexicalization of compounds

In Yongning Na, tone changes occur in syntagms: typically at compounding or affixation, or when associating an object to a verb. Cases of discrepancies between the tones of lexicalized syntagms and those that would be expected in view of the synchronic rules are interpreted (under the present analysis) as vestiges of earlier tone patterns in compounding. Examples include ‘to hunt’ and ‘mare’, discussed earlier.

This is a point of difference with Laze, where there is no tone change in compounding. In Laze, tone changes occur as lexicalization takes place, leading to the neutralization of numerous tonal contrasts. There exist four lexical tones for Laze monosyllables. There exist four lexical tones in Laze monosyllables (for predicates: H, M, L and MH; for nouns: H, M, L and a floating H tone); in theory, this could yield as many as sixteen tone patterns over disyllables, but only seven are observed.

Numerous combinations of two tones other than H yield H+H. This is a key process in the lexical integration of disyllables in Laze: the tonal change signals that the two monosyllables are fused into one single unit. For instance, ‘dog’ is /k^hu^h/, ‘to beat’ is /du/; their combination should yield M.L; but when the speaker says it at one go, rather than as the simple juxtaposition of the two words, it is realised H.H.

In most cases, the speaker remains aware of the tonal identity of the two morphemes that go to compose a [H.H] disyllabic unit, and does not incline to accept the notion that this unit is realised as [H.H]. When the consultant repeats the disyllable at a slow, deliberate pace, there is a pervasive tendency to hypercorrection – saying the morphemes one by one, and falling back on the lexical tones of these individual morphemes.

10.3 Typological perspectives

It is for the typologist, and not for the author of a monography, to set goals and draw typological perspectives. Keeping this in mind, this section is intended for typologists who need their tonal appetite whetted, and for readers interested in an overview of potential contributions of the present case study to typology.

10.3.1 Typological background to the classification of Yongning Na tones as “level tones”

Classification of Yongning Na tones as “level tones” calls for clarifications about the proposed typological divide between “level tones” and “complex tones”.

In what can be broadly termed as “Africanist” usage, “level tone” refers to *a tone that is defined simply by a discrete level of relative pitch*. Level-tone systems have two to five levels of relative pitch: L vs. H; L vs. M vs. H; L vs. M vs. H vs T(op); or B(ottom) vs. L vs. M vs. H vs. T(op). Systems with more than three levels are relatively uncommon (Bariba: Welmers 1952; Bench, a.k.a. Gimira: Wedekind 1983; 1985). One single case of six-level system has been reported: Chori (Dihoff 1977), for which a reanalysis is possible (Odden 1995). The above languages are spoken in Subsaharan Africa, a domain where level tones are especially common. However, level-tone representations have proved useful beyond the Subsaharan domain, for which they were initially developed (on languages of the Americas: Gomez-Imbert 2001; Hargus & Rice 2005; Girón Higueta & Wetzels 2007; Michael 2010; on languages of Asia: Ding 2001; Hyman & VanBik 2002; 2004; Donohue 2003; 2005; Evans 2008; Jacques 2011a). In Yongning Na, the morphotonological alternations studied at length in the chapters that precede provide overwhelming evidence for a level-tone analysis. In level-tone systems, a phonetic contour is *the realization of two or more level tones on a single syllable*. The contours are phonologically decomposable; the observed movement in F_0 is the result of interpolation between the successive levels.

There are some languages for which attempts at the decomposition of contours into levels has been less successful, however, to the point of casting doubt on the relevance of decomposition for these languages. In the Austroasiatic and Tai-Kadai language families, no convincing evidence is found for the decomposition of contours into simpler units. Chao Yuen-ren’s work on Mandarin Chinese in the early 20th century (Chao 1929; Chao 1933) brought to the attention of linguists the complexities of its tone system. Following sustained exchanges with Chao Yuen-ren, Kenneth Pike proposed a typological divide between two types of tones: (i) register-tones, defined simply in terms of discrete pitch levels, and (ii) contour-tones, about which he concludes: “the glides of a contour system must be treated as unitary tonemes and cannot be broken down into end points which constitute lexically significant contrastive pitches” (Pike 1948: 10). Later studies have brought out the importance of durational properties and phonation-type characteristics. In some prosodic systems, phonation types are a redundant, low-level phonetic characteristic of some tones; in others, they are a distinctive feature orthogonal to tone, as in the Oto-Manguean languages Mazatec (Garellek

& Keating 2011) and Trique (DiCanio 2012); finally, in a third type of system, phonation-type characteristics are part and parcel of the definition of tones. Experimental studies of this third type of tone system include Rose (1982; 1989; 1990) for the Wu branch of Sinitic; Edmondson et al. (2001) for Yi and Bai; Mazaudon & Michaud (2008) for Tamang; and Andruski & Ratliff (2000), Andruski & Costello (2004), Kuang (2013) for Hmong. Pike's two-way typology of tone, while it emphasizes typologically relevant properties of the languages which he was able to take into consideration, has some limitations in this respect: characterization as "contour tones" may not be an adequate label for tones such as those of Vietnamese, which contrast with the other tones of the system through a set of characteristics that include specific phonation types in addition to the time course of F_0 (Mixdorff et al. 2003; Tran et al. 2007; Brunelle, Nguyễn & Nguyễn 2010; Nguyen & Tran 2012; Nguyen et al. 2013). For this reason, the term "complex tones" is used below in preference to Pike's "contour tones". To recapitulate the terms used in the present discussion: *level-tone systems* are based on discrete levels of relative pitch, unlike *complex-tones systems*. Complex tones include Pike's category of "contour tones", with the explicit addition of tones that comprise phonation-type characteristics.¹

Under this set of definitions, "contour" refers to a unitary contour: a tone defined phonologically in terms of an overall template specifying the time course of F_0 over the tone-bearing unit. Phonologically unitary contour tones are encoded as an overall shape: "there are no objective reasons to decompose Vietnamese tone contours into level tones or to reify phonetic properties like high and low pitch into phonological units such as H and L" (Brunelle 2009a: 94; see also Brunelle, Nguyễn & Nguyễn 2010; Kirby 2010). In this type of system, the term "level tone" is used to refer to *a tone that does not exhibit any salient fluctuations in F_0* . For instance, Mandarin tone 1 and Vietnamese tone A1 (orthographic *ngang*) can be referred to as "level tones" because, unlike the other tones of Mandarin and Vietnamese, their F_0 curve is relatively stable in the course of the syllable. This does not entail that they are phonologically defined by a discrete level of relative pitch (on Mandarin: see (Xu & Wang 2001).

The two types of phonological contour tones – sequences of levels on the one hand, unitary contours on the other – can be phonetically indistinguishable, so that phonetic observation must be related to functional-structural levels of de-

¹ Note that this differs from the definition used in the World Atlas of Language Structures, where "complex" refers to the number of oppositions, not to the nature of the tones: "[t]he languages with tones are divided into those with a simple tone system – essentially those with only a two-way basic contrast, usually between high and low levels – and those with a more complex set of contrasts" (Maddieson 2011).

scription. The evidence for distinguishing the two types of contours is morphotonological. A rising contour in an African language will typically exhibit phonological behaviour showing that it consists of a low level tone followed by a high level tone (see in particular Clements & Goldsmith 1984; Clements & Rialland 2007). In Yongning Na as in many languages, there is a wealth of evidence for the analysis of contour tones into sequences of level tones. From a typological point of view, instead of positing that all tones can be decomposed into levels, it is at least as reasonable to adopt the opposite standpoint, viewing contours as nondecomposable units unless there is positive evidence to the contrary (Nick Clements, p.c. 2008).

Needless to say, the two-way distinction between level tones and complex tones is by no means water-tight. Borderline situations are likely to exist. As typologists have ample occasion to verify, “structural categories of language are language-particular, and we cannot take pre-established, a priori categories for granted” (Haspelmath 2007: 129). The distinction between level tones and complex tones is proposed as a rule-of-thumb initial distinction; it aims to bring attention to a considerable amount of interesting Asian data that are likely to lie below the radar of some prosodic typologists and which deserve to be more widely appreciated. Tonal systems thus based on levels (tone heights) are relatively unusual in Sino-Tibetan, but not unheard of: examples include Pumi (Ding 2006; Jacques 2011a; Daudey 2014), Mianchi Qiang (Evans 2008), Shixing (Chirkova & Michaud 2009), Hakha Lai (Hyman & VanBik 2002) and Kuki-Thaadow (Hyman 2010).

