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TONAL REASSOCIATION AND RISING TONAL CONTOURS IN NAXI¹

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Western Naxi has three tones (High, Mid and Low) plus a more recent rising contour tone. The first part of the article describes the synchronic process whereby the reduction of a morpheme carrying a High tone results in re-association of its tone to the preceding syllable, creating a rising contour. The second part presents the lexical items that carry a rising tone: ‘native’ words carrying a rising contour tone point to the use of High-tone addition in possessive constructions at an earlier stage. The numerous Chinese loanwords with rising tone are probably not the origin of the rising tone of Naxi; they arguably led to the consolidation of a pre-existing rising-tone category.

Keywords: Naxi, floating tones, syllable reduction, high tone

0. INTRODUCTION

Naxi is a Sino-Tibetan language spoken by some 300,000 people mostly concentrated in the Lijiang Naxi Autonomous County (*lǐjiāng nàxīzú zìzhìxiàn* 丽江纳西族自治县) of the province of Yunnan, China. It is close to, though not a member of, the Burmese-Yi branch of Sino-Tibetan (Bradley 1975, 1997: 37; Matisoff 2003: 5, 8; Thurgood 2003: 20). Naxi appears as a textbook example of level-tone language: each syllable carries a High (´), Mid (ˉ), or Low (ˋ) lexical tone (hereafter H, M, L). However, a rising tone is also reported on a small set of ‘native’ words as well as on numerous loanwords.

The presence of rising tones without corresponding falling tones seems to be relatively uncommon, whereas the opposite situation, that of a language with a falling contour tone and no rising contour, appears to be more widely attested² (e.g. in the Tibetan domain, Shigatse and Dzongkha: Sun 1997: 487, 502n and references therein). Rising contours are avoided in various languages (e.g. in the Bantu branch of the Niger-Congo family: Kisseberth 2001: 149; in Japanese dialects: Nakai 2001). Avoidance strategies can consist in replacing a rise by a level H tone (e.g. in Hausa, Chadic branch of the Afro-Asiatic family; details in Newman 1995: 765-766) or in moving the H part of the contour onto the following syllable. Among the three-tone systems found in Africa (e.g. Gulmancema, Ncam, Kasem in the Voltaic family, and Igbo, Yoruba, Yala-Ikom, Ega, Ebrie in the Kwa family; see e.g. Rialland 1998: 409), those that allow rising contours

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² Statistics on this issue cannot safely be proposed in the present state of our knowledge. The XTone Project (<http://xtone.linguistics.berkeley.edu/>), now in its early stages of development, will hopefully provide tools to answer such questions.

also allow falling contours (both originating in the association of two different tones to the same syllable). Physiologically, a falling contour can be produced faster and more easily than a rising one (experimental evidence in Ohala and Ewan 1973, Ohala 1978: 30-31, Sundberg 1979, as well as in numerous case studies, such as Nagano-Madsen 2003 on Kochi Japanese). The situation in Naxi thus warrants detailed investigation. It will be shown that Naxi has processes of tonal reassociation reminiscent of the morphological *floating tones* that are typically observed in Sub-Saharan languages (Goldsmith 1976: 57-62) and also attested in various other languages (such as Saramaccan, a creole language spoken in Surinam: Good 2002); this opens into a cross-linguistic perspective on the notion of *floating tone* within the broader picture of morpho-phonological alternations.

0.1 *The language and the investigation method*

Three dialects were investigated during two three-month field trips. The locations where they are spoken are indicated on the map:

(i) village of /ā ʂə/, hamlet of /lé p̄ lə/ (Gucheng district, Wenhua administrative village, Lengbuluo village; in Chinese: *lǐjiāng gǔchéngqū, wénhuà xíngzhèngcūn, lěngbùluó zìrán cūn* 丽江古城区, 文化行政村, 冷不罗自然村), hereafter AS, 20 km to the North-East of the town of Lijiang. Unless otherwise stated, the utterances cited come from this dialect of Western Naxi (on the division between Western and Eastern Naxi, see He Jiren and Jiang Zhuyi 1985: 104-116).

(ii) village of /ndā lè/ (Gucheng district, Guifeng Dalai administrative village, lower section; in Chinese: *lǐjiāng gǔchéngqū, guǐfēng dàlái xíngzhèngxiàcūn* 丽江古城区, 贵峰大来行政下村/大来二村), 12 km South of Lijiang, hereafter NL, a Western Naxi dialect that has some nonstandard tone patterns.

(iii) village of /f̄y k^hō/ (Yulong Naxi autonomous county, Fengke district, Shanmei administrative village, second hamlet of Hengke; Chinese: *yùlóng nàxīzú zìzhìxiàn, fēngkēxiāng, shànměi xíngzhèngcūn, héngkē èrzǔ* 玉龙纳西族自治县, 奉科乡, 善美行政村, 恒可二组), hereafter FK, at the border between the Western and Eastern Naxi dialect areas.

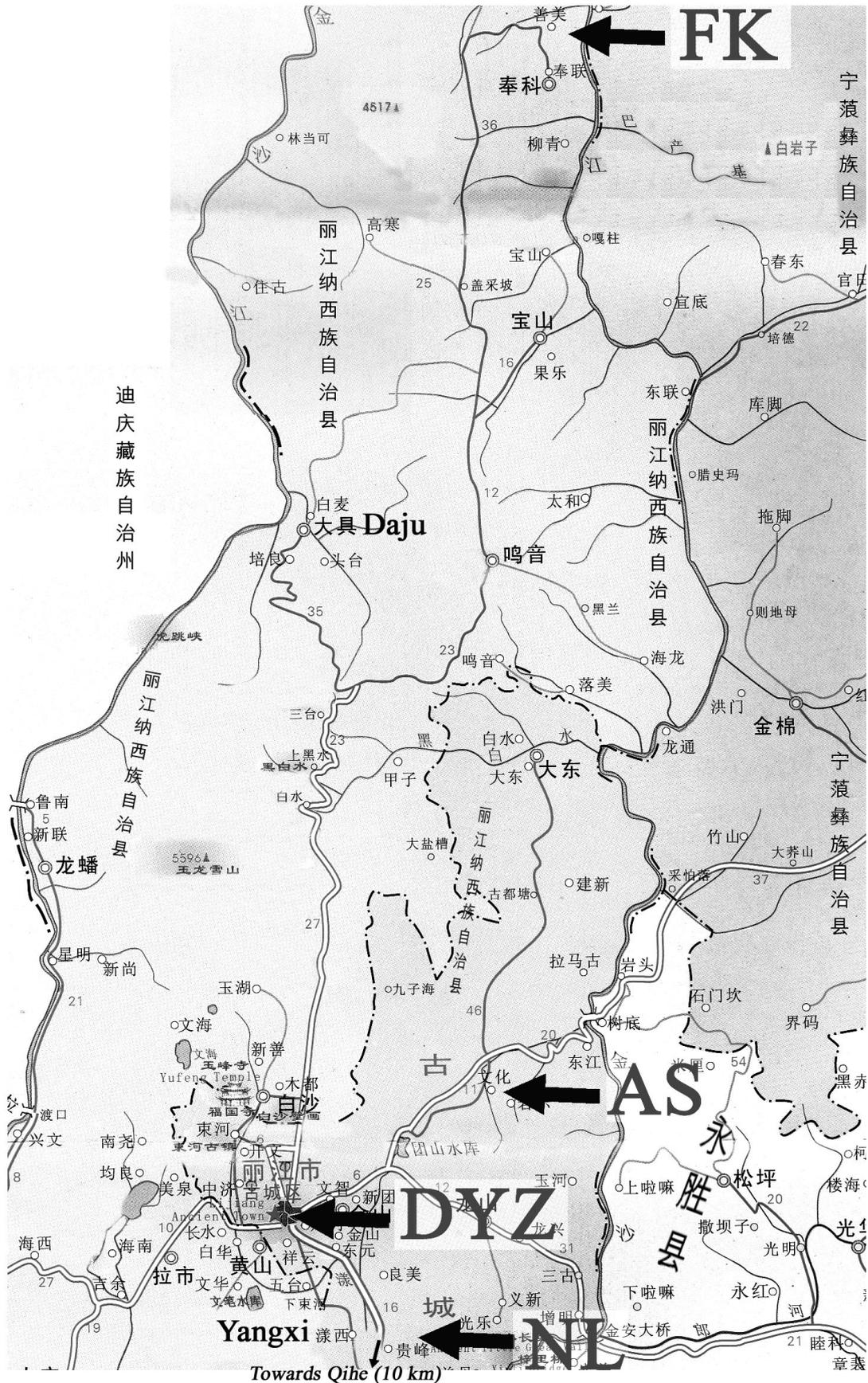
The work was conducted with one main consultant for each dialect, with data also recorded from a total of nine other speakers of these dialects. Eleven more speakers (ten met in the town of Lijiang, and one in Kunming, the capital of the province) contributed data on the following Western Naxi dialects: old town of Lijiang, a.k.a. Dàyánzhèn (大研镇); Qīhé (七河) and Yàngxī (漾西), close to NL; Dàjù (大具), geographically midway between AS and FK.

The main consultant for each dialect recorded a list of 1,000 words, 800 sentences translated from Chinese, and narratives. These data were sifted for examples of rising contours and tonal changes, and rephrasings were tested with the consultants. (Production and perception experiments were also set up, to confirm and complement the observations; these phonetic experiments will be set out elsewhere.)

0.2 *The rising tone within the broader picture of syllable reduction in Naxi*

As the rising tone of Naxi appears on a number of Chinese loanwords, it tends to be described as a foreign element (Li Lincan, Zhang Kun et al. 1953: 57; Rock 1963-1972; Bradley 1975: 95; Fang Guoyu and He Zhiwu 1995: 86; Pinson 1998: xviii). However, a short grammar of Naxi mentions the possibility that it “originally played some sort of grammatical role” (He Jiren and Jiang Zhuyi 1985: 41, my translation).

