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# Approaching the historical phonology of three highly eroded Sino-Tibetan languages

Naxi, Na and Laze\*

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Naxi, Na and Laze are three languages whose position within Sino-Tibetan is controversial. We propose that they are descended from a common ancestor ('Proto-Naish'). Unlike conservative languages of the family, such as Rgyalrong and Tibetan, which have consonant clusters and final consonants, Naxi, Na and Laze share a simple syllabic structure (consonant+glide+vowel+tone) due to phonological erosion. This raises the issue of how the regular phonological correspondences between these three languages should be interpreted, and what phonological structure should be reconstructed for Proto-Naish. The regularities revealed by comparing the three languages are interpreted in light of potential cognates in conservative languages. This brings out numerous cases of phonetic conditioning of vowels by place of articulation of a preceding consonant or consonant cluster. Overall, these findings warrant a relatively optimistic conclusion concerning the feasibility of unraveling the phonological history of highly eroded language subgroups within Sino-Tibetan.

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### Introduction: Sino-Tibetan historical phonology and the pitfalls of comparing simple forms

The aim of this study is to advance our understanding of the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze.<sup>1</sup>

Sino-Tibetan is instructive for the challenges it offers to classification and to the application of the comparative method. For one, the predominance of monosyllabic roots makes it more difficult to distinguish inheritance from sheer chance when monosyllabic words are compared among the languages. There is just a higher chance of possible accidental similarity when it comes to compared short forms ... Another complication is the extensive borrowing among languages in the area where Sino-Tibetan languages are found (Campbell & Poser 2008: 112).

The target languages of this study are a case in point. Some words are identical in the three languages, raising the issue whether these correspondences may not be due to borrowing, e.g. (giving the forms in the order *Naxi:Na:Laze*) /gy˥:gy˥:gy˥/<sup>2</sup> for “back (body part)”. Others are so different that it is not obvious whether they are cognate at all, e.g. /ku˩:ku˥:tsi˧/ for “star” and /ku˩:ku˥:tsi˩/ for “gallbladder, gall”.

The Laze forms for “star” and “gall”, being phonetically different from the Naxi and Na forms, were counted among non-cognates between Laze and Naxi in a preliminary attempt to assess the degree of closeness of Laze with Yi/Loloish and Naxi (Huang Bufan 2009). On the other hand, the search for systematic sound correspondences, the backbone of comparative work, leads to the opposite conclusion, since the syllabic correspondence /ku:ku:tsi/ between Naxi, Na and Laze is illustrated by three examples (the third is “tight”; Online Appendix 2 lists all the items for which cognate sets and reconstructions are proposed). Sifting through all available vocabulary (about 3,000 entries), the number of words for which there is a reasonably certain correspondence between Naxi, Na and Laze is about 700, leaving aside loanwords and compounds (Online Appendix 2). The sheer mass of

1. These languages are spoken in Southwest China; background data, including geographic coordinates and a brief review of available publications, are provided in Online Appendix 1. For reasons of space, the Appendices are published online, at the following address: <http://dx.doi.org/10.1075/dia.28.4.02jac.additional>

2. Throughout the article, tones are indicated by means of Chao tone-letters: ˥ for H(igh), ˧ for M(id), ˩ for L(ow), ˨ for MH.

regular correspondences leads to the conclusion that these three languages belong within one single branch of Sino-Tibetan, to which we refer below as the Naish branch. Watkins (1990:295) argues that “We may assert or hypothesize a genetic relation on the basis of [regular sound correspondences]. But the proof of the linguistic pudding remains in the follow-up, the systematic exploitation, the full implementation of the comparative method, which alone can demonstrate, not just a linguistic genetic relationship, but a linguistic history”. Investigating this linguistic history — the historical phonology of Naish — involves proposing reconstructions for phonetic correspondences. Again taking the words for “star” and “gall” as examples, a number of different hypotheses can be advanced to account for the /k:k:ts/ correspondence, such as reconstructing additional consonants or vowels. The choice among the wealth of competing hypotheses should be guided by considerations of plausibility of the evolutions that one needs to postulate from the proto-forms to the present-day forms. The degree of plausibility is to be assessed in phonetic terms, in structural terms, and also in areal terms.

*How data from conservative languages help interpret correspondences observed within the Naish branch*

Naxi, Na and Laze all have a simple syllabic structure: (C)(G)V+T, where C is a consonant, G an on-glide, V a vowel, and T a tone. Brackets indicate optional constituents. There are neither initial clusters nor final consonants in any of the Naish languages and dialects studied so far, and given the wide coverage of the surveys conducted since the early years of the People’s Republic of China, it is a safe guess that none will come to light as more varieties come under academic scrutiny.

It is standard practice in historical linguistics to turn to conservative languages within a family for analysing the history of eroded languages (see Fox 1995: 57–91 and references). We hypothesise that, in the course of their history, the Naish languages have undergone a simplification of their syllable structure, and that certain characteristics of the earlier segments conditioned the evolution of forms up to the modern languages. This hypothesis, which is central to the present study, makes evidence from conservative languages especially useful to interpret the correspondences between Naxi, Na and Laze. However, unlike in the case of the Lolo-Burmese branch of Sino-Tibetan, where the study of historical phonology can draw heavily on a conservative language within the branch (namely Old Burmese),<sup>3</sup> the Naish languages are not closely related to any conservative language, so that points of reference to analyse nontransparent correspondences (such as /k:k:ts/) have to

3. On the role of Old Burmese in Lolo-Burmese reconstruction, see Matisoff’s 1968 review of Burling 1967.

be sought further out. Table 1 proposes comparisons with three conservative languages of the family.

Table 1. Some correspondences between Na, Laze and Naxi, with potential cognates in Rgyalrong,<sup>4</sup> Burmese and Tibetan.

meaning	Naxi	Na	Laze	Proto-Naish <sup>5</sup>	Rgyalrong	Burmese	Tibetan
star	kui <sup>1</sup>	kui <sup>1</sup>	tsi <sup>1</sup>	*kri	zŋgri	kray <sup>2</sup>	–
gallbladder	kui <sup>1</sup>	kui <sup>1</sup>	tsi <sup>1</sup>	*kri	-čkruut <*-čkrit	saj <sup>3</sup> khre <sup>2</sup>	mkhris
saliva	ki <sup>1</sup>	tči <sup>1</sup>	tči <sup>1</sup>	*tči	-mci	–	–
to tie, to attach	tsu <sup>1</sup>	tsu <sup>1</sup>	tsu <sup>1</sup>	*tsi	–	–	–
muntjac	k <sup>h</sup> i <sup>1</sup>	tč <sup>h</sup> i <sup>1</sup>	ts <sup>h</sup> i <sup>1</sup>	*k <sup>h</sup> i	–	khye <sup>2</sup>	–

The /k:k:ts/ correspondence among initials (lines 1 and 2) can only be explained through the reconstruction of a fourth term (neither *ts* nor *tč* nor *k*), since we already need to reconstruct \*k(<sup>h</sup>)i, \*tč(<sup>h</sup>)i and \*ts(<sup>h</sup>)i to account for the correspondences in the last three lines of Table 1. The reconstruction of a cluster \*kr- is guided by the Rgyalrong and Burmese forms; it receives support from the presence of an *-r-* in these words in other Sino-Tibetan languages which to this day still allow this medial (see Matisoff 2003: 23, 202). In Laze, \*ki and \*kri merge as *tsi*, whereas in the two other languages \*ki merged with \*tči instead and the \*-r- in \*kri coloured the vowel, bleeding the palatalisation rule.

Ideally, guidance in reconstructing characteristics of Proto-Naish could be sought by referring back to available reconstructions of a higher-level node within Sino-Tibetan; however, no such reconstruction is available — indeed, there is no consensus on the subgrouping of Naish (see §2 of Online Appendix 1). Another option would be to refer back all the way up to Proto-Sino-Tibetan. But the reconstruction of Proto-Sino-Tibetan is up against considerable difficulties. In addition to the vast amounts of language contact and the widespread phonological erosion mentioned above, Sino-Tibetan offers a third challenge to reconstruction: it is becoming increasingly clear that a thoroughly complex morphology existed in

4. Rgyalrong is a highly conservative language spoken in Sichuan, China. We will be referring to Japhug Rgyalrong, unless otherwise indicated. See Sun 2000b for a definition of the Rgyalrongic subgroup, and Sun 2000a, 2005 and Jacques 2004, 2008 for analyses of Rgyalrongic languages.

5. The reconstruction of a vowel \*i for these words will be justified below, §1.2.

Proto-Sino-Tibetan;<sup>6</sup> in most languages (both archaic and modern) this morphology is not well-preserved — in particular, very few irregular paradigms are found — but it left deep traces, which tend to obscure the phonetic correspondences between the languages. Still taking the same example, “gallbladder” is *mkhris* in Old Tibetan and /tu-čkrut/ in Rgyalrong; although these two languages share the same root, the /m-/ in Tibetan and the /tu-/ and /č-/ in Rgyalrong are of an affixal nature and must be factored out in comparative work. These two languages are conservative in the sense that they preserve complex clusters; thus, while many processes of affixation are no longer productive, affixal elements can still be identified and distinguished from the root. On the other hand, in the case of languages with a more eroded phonology, fossilised morphology is much harder to identify: the consonant clusters created by affixation later simplified, and the only traces that remain of the preinitial reside in the manner of articulation of the initial — for instance, the aspiration alternation in Burmese pairs like *mraŋ*<sup>1</sup> “be high” and *hmraŋ*<sup>1</sup> “raise” originates in an earlier causative \*s- prefix.