This perspective draws attention to potential implications of the current language contact situation in the Yongning area, where level-tone systems are in contact with complex-tone systems.

10.3.2 Present-day sociolinguistic situation of Yongning Na: contact with a complex-tone system (Mandarin Chinese)

The above typological perspective highlights a situation shared by Yongning Na and other languages of China that have level-tone systems: they are currently in intense contact with varieties of Mandarin Chinese (Standard Mandarin and Southwestern Mandarin), which have a significantly different prosodic organization based on complex tones (undecomposable contours). The influence makes itself felt on the tone system, and on the intonation.

10.3.2.1 Influence on the tone system

In Naxi, language contact with Chinese arguably played an important role in the lexicalization of a new tone, the rising tone, which emerged in a system that contained three levels: High, Mid and Low (Michaud 2006b; Michaud & Xueguang 2007). A lexical contour (rising) tone thus coexists with three lexical level tones that participate in some synchronic processes of tonal reassociation. It is unclear to what extent Naxi speakers, most of whom are highly proficient in Southwestern Mandarin, keep the tone systems of Naxi and Chinese cognitively distinct: specifically, it is an issue to what extent the Naxi rising tone is perceived as a unit (like contours in Chinese) or as a combination of levels. To venture a hypothesis, the lexical rising tone of Naxi seems to behave essentially like an undecomposable contour.

All the level-tone systems spoken within China are currently subject to the same pressure towards reinterpretation of their tones by analogy with those of Mandarin Chinese. In Yongning Na, contact with Mandarin does not appear to have left conspicuous traces in the tonal system as yet. The Yongning Na sociolinguistic scene currently offers interesting opportunities for studying the effects of bilingualism – specifically, *non-egalitarian bilingualism*, to take up a notion from Haudricourt (1961) – in languages with highly different tone systems. This issue links up with that of influence of language contact on intonation.

10.3.2.2 Influence on intonation

Language contact can exert a strong influence on intonation, raising fascinating issues about language evolution. Wolof, a nontonal language, has been described as having typological peculiarities such as the absence of any intonational marking of focus and the optional nature of the division of sentences into intonation groups (Rialland & Robert 2001). Information structure is conveyed by the verbal morphology: there are three “nonfocusing conjugations” and three “focusing conjugations”; the latter “vary according to the syntactic status of the focused constituent: subject, verb, or complement (in the wide sense of any constituent that is neither subject nor main verb)” (Rialland & Robert 2001: 895). As Wolof ascends “from its origins in the heartland of Senegal to the status of urban vernacular and national lingua franca” (McLaughlin 2008: 142), it is acquired as a second language by speakers of many other languages; informal discussion with a speaker of Wolof who also speaks some Bambara suggests that, in her speech, focus is clearly marked intonationally: pitch is raised on the focused constituent ‘Peer’ (a proper name) in (1), as compared with (2), where it is not under focus.

This suggests that carry-over of intonation patterns from Bambara to Wolof is not uncommon for bilingual speakers; such situations can have far-reaching consequences for the evolution of the intonation system.

- (1) ... Peer moo ko lekk
Peer SUBJEMPH.3SG OPR to_eat

‘It was Peer who ate it.’ (SUBJEMPH stands for *subject-emphatic*, and OPR for *object pronoun*.)

- (2) ... Peer lekk na
Peer to_eat PFT.3SG

‘Peer has eaten.’ (No focused constituent.)

Intonation is especially subject to carry-over from a language to another in the speech of bilinguals; another striking example, involving Vietnamese speakers in a French-speaking environment, is reported by Dung, Huong & Boulakia (1998: 401). In the case of Yongning Na, a full-fledged study of intonation should include a description and analysis of the intonation of Na speakers when using Chinese, comparing it with their intonation when using Na, and examining patterns of interaction. In practice, this is not an easy topic. The main consultant only uses Chinese reluctantly and hesitantly: she lacks confidence and feels awkward using this language. Her own evaluation is that she will never be able to speak “proper Chinese”, and will make do with “pig Chinese” until her last breath. A complicating factor is that since the year 2000 she has been having regular exposure to Standard Mandarin from listening to television; the tone systems of these two dialects of Mandarin are different enough to complicate accommodation to the intonation patterns. She bravely does her part in dialogues with Chinese-speaking relatives and acquaintances, but recording these exchanges and establishing a transcription together with the participants would have run counter to our collaboration’s implicit focus on Yongning Na. The consultant’s comfort zone was respected, and no pieces in Chinese were recorded.

10.3.3 Overall conformation of Na prosody as shaped by the tone rules

This paragraph aims to convey a feel for the organization of the Na prosodic system by pointing out some consequences of its tone rules, as contrasted with the type of organization that characterizes ‘terracing’ tone systems.

The partial neutralization of lexical oppositions when words are said in isolation does not appear to have far-reaching consequences for the entire tonal

system: such neutralization is observed in numerous tonal systems which differ widely from one another, e.g. Japanese (Kubozono 1993), San Juan Quiahije Chatino (Oto-Manguean family) (Cruz 2011: 91), and Sotho and Tswana (Bantu) (Creissels, Chebanne & Nkhwa 1997; Zerbian & Barnard 2010b). On the other hand, the levelling rules of Yongning Na (Rules 4 and 5), whereby all tones following a H tone, or a ML sequence, are lowered to L, have far-reaching consequences for surface-phonological tone sequences. These rules result in the neutralization of tonal oppositions over large portions of tone groups – a massive phenomenon of levelling that is reminiscent of stress systems in which all syllables following a major stress are de-stressed. This rule alone makes Na tone strikingly different from the extensive set of tone systems called ‘terraced-level tone languages’ (Armstrong 1968). ‘Terracing’ refers to processes of categorical shift in register, affecting all following tones: downstep, a distinctive lowering; and upstep, a distinctive raising. An important consequence of terracing is that tones belonging to the same ‘terrace’ become more tightly knit together than the successive tones in a language which, like Na, does not have downstep or upstep. This intuition is reflected in Nick Clements’s proposed treatment of ‘terracing’ in terms of a “tone level frame”. “Within this framework, terracing is seen to be the result of (...) processes applying to the tone level frame itself, rather than directly to individual tones” (Clements 1979: 538). ‘Terracing’ places constraints on the range of fundamental frequency within which the tonal levels are realized, as shifts in register are distinctive. It makes a major contribution to shaping surface-phonological tone sequences and their phonetic realization. Clements points out a key factor: categorical shift in register can take place more than one time in a tone group, requiring, as it were, constant attention on the part of speaker and listener.

A final, important feature of tone terracing, at least in the case of downstep, is that there is no limit on the number of register lowerings that may occur within a tone group; the only limit is the external one imposed by the lexical, grammatical, or phonological factors that govern the occurrence of downstep. (Clements 1979: 540)

This leads to preplanning strategies that can get highly elaborate: excellent speakers anticipate the amount of downsteps that will be required in a long utterance, and raise the initial pitch accordingly. This gives them sufficient phonetic room for realizing successive lowerings all the way to the end of the utterance. Less talented orators need to reset the tonal baseline when successive downsteps make them hit bottom before they reach the end of a tone group (Rialland 2001).

In Na, there is no downstep, and hence no need for whenever a tone group contains a H tone, this tone serves as the tone group's climax. In terms of perceptual processing, in cases where a H tone is identified, the rest of the tone group contains no more tonal information: there is nothing to expect but a sequence of L tones. Phonetically, the pitch gradually lands towards its floor value; the realization of the F_0 curve on this portion of the tone group is free from the trammels of categorical precision, and can be phonetically modulated to convey intonational nuances, such as speaker attitude and emotion, rhythmic choices, and nuances of respective prominence among the syllables that carry L tones.

To summarize, the 'tone level frame' (Nick Clements's term to refer to the tone space at a given point in an utterance) is subject to much fewer constraint in Na than in 'terracing' tone languages. The absence of downstep (or upstep) in Na, and the culminative nature of its H tone, go a long way towards explaining the very different feel of its prosody as compared to that of 'terracing' tone languages. There are simply fewer possible tone sequences in Na than in, for instance, Yala (Ikom), which has H, M and L tones, like Na, but (according to Armstrong 1968) also has the downstepped counterparts !H, !M and !L, and allows the full range of their combinations. In Na, there is no contrast between a fall from M to L and one from H to L. This gives a greater range of intonational freedom than in languages where the tonal space is more crowded.