The data presented here confirm that there are few lexical items carrying a rising tone (Chinese borrowings apart), but show that in connected speech, reduction of a H-tone morpheme can create a categorical rising contour on the previous syllable: the segmental content of the



Map of the Lijiang area (showing part of Gucheng district and Yulong county), indicating the position of the main dialects referred to in the study. Adapted from He Wenxi et al. 2004.

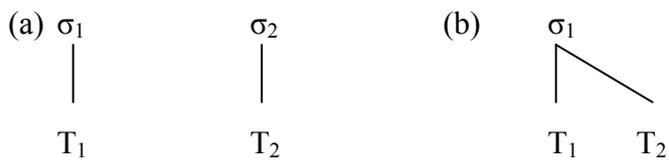
morpheme is deleted; the H tone is *set afloat* and reassociates to the preceding syllable. Also, a H tone can be added after L- or M-tone syllables for intensification. Part I presents these two processes, and part II presents the origin of lexical items carrying a rising contour.

PART I. HIGH-TONE REASSOCIATION AND HIGH-TONE ADDITION

1. *High-tone reassociation and floating High tones*

1.1. *Tone reassociation by reduction of a morpheme carrying High tone*

In Naxi, some monosyllabic morphemes carrying H tone can undergo reduction to a H tone: the entire segmental content of the syllable is elided, and its tone associates to the preceding syllable; if the latter has a lexical L or M tone, it becomes a contour tone: /LH/ (/´/) and /MH/ (/˘/), respectively. This is similar to phenomena observed in Sub-Saharan languages, now commonly modelled in terms of association lines between a tonal tier and a syllabic tier (after Goldsmith 1976), as in a-b below: when syllable σ_2 undergoes ellipsis, its tone, T_2 , reassociates to syllable σ_1 . If σ_1 has H tone, the reduction cannot take place. The tones of the syllables that come after σ_2 have no effect on the process.



Historically, this phenomenon certainly originates in a reduction process. The syllables at issue are enclitic on the preceding word, and are followed by a phrase boundary, explaining why, in synchrony, the tone *floats* to its left and not to its right (unlike in some African three-tone systems, e.g. in Mono, where the morpheme /gà´/ ‘towards’ carries a floating H tone that attaches to the next syllable; see Kamanda-Kola 2003: 79). The syllables involved, being function words and prosodically weak, must have tended to lose their initial consonant (consonants rather than vowels tend to undergo reduction in colloquial speech in tone languages, as shown experimentally by Su Tzu-ting 2003); the fact that Naxi has a simple CV syllable pattern certainly facilitated coalescence of a function word with the preceding syllable.

1.1.1. *Tone reassociation by reduction of /tá/ (‘only’)*

Two examples will be presented here, one involving tone L, the other tone M. Sentence 1a (from a dialogue) is an answer to the question ‘Do you know him?’

- (1a) m̄x̄ sū ! ŋ̄x̄ t̄s̄^hū k^hà´ t̄s̄^hū.lù t^hṽ m̄x̄.
 NEG know 1stSG DEIC moment+only (*reduced to H*) here reach AFFMT
 ‘No! I’ve only just arrived here. (= I’m a newcomer here.)’

The explicit phrasing is the following:

- (1b) ŋ̄x̄ t̄s̄^hū k^hà tá t̄s̄^hū.lù t^hṽ m̄x̄.
 1stSG DEIC moment only here reach AFFMT

In 1a the segments of the adverb /tá/ are deleted, and its tone is reassociated to the preceding syllable, /k^hà/ ‘moment’, changing its tone to /LH/.

Examples 2a and 2b are taken from He Jiren and Jiang Zhuyi (1985: 14-15);³ they are confirmed by Pinson 1996: 14 and my own data. ‘There is only one day left’ translates as either 2a or 2b:

(2a) dū ŋī tá g̃y sè.
 one day only EXIST PERF

(2b) dū ŋī´ g̃y sè.

The stylistic nuance that separates 2a and 2b is that between explicit and less explicit, formal and colloquial.

The phenomenon is observed in all the dialects where the adverb ‘only’ carries H tone (/tá/): AS, NL, and other dialects of Western Naxi. By contrast, in FK, where there are four basic lexical tones: H, M, L, and LM, the word ‘only’ is /tã̃/, carrying LM tone, not H tone, and it cannot undergo reduction. (Fuller presentation of tonal correspondences across the dialects of Naxi must be deferred until another publication.)

These facts show that the Naxi M tone must be acknowledged as a tone in its own right, not as a default, ‘underspecified’ tone (on the latter situation, common in Sub-Saharan languages, see e.g. Odden 1995: 464-467, 474): one would expect linking of a H tone to a syllable without tone to yield H tone, not a contour (though the story can be more complex: in some African languages, it would seem that a syllable without tone may receive a ‘default’ M tone by a post-lexical default assignment rule and then an added floating tone, the final result being a contour tone; see Akinlabi 1984). According to reconstruction, the three level tones of Naxi originate in a two-tone system, the present-day H tone being due to a later tonal split (involving the loss of contrasts on the initial that dated back to earlier prefixes, see Bradley 1975); there are thus both diachronic and synchronic reasons to acknowledge the M tone as a full-fledged tone.

1.1.2. Tone reassociation by reduction of /pú/ (‘to bring’)

As a verb, /pú/ means ‘to bring, to offer’; in its grammaticalized uses, it has been described as ‘gerundizer’ (Pinson 1998: 11). Utterances 3a-b are answers to ‘Did you arrive by the 6 o’clock train?’, elicited as part of a dialogue:

³ This source compiles data from several places, mainly Chángshuǐ (长水, formerly Qīnglóng 青龙乡) and Yàngxī 漾西. The data were disentangled by going through the book with one of the authors, Hé Jírén, who pointed out his own contribution (based on his native dialect, Yàngxī) as opposed to the Chángshuǐ and Dàyánzhèn data. For convenience, the data from sources other than my own fieldwork are adapted to follow my own phonemic analysis (set out in Michailovsky and Michaud 2006) when first-hand familiarity with the dialect at issue confirms that the same phonemic analysis applies. In particular, the tones are rewritten as level tones, as appears most adequate for this language, and the palatalized initials rewritten as velars, e.g. in example 2, /gy/ (in keeping with Mazaudon and Michailovsky 1979) instead of the form /dzy/ used by He Jiren and Jiang Zhuyi 1985, Fang Guoyu and He Zhiwu 1995 and Pinson 1998.

- (3a) m̄x wà ɲè s̄ə d̄zù ḡx t̄s̄hũ tjá ndzù pú ts̄hũ m̄x.
 (3b) m̄x wà ɲè s̄ə d̄zù ḡx t̄s̄hũ tjá ndzù ´ ts̄hũ m̄x.
 NEG COP 1stSG seven o'clock GEN DEIC CLF sit GER arrive AFFMT
 The meaning of both 3a and 3b is: ‘No, I came by the 7 o’clock train’.

Here again, utterances with the morpheme fully realized and with reassociated H tone are interchangeable. The 3b variant, where /pú/ reduces to a H tone, came up when the speaker was asked to say 3a three times (as part of a phonetic experiment requiring several repetitions): the third time, he modified it to 3b. This gives a clue to the nuance that distinguishes 1a from 1b, 2a from 2b, etc.: the morpheme is reduced when attention focuses on other parts of the utterance. The sifting of examples from the transcribed narratives shows that reduction is more frequent than full realization. All in all, the choice is largely similar to that between uncontracted and contracted forms in other languages (e.g. reduction in English, as described by Quirk, Greenbaum, Leech and Svartvik 1985: 123-124).

1.1.3. Tone reassociation by reduction of /nú/ (‘or’)

‘Or’ is pronounced /nú/ in AS and NL, /ný/ in some other dialects (FK, and the dialects described in Fu Maoji 1984, He Zhiwu 1987).

- (4a) nù t̄hē.ũ hà bũ nú m̄x bũ lē ?
 2ndSG book buy go or NEG go INT
 ‘Are you going to buy books? / Would you like to buy books?’

The more spontaneous, colloquial realization of this sentence is:

- (4b) nù t̄hē.ũ hà bũ ´ m̄x bũ lē ?
 2ndSG book buy go or (*reduced to H tone*) NEG go INT

Omission of the reassociated H tone is not allowed:

- (4c) *nù t̄hē.ũ hà bũ m̄x bũ lē ?
 2ndSG book buy go NEG go INT

Reduction of /nú/ was observed to take place after H-tone syllables, unlike in the case of the particles described in 1.1.1 and 1.1.2; the /HH/ combination surfaces as [H], i.e. two H tones linked to a single vowel are phonetically indistinguishable from a single H tone:

- (5a) nù k̄hí nú m̄x k̄hí lē ?
 2ndSG cold or NEG cold INT
 ‘Are you feeling cold?’