The complexity of this lost morphology is the main reason why, after more than a century of scholarly endeavour, no equivalent of Grimm’s Law is yet available for Sino-Tibetan, not even for well-documented languages such as Tibetan and Burmese. There is still a long way to go before Proto-Sino-Tibetan can be reconstructed with a degree of precision approaching Proto-Indo-European or Proto-Austronesian. Two reconstruction systems are currently available for Sino-Tibetan: Peiros & Starostin (1996) and Matisoff (2003) — the latter focusing on Tibeto-Burman, defined as excluding Chinese. Neither of these systems is actually based on a set of explicit phonetic laws; in view of the uneven state of our present knowledge, Matisoff (2003:9) endorses the method applied by Benedict (1972) under the name of “teleoreconstruction”. Benedict attempted to reconstruct as far back as Proto-Sino-Tibetan on the basis of a selected set of languages (in particular Tibetan, Burmese, and Jingpo). Benedict’s main aim was to establish etymologies between widely different languages; he had a moderate interest for working out the exact phonetic laws, and he essentially relied — to state things somewhat bluntly — on educated guesswork instead. This is slightly at variance with the principles of reconstruction, whereby “a reconstructed form does not constitute one monolithic unit: it consists in the sum of several pieces of phonetic reasoning, and each of its parts always remains open to reexamination. Restituted forms have always

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6. Lepsius (1861) is credited with the first formulation of the observation that several affixes could be reconstructed for the Proto-Sino-Tibetan stage. Conrady (1896) posited a causative \*s-prefix, a finding which has been amply corroborated since then; see Wolfenden 1929, Benedict 1972: 106, Bauman 1974, Jacques 2010, and DeLancey’s 2010 synthesis.

mirrored faithfully the generalisations that apply to the words at issue" (Saussure 1916: 300, our translation<sup>7</sup>).

Our work focuses specifically on the Naish languages; its backbone consists of the establishment of phonetic rules. No attempt is made here to propose any reconstructions for the Sino-Tibetan level. We found it more rigorous to compare Naish languages with a closed set of well-documented conservative languages, rather than to refer to reconstructed forms. The languages chosen are Rgyalrong, Old Burmese, and Old Tibetan — where the syllable canon is an impressive (C)(C) C<sub>initial</sub>(C<sub>medial</sub>)V(C)(C) —, referred to below as 'the conservative languages'.<sup>8</sup> While comparison with the conservative languages provides irreplaceable insights, it goes without saying that the state of affairs found in these languages cannot be mechanically postulated for Proto-Naish. In theory, Proto-Naish may have evolved consonant clusters unattested in other branches, for instance through morphological processes; conversely, the inventory of consonant clusters of Proto-Sino-Tibetan may have already simplified by the stage of Proto-Naish. However, the general hypothesis that Proto-Naish had initial clusters and that syllable structure simplified from Proto-Naish to the modern languages appears fully plausible in view of the documented history of other languages of the area, for instance the dramatic phonological erosion undergone by various Tibetan dialects since the stage of Old Tibetan (ca. 7th c. C.E.).

Rhymes are studied in §1, and onsets in §2. The diachronic study of tones in the Naish languages is a highly complex topic, which must be deferred until a later study.

7. "Une forme reconstruite n'est pas un tout solidaire, mais une somme toujours décomposable de raisonnements phonétiques, et chacune de ses parties est révocable et reste soumise à l'examen. Aussi les formes restituées ont-elles toujours été le reflet fidèle des conclusions générales qui leur sont applicables".

8. The phonological complexity of other languages within the Sino-Tibetan family makes them suitable for this type of research, namely Dulong/Trung, Rawang, Jingpo/Jinghpaw and Kuki-Chin. Lacking sufficient acquaintance with these languages, we do not take them into account. As for Chinese, the oldest written language of the family, Old Chinese did have a degree of syllabic complexity that makes it theoretically relevant for our purpose, but in practice numerous uncertainties remain in the reconstruction of Old Chinese consonant clusters (in particular Ferlus 2009 and Sagart & Baxter 2009). As a result, the comparison of reconstructed Old Chinese forms with the Naish languages is not fruitful at this stage.

The phylogenetic distance between Naish, Rgyalrong and Burmese is relatively great — although we believe that they belong together with the Naish languages in a Burmo-Qiangic branch of Sino-Tibetan: a tentative family tree is proposed in Online Appendix 1. The distance between Naish and Tibetan is even greater. Some justifications for referring to these distant languages in the reconstruction of Proto-Naish, instead of relying on data from the more closely related languages Shixing, Namuyi and Ersu/Tosu/Lizu, are provided in Online Appendix 1.

## 1. An analysis of rhyme correspondences in light of cases of complementary distribution with respect to the initial

### 1.1 Vowel \*a

There are numerous vowel correspondences between the three languages under investigation. Leaving aside those illustrated by less than three examples, we found no less than fifty correspondences. It would obviously make no sense to reconstruct that many different vowels in Proto-Naish: on the whole, the number of vowels in conservative Sino-Tibetan languages is low, e.g. five in Classical Tibetan and six in Old Chinese (Baxter 1992: 180). Large vowel inventories, involving length contrasts and diphthongs, are not unheard of in East Asian languages, but they result from well-identified, relatively recent changes: in Khmer, the vowel system underwent a two-way split, as phonation-type register contrasts transphonologised into vowel contrasts, resulting in a complex system generally described as having five levels of vowel aperture as well as prediphthongisation (Ferlus 1979, 1992 and references). The models needed to understand vowel correspondences within Naish are to be sought elsewhere.

A close look at the vowel correspondences between Naxi, Na and Laze brings out relatively clear distributional properties. In the following discussion, K stands for velar obstruents, TS for coronal affricates and fricatives, and R for rhotics and retroflexes (or, more accurately, proto-initials that are reflected as present-day retroflexes). The correspondence /e:i:ie/ (e.g. “moon”: /le:lH:iel/) is never found in syllables beginning in K-, TS- or R-. On the other hand, the correspondence /e:e:e/ (e.g. “salt”: /ts<sup>h</sup>el:ts<sup>h</sup>el:ts<sup>h</sup>el/) is only found after TS-<sup>9</sup> and the correspondence /ui:i:i/ (e.g. “lake”: /hu:l:hi:l:fi:l/) is only found in association with a small set of initial correspondences: /h:h:f/ and /Ø:Ø:v/ (see example set a5 in Online Appendix 2). Looking beyond the Naish languages, these three correspondences, /e:i:ie/, /e:e:e/ and /ui:i:i/, involve words that end in the vowel -a in Rgyalrong, Tibetan and Burmese, as illustrated by the examples in Table 2. These two facts — that these three correspondences are in complementary distribution with one another, and that they correspond to the same vowel in related languages — lead us to reconstruct them back to one and the same rhyme in Proto-Naish. We propose to reconstruct this rhyme as \*-a.

Other correspondences also point to the vowel \*a. The correspondence /a:a:a/ is likely to have several origins, since it does not fall neatly in complementary

9. The only context where there is a phonemic contrast between /i/ and /e/ in Yongning Na and in Laze is TS-. For instance: Na /sil/ “wood”, /sel/ “to walk”; Laze /si:dzih/ “tree”, /se:l/ “to flow (water)”. The diachronic reason why the distribution of /e/ is so restricted in Na and Laze is because its only diachronic origin is \*a after \*TS-.

distribution with /e:i:ie/; however, after velar-initial (or h-initial) syllables, a sizeable number of etyma correspond to words that have -a after a velar in the conservative languages. By the same reasoning, /u:e:u/ after R- and /i:i:i/ after η- can be interpreted as modern reflexes of \*-a in these environments. (Note, however, that the /i:i:i/ correspondence after η- can also result from \*-i, as illustrated in the cognate sets a4.01 and a4.02 in Online Appendix 2; it should therefore be reconstructed as \*-a/-i.)

Thus, there are at least seven different correspondences for the rhyme \*-a depending on the preceding consonant in Proto-Naish, as recapitulated in Table 2. In Proto-Naish, the correspondence /a:a:a/ after velars will be reconstructed as \*-a/-aC<sub>1</sub>, as Naish-internal evidence does not allow to distinguish these two rhymes in this context; on the issue of rhymes that come from checked syllables, see §1.4.

Once hypotheses have been proposed about the interpretation of correspondences, with the help of data from the conservative languages, these hypotheses can be extended to other cases, for which no cognates are present in the conservative languages. The number of examples for each vowel correspondence is indicated on the right hand-side of each table; the full list is provided in Online Appendix 2.

The complementary distribution of vowel correspondences with regard to the initial consonant is by no means an unprecedented observation. The Proto-Indo-European laryngeals are the most famous instance of phonetic conditioning of the rhyme by the place of articulation of the preceding consonant. In Sino-Tibetan, such phenomena are widespread: for instance, Matisoff (2007:2) distinguishes three distinct reflexes of Proto-Lolo-Burmese \*-a in Achang depending on the onset. However, with seven different reflexes for the rhyme \*-a, the complexity of the correspondences observed in the Naish languages for this rhyme is (to the best of our knowledge) without equivalent elsewhere in the family. The Naish languages thus stand out among Sino-Tibetan languages by the amount of phonetic changes depending on the place of articulation of initial consonants.

#### *On the usefulness of the study of vowel \*a for the dating of borrowings*

The above conclusions about the evolution of Proto-Naish \*a shed light on the interpretation of some words as borrowings, and also offer indications as to their relative chronology. The vowel correspondence /a:a:a/ after a non-velar initial, straightforward as it may seem, can actually only result from a borrowing that has taken place after the change from \*a to /e:i:ie/.<sup>10</sup> The words for “tiger” /la:la:la/,

10. This is similar to the textbook example of the consonant correspondence *p:p* between English and French, of which there are numerous examples: all the words at issue are either borrowings or learned words, e.g. *paternal:paternel*, whereas the real English/French cognates exhibit the phonological correspondence *f:p*, e.g. *father:père* (Campbell & Poser 2008:174).

Table 2. Examples of reflexes of Proto-Naish \*a. The context indicated is the initial consonant in Proto-Naish.

meaning	Rgyalrong	Burmese	Tibetan	Naxi	Na	Laze	correspondence	Proto-	context	# of examples
bitter	-	kʰa <sup>3</sup>	kʰa	kʰa	kʰa	a:a:a	*a/aC <sub>1</sub>	*K	5	
salt	-	cʰa <sup>3</sup>	tsʰwa	tsʰe	tsʰe	e:e:e	*a	*TS	8	
to borrow	-	hna <sup>3</sup>	rŋa<*rŋja	ŋi	ŋi	i:i:i	*a/*i	*ŋ	2	
tooth	-qya<*wa	swa <sup>3</sup>	so <*swa	hu	fɪt'v <u>u</u>	u:ii:ii	*a	*w	5	
hoof	-qa <*qwa	-	-	kʰwa	kʰw <small>y</small>  bie	waww:wY	*a	*kw,*ŋw	3	
meat	-	sa <sup>3</sup>	ča	ʂu	ʂu	u:eu:eu	*a	*R	3	
thin (not thick)	mba	p <sup>3</sup> a	-	mbe	bi	e:i:ie	*a	(others)	21	

Note: The /e/ in the correspondence /u:eu/ does not contrast with /i/, since there is no /ʃi/ in Na. For phonetic precision, the notation used here is nonetheless e.