10.3.4 Assessing the complexity of the Na tone system

In comparison with its immediate siblings (Naxi and Laze), Na presents a high degree of tonal complexity. It has more lexical tone categories, and greater morphotonological complexity. Some dimensions of this complexity are recapitulated below and compared with other languages, not on the basis of phylogenetic or areal closeness but of synchronic typological similarities.

10.3.4.1 Partly regular morphotonology

Partly regular morphological paradigms are cross-linguistically wide-spread. Examples (picked among readings) include

- the inflection of interrogative pronouns in the Australian language Anguthimri (Crowley 1981: 172);
- the inflection of transitive verbs in Dinka (Andersen 1993: 8): while certain inflections are marked by a particular toneme for all verbs alike, other inflections are specific to particular classes of verbs.

Within the tone system of Na, numeral-plus-classifier phrases constitute an area where tone patterns have proliferated. The description set out in Chapter 5 brought out no less than nine tonal categories for monosyllabic classifiers, as opposed to five for monosyllabic nouns. Furthermore, the tone patterns of these nine categories of classifiers in combination with numerals need to be learnt: they do not follow from synchronically regular rules.

While this complexity is not as spectacular as that found in the Ahmao language (Hmong-Mien family), where classifiers have “12 basic forms, each displaying a complex cluster of meanings” (Gerner & Bisang 2009), the Na data may nonetheless have a contribution to make to typological generalizations, showing that the tones of classifiers can be more complex than those of nouns.

10.3.4.2 Nouns and verbs: a comparable degree of complexity?

Keeping in mind that some types of nouns (especially classifiers) are more complex than others in terms of their tone categories, it seems that there is no conspicuous imbalance between nouns and verbs in terms of complexity. This is a difference from tone in Bantu, and in the Niger-Congo family at large, where verbs display less diversity of tone categories than nouns. Many Bantu languages have two tonal types of verbs (irrespective of their number of syllables), versus three or more types of monosyllabic nouns, and an even greater number for nouns of two syllables and more (Creissels 1994: 183). Gbeya, Kissi, Baoulé and Urhobo only have one tonal class for verbs (Creissels 1994: 184).

10.3.4.3 More progressive spreading than regressive spreading: a typologically common pattern

Under the analysis proposed here, L tone tends to spread progressively (‘left-to-right’). The H tone does not spread, in the sense of associating to several syllables in a row: there can only be one H tone per tone group. But the influence of a H tone affects following tones (which all get lowered to L), not previous ones. Seen in this light, Na has more progressive spreading than regressive spreading of tone.

This is a typologically common pattern. Regressive tone spreading is firmly attested, e.g. in Tswana and Odienné Dioula (Creissels 1994: 206), but progressive tone spreading is far more common.

A separate but not wholly unrelated observation is that H tone in Na has a tendency to be realized late within a tone group. Depending on the type of H tone, it associates on the last syllable of the root (H#) or the morphological word (H\$), or

even on the syllable following (#H). A H tone never associates to the first syllable within a tone group. This pattern, too, is relatively common cross-linguistically. Late realization of H targets is more common than the reverse: “when tones and syllables come to be out of phase with one another, it is almost always the case that the tones will last too long, rather than the reverse” (Hyman 1978: 262); “perseverative tone spreading phonologises the tendency of tone targets to be realized late” (Hyman 2007b: 19). The diachronic developments leading to the present diversity of final H tones in Yongning Na seem to follow tendencies that are well-attested across languages. This is a case where synchronic complexity is not particularly surprising when viewed from a typological (panchronic) perspective.

10.3.5 The dual status of the M tone is not a typological rarity

Under the present description, the M tone in Na has two facets. On the one hand it is a full-fledged, phonologically specified tone: the M element in tone categories such as LM and MH cannot be omitted. LM contrasts with L, and MH# with H#. On the other, the M tone serves as a default tone: by Rule 2, M tone is assigned to syllables that remain toneless after Rule 1 (L-tone spreading onto toneless syllables) has applied.

Na is not an isolated case in this respect: the dual status of the M tone is not a typological rarity. In Yoruba, for example, the M tone is not lexically specified: the only two lexical tones are L and H, but following its insertion through default-tone assignment rules, M later behaves as a specified tone in derivations (Akinlabi 1985).

10.3.6 Tonal vs. non-tonal intonation

An important fact about Yongning Na is that it does not have tonal intonation. This section sets out the typological background to this observation.

10.3.6.1 Instances of intonational tones in the world’s languages

There are some well-established cases where intonation is encoded by tones that are treated on a par with lexical tones and morphological tones: in some tonal languages, tone can serve as a marker for functions at the phrasal level. These will be referred to as *intonational tones*. This extension of the notion of tone beyond its primary meaning (lexical and morphological tone) is made in view of the structural similarities between lexical and morphological tone, on the one

hand, and certain intonational phenomena, on the other hand; it does by no means amount to a broadening of the concept of tone to intonational phenomena in general, as is the case in some versions of autosegmental-metrical models of intonation.

First, tone may indicate sentence mode. “The most commonly encountered cases involve a tonal means to distinguish interrogatives from declaratives. In Hausa, a L is added after the rightmost lexical H in a yes/no question, fusing with any pre-existing lexical L that may have followed the rightmost H (...). As a result, lexical tonal contrasts are neutralized. In statements, [káì] ‘head’ is tonally distinct from [káí] ‘you [masculine]’. But at the end of a yes/no question, they are identical, consisting of an extra-H gliding down to a raised L” (Hyman & Leben 2000: 61). The Hausa example is described as a case of intonational tone, rather than a case of superimposition of an intonational contour onto an underlyingly unchanged tone sequence.

Second, tone may serve phrasing functions. In some languages, certain junctures of the utterance are characterized by the addition of boundary tones, which, though introduced by post-lexical rules, are integrated into the tone sequence of the utterance on a par with lexical tones. L. Hyman (personal communication) points out that such phenomena are “rampant in African tone systems”, taking the example of a phrase-final boundary tone in Luganda: this tone is transcribed as H%, where the %, representing a boundary, is a functional indication of the tone’s origin. It acts just like any level tone, except that it is inserted into the tonal string later than the lexical tones. Any sequence of preceding toneless moras will be raised to that H level (though there has to remain at least one L before it). For example, /omulimi/ ‘farmer’ is pronounced all-L as subject of a sentence (/òmùlìmì/), but at the end of an utterance marked by this H%, it is pronounced L-H-H-H: /òmúlímí/.

A third intonational function that may be served by tone is to convey prominence. A clear example of intonational tone (a tone of intonational origin) is encountered in Naxi: a word that carries lexical L or M tone on its last syllable can be focused by addition of a H tone that aligns at the right edge of the word, causing the tone of the last syllable to become rising (Michaud 2006b: 72).

In order to understand how intonational tones emerge and evolve, it appears interesting to examine not only clear-cut cases as those reviewed in this paragraph, but also doubtful cases of intonational tones.

10.3.6.2 Doubtful cases of intonational tones: crossing the fine line between intonation and tone?

Scholars have long been aware of the phonetic similarities between (phrasal) intonation and (syllable-based) tones. In the mid-17th century, the European authors who devised a Latin-based writing system for Vietnamese (de Rhodes 1651) had to develop a notation for a six-way tonal contrast. One of the tones was left unmarked; grave and acute accents were used for two others, and tilde for a fourth one. For the re-remaining two tones, symbols from sentence-level punctuation were used: the full stop was added (below the vowel) to indicate tone B2 (orthographic *nặng*) on the basis of the perceived similarity between its final glottal constriction and the intonational expression of *finality*; and the question mark (in reduced form, on top of the vowel) was used for tone C1 (orthographic *hỏi*) due to its final rise (Haudricourt 2010). To the authors of this system, the newly coined tone marks served as mnemonic cues to the pronunciation of tone, via an analogy with intonation in Romance languages. In this instance, there is no possible confusion between lexical tone and intonation; but there exist cases where a language's lexical tones are reported to serve intonational purposes. Phake (Tai-Kadai language family) exemplifies the diversity of situations found in Asian languages.