In colloquial speech, constructions such as 5a often reduce as in 5b:

The full form, /lḗ ú/, can be substituted without affecting the meaning, with the unsurprising nuance that the full form is perceived as more “clear” and “definite”. The simplified form is so common that, in the lexicon by Fang Guoyu and He Zhiwu 1995: 405, /lḗ/ is presented as a lexical item in its own right, with the examples ‘to leave’, /lḗ b̂ŷ/; ‘to come back’, /lḗ lū/ (/b̂ŷ/: ‘go’ + perfective aspect; /lū/: ‘come’ + imperative mood). These can transparently be analyzed as: /lḗ ú b̂ŷ/, /lḗ ú lū/.⁵

1.1.5. Tone reassociation by reduction of /í/ (exclamative particle)

In Naxi as in the other Burmese-Yi languages, a host of particles provide cues to modality, aspect and informational structure. The nuances conveyed by each particle are best understood within the paradigm offered by the language, and can seldom be adequately described in a few words; the particle /í/ is here simply glossed as *exclamative*. (For descriptions of the particles of languages related to Naxi: on Lahu: Matisoff 1973; on Burmese: Bernot 1980; on Lalo: Björverud 1998.) Here is an example (from a dialogue) where this particle undergoes reduction:

- (9) nū gū.zū è.tsū.bḗ m̂ lá ?
 2ndSG POSS little.brother why+EXCL / í/ reduced to H tone NEG strike
 ‘Why doesn’t your little brother play?’ (‘play cards’ translates as ‘strike cards’ in Naxi)

Out of five language consultants who were asked to listen to this passage and repeat it word by word, three (including the speaker who produced the utterance) were unable to indicate the underlying syllable; two suggested that the complete form was /è.tsū.bḗ.í.m̂.lá/, a suggestion which received the assent of the other consultants to whom it was proposed.

1.1.6. Tone reassociation by reduction of /k̂ŷ/, generic classifier

Naxi (like all the languages of the area) possesses a large array of classifiers. The most widely used is /k̂ŷ/. The pronominal expression /é dzù k̂ŷ/ (first syllable of PI pronouns+‘pair’+CLF) ‘the two of us, us two’ can also be pronounced /é dzù́/ (Fang Guoyu and He Zhiwu 1995: 477 and our data). Further elaboration on this form is also observed: adding anew to the simplified form the figure ‘two’ plus classifier /k̂ŷ/, results in the form /é dzù́ nī k̂ŷ/, with the same meaning (Fang Guoyu and He Zhiwu 1995: 548). No other examples of reduction of /k̂ŷ/ were found.

As in the case of /tá/ (described in 1.1.1), the corresponding form in the FK dialect carries a different tone: a LM tone (/k̂ŷ̄/), and it cannot undergo reduction.

1.1.7. Tone reassociation by reduction of focus marker /ŝ/

This particle can be described as *focus marker*. It is homophonous with the verb ‘to say’, and perceived by consultants as identical with it; it is plausibly a grammaticalized form of this verb. Here is an example from the Naxi cosmogony as recorded in NL:

⁵ Other instances include association with /k̂ā/ ‘ahead; towards the front’. The form /k̂ā́/ ‘scoop up (water...)’ reported by Li Lincan, Zhang Kun *et al.* 1953: 284 is most probably to be analyzed as /k̂ā/ ‘ahead, towards the front’ plus /ú/ ‘scoop’.

- (10a) dÿ lò hī́ nè nū̄, ...
 earth in man+FOC (reduced) PROG TOP
 ‘As to mankind, down here on earth, ...’

This passage was dictated as 10b in the transcription session, the language consultant being unaware of the reduction in the recording:

- (10b) dÿ lò hī ʂʂ nè nū̄, ...
 earth in man FOC PROG TOP

1.1.8. Tone reassociation by reduction of /ló/ ‘cross’?

The interrogative pronoun /zè/ ‘which’ is most likely cognate with the interrogative particle /zè́/ ‘where’, perhaps through reduction of the syllable /ló/, which is a grammaticalized form of the verb /ló/ ‘cross’. The question ‘Where are you going?’ can be pronounced as /zè́ ló bŭ lē/ (interrogative pronoun ‘which’-particle /ló/-go-INT) as well as /zè́ bŭ lē/ (interrogative pronoun ‘where’-place-go-INT); but /zè́/ cannot be replaced by /zè́ ló/ in all cases, witness the interrogative expression /zè́ kʰà/ ‘when’, for which one cannot substitute */zè́ ló kʰà/. The underlying syllable in this latter case may be the particle /í/ (found in example 9a, paragraph 1.1.5).

1.1.9. Tone reassociation by reduction of /sé/ (conditional-topicalizer)

In the Dàyánzhèn dialect, the conditional-topicalizer /sé/ can reduce to a H tone (as was already mentioned by He Jiren and Jiang Zhuyi 1985: 15):

- (11a) m̄ wà́ , ...

standing for

- (11b) m̄ wà sé, ...
 NEG COP COND/TOP

both meaning ‘If not, ...’; and

- (12a) é.tʂʰū ŋī nū́ , ...
 DEIC day ABL+COND/TOP (reduced)

standing for

- (12b) é.tʂʰū ŋī nū sé, ...
 DEIC day ABL COND/TOP

meaning ‘From that day on, ...’

As reported at the beginning of Section 1, the process does not take place in cases where the preceding syllable (the syllable before /sé/) has a H tone: the full form is used.

In the AS, NL and FK dialects, reduction of the conditional-topicalizer likewise results in reassociation of a H tone to the preceding syllable. But in these dialects, the conditional-topicalizer influences the tone of the preceding syllable even when it does not undergo reduction: it carries a floating H tone. This pattern is presented in the following paragraph (1.2.1), along with two other cases where a morpheme carries a floating H tone: a trace of a lost initial syllable that carried a H tone.

1.2. *Monosyllables carrying a floating tone originating in former disyllables*

1.2.1. *The conditional-topicalizer morpheme in AS, NL and FK: the topicalizer-conditional / sé/ carries a floating H tone*

In AS, NL and FK, the conditional-topicalizer morpheme is accompanied by a floating H tone, a tone which is not realized when the morpheme is elicited in isolation but links to the preceding syllable within an utterance. A resulting /HH/ sequence surfaces as [H], i.e. /HH/ is phonetically indistinguishable from a single H (see Rialland and Sangaré 1989: 23 and Clements 2000 on a similar situation in Bambara, Good 2002 on Saramaccan), e.g. /mé/ ‘teach’ plus / sé/ yields [mé sé].

(13a) tʂ^hũ ŋĩ sé, ...
 DEIC day COND/TOP
 ‘That day, ...’ (reminder: ‘day’ is /nĩ/)

(14a) nù sé, ...
 2ndSG COND/TOP
 ‘As for you, ...’ (reminder: the 2nd person singular is /nù/)

The change in tone is exceptionless and compulsory in the AS, NL and FK dialects:

(13b)* tʂ^hũ ŋĩ sé, ...

(14b)* nù sé, ...

At first glance, no syllable reduction is involved. Historically, however, the process is the same as described in section 1.1. An older form of the conditional, still in use in formal speech, is disyllabic: in AS, /lú sé/; in FK, /lí sé/; in NL, following confusion of /l/ and /d/ to /d/, it is pronounced /dú sé/. Indeed, the morpheme /lú/ is also in use as a conditional (the same holds true of the corresponding forms in FK: /lí/ and in NL: /dú/; Fu Maoji 1984: 324-325 provides some remarks on this morpheme). The floating tone in present-day / sé/ can therefore be traced back to a former disyllabic /lú sé/.

This provides evidence for a hypothesis formulated by David Bradley (seminar talk): in neighboring Lisu, the conditional and the topicalizer are homophonous; the hypothesis is that the two are one and the same thing. Homophony is not a sufficient criterion, given the restricted inventory of phonemes found in Tibeto-Burman function words. The fact that the tonal behavior of the two / sé/ morphemes (conditional and topicalizer) is identical within each dialect of Naxi, and has very few equivalents in the language, provides convincing evidence of their identity,

confirming the observation, from non-related languages, that “Conditionals are topics” (Haiman 1978).

1.2.2. The restrictive adverb /^ˈsū/ ‘only’

The adverb /^ˈsū/ differs from /tá/ (described in 1.1.1) in that /^ˈsū/ implies that what is the case falls short of what should be the case:

- (15) t^hū t^ʃ^hū k^hà tá ts^hù mē!
 3rdSG DEIC moment only arrive EXCL
 ‘(S)he only just arrived!’ (No hint of reproach.)

- (16) t^hū t^ʃ^hū k^hà ^ˈsū ts^hù mē!
 3rdSG DEIC moment only arrive EXCL
 ‘(S)he only arrives now!’ (Hint of reproach: (s)he should have arrived earlier.)

Concerning the underlying syllable, a possible candidate is /m̃y/, the disyllabic form /m̃y sū/ being used as a final-particle cluster signalling a conjecture. In any case, it can safely be assumed that present-day /^ˈsū/ comes from an earlier disyllable, the first syllable of which carried H tone.

In the NL dialect, the particle is pronounced /sú/, and does not carry a floating H tone. This can be explained in light of the general reversal of all the /HM/ and /MH/ tone sequences on lexical items in this dialect: e.g. ‘sparrow’, /ki ^ˈʃ̃/ in AS and FK, is /ki ^ˉʃ̃/ in NL.⁶ Following this rule, the hypothesized disyllabic /m̃y sū/ became /m̃y sú/ in the NL dialect, and finally /sú/ by deletion of the first syllable, its M tone leaving no trace.

1.2.3. The topicalizer /^ˈm̃y tsú/

The topicalizer /^ˈm̃y tsú/ is composed of a floating H tone, the affirmative particle /m̃y/, and /tsú/, a particle that may be identical in origin with the (sentence-final) evidential particle /tsú/, which indicates indirect knowledge. As in the case of /^ˈsé/ and /^ˈsú/, the floating tone associates to the preceding syllable: /t^hū^ˈ m̃y tsú/ ‘as for him/ her...’ (recall that /t^hū/ is the 3rdSG).

Concerning the origin of this floating H tone, none of the following syllables can be substituted for it in the AS and NL dialects: /sé/, /lú/, /ʃ̃/, /nú/, /í/. A plausible guess, however, is that the earlier form was /lú m̃y tsú/, the /lú/ being the same as in the conditional-topicalizer /lú sé/ (described in 1.2.1): in the FK dialect, more conservative in this respect, the sequence /lú m̃y tsú/ can still be substituted for /^ˈm̃y tsú/.⁷

1.3. Conclusion on High-tone syllable reduction

Reduction leading to the reassociation of a H tone only involves a small set of words, but these words are among the most frequent; besides, from the point of view of language use, this set

⁶ The inversion is also manifest in reduplication: a H-tone syllable reduplicates to M-plus-H in the NL dialect, as against H-plus-M in other dialects: e.g. /lá/ ‘to strike’ yields /lā lá/ ‘to quarrel, to fight with one another’ in NL, versus /lá lā/ in AS (same meaning).