“hemp” /sa:sə:sa/ and “crossbow” /ta.na:ta.na:ta.na/ illustrate this situation. “Tiger” is probably a loanword of Austroasiatic origin, likely to have been borrowed via Lolo-Burmese languages (Old Burmese *kla*; reconstructed as \*k-la<sup>2</sup> in Proto-Loloish by Bradley 1979). “Crossbow” could be another borrowing from an Austroasiatic language (on this notorious *Wanderwort*, see Blench manuscript; on the Austroasiatic substratum in Southwest China, Norman & Mei Tsu-lin 1976). “Hemp” is of unknown origin but also looks like a borrowing: it is also found in Rgyalrong, with the same vowel (*ta-sa*), where the expected correspondence would be with Naish /e:e:e/.

These three words belong in a different layer from “tea” /le:li:lie/. “Tea” appears to be an early borrowing, from an Austroasiatic word for “leaf”, in the same way as happened in Lolo-Burmese languages:

“The early Tibeto-Burman invaders, Lolo, Lisu, Burmans, etc. generally called it *la?*, the Austroasiatic word for “leaf”, often adding their own word for Economic Leaf, *p’ak* ; and passed on the term *la? p’ar* (*le? p’er?*) to other languages of Burma” (Luce 1985: 16; note that in more recent work, “tea” is reconstructed as \*sla?: Shorto 2006: 119).

The present-day correspondence /e:i:ie/ suggests that the word for “tea” was pronounced \*-a when it was originally borrowed, and later underwent the regular sound changes of the native vocabulary; the process of borrowing must therefore predate the sound change from \*a to /e:i:ie/.

After velar initials, on the other hand, the change from \*a to /e:i:ie/ did not take place, so that the correspondence /a:a:a/ does not carry any hint to distinguish cognates from loanwords; such is the case of “bitter”, for instance. (Again after velar initials, there is no way to distinguish \*-aC<sub>1</sub> from \*-aC<sub>2</sub>, see Table 8.)

## 1.2 Vowel \*i

Without an external point of comparison, it is not possible to decide with certainty which of the correspondences appearing after dentals and which of the correspondences occurring after retroflexes come from the same proto-rhyme. The method presented above for \*-a consisted in grouping correspondences that are in complementary distribution with regard to initial consonants in light of potential cognates in the conservative languages: Rgyalrong, Burmese and Tibetan. The same method yields the set of reflexes for Proto-Naish \*-i shown in Table 3.

For the last two correspondences in Table 3, the reconstruction of a rhyme \*iN is proposed. For the etymon “wood”, note that while some languages such as Tibetan have a nasal final, Proto-Lolo-Burmese has a velar stop (Matisoff 2003: 283–284); here Naish patterns like Tibetan rather than Lolo-Burmese, as it presents the

Table 3. Examples of reflexes of Proto-Naish \*i.

mean-ing	Rgyal- rong	Bur- mese	Tibetan	Naxi	Na	Laze	corr.	Proto- Naish	context	# of ex.
to know	sus	si <sup>1</sup>	çes	surl	sul	sul	w:u:u:w	*i	*TS, *R	12
fire	smi	mi <sup>3</sup>	me	mił	mył	mył	i:y:y	*i	*m	5
star	zngri	kray <sup>2</sup>	-	kuił	kuił	tsił	w:ur:i	*i	*kr	3
small	xtçi	-	-	kil	tçił	tçił	i:i:i	*i	(others)	17
pus		prap <sup>2</sup>		mbəł	bəł	bəł	ə:æ:æ	*iN	*Pr- / *Cr-	7
wood	si	sac [sik]	çinj	səł	sil	sił	ə:i:i	*iN	*TS	4

same correspondences as “liver” (Tibetan *mchin-pa*), for which a nasal must be reconstructed. General reflections about final consonants will be set out in §1.4.

### 1.3 Back vowels

Table 4 presents the correspondences pointing to rounded back vowels in Proto-Naish.

Table 4. Examples of Proto-Naish \*u and \*o.

mean-ing	Rgyal- rong	Bur- mese	Ti- betan	Naxi	Na <sup>11</sup>	Laze	corr.	Proto- Naish	context	# of ex.
to sit	-mdzu < -	-	-	ndzuuł	dził	dzył	w:i:y	*u	TS-	3
	*-mdzu									
price	-p <sup>h</sup> u	phui <sup>3</sup>	-	kałp <sup>h</sup> ył	ka.p <sup>h</sup> y #H	kałp <sup>h</sup> ył	y:y:y	*u	(oth- ers)	49
	<*p <sup>h</sup> u									
yak	qambru	-	mbri	bəł	bŷł	bŷł	ə:y:y	*u	Pr-	5
head	-ku < *ko -	-	mgo	kuł	kuł (ku. (kułłył))	uł	u:u:u	*o	(oth- ers)	16
to spread	çk <sup>h</sup> o <	khanj <sup>3</sup>	-	k <sup>h</sup> uł	k <sup>h</sup> u <sup>H</sup>	k <sup>h</sup> uł	u:u:u	*o		
	*çk <sup>h</sup> anj									

It appears that Proto-Naish \*-o corresponds both to Proto-Rgyalrong \*-o and \*-anj, suggesting a merger between a closed syllable and an open syllable.

11. The tones of disyllabic words in Na are transcribed according to the conventions set out in Michaud 2008, which indicate the syllabic anchoring of the tones.

After coronal fricatives and affricates, the change from \*u to i and y in Na and Laze respectively appears at first blush to be fronting; however, the change to uu in Naxi would then have to be explained as a wholly different process. We propose that the evolution of \*u after TS- in Naxi is in fact another instance of apicalisation, resulting in a rounded apical vowel, \*-ɥ in Yuen-ren Chao's non-IPA notation (the IPA notation for this sound, a syllabic /z/ with lip rounding, is a rather unwieldy /ɿ/). This rhyme contrasts with \*-ɪ, which is the product of the apicalisation of \*i after \*TS- (/ɪ/ is another symbol coined by Yuen-ren Chao; the IPA recommends using /ɿ/). A contrast between /ɪ/ and /ɥ/ is attested in some Sino-Tibetan languages — including Laze, where /zyɪ/ “son”, realised [zvɪ], contrasts with /zɥɪ/ “grass”, realised [zvɪ]. In Naxi, the rhymes \*-ɪ and \*-ɥ merged to [ɪ]; this sound is phonemically interpreted as /u/, as was mentioned above. In Na and Laze, \*-ɥ had a different evolution from \*-ɪ: it changed to \*-y. Later, it underwent the merger of \*-i and \*-y in Na, along with all the other \*-y rhymes in the language.

A result of the separate evolution of \*u after TS is that there are no syllables consisting of a dental affricate and a rhyme /y/ in Na or Naxi. In Laze, these syllables exist, as part of a /"ə:ɻ:y/ correspondence (*/ʈʂʰəɻʈʂʰɻ:tsʰy/* “to hold, e.g. a knife”, */ʈʂʰəɻʈʂʰɻ:tsʰy/* “lungs”, */ʈʂʰəɻʈʂʰɻ:tsʰy/* “to cough”) and as an isolated /u:i:y/ correspondence: */dʐɯɻ:dʐiɻ:dʐyɻ/* “chisel”. As will be shown in §2.2, the likely origin of the /"ə:ɻ:y/ correspondence is \*rts(ʰ)U: the preinitial \*r- coloured the vowel and prevented apicalisation.

#### 1.4 The issue of final consonants

There is little debate that at least nine final consonants should be reconstructed for Proto-Sino-Tibetan: \*-p \*-t \*-k / \*-m \*-n \*-ŋ / \*-r \*-l \*-s (Matisoff 2003: 247, 313–314, 383, 439). It has repeatedly been observed in Sino-Tibetan that rhymes with identical vowels and different final consonants tend to undergo widely diverging historical evolutions. In the Lolo-Burmese branch, for instance, “Vowels in syllables which are terminated by nasals or stops almost invariably show radically different correspondences than the vowels of open syllables. So different are the correspondences that reconstructions for open, nasal and stopped syllables rarely support one another” (Burling 1967: 10). Postulating final consonants could therefore be a convenient tool for sorting out the vowel correspondences observed between the Naish languages. However, some evidence suggests that all final consonants had already disappeared by the Proto-Naish stage. In this section, we will

successively discuss rhymes whose main vowel is (i) a front vowel, (ii) a back vowel, and (iii) a low vowel with a final consonant in the conservative languages.<sup>12</sup>

#### 1.4.1 *Front vowels*

In Table 3 and the list of words in Online Appendix 2, it can be seen that words that correspond to Burmese *-ac*, *-ip* and *-it* follow the same correspondences as those that correspond to a plain *-i* in Burmese. The correspondences with Rgyalrong are similarly revealing, though the comparison has to be based on reconstructed forms rather than on present-day Rgyalrong pronunciations. Rgyalrong *-uy*, *-y*, *-uit* and *-uβ* originate in *\*-ik*, *\*-ek*, *\*-it* and *\*-ip*, respectively (Jacques 2004: 266); the correspondences with the Naish languages are the same as for the plain *\*-i* of Rgyalrong. This suggests that the three final stops *\*-p*, *\*-t* and *\*-k* have disappeared after *\*-i* in Naish without a trace, see Table 5.