10.3.6.2.1 The expression of negation and sentence mode in Phake Phake, a Tai-Kadai language of Assam (India), has six lexical tones, and cases of “changed tones” (Morey 2008: 234–240). There are two different processes. (i) If a verb has the second tone (High falling), it changes to rising when negated. This rising tone is identical in form to the rising tone (no. 6); this is perceived by the speakers as a categorical tone change. This process appears to be spreading to verbs carrying other tones (S. Morey, p.c.). (ii) According to observations made in the 1960s and 1970s, changing the lexical tone of the last syllable in a sentence to the sixth tone (a rising tone) would express a question (Banchob 1987). More recent fieldwork reports the same phenomenon, but instead of identifying the “changed tone” with one of the six lexical tones, it is suggested that it is “a special questioning tone (...). This questioning tone first rises and then falls, and here is arbitrarily notated as 7” (Morey 2008: 234). Finally, an eighth tone is reported: an “imperative tone”, “that exhibited glottal constriction and creaky voice” (Morey 2008: 239). Observation (ii) can be reinterpreted as cases of neutralization of tonal oppositions: it is not appear implausible that question intonation in Phake overrides the lexical tone of the sentence's last syllable in questions, and imperative intonation has a salient influence on some tense-aspect-mood markers, which may go so far as

to override their lexical tone. “The fluctuating needs of communication and expression are reflected more directly and immediately in intonation than in any other section of the phonic system” (Martinet 1957). The phonation type associated to imperative mode – a contraction of the laryngeal sphincter, to convey an attitude of authority – appears to have a clear iconic motivation (see Fónagy 1983: 113–126).

It is perhaps significant that “changed tones” are reported in an area where the dominant languages are non-tonal. Speakers of Phake are also fluent in Asamese, a non-tonal language, which may create a pressure towards the simplification of the Phake tone system, e.g. through neutralization of tonal contrasts in some contexts. Overall, it would seem that intonation does not easily win the day over lexical tone. Some experimental evidence on this topic comes from a study of the Austroasiatic language Kammu, one of few languages with two dialects whose only major phonological difference is the presence or absence of lexical tones. A comparison of the two dialects concludes that the intonational systems of the two Kammu dialects are basically identical, and that the main differences between the dialects are adaptations of intonation patterns to the lexical tones when the identities of the tones are jeopardized (Karlsson, House & Svantesson 2012).

10.3.6.2.2 Mandarin interjections: a case of spurious tonal identification The treatment of the interjection /a/ (transcribed as 啊 in Chinese writing) in a learner’s dictionary of Standard Mandarin offers a clear case of spurious tonal identification. This dictionary treats the interjection as if it had lexical tone, and sets up four distinct entries for it, corresponding to the four tones of Standard Mandarin: with tone 1, the interjection would mean “speaker gets to know something pleasant”; with tone 2, it would signal a “call for repetition”; with tone 3, “surprise or disbelief”; and with tone 4, the “sudden realization of something” (Qinglián 1994, entry “a”). This categorization is based on phonetic similarities between the pitch patterns of the four tones and intonational variants of the interjection, as recapitulated in Table 10.1.

There is in fact a considerable phonetic difference between the four-way division of the Mandarin tonal space, on the one hand, and the intonational gradations in the realization of interjections, on the other – involving not only F_0 , but also length and other parameters. Interestingly, the authors of the dictionary gloss the “tone-4” realization of the interjection /a/ as the “*sudden* realization of something” (emphasis added). The interjection /a/ can just as well convey the realization of something, without any specific hint of suddenness (Lin 1972, entry

Table 10.1: Phonetic basis for the four-way categorization of the nuances expressed by the interjection /a/ in Mandarin, as proposed in some dictionaries.

tone	characterization in dictionary	example	translation of example	F ₀ on interjection	canonical realization of tone
1	“speaker gets to know something pleasant”	啊！我考过了！ <i>ā! wǒ kǎo guò-le!</i>	Wow! I passed the exam!	overall high F ₀	level, in the upper part of the speaker's range
2	“call for repetition”	啊，是吗？ <i>á, shì ma?</i>	Oh, is that right?	rising	rising
3	“surprise or disbelief”	啊？你在这儿干吗？ <i>ǎ? nǐ zài zhèr gān má?</i>	Huh? What are you doing here?	falling-rising	falling from mid-low to lowest, with final rise in isolation
4	“sudden realization of something”	啊，现在我知道了。 <i>à, xiànzài wǒ zhīdào-le.</i>	Aha! Now I understand.	falling	sharply falling, from high starting-point

“啊”). The F_0 of the interjection decreases gradually, in a manner that does not resemble tone 4 (an abruptly falling tone). The mention of suddenness was added because the intonational signalling of this extra nuance tends to shorten the interjection, thereby creating a surface similarity with tone 4. From the point of view of linguistic functions, there should be no confusion: the phonetic realization of interjections in Standard Mandarin is purely intonational, “with varying, indeterminate accent, like English *Oh! ah! aha!*” (Lin 1972, entry “啊”). Mandarin interjections bypass tonal coding; the interjection /a/ has a wide range of possible realizations, and of expressive effects. The four entries set up for this interjection in the dictionary single out four of these realizations, and grant them separate status merely because they happen to be phonetically close to the language’s four lexical tones. This example illustrates the potential for a misinterpretation of intonational phenomena as tonal.

10.3.6.3 Conditioning factors for the development of intonational tones

In light of the above survey, it appears that the presence or absence of intonational tones is a typological parameter: a parameter that varies from language to language.

The issue whether a language has tonal intonation or not may appear as a non-issue to researchers who use autosegmental-metrical models, since these models operate with the same concepts – among which tone plays a key role – for all languages, as a matter of definition. Viewed in this light, it may seem as if the issue whether a given language has intonational tones or not were simply an issue of terminology. There often exist straightforward equivalences between observations couched in tonal and non-tonal terms. For instance, in their description of phrasing in French, Fougeron & Jun (1998: 49–51) explain that they use notations as H^* tone and $H\%$ tone (or $L\%$ tone) respectively as equivalents for ‘s (1966) *minor continuation* and *major continuation*.

Such equivalences allow for converting from one framework to another – but only from a language-internal point of view: when it comes to typology, this use of the same labels with widely different meanings for different languages creates difficulties. Upon close examination, it appears that the label $H\%$ as used for, say, Kinande, Vietnamese, and French refers to fairly different phenomena. In Kinande, the $H\%$ which marks the end of a phrase is a *bona fide* tone, which interacts with tones of lexical origin, e.g. causing neutralization of certain lexical tone oppositions on nouns when they are said in isolation (Hyman 2010: 207). In French, in the absence of tones at the lexical level (and at the morphological level) there is no language-internal evidence to decide whether the phenomenon

at issue is tonal or not, so H% can be considered as equivalent with *major continuation*, with added information on phonetic realization. For Vietnamese, H% is used for “rising final pitch movements” by Hà & Grice (2010); like in French, this choice of label is based on theory-internal motivations, not on structural similarities between the lexical tones of Vietnamese and the phenomenon labelled as H%. The adoption of the same label, H%, may appear economical from the point of view of a universal model, in the same way as resorting to the feature /ATR/ (Advanced Tongue Root) to describe the four-way opposition in a vowel system containing /i-e-ɛ-a/ obviates the need for a multi-valued /open/ feature for vowels, considered uneconomical under certain phonological analyses. The pinch comes when typological considerations come in: should French, and other Romance languages (Calabrese 2000), be included in cross-linguistic studies of ATR? A common-sense answer is that it would seem best to begin by identifying a core set of languages that uncontroversially possess ATR systems – a crucial phonological test being the presence of ATR vowel harmony –, and to apply due caution when considering extensions of the concept beyond this core domain.