⁷ The actual pronunciation in FK is not /lú m̃y tsú/ but /lí m̃y tsú/; FK /li/ and AS/NL /lu/ stand in a regular relation of correspondence.

should remain small: an added H tone is a clue to an underlying morpheme; the difficulty of recovering it is proportional to the number of likely candidates.

The observations made so far may be summarized in present-day phonological parlance as: 1. H tones may de-link: they are *set afloat* when the segmental content of the syllable is deleted. 2. A de-linked tone attaches to the preceding syllable, and does not move further. 3. /HH/ surfaces as [H]. 4. /MH/ and /LH/ sequences associated to the same syllable surface as rising contours. 5. The tone may only float backward and not forward. H-tone syllable reduction in Naxi, a Tibeto-Burman language, thus yields itself to nonlinear modelling similar to that initially proposed for Sub-Saharan languages (Goldsmith 1976; Clements and Goldsmith 1984; Hyman 1993).

Before engaging in the discussion of the issue of tonal morphology in Southeast Asian languages, it appears useful to investigate the other aspects of H-tone addition in Naxi.

2. Intonational use of a floating High tone

2.1. Use of a High tone in intensification

2.1.1. General description of the process

In AS and NL Naxi, a word that carries L or M tone on its last syllable can optionally receive intensification⁸ by addition of a H tone that aligns at the right edge of the word, again changing the tone of the last syllable to a rising contour tone, as in (17):

- (17) ... hā.pà' gǎ lā dū.hū kó.
 Chinese GEN. too some celebrate

‘[The Naxi not only celebrate their own feasts, they] also celebrate some Chinese feasts.’

The lexical form of the word ‘Chinese’ is /hā.pà/. In 17 it is modified to /hā.pà'/; the effect is to put it into relief, at a point in the narrative where it has a pivotal role.

As ‘Chinese’+genitive makes up a single phrase, it is not expected that elements which do not belong in the phrase will come in between them. An attempt was nonetheless made to insert various particles between /hā.pà/ and the possessive /gǎ/; these rephrasings were refused: no full syllable could be substituted. Diachronically, one cannot rule out the hypothesis that the H tone comes from reduction of a syllable, e.g. a topicalizer such as /lú/; but if so, it has followed its own evolutionary path, as it now appears at places where these particles cannot. There are no pressing reasons to believe that it comes from syllable reduction at all.

There can be two or more intensive tones in a row, as in 18 (from a dialogue); quite predictably, the effect of successive intensives is cumulative:

- (18) pǎ sé gǎ' ŋgǎ' mǎ !
 write COND/TOP very+intensive.H painstaking+intensive.H AFFMT

‘[Learning Chinese is not too difficult, but] the writing is really, really hard!’

The fact that the intensive H tone is optional appears clearly in transcription sessions: the consultants sometimes inadvertently omit an intensive H when repeating a recorded sequence, or conversely add one which is not present on the recording.

⁸ Rather than call the added tone *emphatic*—a term that has an extremely broad field of application—, it is here termed *intensive*.

2.1.2. H-tone addition for intensification is different from contrastive stress

The 20th century American tradition of prosodic studies popularized the view that intonation is to be analyzed in terms of discrete levels (e.g. Pike 1945); this tradition later borrowed from the models developed in the description of African tone systems (an influence traced by Rialland 1998), leading to descriptions of English intonation in terms of four tones (Leben 1976), three tones (Lieberman 1975), and finally simply two tones (Pierrehumbert 1980). The *autosegmental-metrical* model of intonation is now often considered to be universally valid; it has been extended to various languages, some of which possess lexical tones. Robert Ladd phrases the radical version of the postulate as follows: “In effect, the restrictive linear view says that all languages have tonal strings” (Ladd 1992: 328). This runs counter to functional approaches to prosody, as well as to superpositional approaches (see Fónagy 1989, Rialland 1995, Grønnum 1998, Rossi 1999, Vaissière and Michaud 2006). In this epistemological context, where the notion of *tone* is used in a variety of ways by different authors, it may be useful to bring out the difference between the phenomenon of H-tone addition observed in Naxi, on the one hand, and the *intonational* phenomena commonly referred to as *contrastive stress* and *emphatic stress*, on the other.

Intonational H-tone addition is different from contrastive stress (also called *contrastive focus* by some authors). Indeed, contrastive stress as it typically appears in English (and, in Asia, in Chinese) is not found in Naxi (nor in many other languages, in the Tibeto-Burman area and elsewhere), as shown by the following test, which consisted in attempting to add a H tone onto various syllables of the sentence ‘He shouldn’t act like this’ (which is entirely made up of M-tone syllables): none of 19-21 is well-formed.

- (19) *t^hũ t̚^h̄ bē bē´ m̄ ā.
 3rdSG manner DEIC ADVR act+intensive.H NEG modality verb: should
 The intended meaning of 19 was: He shouldn’t *act* like this (i.e. he may think and speak as he likes, but not act it out).

- (20) *t^hũ´ t̚^h̄ bē bē m̄ ā.
 3rdSG+intensive.H manner DEIC ADVR act NEG modality verb: should
 The intended meaning of 20 was: ‘*he* shouldn’t act like this (though other people may)’.

- (21) *t^hũ t̚^h̄´ bē bē m̄ ā.
 3rdSG manner DEIC+intensive.H ADVR act NEG modality verb: should
 The intended meaning of 21 was: ‘he shouldn’t act in this way’; emphasis on ‘this way’.⁹

It may also be worth emphasizing that the added H tone is not a focus-marker: the difference between the *optional* intensification by H-tone addition and focus-marking appears clearly,

⁹ Addition of a H tone onto the adverb /t̚^h̄/ was only observed in cases where the speaker simultaneously demonstrates how to perform the action at issue, as in 22:

- (22) t̚^h̄´ bē bē lū!
 MANDEIC+intensive.H ADVR act come (IMP)

‘That’s how it’s done!’ (said while showing how to perform a certain gesture)

This reveals that, in the present state of the language, the intensive H tone has undergone a degree of specialization, developing affinities with deixis.

whether *focus* is understood (in the spirit of Paris 1999: 204, Xu Yi 1999, Delais-Roussarie, Rialland et al. 2002, Mazaudon 2003) as *that part of the utterance on which the assertion (or the interrogation) bears*, or again as *the part of the utterance that the hearer is presumed not to be familiar with*. H-tone addition and focal status are nonetheless linked, insofar as the intensive H tone only associates to focal items, as shown by its complementary distribution with the topicalizer /´ sé/ (described in 1.2.1): compare utterance 20 above with 23.¹⁰

- (23) t^hũ ´sé tʃ^h̄ bē bē m̄ ā.
 3rdSG COND/TOP MANDEIC ADVR act NEG should
 ‘He shouldn’t act like this (though other people may)’.

2.1.3. H-tone addition for intensification is different from emphatic stress

Intensive H tone addition should furthermore be distinguished from the phenomena which since Coustenoble and Armstrong 1937 have been grouped under the name *emphatic stress* (see also Carton, Hirst et al. 1976; on the importance of the recognition of emphatic stress as a distinct category: Kohler 2003, Vaissière 2004). The correlates of emphatic stress include consonant lengthening, modified voice quality, amplified jaw opening and tongue movements, amplified pitch range, and increased subglottal pressure. The intensive floating H tone is compatible with emphatic stress, and indeed often goes hand in hand with it. The two phenomena are nonetheless distinct, as evidenced by the cases where intensive H tone and emphatic stress are both present but are located on different syllables. Example (24) is taken from a narrative about the old times when marriage was planned during childhood but flirting allowed during adolescence, so that many fell in love with someone other than their future spouse, and finally committed suicide with their beloved. Two lovers sing to each other:

- (24) á.ŋgũ t^hũ, m̄ p^hý h̄ ký ḡ, m̄ lù nà ký ḡ,
 1stPI TOP NEG sow green be.able.to REL NEG plow black be.able.to REL
 ‘As for us, [let us to a place where (*this part of the sentence comes at the very end*)] one
 reaps without sowing, where crops grow (become black with grain) without any plowing,
- lā nũ ndzā.zwā bē, tʃ^hwá.p^h̄ lù.ũ bē,
 tiger ABL riding-horse do doe plowing-cow do
 where tigers serve as mount, does serve as plowing-cows,
- mb̄.tsà lā m̄ ŋgý, mb̄.l̄ lā m̄ ŋgý,
 mosquito too NEG EXIST fly (N) too NEG EXIST
 where there are no mosquitoes or fleas,
- má.t^h̄ nũ ḡ dzē.d̄ lā ndzà k̄ nũ tá ký,
 buns and wheat cake too tree on ABL to pick be.able.to
 where one can pick buns and cakes from the trees,

¹⁰ The floating H tone in example 23 is due to the presence of the COND/TOP, not to a phenomenon akin to the intensive H tone; this is shown clearly by data from the Dàyánzhèn dialect, where the COND/TOP does not have a floating H tone and where 23 is consequently realized without a floating tone, as /t^hũ.sé.../.

hā nī sū tá ndzū, gì nī ηō tá t^hù g̃
 food want meat only eat water need milk only drink REL

where one only eats meat when one needs food, where one only drinks milk when one needs water (=when one is thirsty),

t̚^h̃ g̃ dū b̃' bū là!
 MANDEIC GEN one place+intensive.H go IMP: 'let us'
 let us go to such a place!'