Table 5. Two words reconstructed with Proto-Naish *\*-i* corresponding to rhymes ending in stops in other languages. The dash (–) indicates the absence of any identifiable cognate term.

meaning	Rgyalrong	Burmese	Tibetan	Naxi	Na	Laze	Proto-Naish
sleep	nuzwiβ < *jip	‘ip	–	ił	ził	ził	*ji
goat	tsʰyt < * tsʰet	chit	–	tsʰuł	tsʰuł	tsʰuł	*tsʰi

The only indirect trace of a final consonant is the rhyme reconstructed *\*-iN* (i.e. nasal [i], or [i] plus a nasal consonant) after *\*TS-*, *\*Pr-* and *\*R-*. Table 6 presents examples showing that, apart from the context *\*TS-*, *\*Pr-* and *\*R-*, nasal rhymes *\*-iN* had entirely merged with *\*-i* by the Proto-Naish stage.

Table 6. Some words reconstructed with Proto-Naish *\*-i* corresponding to nasal vowels or rhymes ending in nasals in other languages. Pumi data are from our fieldwork in Muli, Sichuan, China.

mean- ing	Rgyal- rong	Tibetan	Pumi	Naxi	Na	Laze	corr.	context	Proto- Naish
urine	tuu-rmbi	–	b̄i	mbiH	–	–	i:i:i		mbi
to hear	–	–	mɛ	miH	mył	mył	i:y:y	*m-	mi
			(kʰołmiH)						
tight	–	grim po	–	–	kwl	tsił	w:w:i	*kr-	kri

12. The final consonants as reconstructed in Matisoff's work always agree with the Tibetan, Burmese and Rgyalrong data cited in the present article.

In the analysis of the cognate sets in Table 6, we allow ourselves a peek at Pumi: although this language is too eroded phonologically to be used as a language of reference for reconstruction, it can occasionally provide useful cues. Pumi has nasal vowels that are likely to originate in earlier nasal codas, though to our knowledge this hypothesis has not yet been stated explicitly. For “urine” and “to hear”, Pumi provides crucial evidence of nasality over the rhyme. Pumi, unlike Rgyalrong, preserves a trace of final nasal consonants as nasality on the vowel. In Rgyalrongic languages, the only nasal final preserved is *-m*, though *\*-ŋ* can be reconstructed in a few environments.

The merger of all the rhymes with front vowels found in the Naish languages is an unusual evolution, unattested as such in other branches of the family whose phonological development is well documented, such as Lolo-Burmese and Tibetan dialects. In the Loloish languages, the outcome of Proto-Lolo-Burmese *\*-i* and *\*-iC* is rarely identical. For instance, in Lahu, the correspondences are the following (Matisoff 2003: 186, 248–249, 314):

Proto-Lolo-Burmese	<i>*-i</i>	<i>*-ik</i>	<i>*-it</i>	<i>*-ip</i>	<i>*-iŋ</i>	<i>*-in</i>	<i>*-im</i>
Lahu	-i	-i?	-i?	-i?	-e	-i	-e

#### 1.4.2 Back vowels

As with front vowels, the rhymes with back vowels ending in a stop coda all merged with the corresponding Proto-Naish high vowel *\*-u*, as illustrated in Table 7.

Table 7. Correspondences of Proto-Naish *\*-u* with closed-syllable comparanda in conservative languages.

meaning	Rgyal- rong	Burmese	Tibetan	Naxi	Na	Laze	Proto- Naish
sew	tʂwβ	khyup	ndrub	zv̚l	zv̚l	zv̚l	*C-ru
go out <sup>13</sup>	—	thut	—	tʰv̚l	tʰv̚l	tʰv̚l	*tʰu
bent	ŋgv̚y	—	gug	gv̚l	la.gv̚	la.lgv̚l	*gu

Examples of Naish words corresponding to etyma with back vowels and nasal codas are too few in our data to be studied profitably; further research is needed to determine their exact correspondences.

As in the case of front vowels (§1.4.1), the massive merger of rhymes with rounded vowels in Naish is rather unusual in the languages of the area. Taking again the example of Lahu, the reflexes for Proto-Lolo-Burmese rhymes with

13. The Burmese form means ‘to take out’.

\*-u- as their main vowel are of no small degree of complexity (Matisoff 2003: 180, 248–249, 314):

Proto-Lolo-Burmese	*-u	*-uk	*-ut	*-up	*-uŋ	*-un	*-um
Lahu	-u	-u?	-ə?	-ɔ?	-ɔ	-ə	-ɛ

#### 1.4.3 Low vowels

Unlike the rhymes with back and front vowels, the rhymes -aC (where C stands for a consonant) in conservative languages do not correspond to the same Proto-Naish rhymes as those in open syllable -a. With nasal finals, we have already seen that Proto-Rgyalrong \*-an and \*-o both correspond to Proto-Naish \*-o. At an earlier stage, two rhymes existed, but had already merged to \*o in Proto-Naish, without a trace of nasality. For rhymes with \*a+stop codas, we find two sets of correspondences, shown in Table 8.

Table 8. Correspondences for Proto-Naish \*-aC, where C is an etymological final stop.

mean-ing	Rgyal- rong	Bur- mese	Tibetan	Naxi	Na	Laze	Proto- Naish	# of ex.
to cover	fkaβ	–	ŋebs, bkab	ka˥	ka˩	ka˥	a:a:a	*-a/-aC <sub>1</sub>
black		nak	nag	na˩	na˩	na˧	a:a:a	*-aC <sub>1</sub>
to strike	lht	–	–	la˥	la˩	la˧	a:a:a	*-aC <sub>1</sub>
sharp	tʰak	–	–	tʰa˥	tʰa˩	tʰa˧	a:a:a	*-aC <sub>1</sub>
to climb	taꝝ “top”	–	–	ndo˧	dol	du˧	o:o:u	*-aC <sub>2</sub>
to jump	mtsar	–	–	tsʰo˧	tsʰo˩	tsʰu˧	o:o:u	*-aC <sub>2</sub>
needle	-qaβ	ap	kʰab	ko˥	ku˩ (no con- trast with /kɔ/)	u˩	o:o:u	*-aC <sub>2</sub>
thick	jaꝝ	–	–	la˥	lo:f˥	lu˧	*-aC <sub>1</sub> / aC <sub>2</sub>	5
hand	-jaꝝ	lak	lag	la˩	lo.qʰwv LM	la˩	*-aC <sub>1</sub> / aC <sub>2</sub>	

The double correspondence (a:a:a and o:o:u) calls for an explanation. Unlike in the case of Proto-Naish \*a, \*i, \*u (Tables 2, 3 and 4), it cannot be ascribed to conditioning by initial consonants. At present, we cannot propose an interpretation of this distinction; in order to reflect it in the reconstruction nonetheless, we adopt the following notation: \*-aC<sub>1</sub> for a:a:a, and \*-aC<sub>2</sub> for o:o:u. The phonetic interpretation of \*-aC<sub>1</sub> and \*-aC<sub>2</sub> in Proto-Naish is difficult; these two rhymes were clearly distinct from \*-a, but it is highly unlikely that the final stops were preserved in

Proto-Naish. In this perspective,  $*\text{-aC}_1$  and  $*\text{-aC}_2$  could be reconstructed as  $*[a]$  and  $*[\ɔ]$  respectively, and  $*\text{-a}$  as  $*[\æ]$ .

There exist isolated ‘mixed’ correspondences, /a:o:u/, /a:o:a/ and /o:o:a/, only attested by one or two cognate sets each: the forms in the shaded cells are those expected for  $*\text{-aC}_1$ , whereas the others are expected for  $*\text{-aC}_2$ . A full study of the origin of these correspondences must be deferred until future investigations (as a wild guess: language contact within Naish or vowel sandhi may have been at work), but it is unlikely that we need to reconstruct distinct proto-rhymes for these marginal correspondences.

The reconstructed Naish chain shift whereby (i)  $*\text{-a}$  undergoes fronting in open syllables and (ii)  $*\text{-aC}$  ( $*\text{a}$  in checked syllables) becomes a simple /-a/ appears panchronically plausible in light of similar developments that took place in Tangut: all types of Proto-Tangut  $*\text{-a+stop}$  rhymes (including at least  $*\text{ap}$ ,  $*\text{at}$ , and  $*\text{ak}$ ) lost their final stop, and preserved an *a* vowel while Proto-Tangut  $*\text{-a}$  underwent raising plus fronting (Jacques 2006). The Tangut and Naish facts are of course fully independent.

## 1.5 Some reflections on phonetic paths of evolution

The purpose of the present study is to establish and interpret correspondences, not to reflect on the evolutionary paths from one state to the other.

As all comparativists know, what is important is not the phonetic similarity between compared lexical items, but the regularity of the correspondences between elements. If a correspondence is regular, we can even say that the more phonetically different the elements are, the better evidence they provide for a common ancestry. Nonetheless, after a common ancestry has been established, and a reconstruction proposed, it is necessary to relate the forms of the reconstructed language to the modern language or languages by a plausible story in terms of general linguistic knowledge, that is, to postulate a sequence of plausible changes, understood as phonetically well-motivated changes or changes attested somewhere else among the world’s languages. (Mazaudon forthcoming).

In the case of the Naish data, a few preliminary hypotheses can be put forward concerning these paths.

### 1.5.1 *Hypotheses on the details of phonetic development from $*\text{a}$ to /e:i:ie/*

Concerning  $*\text{-a}$ , the phonetic evolution can be hypothesised to have taken place as follows. The preservation of the original vowel quality after velars may be due to an overall back articulation of the syllable, possibly close to a phonetically uvular realization: [qa] for /ka/, etc. Vowel raising takes place in other contexts.

The hypothesis that velars had uvular allophones before \*a at the time when the sound change began implies that velars and uvulars were not contrastive in this context. If the hypothesis is correct, it entails that velar and uvular initials had already ceased to be contrastive before \*a by the time this vowel began to undergo raising. Of course, this does not entail that velars and uvulars did not remain contrastive in other contexts, as they do to this day in Yongning Na.