The current vogue of tonal models of intonation as applied for the most diverse languages entails an indirect benefit for specialists of intonation, as it leads linguists engaged in intonational descriptions of tonal languages to raise explicitly the issue of the degree of similarity of intonational tones with the other tones found in the language. For instance, a study of Tanacross Athabaskan, a two-tone language, uses the tonal notations advocated in the framework of intonational phonology, proposing four intonation contours for four utterance types: H* L% for declaratives, H* H% for polar questions (yes/no interrogatives), L* L% for imperatives, and H+L* L% for open questions (wh-questions) (Holton 2005: 263). The author espouses the logic that underpins these notations: that tone and intonation are of the same nature at a certain phonological level. “Both tone and intonation can be viewed as strings of binary tone values with certain associations between the tone values and the segmental tone bearing units” (Holton 2005: 267). This opens into the question whether intonational tones partake in the language’s tone rules. For instance, in Tanacross Athabaskan there exists a phenomenon of tone spreading which is conditional on the stem’s tone: the tone of the stem syllable affects the assignment of tone to preceding syllables. The author raises the issue whether the final L tone found in declaratives has an influence over tone spreading: in principle, an added tone in the sequence could modify the application of tone spreading. The observation, however, is that the pre-stem tone spread constraint is sensitive to the underlying lexical tone, and is unaffected by the hypothesized intonational ‘tone’ (Holton 2005:

270). The search for categorical effects of intonational ‘tones’ on the tonal string yields a clear conclusion in the negative. For specialists of tonal and intonational typology, this conclusion is highly interesting, and can be taken as evidence that real examples of languages with ‘tonal intonation’ are few in number. On the other hand, for readers who would like to gain an understanding of the language-specific facts, one must point out that autosegmental-metrical notations cause no small amount of confusion, requiring caveats such as: “The notation consists of two types of ‘pitch-accents’, or tones (not to be confused with lexical tones discussed in the previous section)” (p. 263). To call two things by the same name, assert their identity at some level, and insist that they need to be kept distinct is to ask a lot of the reader. Moreover, not all studies of intonation couched in autosegmental-metrical terms contain an explicit discussion of the theoretical underpinnings of the notions used; this leaves readers hard put to figure out whether intonation in the language at issue is encoded by tones, or whether the author simply uses tonal notations for convenience, without implying that the primitives of tone and intonation are the same. The generalized use of boundary-tone labels such as H% and L% arguably veils typological differences (Ladd 2008).

In most East and Southeast Asian languages, the available literature suggests that intonation does not seem to be implemented by the addition of tones in the way described for Kinande, Hausa, or Luganda and Naxi (§10.3.6.1). The widely-studied case of Standard Mandarin provides an example. Mandarin has salient intonational phenomena, which have a strong influence on the phonetic realization of tones, to the extent of making the automatic recognition of tone in continuous speech a great challenge. But these intonational phenomena do not affect the phonological identity of the lexical tones. Instead, intonation is superimposed on tone sequences. From the point of view of linguistic structure, intonation remains on an altogether different plane from tones: it does not modify the phonological sequence of tones, even in cases where it exerts a considerable influence on their phonetic realization. This has been studied since the pioneering work of Chao (1929). Relevant evidence on this issue comes from the field of speech synthesis: some specialists choose to specify (i) full templates of the time course of F_0 for each lexical tone, and (ii) a “strength coefficient” for each syllable (Kochanski, Shih & Hongyan 2003; Kochanski & Shih 2003). The strength coefficient, which correlates with informational prominence, plays a major role in the final shape of the synthesized F_0 curve. This synthesis system provides indirect confirmation for the observation that, although intonational parameters interact with the phonetic realization of tone, they do not modify the underlying phonological sequence of tones: there is no insertion or deletion of tones. The

informational prominence of a syllable is indicated by local phenomena of curve expansion and lengthening on the target syllable, as well as some modifications in supraglottal articulation; conversely, a degree of phonetic reduction is found on other syllables, including a degree of post-focus compression of F_0 range (see in particular Xu 1999).

It seems intuitively clear that multilevel tone systems (e.g. Ngamambo, Wobe) cannot allow the type of intonational flexibility in the realization of tone which is pervasive in Mandarin or Vietnamese, because such flexibility would jeopardize the identification of the utterance's underlying tonal string. The need to distinguish a wide range of categorically different sequences makes it less economical to encode information about phrasing and prominence as modulations of F_0 superimposed on the tonal string. This creates a tendency to favour other means to convey phrasing and prominence: either by integration into the tonal string (i.e., *intonational tones* as defined here), or by the use of nonintonational means, such as the use of topic/focus morphemes to convey information structure. Experimental verification of such hypotheses is greatly complicated by the multifarious differences between the languages to be compared, including the effects of areal convergence between languages without different tone systems. It is hoped that the availability of an increasing number of monographs such as the present one can contribute to gradual clarification of these typological perspectives.

11 Yongning Na tones in a dynamic-synchronic perspective

The past century of phonetic research has illuminated our understanding of the production of sound, the properties of the acoustic signals, and to a certain extent, the perception of speech sounds. But the search for the originating causes of sound change itself remains one of the most recalcitrant problems of phonetic science.

(Labov 1979: 1)

The synchronic description proposed in the present volume provides a basis for studying the historical dynamics of tone in Na: a dynamic approach to synchrony brings out patterns of synchronic variation which, in turn, offer some glimpses into the evolution of the tone system. The study of variability and evolution is especially crucial to the study of tone, because variability in tone patterns tends to be high in level-tone systems with rich tonal morphology, and diachronic evolution accordingly tends to be more rapid than in other domains. It has been argued that tonological models for Bambara, a Mande language, should be designed in such a way as to be able to accommodate patterns of variation:

Clearly, any hypothesis about the system that underlies the tonal productions of Bambara speakers should be able to account, with minimal adjustments, for observed patterns of variation. (Creissels 1992: 8)¹

In the case of Bambara, variability can in part be put down to complex interferences between the vernacular systems of rural areas and an emerging (as yet unstabilized) urban standard; in the case of Yongning Na, no urban standard comes

¹ *Original text:* ... il est clair que toute hypothèse sur l'organisation du système sous-jacent à un corpus de productions tonales de bambarophones doit pouvoir au prix d'un minimum d'aménagements rendre compte de possibilités éventuelles de variation.

into play, suggesting that the bulk of variability does not necessarily need to be ascribed to external influences.

11.1 Disyllabification

As mentioned at the outset of Chapter 4, many roots that used to be phonologically distinct have become homophonous in Na, as in other Sino-Tibetan languages that have undergone considerable phonological erosion (such as Tujia, Bai, Namuyi, or Shixing). As a consequence, there exists a strong tendency towards disyllabification. Supposing that each tonal combination of two monosyllables creates in a different tonal category for the resulting disyllable, this could multiply the number of tones by squaring: 6 tones on monosyllables could yield 36 tones on disyllables. The observed number of tone categories for disyllabic nouns is much smaller (11 tonal classes); the study of the relationship between the tones of monosyllables and those of disyllables holds promise for an understanding of the dynamics of the tone system.

11.1.1 A dynamic analysis of compound nouns

The analysis of compound nouns in Chapter 4 aimed to bring out the relationship between input nouns and the resulting compound. The notation chosen for their tones emphasized their internal makeup. For instance, the combination of a #H-tone determiner and a LM-tone head yields a M.H surface-phonological tone pattern (e.g. /zɰæɪ-ɣuɪ/ 'horse's skin', from /zɰæɪ/ 'horse' and /ɣuɪ/ 'skin'); in terms of processes leading from the input tones to the tone of the compound, this can be interpreted as follows: the lexical tone of the determiner, being a floating H tone (never expressed on the lexical item itself, only on a following syllable), associates to the second syllable of the compound. In the shorthand notation used here, this is to be transcribed as #H°: a floating H tone associating to the first part of the compound. The assignment of surface tones then takes place according to the general rules governing the association of tone #H in Yongning Na. Since there is a following syllable within the tone group to host it (namely, the second syllable of the compound), the H tone attaches there; and the first syllable of the compound receives M by default. The notation used for this combination in Chapter 4 is #H°, using the symbol ° to stand for the last syllable of the first part of the compound. This notation, while it is fairly complex, appeared adequate insofar as it reflects a hypothesis about the way in which the tone pattern of the compound obtains. Such notations will be referred to below as 'source-oriented'.

Table 11.1: Source-oriented and result-oriented notations of the tones of compounds: three examples.

input tones	surface-phonological tone	phonological analysis	
		source-oriented	result-oriented
#H and LM	M.H	#H°	H#
M and LM	M.L	°L	L#
M and L	M.L	°L	L#

In terms of end result, on the other hand, the resulting compound belongs in tone category H#: it carries a final H tone, which does not move. Compounds made up of the combination of a #H-tone determiner and a LM-tone head therefore feed into the lexical category of H# disyllables. Notation as H# will be referred below as ‘result-oriented’.

Likewise, the source-oriented notation °L is strictly equivalent with the result-oriented notation L#: assigning a L tone after the juncture between the two parts of the compound yields the same result as assigning a final L tone to the entire expression. Table 11.1 provides a summary.

The table presenting the tone patterns of disyllabic compounds (Table 4.2a of Chapter 4) is rewritten below as Table 11.2, adopting a result-oriented notation, without any reference to the juncture between the two parts of the compound (transcribed by means of the symbol ° in Table 11.1). Each line corresponds to a tonal category of determiners, and each column to a tonal category of heads.