As Naxi relative clauses come before their head (the “antecedent” of traditional Western grammar), the whole series of relative clauses (over half a minute on the recording) comes before the noun ‘place’, /b̃/, which is followed by the verbal cluster ‘let us go’, /bū là/ (‘go’ + particle indicating invitation). The three last syllables of the sentence are pronounced /b̃' bū là/, with added H tone on /b̃'—recalling the use of an intensifier in English in the phrase *the very place*—, and with a considerable burst of articulatory energy on the last two syllables, /bū là/. This illustrates the difference between *phonological*, categorical intensification by addition of H tone and *phonetic*, noncategorical emphasis/intensification (phonetic data on intonational emphasis in Naxi are reported by Michaud 2003, Michaud 2005).

2.1.4. Reduplication with intensification

Use of the intensive H tone in combination with reduplication follows the same patterns as above; its interest for this study is that it is apparently the medium by which the intensive H tone is currently gaining dialectal extension.

In AS (Western Naxi), the reduplication pattern is: H yields H+M, M yields M+M, L yields M+L (for a discussion, see Michaud and Vaissière forthcoming). For example, /lá/ ‘strike’ reduplicates to /lá lā/ ‘to quarrel, to fight with one another’; /sū/ ‘know’ reduplicates to /sū sū/ ‘to become acquainted; to fall in love’; /l̃/ ‘look’ reduplicates to /l̃ l̃/ ‘to take a casual look at’. An intensive H tone is frequently added, attaching to the first syllable: /šwā' šwà/ ‘really tall’, from /šwà/ ‘tall’; /b̃' b̃/ ‘really coarse’, from /b̃/ ‘coarse’. The reduplicated element can be monosyllabic or disyllabic; it can be a verb, a noun phrase, an adverb, or a final particle: /ā/, meaning ‘have to/must’, reduplicates to /ā' ā/ ‘really have to’; /má k̃/ ‘at the back’ reduplicates to /má k̃' má k̃/ ‘edgemoat, most to the back’; /t̚^hū k̃à/ ‘now’ (made up of DEIC /t̚^hū/ plus /k̃à/ ‘time, moment’) reduplicates to /t̚^hū k̃à' t̚^hū k̃à/, ‘right [at] that moment’. Reduplication with intensification is also very common on the affirmative final particle /m̃/ (pronounced /m̃/ in the Dàyánzhèn and Yàngxī dialects); it seems clear enough why an affirmative particle, more than other particles, should make the most of a device that conveys intensification.

In the FK dialect, reduplication with intensification is the only case in which intensive H tone addition takes place; none of the examples given under 2.1.1 are possible in FK. My guess is that the intensive H tone is basically absent in FK, and was introduced only through imitation of the reduplication patterns of Western Naxi: being expressive forms, such patterns are likely to be adopted from one dialect into another.

2.1.5 Conclusion on the intensive High tone

The intensive H tone cannot be replaced by a full syllable; and it is added at the speaker's choice (said differently, it is not determined by the phonological context). It is different from the scalar increase in intonational prominence also found in the language (*emphatic stress*). The example of tone languages that have a special, categorical device to lend salience to L- and M-tone syllables is of interest for intonational typology: it is an instance of phonologization of the cross-language correlation between pitch height and informational prominence (on Wolof, which does not follow this general tendency, see Rialland and Robert 2001; some other African languages, tonal and non-tonal, are similar to Wolof in this respect). It is a safe guess that addition of a L tone for intensification is far less frequent across languages.

2.2. Use of a High tone to convey sentence mood: evidence from cross-dialect differences

The H tone of Naxi has intonational uses beyond intensification, though with much variation across dialects.

2.2.1. Intensive H tone as indicator of sentence mood?

H-tone addition is frequent in imperative sentences, but is not in itself an indicator of sentence mood. Both 25a and 25b are well-formed imperatives:

(25a) nù lỳ!
 2ndSG look
 ‘Look!’

(25b) nù lỳ’!
 2ndSG look+intensive.H
 ‘Look!!!’

Adding a H tone in 25b makes the command more pressing (this is frequent in commands to children).¹¹ In the NL dialect, however, addition of an intensive tone is so widespread as to appear standard; it can therefore be considered to have become part of the expression of sentence mood.

Likewise, interrogation is sporadically accompanied by a final intensive H tone:

(26a) t^hũ á ts^hũ lē?
 3rdSG INT arrive INT
 ‘Has he arrived?’

¹¹ Randy LaPolla notes that using a rising tone to mark a more pressing imperative appears typologically marked; he suggests that, cross-linguistically, high and rising tones are used for *softening* (see the reflections on phonetic symbolism in LaPolla 1995). However, the ethological *frequency code* (Ohala 1984) whereby a higher pitch is associated with smallness and submissiveness (and secondary connotations such as loveliness, and a certain form of femininity) applies as a phonatory *setting*; as far as human language is concerned, it essentially applies at the level of the utterance and above. A local pitch excursion into a higher register (going hand in hand with higher intensity, and other modifications) typically indicates *foregrounding/prominence* rather than *backgrounding/absence of assertiveness*. (On the many layers that make up prosody, and the descriptive and theoretical issues raised by their interplay, see Vaissière 2004 and the literature review therein.)

1. Morphosyntactic uses of H-tone addition: possessive and vocative

Addition of a H tone is found in some possessive constructions (no longer productive) and in what appears to be vocative constructions (still productive). The presentation below starts out from the clearest instances of these processes, then discusses their semantic extensions.

1.1. Use of High-tone addition in possessive constructions

A few examples point to the use of an added H tone in possessive constructions in earlier states of the language, a situation analogous to that of the tone-marked possessive of Burmese. On the analogy of Burmese and other languages, the *possessive H tone* of Naxi can be hypothesized to date back to an earlier H-toned possessive. In present-day Naxi, possessive constructions are standardly built with the morpheme /gǝ/, which has M tone, or simply by juxtaposition; no diachronic guess at the identity of the demised possessive which simplified to a H tone can be proposed as yet.

In AS, the names of two plants are composed of /lě.kà/ ‘raven’, an added H tone, and a plant name: /lě.kà́ .pǝ/, a poisonous weed; and /lé.kà́ .sá.kì/ (consultants proposed translations as *naishēn* 奶参 or *qīngyángshēn* 青洋参, and *suànjǐāngshēn* 酸浆参, respectively, but these nonstandard terms—apparently referring to types of ginseng—could not be translated into English). The motivation of this designation is that the leaves resemble the beak of a raven. Another plant name, similar in structure, is /ǎ.ỳ́ .mà.bǝ.dzè/, from: /ǎ.ỳ́/ ‘monkey’, /mà/ ‘oil, fat’, and /bǝ.dzè/ ‘spoon’ (‘oil spoon of the monkey’). Such compounds are frequent across languages, e.g. *harebell*, *cowslip*, *dandelion* (from the French *dent-de-lion*, ‘lion’s tooth’), or the French *herbe à chat* (‘cat’s grass’). The example best attested across dialects is /lā.bà́ .tʰō.lō/, referring to a kind of large straw hat mainly produced in the village of /lā.bà/; /tʰō.lō/ means ‘straw hat’. The same process may account for the additional H tone found in the titles of some traditional songs and religious rituals (Li Lincan, Zhang Kun et al. 1953: 320, 492; Fang Guoyu and He Zhiwu 1995: 601, 617): under this view, it is an instance of the archaic possessive.¹³ The cross-dialect and cross-speaker variation probably reflects the early demise of this grammatical process.¹⁴ The possessive is likely to be the original meaning from which all of the constructions in the present section (section 1) are historically derived.

¹³ The traditional song called /wǝ́ mǝ ndà/ can also be called /wǝ mǝ ndà/ in NL and Dàjù (both variants are familiar to the speakers who know the song, in NL and Dàjù; no certainty could be reached as to the meaning of these titles); the titles of rituals traditionally pronounced as /sǎ́ pʰi/ and /sǎ́ tǝù/ (Fang Guoyu and He Zhiwu 1995: 601, 617) were pronounced with initial syllable /sǎ/ by my Dàjù language consultant, a young priest of the /tō mbà/ religion who had learnt these forms without the archaic possessive, i.e. following the rule of the present-day language, where possessive constructions are expressed by simple juxtaposition or with particle /gǝ/. (The Naxi religious script is for the most part pictographic, and provides no indication on tones.) He interpreted the syllable /sǎ/ to refer to the variety of hemp out of which paper (and therefore religious books) used to be made; a possessive construction involving this noun is not unlikely.

¹⁴ Compare NL /lé kà sá kì/ to AS /lé kǎ́ sá kì/, mentioned above, and NL /há lè mà bǝ dzè/ (/há lè/ ‘cat’) to the AS form, cited above, with added H tone: /ǎ ỳ́ mà bǝ dzè/, for the same plant. ‘Wild lychee’ is transcribed as /sú dzù́ lā kʰā/ by Fang Guoyu and He Zhiwu 1995: 149, who describe the Dàyánzhèn dialect; it probably comes from /sú dzù/ plus H tone of genitive construction plus /lā kʰā/ (the meaning of the two elements in this compound could not be ascertained); but it does not have an added H tone in my data: /sú dzù lā kʰā/ in Qīhé, /sǝ́ dà lā kʰà/ in AS.

1.2. Use of High-tone addition in personal pronouns, agent names and vocatives

In all the Western dialects investigated, an added H tone appears in collective designations. One out of its several surface effects is the expression of the plural: /zý.zỳ/ ‘child’, /zý.zỳ́/ ‘the children’; /p^há.kī.mē/ ‘young woman/young women’, /p^há.kī.mḗ/ ‘young women in general’ (He Zhiwu 1987: 9, 42). When the base form (with L or M tone) is a pronoun or a noun designating an individual, a trade, or a place, the form with added H tone designates a household as a whole. It may also serve to personify a nonhuman entity, such as animals in fairy tales. The collective form conveys a sense of social belonging, with a nuance of friendliness in the cases where a choice is open between the form with and without extra H tone. It will be argued that this set of phenomena may be influenced by the neighboring Bai language.