Similar developments towards *e* or *i* are known to have occurred independently in Rgyalrongic (Tshobdun and Zbu), as well as in Tangut (especially Bradley 1975: 102, 1997: 38). Matisoff 2004 refers to this change as ‘brightening’, using a term used in Germanic historical phonology to describe the change from /a/ to /æ/. Interestingly, like Proto-Naish \*a, Proto-Western Germanic \*a has numerous reflexes in Old English: no less than six (Lass 1994: 41). As for the correspondence /hu:hi:fi/, it is to be interpreted in light of the evolution of the entire syllable. Concerning the initial, we propose that the Proto-Naish form was \*Swa, and that the initial went through a stage \*w- at some point between the Proto-Naish stage and the modern languages, whereas the correspondence /u:i:vi/ goes back to Proto-Naish \*wa: the initial \*w- fuses with the rhyme in Na and Naxi, and evolves to /v-/ in Laze. Concerning the correspondence /u:e:u/, \*-a first fronted to \*-i in Naxi and Laze (there is no way to ascertain whether this was a parallel development, or a common innovation not shared by Na) and this change occurred before the \*-i > -u change discussed in the next section. Thereafter, the \*-i coming from \*-a underwent the same \*-i > /-u/ change as the other \*-i.

### 1.5.2 About the change from \*i to u after s

The change from \*i to /u/ after *s* calls for some explanation. It does not consist of a movement from a front articulation [i] to a back articulation [u] — which would be a surprising evolution. It is in fact an instance of apicalisation — a common phenomenon in the area, as noted by Baron 1974, in particular — which results phonetically in the combination [sz] (in Yuen-ren Chao’s notation: [s1]); the vowel in this syllable is to be analysed phonemically as an allophone of /u/, as noted by He Jiren & Jiang Zhuyi (1985: 9). The change from \*i to /y/ after *m-* may result from a similar process whereby the rhyme loses any independent articulatory target, resulting in a syllabic consonant \*m;<sup>14</sup> the syllable is then reinterpreted as having the rhyme /y/. No scenario can be offered at present concerning the

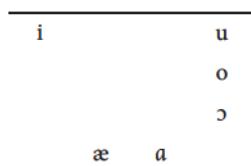
14. Bradley refers to this process as “rhyme-gobbling”: “In various Loloish languages some or all of the nasals occur as syllabics. In most such cases the diachronic source is syllables with a nasal initial and a high vowel; sometimes one dialect has nasal syllabics where others have nasals plus a high vowel. This could be called “rhyme-gobbling” (Bradley 1989: 150; see also Björverud 1998: 8).

developments that led up to the correspondence /u:u:i/ illustrated in Table 1 (e.g. /ku:ku:tsi/ for “star”).

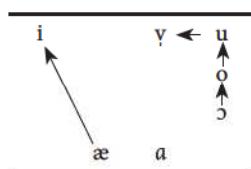
Tibetan loans corroborate the reconstruction of \*i after sibilants. For instance, the proper name /tælʂur/ in Yongning Na clearly comes from the Tibetan name *bKrashis* (IPA interpretation: Old Tibetan [pkraçis]); whatever the donor dialect of Tibetan, the second syllable must have been either [çi] or [çis], and this word later underwent the regular change from \*çi to /ʂu/.<sup>15</sup>

### 1.6 The Proto-Naish vocalic system: A provisional summary

The above analyses lead to the reconstruction of the following vowel system for Proto-Naish:



The symbols /æ/, /a/ and /ɔ/ are proposed as phonetic values for the entities reconstructed as \*a, \*aC<sub>1</sub> and \*aC<sub>2</sub> respectively. The contrast between /æ/ and /a/ was neutralised after velars. This is a somewhat unbalanced system, crowded with back vowels. The changes that occurred in most consonantal contexts can be schematised as follows:



A chain shift occurred among back vowels, followed by mergers which reduced the four-way height contrast to a three- or two-way contrast depending on the language, while a height contrast between /i/ and /e/ was created for front vowels.

15. In turn, this opens into the question of the time frame of this sound change; the distinction among layers of Tibetan loans remains a question for future research.

## 2. Onsets

The available evidence strongly suggests that Proto-Naish had already lost all codas; on the other hand, the evidence for initial clusters can be considered strong, as exemplified in the Introduction with the cluster \*kr-. It is more common for a language to retain final stops whereas initial clusters are lost: examples in the Sino-Tibetan domain include Lhasa Tibetan, which retains final -p and nasal -m -n -ŋ but has lost all consonant clusters, and Cantonese, which also retains final -t and -k. The reverse situation is attested, however: some Sino-Tibetan languages preserve some initial clusters but have lost all final consonants, such as the Tibetan dialect of Zhongu (Sun 2003). This section sets out a historical scenario of the evolution of initial clusters from Proto-Naish to the modern languages.

### 2.1 Stop consonants

The basic correspondences for voicing features across the three languages are straightforward. Table 9 provides examples for labials; similar examples can be found for dental and velar stops and affricates.

Table 9. Examples of correspondences among initials, and proposed Proto-Naish reconstructions. N stands for a nasal pre-initial.

meaning	Rgyalrong	Tibetan	Naxi	Na	Laze	corresp.	Proto-Naish
white <sup>16</sup>	wyrum	-	pʰəJ	pʰyJ	pʰyJ	pʰ:pʰ:pʰ	*pʰ (*pʰru)
to pluck	-	-	pəJ	pyJ	pyJ	p:p:p	*p (*pru)
yak	qa-mbru	mbri	bəJ	byJ	byJ	b:b:b	*b
village	-	-	mbeɻ	fj.bi <sup>L</sup>	bieɻ	mb:b:b	*mb
to steam	-	-	pyJ	byJ	byJ	p:b:b	*Np

The first three reconstructions in Table 9, \*pʰ, \*p and \*b, are straightforward. As for \*mb, the evidence for a series of prenasalised stops comes from Naxi; the facts can be described simply as a merger of proto-prenasalised stops with plain voiced stops in Na and Laze.<sup>17</sup> Finally, nasal+unvoiced clusters such as \*Np are tentatively postulated based on the presence in Naxi of unvoiced stops corresponding to voiced stops in Na and Laze. Data from outside the Naish group do not shed

16. Alternatively, this Na form could be related to Burmese *phru*<sup>2</sup> “white”.

17. Looking beyond Naish, the history of prenasalised stops in Burmo-Qiangic is complex: the prenasalised stops of Naxi do not correspond to those of Lolo-Burmese, as already pointed out by Bradley 1975.

light on this issue. The hypothesised change in Na and Laze is a merger of \*Np and \*mb (to \*mb) before the merger of \*mb and \*b (to b). In Naxi, nasality was lost in \*Np initials, leading to a merger with \*p.

The rendering of Naxi place names in Chinese in the *Yuan Yi Tongzhi* (元一统志), a book dated 1286, provides equivalences between voicing features in Yuan-dynasty Mandarin and Yuan-dynasty Naxi. Table 10 sets out the data.

Table 10. Transcription of two Naxi place names in a 13th-c. Chinese record, and phonetic interpretation.

place name	transcription in the 元一统志 (date: 1286; cited from Fang Guoyu 2008: 89) and Pinyin romanisation	'Phags-pa in transliteration <sup>18</sup>	'Phags-pa as reconstructed by Coblin 2007	present-day Naxi
Lijiang	样渠头 yàng qú tóu	yang kyu tʰiw	*jan gy dəw	iHgyldyJ
Yongning	楼头 lóu tóu	lʰiw tʰiw	*ləw dəw	lyldyJ

The Chinese phonetic equivalents for present-day Lijiang and Yongning are 样渠头 and 楼头, respectively. In the variety of Chinese recorded in the 14th-century rhyme table *Zhongyuan Yinyun* (中原音韵), the initials of 渠 and 头 are unvoiced; however, using the reconstruction of 'Phags-pa by Coblin 2007, they are interpreted as \*gy and \*dəw, i.e. with the same voicing features as present-day Naxi. This observation provides evidence on a disputed point of Chinese historical linguistics: it is currently an issue whether the standard dialect of Yuan dynasty Chinese (Northern Mandarin) retained voiced obstruents or not; the facts in Table 10 suggest that it did (we have no reason to suspect that the present-day voiced obstruents of Na, Laze and Naxi are secondary). Had the Chinese dialect of the person transcribing these names already lost the voicing contrast and developed aspiration on previously voiced obstruents, the transcriber would have used unvoiced stops, rather than aspirated stops, to match the Naish voiced initials.

Table 11 sets out correspondences for complex initials, again taking labials as an example.

The Laze data offer good evidence for reconstructing clusters. At this juncture, the history of other languages of the Sino-Tibetan family, as well as of the neighbouring Austroasiatic family, provides precious insights. In Sino-Tibetan and Austroasiatic, many languages are known to have lost complex onsets. Three

18. 'Phags-pa is a writing system that was invented at the end of the 13th century to transcribe Chinese and Mongolian. It is the first fully consistent spelling system for Chinese. Except for its disregard for tonal contrasts, it is the most faithful source about early Mandarin pronunciation. The dialect transcribed in 'Phags-pa script is not the direct ancestor of any modern Chinese dialect; however, it was still very close to the ancestor of most Mandarin dialects.

**Table 11.** Examples of correspondences pointing to *pre-initial+initial* clusters in Proto-Naish. S stands for either \*r or \*s, and C stands for a stop; the phonetic value of the units S and C is unrecoverable in these contexts.