Note that the same treatment cannot be extended to compounds of more than two syllables: it is not possible to describe the tone patterns of these compounds without referring to the juncture between the two input nouns (except by changing the entire notation, for instance specifying the tone of each syllable).

All of the tone categories observed on disyllabic nouns in Yongning Na are found in Table 11.2, except M. This reveals that the synchronically productive tone rules that apply in compounds feed into all of the tone categories of disyllables, apart from M.

Table 11.2: The tones of disyllabic compounds, adopting a result-oriented notation. The four combinations for which a different notation is used in Table 11.1 are set in italics.

tone	LH; LM	M	L	#H	MH#
LM	LM	LM	LM	LM+#H	LM+MH#
LH	LH	L	LH		
M	<i>L#</i>	#H	<i>L#</i>	#H	MH#
L	L				
#H	<i>H#</i>	#H			<i>L#</i>
MH	<i>H#</i>			<i>H\$</i>	

11.1.2 Possible origins for disyllables, on the basis of their tone: a bird's-eye view

Table 11.3 provides an overview of possible origins of disyllabic items, in view of currently productive tone rules. The indication ‘-’ means that no example was found, and the mention ‘dubious’ means that there exists isolated examples whose analysis is problematic, e.g., among affixed forms, /**tɕu**lmi/ ‘Hwamei’ (a kind of bird) and /**tse**lmi/ ‘lighter’, which do not correspond to any of the well-attested correspondences.

This bird's-eye view can provide a hint for the analysis of a disyllabic word whose etymology is unclear.

11.1.3 Recovering the tones of nouns on the basis of compounds

The tones of compounds can shed indirect light on the tone of their constituting elements. For instance, ‘elder sibling (brother or sister)’ is commonly realized as /ə**l**mv/ (tone: L#), but it has a variant with tone MH#: /ə**l**mv/. The tone of the coordinative compounds /ə**l**mv**gi**lzu/ ‘brothers’ (made up of ‘elder sibling’ + ‘younger brother’) is the one expected for an input MH# tone, not an input L# tone. Knowledge of the tone rules in compounds leads to the conclusion that it is the MH# variant that went into the creation of the compound. This fact, together with its rarity in present-day speech, where /ə**l**mv/ is far more common, suggests that /ə**l**mv/ is not a recent innovation but a form which is currently

Table 11.3: Possible origins of disyllabic items, in view of currently productive tone rules.

tone	compounding	suffixation	prefixation
M	–	yes	yes
#H	yes	yes	–
MH#	yes	–	yes
H\$	yes	yes	yes
L	yes	yes	yes
L#	yes	–	yes
LM+MH#	yes	–	–
LM+#H	yes	yes	–
LM	yes	yes	–
LH	yes	yes	–
H#	yes	dubious	–

losing ground to /ə-**mv**l/.

Needless to say, the greatest care must be exercised when attempting to recover tones in this way, since different tone rules may have applied at different stages of the language's tonal history.

11.2 Analogy

11.2.1 General principles

Analogy is the process whereby word forms perceived as irregular are reshaped so as to conform with common forms. From a morphological point of view, analogy can thus be viewed as a process of regularization. From the point of view of phonetic change, on the other hand, the piecemeal changes introduced by analogy tend to obfuscate regular correspondences.

Detailed case studies of analogical reanalysis reveal the complexity of individual situations. For instance, in the Cameroonian Bantu language Eton the stem of the possessive adjective 'my' ends in /ɔ/ in the forms of class 1 and 3: /-**amɔ**/, and in /a/ elsewhere: /-**ama**/. This irregularity is due to a mechanism of analogical morphophonological reanalysis that changed the original /a/ of the class 1/3 forms to /ɔ/. There exists a |ɔ| morphoneme whose morphologically-conditioned phonological realizations include /**wa**/; commonly occurring sequences

of w+a, although separated by a morpheme boundary, were reinterpreted in Eton as realizations of this morphoneme (Van de Velde 2008b). In this example, morphophonological analogy disregards morphological boundaries; this is not the least of the paradoxes of analogy, which has the potential to create morphophonological alternations (Blevins & Garrett 2009), as well as to inhibit phonetic change in some contexts (Blevins & Wedel 2009).

11.2.2 Application to Yongning Na

It appears highly plausible that the tantalizingly similar, but not identical tonal paradigms of classifiers – H1 and H2, M1 and M2, MH1 and MH2, L1, L2 and L3: see Chapter 5 – have undergone a degree of analogical levelling, without becoming fully identical. The existence of variants for some combinations, and the occasional hesitations and confusions (errors) during elicitation sessions, all point to the presence of contradictory pressures of the tendency towards analogical simplification, on the one hand, and of the tendency to maintain the distinct identity of the different classes, on the other. The same can be said of the tonal behaviour of affixes and clitics.

This is a field where the description of a single language variety reaches its limits, and a variationist approach would be called for. This study could be based on the closest language varieties, spoken within the plain of Yongning or in its close vicinity.

11.3 The influence of bilingualism with Chinese

Language contact is known to be a key factor in linguistic change. Since the present volume is synchronic in orientation, past contact between Na, Tibetan, Chinese, Pumi, Lisu, Naxi and other languages will not be investigated here. Instead, this section focuses on the current landscape of language contact, in which Chinese has, by far, the leading role. To take the example of the main consultant, Chinese is the only language other than her mother tongue of which she has any knowledge.

Chinese is a late comer to this area. The feudal lord of Yongning spoke Na, and the Na language had a dominant situation in the plain of Yongning up until the mid-20th century. There were few (Han) Chinese migrants to Yongning, and they learnt Na, which was the locally dominant language, used in the Yongning marketplace by native speakers of other languages, such as Pumi, Lisu, and Nosu (Nuosu/Yi). While there can be no doubt that the Na 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 very little command of other languages, or none at all. 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 Pumi and Nosu.

While Yongning still preserves the role of a meeting-place and market place in the eyes of inhabitants of neighbouring mountain villages, for instance for the Yi and Pumi/Prinmi people from small villages around Yongning (Wellens 2006: 85), language shift from Na to Chinese is now under way in Yongning. All of the Na now have some command of Chinese. While some members of the community regret the fact that their language falls into gradual disuse, proficiency in Chinese – one of the keys to success in society – tends to be ranked far above proficiency in Na, and the attitude observed is one of toleration: phenomena of blending between Na and Chinese are not stigmatized. This attitude facilitates the acceptance of language change: while a pool of variation is present at every moment and for any language, linguistic change in the strict sense requires the acceptance of innovative, deviant forms by the community of speakers.

This has major consequences for the tone system. The account of Na tone presented in Chapters 3 to 8 of this volume makes it clear how widely this system differs from that of the Chinese dialects to which speakers of Na are exposed (Southwestern Mandarin and Standard Mandarin). As discussed in Chapter 10, tones in Na are phonetically simple, consisting of three levels and their combinations, whereas tones in Chinese are phonetically complex. The tone system of Yongning Na includes some oppositions that are neutralized when a word is said in isolation: a Yongning Na monosyllable that carries a Mid tone when it is said in isolation may have one of three underlying tones, M, L, or #H. When they learn Mandarin Chinese, Na speakers come to terms with a differently structured tone system: one in which (leaving aside marginal phenomena of toneless syllables and tone sandhi) each syllable has its own tone, which surfaces as such in isolation. The discrepancy between the underlying forms and the surface forms of Yongning Na tones makes them relatively difficult to handle for less proficient speakers: bilingual speakers who have more exposure to Chinese than to Na.

11.3.1 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 main language consultant is pronounced [la-t^ha-miŋ]. If the surface pattern, M.M.H, is taken at face value, the derivation of the associative plural form ('the Latami clan, the Latami family'), by addition of the suffix /=ɹɹ/, should lead to the assignment of a L tone on the ASSOCIATIVE suffix: [*la-t^ha-miŋ=ɹɹ], a tone pattern which is actually attested in the speech of one of the bilingual speakers. However, the correct (conservative) tone pattern is [la-t^ha-miŋ=ɹɹ]: it reveals that the final H tone in the name [la-t^ha-miŋ] is in fact phonologically specified as attaching to the last syllable of the phonological word: /la-t^ha-miŋ\$/. Under the reinterpretation made by less proficient speakers, it becomes /la-t^ha-miŋ#/, with H tone at the end of the lexical word.