1.2.1. Personal pronouns

Among the small set of ‘native’ lexical items with rising contour tones found in Naxi, the most conspicuous make up a series of pronouns, with the rhyme /ǎ́/: 1st person: /ŋǎ́/, 2nd person: /nǎ́/, 3rd person: /t^hǎ́/. They refer to an individual’s household (as mentioned in Fu Maoji 1944, He Jiren and Jiang Zhuyi 1985, Fang Guoyu and He Zhiwu 1995: 401):

(30a)	ŋǎ́	tʂ ^h ũ	pá	ndzù.
	‘possessive’ 1 st SG	DEIC	place, side	EXIST
	‘I live here / my family lives here.’			

The form 30b is considered inadequate by the consultants, with the comment: ‘I am not living on my own, am I?’

(30b)	??	ŋǎ̀	tʂ ^h ũ	pá	ndzù.
		1 st SG	DEIC	place, side	EXIST

In light of comparison with the simple personal pronouns (1st SG /ŋǎ̀/, 2nd SG /nũ/, 3rd SG /t^hũ/), the /ŋǎ́/, /nǎ́/, /t^hǎ́/ series appears to comprise a *possessive* element: /ŋǎ́/ would mean ‘mine’, understood as ‘my family’. When used in association with /kò/ (which means ‘inside’, e.g. /zǎ́/ ‘shoe’, /zǎ́ kò/ ‘socks’: ‘[piece of clothing worn] inside the shoes’), these pronouns refer unequivocally to the household as a whole: /ŋǎ́ kò/ ‘my family; my house and the people in it, including myself’, /nǎ́ kò/ (same meaning, 2nd person), /t^hǎ́ kò/ (ditto, 3rd person). It is also possible to refer to one’s family by using an analytic form consisting of the simple pronoun plus genitive plus ‘house’: ¹⁵

(31)	ŋǎ̀	gǎ̀	jǎ.kò
	1 st SG	GEN	house

¹⁵ Note that the tone of the pronoun is changed from L to M in possessive constructions; pending further analysis, this can be ascribed to the phonologization of the phonetic tendency for intonational groups to start on a relatively high pitch (both synchronic and diachronic evidence for this tendency is offered in Michaud and Vaissière forthcoming).

The construction 31 is observed in my data in a context where a distance is established between the speaker and the rest of the family: in a story in which lovers tell each other how hard they find life in their families.

A fourth (and apparently last) member of this set is /mə́/, a second-person pronoun used to address a beloved woman (Fang Guoyu and He Zhiwu 1995: 384 and my AS and NL data), its usage being now restricted to love songs.

Concerning the origin of these forms, the NL dialect provides an indication that the change in the vowel probably preceded the tonal change. In this dialect, there is a set of possessive pronouns which carry L tone, and can have vowel /e/ or /a/: e.g. /tʰè bā/, /tʰà bā/: ‘his or her father’; /nè bā/, /nà bā/: ‘your father’; /ŋà bā/: ‘my father’ (the form */ŋè bā/ is not acceptable). These possessive pronouns can also receive an additional H tone: /tʰè́ bā/ or /tʰà́ bā/, /nè́ bā/ or /nà́ bā/, and /ŋà́ bā/ (*ŋè́ bā/); the difference is that, in cases of explicit reference to the household, only the form with rising contour is acceptable: /tʰà́ kò/ ‘his family’ (*tʰà kò/). Forms with the added H tone are respectful, whereas those without are blunt. For instance, /nà bā/ or /nè bā/ may be used when scolding a child (‘I’ll tell your father!’). In other words, leaving aside the question of why the vowel of 2nd and 3rd person pronouns can be either /e/ or /a/, the forms /ŋà/, /nà/, /tʰà/ are simple possessive pronouns, differing from the personal pronouns by their vowel and their L lexical tone; the forms /ŋà́/, /nà́/, /tʰà́/ found in all the Western Naxi dialects investigated might therefore be etymologized as a possessive pronoun plus an added H tone indicative of possession.

In light of this analysis, the link with the facts in the next section appears clearly.

1.2.2. Surface effects of the possessive construction: designation of the agent

A close parallel to the cases described above is the addition of a H tone that changes the name of an action or a trade into a designation for the agent; it can also change a name place into a designation for the inhabitants. For instance: /ʂù/ ‘iron’; /t̃y/ ‘strike’; /ʂù t̃y/ ‘to strike iron, to forge’; /ʂù t̃ý / ‘the blacksmith, the household of the blacksmith’ (He Zhiwu 1987: 9 and my own data). Other examples include /pú dzù/ ‘craftsman’, /pú dzù́/ (or /pú dzù́ kò/) ‘household of the craftsman’; /gì/ ‘house’ (the building), /gì́/ ‘family, household’:

- (32) ə.bē.ʂə.bē.njə tʰū, nà.hī dū gí tʰū, ...
 once.upon.a.time TOP Naxi one house+H tone TOP
 ‘Once upon a time, there was a Naxi household...’ (beginning of a narrative)

The designations of people’s dwellings clearly involve a tone-marked possessive: /kʰà/ ‘emperor’ (borrowed from the Mongolian ‘Khan’), /kò/ ‘place’, /kʰà́ kò/ ‘the emperor’s court’; /lā mà/ ‘priest (of the Tibetan Buddhist religion)’, /lā mà́ kò/ ‘the Lama temple’. Likewise, /kʰà d̃y/ ‘capital city’, literally ‘emperor’s domain’,¹⁶ can be pronounced /kʰà́ d̃y/ to emphasize the presence of the emperor and his court in the city.¹⁷ In all the dialects investigated, adding a H

¹⁶ This designation, which refers to Beijing, is now being replaced by a borrowing from Chinese: /pʰá ki/ ‘Beijing’.

¹⁷ An otherwise isolated word shows a degree of analogy to this set: ‘below, under’ is /mù tʰā/ (Fang Guoyu and He Zhiwu 1995: 386) but mostly appears in my data as /mù tʰā́/. Its first syllable means ‘down’, as in /mù ndzù/ (‘down+’sit’) ‘Sit down!’ The form with added H tone tends to be preferred when reference is to an inhabited place: typically, a village located downstream. No further analysis of this word can be proposed at present; /g̃x̃ tó/ ‘above’ cannot undergo the same treatment: */g̃x̃́ tó/ (intended meaning: ‘the village upstream’). Lastly, in some

tone to an action name creates an agent name, more exactly a name for the agent as social person, within his family setting: The form with added H tone is typically used to designate a household that has worked at the trade in question for several generations. For example, hearing that someone has damaged a man's plow, one might remark that he can repair it himself without problem: 'his family are blacksmiths, aren't they!'

- (33) t^hà´ şù tǔ´ mà´!
 'possessive' 3rdSG iron beat+H tone PART.certainty,obviousness

Other examples within this open set include /bù zǔ/ ('pig'+ 'castrate') 'to castrate pigs', /bù zǔ´/ 'the person who castrates pigs' (i.e. the person in the village that people go and fetch when the operation needs to be performed); /ts^hē k^hǐ/ ('salt'+ 'sell') 'to sell salt', /ts^hē k^hǐ´/ 'salt merchant'. Randy LaPolla suggests a parallel with present-day Mandarin *mài yán* 卖盐 ('sell'+ 'salt') 'to sell salt', *mài yán de* 卖盐的 ('sell'+ 'salt'+ possessive) 'salt seller'.

1.2.3. Extension to familiar terms of address, and names for plants and animals: a vocative use of High-tone syllable addition?

Other phrases with added H tone are less easy to interpret as possessives; semantically, they could be somehow related to the examples above; still, they verge on the *expressive*, and could perhaps be described as instances of *vocative* use of H-tone syllable addition. The addition of a H tone to proper names is frequent when calling out to the person (e.g. changing the name /ū p^hǐ/ to /ū p^hǐ´/); the same process seems to manifest itself in less obviously vocative utterances. For example, the phrases /zō k^hǔ/ (meaning 'men in general, the male sex') and /mí k^hǔ/ ('women in general') can be used to refer to one's spouse: /ŋà´ mí k^hǔ/ 'my wife', /ŋà´ zō k^hǔ/ 'my husband'.¹⁸ In running speech, these are usually pronounced /zō k^hǔ´/ or /zō k^hǔǣ´/, /mí k^hǔ´/ or /mí k^hǔǣ´/, with rising tone.¹⁹ A parallel phonetic evolution is observed in the Dàyánzhèn dialect on the word for 'child', /zý zỳ/, which has affectionate variants with an added H tone: /zùè zùè´/, or /zùè zùè´/ (there is some variation among speakers), with diphthongization and tonal change. In AS, a different term for 'child', /kí mē/, can undergo a similar tonal change:

- (34) nà´ zō.k^hǔǣ´ ŋgỳ sjǔ
 'possessive' 2nd husband EXIST PART.obvious observation

t^hũ, kí mē´ ó ŋgỳ sũ lē?
 TOP child+H tone INT EXIST as yet INT

'Now you're married, aren't you [literally: Now there's a husband at your home]; and do you have any babies as yet?'

Western dialects, adding a H tone may change a place name to a designation of its inhabitants, e.g. /i´ gǔ dǔ/ 'Lijiang', /i´ gǔ dǔ´/ 'inhabitant(s) of Lijiang' (He Zhiwu 1987: 9, describing the dialect of Changshui, close to the town of Lijiang; not in use in AS).