English	Rgyalrong	Bur-	Tibetan	Naxi	Na	Laze	corr.	Proto-	# of
		mese						Naish	ex.
(predicted correspondence)									
dry	spu<*spu	-	-	p <sup>v</sup> l	p <sup>v</sup> t	f <sup>v</sup> l	p:p:f	*S-p <sup>h</sup>	1
(predicted correspondence)									
intestine	-pu	u <sup>2</sup>	pho-	b <sup>v</sup> t	b <sup>v</sup> t	v <sup>v</sup> t	b:b:v	*S-b	2
snow	-jpa	-		mbe <sup>t</sup>	b <sup>v</sup> t	vie <sup>t</sup>	mb:b:v	*S-mb	2
garlic	cku	-	sgog-	k <sup>v</sup> t	k <sup>v</sup> t	f <sup>v</sup> t	k:k:f	*S-k	1
head	-ku		mgo	k <sup>v</sup> l	g <sup>v</sup> l	u <sup>v</sup> t	(k:g:w)	*S-Nk	1
to do	pa		byed, byas	be <sup>t</sup>	i <sup>v</sup> t	vie <sup>t</sup>	b:Ø:v	*C-b	3
difficult	nqa		dk <sup>a</sup>		lo.ha <sup>M</sup>	lu:h <sup>t</sup> ha <sup>t</sup>	?::h:h	*C-k	1
maternal uncle	u <sup>3</sup>	a k <sup>h</sup> u	əlgv <sup>v</sup> t	ə.v <sup>MH#</sup>	æt <sup>v</sup> t	g:Ø:v	*C-g		1

mechanisms of cluster simplification are attested. First, deletion of one element of the cluster: for instance, in Lhasa Tibetan, Cp-, Ct-, Ck- > p-, t-, k- where C stands for one of {r, s, b, d, g}. Second, coalescence of the two consonants into one: for instance, in Lhasa Tibetan p<sup>b</sup>r- and k<sup>b</sup>r- simplify to the affricate tʂ<sup>h</sup>- (the syllable acquiring a high tone in the process). Third, lenition of one of the consonants within clusters involving two obstruents: see for instance the comparison of Laven and Nha Heun by Ferlus 1971. Unlike Naxi, where pre-initials disappeared without leaving any traces before stops, in Laze these pre-initials caused a lenition of the following stop — a phenomenon akin to that observed in Vietnamese, where medial consonants were spirantised (Ferlus 1982, about the term ‘spirants’, see Martinet 1981, 1985). In Na, we also find spirantisation in some etyma, and we posit a distinct preinitial \*C- to explain these cases.

There is no evidence of spirantisation in the case of dentals in either Na or Laze. This observation is placed in cross-linguistic perspective in Table 12.

The Pumi data are unpublished, so examples are provided in Table 13. The Shuiluo dialect lost *s+obstruent* clusters still found in the Lanping dialect (Lu Shaozun 2001). The clusters found in Lanping Pumi regularly correspond to fricatives in Shuiluo, whereas simple stops always correspond to stops; this warrants the conclusion that a process of spirantisation took place in Shuiluo Pumi. Labial stops are an exception: they never undergo spirantisation.

**Table 12.** Data from several East Asian languages on the lenition of C<sub>2</sub> stops in C<sub>1</sub>C<sub>2</sub> clusters. Amdo Tibetan data from Hua Kan & Long Bojia 1993. Rgyalrong data and analysis from Jacques 2009. Situ Rgyalrong data from Huang Liangrong & Sun Hongkai 2002. The Shuiluo Pumi data are set out in Table 13.

	labial	velar	coronal
Lhasa Tibetan	spirantisation of one single cluster: db-; e.g. dbang>/wá/ “power”	preserved	preserved
Rgyalrong	spirantisation of *jb and *zb; e.g. *zb- > zw- (e.g. /zwvr/ “mugwort”, cp. Situ Rgyalrong /spor <sup>22</sup> pram <sup>52</sup> /)	preserved	preserved
Amdo Tibetan	spirantisation of all labial stops; db->y- or yw-, e.g. dbu “head”>/yə/; sp->hw-, e.g. spu “hair”>/hwə/	preserved; e.g. dka “difficult”>/hka/	preserved; e.g. gtam “speech”>/htam/
Laze	spirantisation of all labial stops	spirantisation of all velar stops	preserved
Tangut	spirantisation of all labial stops	spirantisation of all velar stops	spirantisation of ts-; rare cases of spirantisation of t-
Shuiluo Pumi	preserved	spirantisation of all velar stops	spirantisation of all coronal affricates and some dental stops
Vietnamese	spirantisation of all obstruents in medial position		

**Table 13.** Correspondences showing the spirantisation of nonlabial stops in Shuiluo Pumi. Data from 2009 fieldwork in Muli, Sichuan, China.

meaning	Shuiluo Pumi	Laping Pumi
to cook	xō	sqó
nine	yíð	sgitú
to chop	çé	tʰə stʃá
to feed	çʰé	tʰə stʃʰé
trousers	zɔ̄	sdʒá
beard	a sō̄	à stiáu
to choose	sʰé	tʰə stʰié
deaf	za bō̄	sdə bō̄
leaf	pă	sè spà
to patch	pʰié	xə spʰé
ice	bu bō̄	sbù sbō̄

From the data in Table 12, it is clear that there is no universal hierarchy of propensity to spirantisation according to place of articulation. In Tibetan, Rgyalrong and Laze, dental stops appear to resist spirantisation; conversely, in Shuiluo Pumi, labial stops resist spirantisation.

Apart from \*C- and \*S-, there is evidence for a third preinitial, \*r-, in Proto-Naish. The evidence does not come from initial lenition, but from vowel correspondences. Unfortunately, most cases involve so few examples as to be inconclusive; the only syllable types that can be reconstructed with confidence with a preinitial \*r- are shown in Table 14.

Table 14. Cognate sets reconstructed back to \*rts(<sup>h</sup>)V in Proto-Naish.

meaning	Rgyalrong	Burmese	Tibetan	Naxi	Na	Laze	Proto-Naish
articulation	t <u>u</u> -rtsvy	chac	tsʰigs	tʂəl	tʂæl	tswɿ	*rtsi
wash	χtci (Situ rtci)			tʂʰəd	tʂʰæd	tsʰwɿ	*rtsʰi
medicine		che <sup>2</sup>	rtsi	tʂʰədɯɿ	tʂʰæ.u <sup>#H</sup>	tsʰwɿfɪɿ	*rtsʰi
waist					i.tʂæ <sup>L+MH#</sup>	iɿtswɿ	*rtsi
to hold				tʂʰwɿəl	tʂʰɿl	tsʰvɿ	*rtsʰU
lungs	t <u>u</u> -rtsʰvs <*rtsʰɔs	chut		tʂʰwɿəl	tʂʰɿl	tsʰvɿ	*rtsʰU
to cough				tʂʷəd	tʂɿl	tsvɿ	*rtsU

In these examples, the initial correspondences /tʂ(<sup>h</sup>):tʂ(<sup>h</sup>):ts(<sup>h</sup>)/ are associated with the rhyme correspondences /ə:æ:u/ and /ə:ɿ:v/. Cognates in Rgyalrong and Tibetan suggest the presence of a preinitial \*r-, and the evidence is overwhelming for reconstructing a front vowel \*i in the first case, and a rounded vowel (either \*u or \*o) in the second. In Laze, \*rts(<sup>h</sup>)i and \*ts(<sup>h</sup>)i merged as /ts(<sup>h</sup>)wɿ/, while in the two other languages both the initial and the rhyme underwent retroflexion (the correspondence between Naxi /ə/ and Na /æ/ is the same as for the rhyme \*iN reconstructed after \*Pr-). The vowel /æ/ of Na probably went through a stage \*ə as in Naxi. The vowel /æ/ of many cognate sets originates in a syllable with preinitial or medial \*r- in Proto-Naish; most other examples of /æ/ are in fact loanwords.

## 2.2 Sonorants

Table 15 provides examples of correspondences for sonorants.

The three-way correspondence /h:tɬ:/, /l:tɬ:/ and /h:h:h/ points to three different initials in Proto-Naish. Nasality is present on the entire syllable in the Na and Laze word for ‘red’, while vowel nasality is entirely absent in Naxi — though it was

Table 15. Examples of correspondences for sonorants.

English	Rgyal- rong	Bur- mese	Tibetan	Naxi	Na	Laze	corr.	Proto- Naish	# of ex.
black	-nak	nak	nag	naʃ	naʃ	naʃ	n:n:n	*n-	10
work	-	lup	-	loʃ	loʃ	luʃ	l:l:l	*l-	20
moon	-sla	la <sup>1</sup>	zla	leʃ	ti.mi <sup>M</sup>	tieʃ	lɔ:l	*Sl-	3
red	-rni	ni <sup>2</sup>		hyʃ	h̥yʃ	hi	h:h:h	*Sn-	3
rib	-rnom	nam <sup>2</sup>	snam-gzogs, snam-logs “side”, snam- brag “bosom”	hoʃ	tɔl	tul	hɔ:l	*l̥-	4
soul	-rla	-pra <sup>2</sup>	bla, brla	heʃ	æ:t:i L+H	tieʃ	hɔ:l	*l̥-	

partly transphonologised as a contrast of initials: \*h̥y>/hy/, and \*hy>/çy/; this is the only context in Naxi where /ç/ is contrastive (Michaud 2006a). This suggests the possibility of a voiceless nasal \*n̥ (corresponding to present-day /h:h:h/) at an earlier stage.

To account for all the correspondences, as many as four different initials must be reconstructed. Proposing concrete values for these entities is a thorny task, because all of them appear to have gone through a phase where they were realised as one of /l/ or /n/. A complex evolutionary path must be hypothesised. Table 16 sets out a model of the sequence of changes in the three languages.

Table 16. Reconstructed sequence of changes in each of the three languages leading to the correspondences in Table 15.

	Naxi	Na	Laze
(i)	*n̥-, *l̥->*l̥- (merger of *n̥- and *l̥-)		
(ii)	*l̥->*h-		
(iii)	*Sl->*l- (merger with *l-) *Sn-, *Sm-, *Sŋ- >*n̥-, *m̥-, *ŋ-	*Sl->*l̥- *Sn-, *Sm-, *Sŋ- >*n̥-, *m̥-, *ŋ-	*Sl->*l̥- *Sn-, *Sm-, *Sŋ-
(iv)	*n̥V, *m̥V, *ŋV>*hV>hV	*n̥V, *m̥V, *ŋV>hV *l̥->l-	*n̥V, *m̥V, *ŋV>hV *l̥->l-

Since Proto-Naish \*l̥- corresponds both to Cn- and Cl- clusters in Tibetan and Rgyalrong, it is reasonable to assume that it results from the merger of still earlier \*n̥- and \*l̥-. This merger, which constitutes a common Naish innovation, has parallels in Chinese. Old Chinese \*hn- and \*hl- merge in Middle Chinese. These

initials yield *t<sup>h</sup>*- or *ç*- in Middle Chinese, depending on the type of syllable (Baxter 1992: 194, 197).