An especially difficult opposition to learn is that between the LM and LH patterns over disyllables, because it only surfaces when the word is followed by a toneless clitic. For instance, [boŋmi-t] 'sow, female pig' and [boŋa-t] 'boar, male pig' have the same tones not only in isolation but also when followed by the copula; the few contexts that can disambiguate their tone pattern are exemplified by [boŋmi-t-bv-t] '... of (a) sow' vs. [boŋa-t-bv-t] '... of (a) boar', where the H part of the lexical LH pattern results in the lowering of the following possessive particle, to L.

Under such circumstances, it does not come as a surprise that the opposition between LM and LH 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 LH have merged to LM.

11.3.2 The simplification of morphosyntactic tone rules

Examining the tables in Chapters 4 to 7, the complexity of Na tonal morphosyntax may look staggering. These combinations are not all that difficult to memorize and apply so long as one practises the language regularly: the rules are productive, and the syntactic structures at issue (subject+verb, object+verb, compound nouns ...) 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.

Evidence about ongoing language change can be gathered from deviant patterns, which to the linguist are harbingers of language change. They include a range of phenomena, from occasional slips of the tongue on the part of proficient speakers to ingrained habits of other speakers.

Examples of hesitations and of simplified patterns can be found in the speech of M23, a bilingual language consultant. In subject+verb and object+verb combinations as well as in compounds, tone L, which is realized as [M] in isolation, tends to be neutralized with tone M: consultant M23 realizes ‘the sheep arrived’ as /**jo**⊃ | **ts^hu**⊃-**ze**⊃/, i.e. in his speech this is not simply a variant condemned as a slip of the tongue, as in F4’s speech, but it has become the norm. Likewise, he realizes the combination ‘sheep’s muzzle’, made of /**jo**⊃/ ‘sheep’ and /**ni**⊃-**gr**⊃/ ‘nose, muzzle’, as /**jo**⊃-**ni**⊃-**gr**⊃/, i.e. a simple concatenation of the two nouns, unlike the conservative pattern found in F4’s speech: /**jo**⊃-**ni**⊃-**gr**⊃/. In this conservative form, the tone of the compound is phonologically identical with the lexical L tone of the determiner of the compound, /**jo**⊃/ ‘sheep’. This yields /**jo**⊃-**ni**⊃-**gr**⊃/, ‘sheep’s muzzle’, realized phonetically as [**jo**⊃-**ni**⊃-**gr**⊃] following the post-lexical addition of a final H tone, due to Rule 7: all-L tone groups are not allowed in Na; if a tone group only contains L tones, a post-lexical H tone is added to its last syllable.

A speaker needs a good command of the grammar of Na to implement the conservative tone pattern in this compound, 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 [**ni**⊃-**gr**⊃] in citation form to [**ni**⊃-**gr**⊃] 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 the tones as they appear in isolation, as is the case in their second language (Mandarin Chinese), instead of applying the complex rules of Yongning Na tonal grammar.

These examples illustrate the complexity of phenomena of language variation and change, which can constitute a simplification from one point of view and a complexification from other points of view. Saying /**jo**⊃ | **ts^hu**⊃-**ze**⊃/ for ‘the sheep arrived’ is a simplification insofar as the subject bears the same tone as in isolation. It is a complexification insofar as it increases the frequency of occurrence of contexts in which the lexical L tone of ‘sheep’ does not surface, making it more difficult for language learners to arrive at the identity of this word’s lexical

tone.

11.3.3 The straightening out 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 /tʂɑːɮɣ˥˥/, with M tone. According to the rules that govern the tone pattern of compound nouns, the combination of this word with /ɮv˥˥mi˥˥/, ‘stone’, should yield a simple M-tone output, /ɮv˥˥mi˥˥tʂɑːɮɣ˥˥/. (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 /tʂɑːɮɣ˥˥/, ‘powder, flour’, are irregular – a fact that may well be related to the fact that this is a Tibetan loanword. They carry a L tone on that morpheme, witness /ɮv˥˥mi˥˥tʂɑːɮɣ˥˥/ ‘fine sand’, /qʰɑːdʒe˥˥tʂɑːɮɣ˥˥/ ‘sweetcorn flour’, /dʒe˥˥ɮw˥˥tʂɑːɮɣ˥˥/ ‘wheat flour’, all with a M.M.L.L tone pattern (phonological notation: °L), instead of the expected M.M.M.M (phonological notation: M). (Note that /ɮv˥˥mi˥˥/ ‘stone’, /qʰɑːdʒe˥˥/ ‘sweetcorn’ and /dʒe˥˥ɮw˥˥/ ‘wheat’ all have a lexical M tone.)

11.3.4 Cases where MH tone fails to split into two levels: hint of a potential for evolution towards a syllable-tone system?

Naxi, a close relative of Yongning Na, has few phenomena of tone change. In the A-sher dialect, the reduction of a morpheme carrying H tone results in reassociation of this tone to the syllable to its left (Michaud 2006b; Michaud & Xueguang 2007); informal observations and exchanges with Naxi speakers living in the city of Lijiang suggest that even these simple instances of tone change are fast disappearing from Lijiang Naxi. For instance, the conditional/topic is /ɿ se˥˥/ in A-sher: the syllable /se˥˥/ is preceded by a floating H tone, presumably the historical product of the reduction of disyllabic /ɮw˥˥se˥˥/. The phenomenon is still reported in a dictionary elaborated from 1995 to 2012: “This word is fairly unique in that it triggers the mid or low tone of the preceding syllable to become a rising tone” (Pinson 2012: 337). Impressionistic observations made in Lijiang around 2010 suggest that this morpheme becomes simplified to /se˥˥/ in the speech of younger speakers. It is not at all unlikely that increasing familiarity with Chinese is exerting an influence on Naxi, leading to the reinterpretation of its tones as units attached to the syllable, rather than levels that can combine among themselves.

Of the four tones of Naxi, H, M, L and Rising, the latter appears especially revealing in this respect. It is clearly a Naxi innovation, on the basis of an earlier three-tone system (H, M, L). The following historical scenario can be proposed. Rising contours appeared in the language through processes of syllable reduction, and became lexicalized on some words. This paved the way for the assignment of a /LH/ tone sequence to Chinese words with rising tone. At that point, Chinese borrowings consolidated this marginal lexical tone category by giving it considerable lexical development. Increasing bilingualism with Chinese gradually tilted the perception of Naxi tones towards the syllable-tone type, to the point that it is now an issue whether the rising tone of Naxi is to be analyzed as a combination of levels (L+H, or M+H) or as a phonological unit.

In Yongning Na, there is plentiful evidence that contours are to be analyzed as sequences of levels. There are nonetheless some weak hints of a tendency for MH contours to be treated as units associated to one syllable. When saying MH-tone monosyllabic nouns in the frame ‘This is ...’, /tʂʰu˥ ____ ɲi/, consultant F4 occasionally produced *M.MH.L or *M.MH.H variants, instead of M.M.MH (e.g. /*tʂʰu˥ | tsʰu˥ ɲi/ or /*tʂʰu˥ | tsʰu˥ ɲi˨/, instead of /tʂʰu˥ | tsʰu˥ ɲi˨/, for ‘This is a sheep’). When her attention was drawn to these discrepancies, she said: /ɕu˥-bæ˥-lɑ˥ ɲi˨/, ‘It’s just the same’. Intonationally, realization of the MH contour on the syllable to which it is lexically attached tends to happen when the word is emphasized; the realization of a noun within a carrier sentence is clearly a case in point.

This tendency surfaces here and there in the recordings. An example is found on item 7 of the ‘Tone: Even’ recording, where /tʂʰæ˥-pr̥˥to˥/ ‘even a deer’ is realized phonetically close to [tʂʰæ˥-pr̥˥to˥], with (i) a H tone on [pr̥˥], due to reassociation of the H part of the MH contour of /tʂʰæ˥/ ‘deer’, as expected; and (ii) a MH contour on [tʂʰæ˥], due to incomplete deassociation of the H part of its phonological MH contour.

This is only a weak tendency; it does by no means warrant the conclusion that Yongning Na is on its way towards adopting a syllable-tone system. A detailed cross-linguistic phonetic study would be necessary to determine to which extent such tendencies are present among the world’s level-tone systems. Such a study might reveal that Yongning Na is not at all exceptional in this respect. The computation of tone sequences is not a mechanical process, and slight slips of the tongue whereby a H tone does not fully deassociate from the syllable to which it is lexically attached may not come as a surprise to linguists with an experience of level-tone systems. This synchronic tendency appeared well worth mentioning, however, in relation to the influence currently exerted by Chinese.