¹⁸ The word /k^hǔ/, which could be approximated as 'species', also appears in: /k^hǔ ts^hǎ/ 'clan, extended family'; /nà hǐ k^hǔ/: 'the Naxi ethnic group' (He Jiren and Jiang Zhuyi 1985: 91).

¹⁹ The diphthongization of /y/ to /ǔǣ/, which is specific to these examples, remains unexplained.

2. Sporadic lexicalization of the intensive High tone, resulting in rising-tone lexical items

Frequent association of the intensive H tone to certain L-tone syllables results in its sporadic lexicalization (on very few items), the rising /LH/ contour coming to be perceived as the lexical tone. In AS, the verb ‘to want’ translates as /nà ỳ/, as in (27a) above; its second syllable often bears an intensive H tone, yielding /nà ỳ́/, as in (27b) above. In other dialects, the second syllable has been described as bearing a lexical rising tone: /nà ỳ́/ (Pinson 1998: 76).

A second instance of such tone change through habitual intensification is the adverb ‘very’, /gjà/. In AS, /gjà́/ is frequent, but is still a distinctly intensive counterpart to /gjà/; in Pinson 1998, two phonetic forms are given under this entry, one with L tone and one with a rising contour tone; Fu Maoji 1984: 310 only provides the form /gjà́/, a sure hint that the added H tone was habitual in the speech of his language consultant. It is no surprise that ‘to want’ and ‘very’ should come to carry habitual intensification.

The very frequent adjective ‘correct, right’ is pronounced /hò/ in FK (and cannot be pronounced /hò́/), and /hò́/ in AS, NL and other Western dialects (where it cannot be pronounced /hò/). In light of this cross-dialect piece of evidence, it can be hypothesized that, in Western dialects, /hò/ came to receive intensive H tone with such frequency that its lexical tone changed to a /LH/ contour.²³

Items presently in the process of acquiring a rising contour include /kā nỳ/ ‘in the old times’ and /ǎ bē ʂǎ bē nỳ/ ‘once upon a time’, now most frequently realized as /kā nỳ́/, /ǎ bē ʂǎ bē nỳ́/. In NL, /lē kỳ/ ‘then, afterwards’ is usually pronounced with a /LH/ contour on the second syllable.²⁴ The conjunction ‘and’ is /nù/ in AS, but often receives intensification: /nù́/; it is standardly pronounced /nè́/ in NL, where the form /nè/ is still understood but not in common use. The topicalizer /dà/ is also most frequently encountered as /dà́/ (the form with L tone now being out of usage in dialects such as Dàjù). Replacing /dà́/ by /dà/ in utterance 35 was judged inappropriate by the consultants (AS dialect):

- (35) t^hũ g̃ bā.là dà́ k^hũ.k^hú t^hè há j̃.
- 3rdSG GEN clothes TOP+H doorway STAT EXIST EVID
- ‘[I have not seen him, but] his *clothes* are hung up at the door.’

Intensification can be hypothesized to be the origin of the /LH/ contour found on final particles /mjà́/ (conveying obviousness) and /mà́/ (conveying certainty). Lastly, one single verb carrying a lexical contour tone was observed in the AS dialect: /d̥z̥ỳ́/ ‘to ram, to break open (with a heavy object)’; this verb is unknown to speakers of other dialects. Pending further evidence, it can be imagined, on the face of its meaning, that its contour is due to a lexicalized intensive H tone.

Only /LH/ contours are thus lexicalized, and not /MH/ contours, although both exist in discourse as products of addition of an intensive H tone. From this, it may be concluded that sporadic lexicalization of the intensive H tone is not the original force behind the appearance of a lexical /LH/ tone, otherwise one would expect either of the two following situations: (i) appearance of both /LH/ and /MH/ lexical tones, which is not the case; (ii) appearance of a single

²³ This explanation also accounts for the rising contour found on the adjective /hò́ lō/ ‘polite, friendly’, under the assumption that its first syllable is identical to the word for ‘correct, right’.

²⁴ The vowel of this item differs across dialects: /lē kỳ/ in AS and FK, /lē k̥ỳ́/ in NL.

rising tone as an architoneme originating in /LH/ as well as in /MH/ sequences, i.e. some of the lexical items in the new tone category would come from earlier M-tone syllables plus intensive H tone; this is not the case either: all the items concerned come from L-tone syllables. Other lexical /LH/ contours must therefore have existed before the items described in this paragraph, paving the way for their lexicalization.

3. Syllabic coalescence

Naxi presents some cases of creation of new lexical items from the coalescence of two syllables: the first with M or L tone, the second with H tone. This is phonetically unsurprising: syllable-initial vowels have a potential for coalescence with the preceding vowel, as they have a soft onset (they begin by a semi-vowel in isolation, and link with the preceding syllable rhyme in connected speech). For example, ‘mungo bean jelly’ (a local dish) is called /hṹ á/ in dialects such as AS, NL, Dàjù, whereas the word has simplified to a monosyllable in the Dàyánzhèn dialect: /hà́/, carrying a rising contour tone.²⁵ The resulting vowel is identical to a simple vowel, i.e. the /a/ in /hà́/ differs neither in length nor in quality from a lexical, ‘native’ /a/.

4. Borrowing of items with rising tone from neighboring languages

All descriptions agree that in contemporary Naxi most lexical /LH/ contour tones are found on borrowings: from Tibetan, and (very conspicuously) from Chinese. This section addresses the question of the role played by neighboring languages in the development of the /LH/ lexical tone in Naxi.

4.1. Borrowings from neighboring Tibetan

Tibetan Buddhism deeply influenced the Naxi religion called /tō mbà/ (famous for its pictographic script). The /tō mbà/ scriptures contain some borrowings from Tibetan, e.g. /p^hà́/ for ‘pig’ (Naxi: /bù/), and /hj̣ṛ/ for a variety of bird variously interpreted by the language consultants as a bird of prey or simply as ‘chicken’ (see also Li Lincan, Zhang Kun et al. 1953: 135, and Fang Guoyu and He Zhiwu 1995: 167). The characters for these words are made up of a Naxi pictograph giving a phonetic cue plus a diacritic sign which singles out the item as foreign. No examples of borrowings from Tibetan were found in colloquial speech.

4.2. Borrowings from Chinese

All male Naxi speakers have some knowledge of the dialect of Chinese spoken by (Han) Chinese settlers in their neighborhood. The younger the speakers, the more familiar they are with Standard Mandarin, through schooling and the media. Female speakers are generally less proficient in Chinese, but female and male speakers alike use an increasing number of Chinese loanwords. Among some 1,000 words of basic Chinese vocabulary elicited in AS, 15% are pronounced with a /LH/ contour tone; a sizeable proportion have found their way into everyday linguistic intercourse among Naxi speakers. These include nouns such as /là́/ ‘candle’ (from *làzhú* 蜡烛) and /là́/ ‘chilli peppers’ (*là* 辣²⁶), /pì́/ ‘writing brush/ pen’ (*bǐ* 笔) and /ʃwà́ tsṹ/ ‘brush’ (*shuāzi* 刷子). Among the verbs, /fà́/ is the Naxi rendering of Chinese *fā* 发 and *fá* 罚,

²⁵ The tone is apparently identical with the /LH/ contour, yielding /hà́/ and not /hã́/, but this fact was not verified experimentally.

²⁶ Unlike the words discussed in Part II, section 1, the Naxi word for ‘chilli peppers’ is not a secondary form made up of a L-tone word plus a H-tone-marked possessive.

e.g. ‘to get one’s daughter married’ (*dǎfā* 打发), /fǎ́ i/ ‘to pronounce’ (*fāyīn* 发音). The inventory also includes insults (/nǐ́ tsū́/, from *nǐzǐ* 逆子 ‘bad son’), measure words, and adverbs such as /kó yǐ́/ (from Chinese *guò yú* 过于), in the very frequent negative construction /kó yǐ́ mǎ́/ ‘not too...’, and /tá sú mù́/ (*dà shù mù* 大数目), which in its borrowed form means ‘approximately’.

Apart from *yú* 于, these words all belong in the *rùshēng* 入声 category, i.e. they had a final stop in Middle Chinese: 蜡 *lap, 辣 *lat, 笔 *pit, 刷 *srwæt, 发 *pjot, 罚 *bjot, 逆 *ɲjæk, 目 *mjuwk (reconstructions from Baxter 2000). The correspondences between these borrowings and present-day local dialects of Mandarin (which, like many Southwestern Mandarin dialects [*xīnán guānhuà* 西南官话], retain a distinct *rùshēng* 入声 category) are very straightforward: all *rùshēng* words are realized as rising (Yang Shih-feng 1969: 1619, 1624), whereas none of the former 平, 上, 去 words are realized with rising tone. This regular correspondence, together with the fact that most of these words are actually perceived as Chinese words by the Naxi speakers themselves, suggests that these borrowings are recent.

4.3. Discussion on the role of neighboring languages

The choice made in this paper was to reverse the perspective of earlier descriptions of the Naxi rising tone, presenting lexical borrowings last in order to bring into light the grammatical processes whereby a H tone can associate to a L- or M-tone syllable. The interplay of language-internal dynamics and foreign influence calls for diachronic analysis drawing on the newly established facts.

Borrowing of a contour tone is an attested phenomenon: Hani (*hāní* 哈尼), a Burmese-Yi language spoken in China, has three level tones: H, M and L, and a rising tone occurring only on Chinese borrowings (Sagart and Xu Shixuan 2001: 10); the same process is reported for four Yi dialects in Chen Shilin, Bian Shiming et al. 1985: 32. A rising tone is arguably easy to borrow, having special salience due to the very fact that rising contours are less common than falling contours (as pointed out by Martine Mazaudon, seminar discussion). As Chinese has influenced Naxi continuously for centuries, borrowings carrying a rising contour tone could be relatively early, though the vast majority clearly have a twentieth-century ring. Concerning the ‘native’ rising contours, the fact that the possessive construction by H-tone addition is now no longer productive goes to show that it dates back a long way; its development was certainly not triggered by borrowed words carrying a contour tone, whereas the reverse can be imagined: that marginally present, ‘native’ rising contours paved the way for the assignment of a /LH/ tone sequence on Chinese borrowings. Under this view of things, the role played by Chinese borrowings consisted in extending the role of /LH/ contours, consolidating this marginal tonal category by giving it considerable lexical development.