### 2.3 Correspondences pointing to a contrast between uvulars and velars in Proto-Naish

There exists a small set of examples following the correspondence /y:ɔ:o/, as shown in Table 17.

Table 17. Cognate sets comprising a uvular in Na.

meaning	Rgyalrong	Burmese	Tibetan	Naxi	Na	Laze	Proto-Naish
sleeve	–	–	–	laŋjɔŋlkʰoɻ	i.qʰy <sup>L</sup>	jaŋqʰɔɻ	*qʰU
swallow	mqlaʂ	–	–	koɻ	ɛyɻ	ɛɔɻ	*NqU
cave	–	–	–	ŋgylkʰoɻ	ɛwv.qʰy <sup>M</sup>	laɛŋqʰɔɻ	*qʰU
throat	-rqa < *rqanj	–	–		qy.tsæ <sup>MH#</sup>	qɔɻtsuɻ	*qU
horn	-kruw < *qrū	kʰyui <sup>2</sup>	ru	kʰoɻ	qʰyɻ	qʰɔɻ	*qʰU

Potential cognates in the reference languages do not suggest one single protorhyme (Proto-Rgyalrong \*-aq, \*-aj and \*-u all correspond to this set). On the other hand, these examples do have a common characteristic, namely the presence of a uvular initial in Na. It is probably not a coincidence that the corresponding terms in Rgyalrong, the only conservative language that likewise contrasts uvulars and velars, also have a uvular initial. The homogeneity of the /y:ɔ:o/ correspondence may therefore result from the influence of a Proto-Naish uvular initial over a Proto-Naish rounded rhyme such as \*o, \*u or \*aC. All these rhymes are subsumed under a capital *u* symbol: \*U.

As a concluding note concerning onsets, the present analyses confirm that the evolution of vowels from Proto-Naish to the modern languages is influenced by the consonantal onset: simple initials and complex consonantal onsets both left some marks on the following vowel — a phenomenon already pointed out by Huang Bufan 1991 for the Sino-Tibetan family at large.

### Conclusion

The Naish languages, with their absence of segmental inflection and their limited syllable inventory, constitute a typological extreme and offer an exceptional challenge to the application of the comparative method, due to the high opacity of

the phonological changes that have taken place in this branch. The present study constitutes a first step towards unraveling the phonological history of the Naish languages; it exemplifies the well-established fact that conservative languages provide useful indications for interpreting present-day correspondences among the short forms of phonologically eroded languages.<sup>19</sup>

The present study also contributes pieces of evidence for a general inventory and typology of sound changes. First, phonetic conditioning of the rhyme by the place of articulation of the preceding consonant, though not entirely unheard of (see, again, Matisoff 2007 on Loloish, or PIE laryngeals), is considerably rarer than the opposite: an influence of a consonant on a vowel that precedes it. Second, the Laze language provides evidence for the typology of stop lenition in *obstruent+stop* clusters. Third, the development of \*u and \*i after dental fricatives and affricates offers insights into the mechanisms that govern the evolution of apical vowels.

Finally, while language classification is not the main focus of this research, the insights gained into the historical phonology of Naxi, Na and Laze put to rest any doubt that they belong within a single subgroup (clade) of Sino-Tibetan.

Needless to say, for Proto-Naish as for any other proto-language, the addition of new data from the languages at issue and from other closely related languages will lead to improvements and modifications of the reconstruction. The importance of documenting a greater number of related language varieties cannot be overemphasised.

## References

- Aikhenvald, Alexandra Y. & Robert M. Dixon. 2001. "Introduction". *Areal Diffusion and Genetic Inheritance* ed. by Alexandra Y. Aikhenvald & Robert M. Dixon, 1–26. Oxford: Oxford University Press.
- An Annotated Collection of Naxi Dongba Manuscripts*. 1999–2000. *Naxi Dongba Guji Yizhu Quanji*, edited by the Naxi Dongba Guji Yizhu Quanji Bianweihui. Kunming: Yunnan Renmin Chubanshe.
- Baron, Stephen P. 1974. *On the Tip of Many Tongues: Apical vowels across Sino-Tibetan*. Handout circulated at the 7th International Conference on Sino-Tibetan Language and Linguistic Studies. Georgia State University, Atlanta, October 18th–19th, 1974.
- Bauman, James. 1974. "Pronominal verb morphology in Tibeto-Burman". *Linguistics of the Tibeto-Burman Area* 1:1.108–155.
- Baxter, William H. 1992. *A Handbook of Old Chinese Phonology*. Berlin: Mouton de Gruyter.
- Benedict, Paul K. 1972. *Sino-Tibetan: A conspectus*. Cambridge: Cambridge University Press.
- Björverud, Susanna. 1998. *A Grammar of Lalo*. Lund: Lund University.

19. Within the Sino-Tibetan family, a similar approach could be applied in future to the reconstruction of Tujia or Bai.

- Blench, Roger. Manuscript. *The Southern Yunnan Interaction Sphere*. Available from <http://www.rogerblench.info/>
- Bradley, David. 1975. "Nahsi and Proto-Burmese-Lolo". *Linguistics of the Tibeto-Burman Area* 2:1.93–150.
- Bradley, David. 1979. *Proto-Loloish*. London & Malmö: Curzon.
- Bradley, David. 1989. "Nasals and nasality in Loloish". *Prosodic Analysis and Asian Linguistics: To honour R.K. Sprigg* ed. by David Bradley, Eugénie J.A. Henderson & Martine Mazaudon, 143–155. Canberra: Pacific Linguistics C-104.
- Bradley, David. 1997. "Tibeto-Burman languages and classification". *Papers in Southeast Asian linguistics No. 14: Tibeto-Burman languages of the Himalayas* ed. by David Bradley, 1–72. Canberra: Department of Linguistics, Research School of Pacific and Asian Studies, Australian National University.
- Bradley, David. 2008. "The position of Namuyi in Tibeto-Burman". Presentation at the Workshop on the Namuyi language. Institute of Linguistics, Academia Sinica, Taipei, November 24th 2008.
- Burling, Robbins. 1967. *Proto-Lolo-Burmese*. Bloomington & The Hague: Mouton.
- Campbell, Lyle & William J. Poser. 2008. *Language Classification: History and method*. Cambridge: Cambridge University Press.
- Chirkova, Katia. 2008. "Essential characteristics of Lizu, a Qiangic Language of Western Sichuan." Paper presented at the Workshop on Tibeto-Burman languages of Sichuan, Academia Sinica, Taipei. Archived at <http://hal.archives-ouvertes.fr/hal-00358909/>
- Chirkova, Katia. 2009. "Shíxīng, a Sino-Tibetan language of South-West China: A grammatical sketch with two appended texts". *Linguistics of the Tibeto-Burman Area* 32:1.1–90.
- Coblin, South. 2007. *A Handbook of Phags-pa Chinese*. Honolulu: University of Hawai'i Press.
- Conrady, August. 1896. *Eine Indochinesische Causativ-Denominativ-Bildung und ihr Zusammenhang mit den Tonaccenten*. Leipzig: Harrassowitz.
- DeLancey, Scott. 2010. "Towards a history of verb agreement in Tibeto-Burman". *Himalayan Linguistics Journal* 9:1.1–39.
- Fang Guoyu. 2008. *A Collection of Articles about the Naxi (Naxixue Lunji)*. Beijing: Minzu Chubanshe.
- Fang Guoyu & He Zhiwu. 1995. *A Dictionary of Naxi Pictographic Characters (Naxi Xiangxing Wenzi Pu)*. Kunming: Yunnan Renmin Chubanshe.
- Ferlus, Michel. 1971. "Simplification des groupes consonantiques dans deux dialectes austroasiens du Sud-Laos". *Bulletin de la Société de Linguistique de Paris* 66:1.389–403.
- Ferlus, Michel. 1979. "Formation des registres et mutations consonantiques dans les langues mon-khmer". *Mon-Khmer Studies* 8.1–76.
- Ferlus, Michel. 1982. "Spirantisation des obstruantes médiales et formation du système consonantique du vietnamien". *Cahiers de linguistique — Asie Orientale* 11:1.83–106.
- Ferlus, Michel. 1992. "Essai de phonétique historique du khmer (du milieu du premier millénaire de notre ère à l'époque actuelle)". *Mon-Khmer Studies* 21.57–89.
- Ferlus, Michel. 2009. "What were the four divisions of Middle Chinese?". *Diachronica* 26:2.184–213.
- Fox, Anthony. 1995. *Linguistic Reconstruction: An introduction to theory and method*. Oxford: Oxford University Press.
- Fu Maoji. 1981–1984. *A Study of a Naxi Pictographic Manuscript, "White Bat's Search for Sacred Books"* (Naxi-zu Tuhua-wenzi "Bai bianfu qu jing ji" yanjiu), Vol. I. Tokyo: CAAAL.