12 Conclusion

When one aims to please others,
one may fail, whereas things that
we do to please ourselves always
have a chance to interest someone
or other.¹

(Marcel Proust)

As a conclusion, let us return to the initial puzzle: the first example presented in the Introduction. We can finally set out – with minimum technicality – the mechanisms whereby the surface-phonological tone sequence of example (1) obtains.

- (1) njɣ¹ ʒi¹ -bi¹ -zo¹ -ho¹.
1SG to_take to_go OBLIGATIVE DESIDERATIVE
“I have to go and take [my luggage] now.” (Field notes, 2006)

With morpheme-level transcriptions indicating lexical tone in terms of the lexical tone categories of Yongning Na, the sentence can be represented as (2).

¹ This sentence is followed by reflections that seem close to linguists’ concerns: “No one is unique: our individualities are made out of a universal fabric; this is what allows for sympathy and understanding, which are such great pleasures in life. If we could analyze the soul as we analyze matter, it would become apparent that below the apparent diversity of minds, as under that of material objects, there are but a few simple substances and irreducible elements; and that what we think of as our personality is made up from elements which are quite common, and which are met again pretty much everywhere in the universe.” *Original text*: Quand on travaille pour plaire aux autres on peut ne pas réussir, mais les choses qu’on a faites pour se contenter soi-même ont toujours chance d’intéresser quelqu’un. Il est impossible qu’il n’existe pas de gens qui prennent quelque plaisir à ce qui m’en a tant donné. Car personne n’est original et fort heureusement pour la sympathie et la compréhension qui sont de si grands plaisirs dans la vie, c’est dans une trame universelle que nos individualités sont taillées. Si l’on savait analyser l’âme comme la matière, on verrait que, sous l’apparente diversité des esprits aussi bien que sous celle des choses, il n’y a que peu de corps simples et d’éléments irréductibles et qu’il entre dans la composition de ce que nous croyons être notre personnalité, des substances fort communes et qui se retrouvent un peu partout dans l’Univers. (*En mémoire des Églises assassinées*, in *Pastiches et mélanges*, Paris: Gallimard, 1919, pp. 108–109)

- (2) njɣ⁺ | zɪ[↓]-bi[↓]-zo[↓]-ho[↓].
 njɣ[↓] zɪ[↓]_a bi[↓]_c zo[↓] ho[↓]
 1SG to_take to_go OBLIGATIVE DESIDERATIVE
 “I have to go and take [my luggage] now.”

A crucial piece of information is the tone-group boundary after the 1SG subject: this utterance contains two tone groups, and tonal processes apply independently for the two groups, as set out in detail in Chapter 8.

The first tone group only contains one syllable. Its lexical tone is L. As reported in Chapter 3, the realization of this tone in isolation is as a level, non-low tone: M, hence //njɣ⁺//.

The second tone group consists of two serialized verbs and two suffixes. The second verb, ‘to go’, behaves tonally like its grammaticalized counterpart, the IMMEDIATE FUTURE suffix. Following the regularities brought out in Chapter 7, //zɪ[↓]_a// in association with ‘to go’ and the OBLIGATIVE, which both have the same lexical tone (M), yields //zɪ[↓]-bi[↓]//, then //zɪ[↓]-bi[↓]-zo[↓]//. The last suffix, DESIDERATIVE /ho[↓]/, carries L tone; the tonal behaviour of a L-tone suffix depends on the number of syllables of the expression to which it is attached: if suffixed directly to a L-tone verb, it carries L tone; if suffixed to a L-tone expression of two syllables or more, the suffix carries H tone: hence //zɪ[↓]-ho[↓]// ‘will take’, with a L.L pattern, but //zɪ[↓]-zo[↓]-ho[↓]// ‘will need to take’, with a L.L.H pattern. Association of this L-tone suffix to the three-syllable expression //zɪ[↓]-bi[↓]-zo[↓]// thus yields a final H tone, hence //zɪ[↓]-bi[↓]-zo[↓]-ho[↓]//.

Both tone groups, //njɣ⁺// and //zɪ[↓]-bi[↓]-zo[↓]-ho[↓]//, contain at least one tone other than L, so that the repair rule for all-L tone groups (referred to as Rule 7) does not apply. The two tone groups therefore proceed unmodified to the surface-phonological level, as /njɣ⁺ | zɪ[↓]-bi[↓]-zo[↓]-ho[↓]/.

Beyond the satisfaction of identifying morphotonological patterns that shed light on this and other examples, it must be acknowledged that the present volume is only a step towards the long-term goal of advanced linguistic modelling of tone in Yongning Na. A mid- to long-term direction consists in computer-aided analysis of individual utterances on the basis of a computer model of the grammar (finite-state modelling), following the methodological suggestion of Karttunen (2006), and making use of computational tools that are designed to model regularities and irregularities within paradigms (Sagot & Walther 2013). This will require (i) implementation of the entire tonal grammar of Yongning Na by a computer script, (ii) glossing Yongning Na texts at the morpheme level (indicating lexical tones), providing a unique link to the lexicon, and (iii) encoding the morphosyntactic structure of each utterance. The aim will be to generate surface-

phonological tone patterns for an utterance, spelling out the full set of possible variants in the division of utterances into tone groups. The model will make it possible to verify quantitatively, over the set of all available data, the generalizations which were proposed in this volume on the basis of qualitative analysis of selected examples. More ambitiously, the model will allow the investigator to set the patterns observed in a textual utterance (a real sentence from a text) against the backdrop of the complete set of alternatives. This opens new perspectives for appraising the speaker's stylistic choices in a narrative, such as the observed division of the sentence into tone groups, and the choice of one variant rather than another in cases where two or more tone patterns are acceptable. This holds promise for uncovering factors at play in so-called nonconditioned variation. Modelling of the various components of the language's prosody and morphosyntax could allow for an exploration of the range of stylistic possibilities allowed by the system, e.g. through the choice of congruence vs. dissonance between message and form, and between syntax and prosodic phrasing (a source of inspiration here is 's study of French intonation: 1966; 1970).

A second perspective will consist in examining the phonetic implementation of surface-phonological tone sequences. This study has not begun in earnest yet, because the approved order of business consists of understanding the system first (morpho-tonology, and intonation) before launching into experimental investigation into acoustic correlates and fine phonetic details (Rice 2014; Mazaudon 2014). From the beginning of fieldwork on Yongning Na, this objective has always been kept in view, however. It motivates constant efforts to collect data that will be exploitable for this purpose: high-fidelity audio, and, for some recordings, an electroglottographic signal. The first steps will consist of modelling the tonal targets and studying coarticulation patterns, as has already been done for several two-tone systems, e.g. Dinka (Remijsen & Ladd 2008) and Sotho (Zerbian & Barnard 2010a,b), three-tone systems (Teo 2014: 48–65; citealt[100–106]coupe2003; citealtlaniranetal2003, and four-tone systems, e.g. Mambila (Connell 2003). Since tone-group boundaries are systematically indicated in the Yongning Na annotations, it should be possible to obtain quantified evidence on issues such as: To what extent are tone-group boundaries accompanied by pauses? Do fine phonetic details in the realization of segments cue the presence of tone-group boundaries, i.e. to what extent are tone-group boundaries signalled by “segmental intonation” in the sense of Niebuhr (2009)?

The ultimate aim consists of assessing the contribution of various factors to the final phonetic realization of each syllable, teasing apart and spelling out the

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various components of the speech signal, and their linguistic interpretation.² Computer implementation may be used as a tool to bring out, by contrast, intonational phenomena, as components that are not predictable on the basis of the utterance's contrastive units: the sequence of phonemes, and the tonal string parsed into tone groups.

² Marc Brunelle's work on Vietnamese is an inspirational example of this strand of research (Brunelle 2015).

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Subject index

Tone in Yongning Na

This book aims to provide a description and analysis of the tone system of Yongning Na, a Sino-Tibetan language spoken in Southwest China. Tonal changes permeate numerous aspects of the morphosyntax of Yongning Na; they are not the product of a small set of phonological rules, but of a host of rules that are restricted to specific morphosyntactic contexts. Rich morphotonological systems have been reported in this area of Sino-Tibetan, but book-length descriptions remain few. This study of an endangered language contributes to a better understanding of the diversity of prosodic systems in East Asia.

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