Unlike Chinese influence, influence from the Bai language cannot be isolated from the language-internal dynamics of Naxi. The neighboring (and distantly related) Bai language (*bái yǔ* 白语) may have influenced the development of the pronouns (and perhaps even of the intensive H tone) found in Western Naxi. In and around Lijiang town, i.e. in the Western Naxi dialect area, Bai and Naxi have long coexisted (at least since the 7th century AD; see Guo Dalie and He Zhiwu 1999, Mathieu 2003); Bai craftsmen and traders have long had a prominent economic role; and intermarriages are relatively common. The influence of Bai on Naxi, which is apparent in lexical borrowings such as the nouns ‘saw’ and ‘bed’, may have extended to its grammar: the personal pronouns and the intensive H tone are fairly similar in Bai and Western Naxi; they are absent in FK, i.e. in an area where there has been no contact with speakers of Bai.

The Bai language has a complete series of vowel and tone alternations on pronouns: its personal pronouns, from 1st to 3rd person singular, are /ŋò/, /nò/, /mò/; singular possessives are /ŋú/, /nú/, /mú/; plural possessives are /ŋá/, /ná/, /má/ (Xu Lin and Zhao Yansun 1984). Such alternations might have provided the impetus for the development of the /ŋà/, /nà/, /t^hà/ possessive series in Naxi: there is cross-linguistic evidence that pronominal systems and terms of address may be borrowed or their structure copied (see e.g. Jacqueson 1993, 2001, *pace* Martinet 1975: 31).

In Bai, creation of a contour tone by intonational intensification and creation of a contour tone by syllable reduction (deletion of segmental content of the syllable, as in Naxi) are both observed, in two different dialects (Xu Lin and Zhao Yansun 1984: 7; confirmed by Xu Lin, personal communication). In the dialect of Bìjiāng 碧江, a falling tone (in Chao Yuen-ren's system, in which 5 refers to the top of the pitch range, and 1 is the bottom value: /⁴²/ or /²¹/) may become rising (/¹³/) under emphasis/intensification. Syllable reduction is observed in the dialect of Jiànchuān 剑川. Some polysyllabic words that carry tone /²¹/, /³³/ or /⁴⁴/ on their first syllable and a H tone (/⁵⁵/) on their second syllable can lose this second syllable; its H tone attaches to the first syllable, resulting in a rising (/³⁵/) tone, whatever the original tone of that syllable. For instance: /tu²¹ ku⁵⁵ tsi⁵⁵/ becomes /tu³⁵ tsi⁵⁵/ (meaning 'in the olden times') (Xu Lin and Zhao Yansun 1984: 8). It can be imagined that such perceptually salient phenomena could trigger analogous developments in Naxi under conditions of relatively close language contact. (Study of past contact between Naxi and neighboring languages is still in its early stages.)

4.4 Conclusion on the floating High tone and its frequency in discourse

The general picture of the uses of H-tone addition is now emerging.²⁷ Elementary statistics on its frequency can also be proposed: in a 17-mn narrative containing about 1100 syllables, 87 rising tones were observed, 46 due to the conditional-topicalizer, 16 to intensive H tone, 12 lexical, 6 on loanwords, 4 due to a H tone conveying *personification/collective designation*, 3 due to syllable reduction. The rate of occurrence in narratives, loanwords excluded, is on the order of 5%; this rate is probably at least as H in colloquial speech.

5. CONCLUDING REMARKS: TYPOLOGICAL IMPLICATIONS OF THE DESCRIPTION OF ASIAN LEVEL-TONE SYSTEMS

In the Tibeto-Burman domain, and in Southeast Asia generally speaking, tonal morphology (as illustrated by Burmese) is hardly separable from the general issue of morpho-phonological alternations, which are attested, to various degrees, in many languages of the area. What is known about earlier stages of these languages (through their written tradition, and through reconstruction) shows that these alternations originate in affixes, which modified the syllabic structure of the items with which they coalesced and hence influenced the evolution of these words at the various stages of tonogenesis. One and the same alternation between *simple form and *prefixed form may have transphonologized to a tonal alternation in some language varieties and to an alternation in the laryngeal features of the initial consonant (e.g. aspirated as opposed to

²⁷ Only four items carrying LH tone do not appear to belong in any of the categories proposed above: /bì' / '(shirt, coat) tail' (He Zhiwu 1987: 8 and our own data on the AS, NL and Dàjù dialects); the word for the wooden pot used to prepare butter-tea, /zǐ' / in AS and NL, /dzǐ' / in Dàyánzhèn (Fang Guoyu and He Zhiwu 1995: 461), /dzǐ' / in Dàjù; the noun 'well', which has a contour tone on the first syllable in some dialects: /tsé k^hō/ in AS, /dzě k^hō/ in Dàjù and Dàyánzhèn; and 'hernia', /pǎ' ū/ in Dàyánzhèn and AS, a word which was not recognized by speakers of the NL, Dàjù and Qíhé dialects.

unaspirated, voiceless as opposed to voiced) in other varieties, so that the alternation is suprasegmental in one language, segmental in another. The geographic specialization of researchers thereby contributes to shaping their theoretical orientation: the orientalist tradition tends to be diachrony-oriented, e.g. using etymological labels for tones (Haudricourt's A, B, C, D categories, and their subsequent partitions, often referred to as "Gedney boxes", after Gedney 1972) rather than, or in addition to, synchronic labels. Moreover, instances of tone reassociation as observed in Naxi are infrequent in the Sino-Tibetan and Hmông-Miên families (and, to my knowledge, entirely absent from the neighboring Austroasiatic and Thai language families), although level-tone systems, as opposed to contour and contour-plus-voice-quality tone systems, are not uncommon in the Sino-Tibetan domain.²⁸ It is thus understandable that the notion of floating tone should have been proposed, not in the field of Asian studies (where Ratliff 1992 talks of *meaningful tone*) but in research on African languages, where tone reassociation processes are highly productive, and where the relationship between tones and segments appears to be fairly different, diachronically as well as synchronically.

On the basis of the analogy with similar facts observed in Niger-Congo languages, it appears both adequate and economical to use the notion of *floating tone* in the description of Naxi, especially as the addition of a H tone yields different contours (L-H or M-H, as expected) depending on whether it is added to a L tone or to a M tone. Hyman and VanBik 2002 likewise conclude, from their study of Hakha Lai, that the prosodic system of this Kuki-Chin language resembles Bantu prosodic systems in several respects: it possesses complex rules that operate over level tones (a fact already pointed out for Lushai by Gsell 1979: 8), and *downstep*. Still, there appear to be significant synchronic differences between the level-tone systems of the Sino-Tibetan domain and those of the Niger-Congo domain. Comparison with Subsaharan tone systems (as they are described, in particular, by Stewart 1962, Clements and Goldsmith 1984, Hyman 1993) is only in its incipient stage now, partly because researchers seldom work both on African and Asian languages, but it holds special typological promise (for some typological suggestions, see Michaud 2006). Some of the typical properties of African tone systems listed by Clements (2000) are also found in individual Asian tone systems, but the presence of one (e.g. tone reassociation) does not entail the presence of others (e.g. downstep or tone spreading). For example, in the Maru language as in Naxi, there are three basic lexical tones (H, M and L), and a morphological floating H tone (Okell 1988); as in Naxi, lexical H tones are unaffected by the floating tone. In Maru, however, the added H tone does not create contour tones: it raises L to M and M to H. Conversely, structural differences across tone systems do not preclude some areal similarities: the tonal changes of morphosyntactic and intensive origin in Naxi have fairly close equivalents in other East Asian languages with very different lexical tones, e.g. Bai, whose tone system makes use of voice quality, some Hmông-Miên languages, which otherwise have typical Southeast Asian contour tones, and Cantonese, with its historical (and apparently still productive) process of derivation of mid-rising tones from semantically related syllables that bear a level tone or a low-falling tone (*yángpíng* 阳平) (Kam Tak Him 1977) and its process of re-association of a H tone from a deleted grammatical word to the syllable to its left, likewise creating a rising contour (Hashimoto-Yue 1987; Chen 2000: 60; Yu 2003). Clearly, tonal typology cannot consist simply in the description of a certain number of *types*.

²⁸ On two-tone Tibeto-Burman languages, see in particular Weidert 1987, Michailovsky 1988b; on the analysis of Tibetan tone systems in terms of H and L tones, see Sprigg 1990, building on work that he published since the 1950s, and Sun 1997: 484, 502; on the morpho-phonological alternations sporadically observed in Burmese-Yi languages, see e.g. Hansson 2003: 238.

ABBREVIATIONS

1 st	first person	GEN	genitive
2 nd	second person	GER	gerund
3 rd	third person	IMP	imperative
ABL	ablative (=separative)	INT	interrogative
ADVR	adverbializer	INT.PRON	interrogative pronoun
AFFMT	affirmative particle	MAN.DEIC	manner deictic
AG	agentive	PART	particle
CLF	classifier	PI	plural inclusive
COND/TOP	conditional/topicalizer	PL	plural
COP	copula	POSS	possessive pronoun
DEIC	deictic	PERF	perfect aspect
EVID	evidential	PROG	progressive aspect
EXCL	exclamative	REL	relativizing particle
EXIST	verb of existence	SG	singular
FOC	focus marker	STAT	stative

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