- Guo Dalie & He Zhiwu. 1999 [2nd ed. 1999]. *A History of the Naxi people (Naxizu Shi)*. Chongqing: Sichuan Minzu Chubanshe.
- Hashimoto, Mantaro. 1988. *The Naxi Language Materials: Field data collected by the late Prof. M. J. Hashimoto*. Tokyo: Research Institute for Languages and Cultures of Asia and Africa.
- He Jiren & Jiang Zhuyi. 1985. *A Presentation of the Naxi Language (Naxiyu Jianzhi)*. Beijing: Minzu Chubanshe.
- Hua Kan & Long Bojia. 1993. *A Dictionary of Colloquial Amdo Tibetan (Anduo Zangyu Kouyu Cidian)*. Lanzhou: Gansu Minzu Chubanshe.
- Huang Bufan. 1991. "The influence of onsets over rhymes in Tibeto-Burman (Zangmianyu shengmu dui yunmu yanbian de yingxiang)". *Zhongguo Yuyan Xuebao* 4.
- Huang Bufan. 2009. "A survey of Muli Shuitian (Muli Shuitianhua Gaikuang)". *Journal of Sino-Tibetan Linguistics (Hanzangyu Xuebao)* 3.30–55.
- Huang Liangrong & Sun Hongkai. 2002. *Chinese-Rgyalrong Dictionary (Han-Jiarong Cidian)*. Beijing: Minzu Chubanshe.
- Jacques, Guillaume. 2004. *Phonologie et morphologie du japhug (rGyalrong)*. PhD dissertation, UFR de Sciences du langage. Paris: Université Paris VII. <http://tel.archives-ouvertes.fr/tel-00138568/>
- Jacques, Guillaume. 2006. "Essai de comparaison des rimes du tangoute et du rGyalrong". *Medieval Tibeto-Burman Languages II: Proceedings of the Tenth Seminar of the International Association for Tibetan Studies (PIATS 2003)* ed. by Christopher Beckwith, 121–151. Leiden/Boston: Brill.
- Jacques, Guillaume. 2008. *Research about the Rgyalrong Language (Jiarongyu Yanjiu)*. Beijing: Minzu Chubanshe.
- Jacques, Guillaume. 2009. "The Pre-initials of Proto-Tangut (Yuanshi Xixiayu de qianzhiyin)". Paper presented at the conference 'The Tangut Language and the Religions and Cultures of the Northern China in the Age of the Xixia, the Liao, and the Jin', Taipei.
- Jacques, Guillaume. 2010. "A possible trace of verb agreement in Tibetan". *Himalayan Linguistics Journal* 9:1.41–49.
- LaPolla, Randy. 2003. "Overview of Sino-Tibetan morphosyntax". *The Sino-Tibetan Languages* ed. by Graham Thurgood and Randy LaPolla, 22–42. London: Routledge.
- Lass, Roger. 1994. *Old English: A historical linguistic companion*. Cambridge: Cambridge University Press.
- Lepsius, Karl Richard. 1861. "Über die Umschrift und Lautverhältnisse einiger hinterasiatischer Sprachen, namentlich der Chinesischen und der Tibetischen". *Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin*, 449–496.
- Li Liancan, Zhang Kun & He Cai. 1953. *A Dictionary of Mosuo Pictographs (Mosuo Xiangxing Wenzi zidian)*. Hong Kong: Shuowenshe.
- Lidz, Liberty. 2006. "A synopsis of Yongning Na (Mosuo)". Paper presented at the 39th International Conference on Sino-Tibetan Languages and Linguistics, University of Washington, Seattle. <http://depts.washington.edu/icstll39/participants.html>
- Lidz, Liberty. 2007. "Evidentiality in Yongning Na (Mosuo)". *Linguistics of the Tibeto-Burman Area* 30:2.45–87.
- Lidz, Liberty. 2010. *A Descriptive Grammar of Yongning Na (Mosuo)*. PhD dissertation, University of Texas-Austin.
- Lu Shaozun. 2001. *Pumi Dialectology (Pumiuy Fangyan Yanjiu)*. Beijing: Minzu Chubanshe.
- Luce, Gordon. 1985. *Phases of Pre-Pagan Burma*. Oxford: Oxford University Press.

- Martinet, André. 1981. "Fricatives and spirants". *Suniti Kumar Chatterji Commemoration Volume* ed. by Bhakti Prasad Mallik, 145–151. Burdwan, West Bengal, India: Burdwan University Press.
- Martinet, André. 1985. "Two proposals". *The Study of Sounds (Onsei no Kenkyuu), Commemorative Volume for the 50th anniversary of the Phonetic Society of Japan* 21:67–72.
- Matisoff, James A. 1968. "Review of: Robbins Burling, *Proto-Lolo-Burmese*". *Language* 44:4.879–897.
- Matisoff, James A. 1980. "Stars, moon, and spirits: Bright beings of the night in Sino-Tibetan". *Gengo Kenkyu* 77:1–45.
- Matisoff, James A. 1988. *The Dictionary of Lahu*. Berkeley & Los Angeles: University of California Press.
- Matisoff, James A. 2003. *Handbook of Proto-Tibeto-Burman: System and philosophy of Sino-Tibetan reconstruction*. Berkeley & Los Angeles: University of California Press.
- Matisoff, James A. 2004. "'Brightening' and the place of Xixia (Tangut) in the Qiangic branch of Tibeto-Burman". *Studies on Sino-Tibetan Languages* ed. by Ying-chin Lin et al., 327–352. Taipei: Language and Linguistics Monograph Series W-4.
- Matisoff, James A. 2007. "The Fate of the Proto-Lolo-Burmese Rhyme \*-a: Regularity and exceptions." Paper presented at the *40th International Conference on Sino-Tibetan Languages and Linguistics*. Harbin, China.
- Mazaudon, Martine. Forthcoming. "Paths to tone in the Tamang branch of Tibeto-Burman (Nepal)". *The Dialect Laboratory: Dialects as a testing ground for theories of language change* ed. by Gunther de Vogelaer & Guido Seiler. Amsterdam: John Benjamins.
- Michailovsky, Boyd & Alexis Michaud. 2006. "Syllabic inventory of a Western Naxi dialect, and correspondence with Joseph F. Rock's transcriptions". *Cahiers de linguistique — Asie Orientale* 35:1.3–21.
- Michaud, Alexis. 2006a. "Three extreme cases of neutralisation: Nasality, retroflexion and lip-rounding in Naxi". *Cahiers de linguistique — Asie Orientale* 35:1.23–55.
- Michaud, Alexis. 2006b. "Tonal reassocation and rising tonal contours in Naxi". *Linguistics of the Tibeto-Burman Area* 29:1.61–94.
- Michaud, Alexis. 2008. "Phonemic and tonal analysis of Yongning Na". *Cahiers de linguistique — Asie Orientale* 37:2.159–196.
- Michaud, Alexis. 2009. "The prosodic system of Muli Shuitian/Laze (Muli Shuitianhua Sheng-diao Xitong Yanjiu)." *Minzu Yuwen (Minority Languages of China)* 6.28–33.
- Michaud, Alexis. 2011. "The tones of numerals and numeral-plus-classifier determiners: on structural similarities between Naxi, Na and Laze". *Linguistics of the Tibeto-Burman Area* 34:1:1–26.
- Michaud, Alexis & Guillaume Jacques. 2010. "Insights into Naxi and Pumi at the end of the 19th century: Evidence on sound changes from the word lists by Charles-Eudes Bonin". *Cahiers de Linguistique — Asie Orientale* 39:1.21–40.
- Michaud, Alexis & He Xueguang. 2007. "Reassociated tones and coalescent syllables in Naxi (Tibeto-Burman)". *Journal of the International Phonetic Association* 37:3.237–255.
- Norman, Jerry & Mei Tsu-lin. 1976. "The Austroasiatics in Ancient South China: Some lexical evidence". *Monumenta Serica* 32.274–301.
- Okrand, Marc. 1974. "Na-khi and Proto-Lolo-Burmese: A preliminary survey". *Linguistics of the Tibeto-Burman Area* 1:1.55–97.
- Peiros, Ilia & Sergei Starostin. 1996. *A Comparative Vocabulary of Five Sino-Tibetan Languages*. Melbourne: University of Melbourne.

- Pinson, Thomas M. 1996. *Naxi Phonology — A flat phonemic statement of the Longquan dialect.* SIL unpublished manuscript. Lijiang/Dallas.
- Pinson, Thomas M. 1998. *Naxi-Chinese-English Glossary, with English and Chinese Indexes.* Dallas: The Summer Institute of Linguistics.
- Rock, Joseph. 1963–1972. *A Na-Khi — English Encyclopedic Dictionary.* Roma: Instituto Italiano per il Medio ed Estremo Oriente.
- Sagart, Laurent & William H. Baxter. 2009. “Reconstructing Old Chinese uvulars in the Baxter-Sagart system (Version 0.99)”. *Cahiers de linguistique — Asie Orientale* 38:2.221–244.
- Saussure, Ferdinand de. 1916. *Cours de linguistique générale, publié par Charles Bally et Albert Séchehaye avec la collaboration d'Albert Riedlinger.* Lausanne & Paris: Payot.
- Shafer, Robert. 1955. “Classification of the Sino-Tibetan languages”. *Word* 11.94–111.
- Shorto, Harry Leonard. 2006. *A Mon-Khmer Comparative Dictionary* ed. by Paul Sidwell, Doug Cooper & Christian Bauer. Canberra: Pacific Linguistics.
- Sun Hongkai. 1983. “Minority languages of the Six River Valley and their genetic classification (Liujiang liyu de minzu yuyan ji qi xishu fenlei).” *Minzu Xuebao (Scholarly Journal of Nationalities)* 3.99–274.
- Sun Hongkai. 2001. “On the Qiangic branch of the Tibet-Burman language family (Lun Zang-mianyuzu zhong de Qiang yuzhi yuyan).” *Language and Linguistics* 2:1.157–181.
- Sun, Jackson T.-S. 2000a. “Parallelisms in the verb morphology of Sidaba rGyalrong and Lavrung in rGyalrongic”. *Language and Linguistics* 1:1.161–190.
- Sun, Jackson T.-S. 2000b. “Stem alternations in Puxi verb inflection: Toward validating the rGyalrongic subgroup in Qiangic”. *Language and Linguistics* 1:211–232.
- Sun, Jackson T.-S. 2003. “Phonological profile of Zhongu: A new Tibetan dialect of Northern Sichuan”. *Language and Linguistics* 4:4.796–836.
- Sun, Jackson T.-S. 2005. “Pitch in Rgyalrong phonetics: Two case studies (Jiarong Yuzu Yuyin de Yingao: Liangge Ge'an Yanjiu”. *Studies in Language and Linguistics (Yuyan Yanjiu)* 25:1.50–59.
- Thurgood, Graham. 2003. “A subgrouping of the Sino-Tibetan languages: The interaction between language contact, change, and inheritance”. *The Sino-Tibetan Languages* ed. by Graham Thurgood & Randy LaPolla, 3–21. London: Routledge.
- Watkins, Calvert. 1990. “Etymologies, equations, and comparanda: Types and values, and criteria for judgment”. *Linguistic Change and Reconstruction Methodology* ed. by Philip Baldi, 289–303. Berlin: Mouton de Gruyter.
- Wolfenden, Stuart N. 1929. *Outlines of Tibeto-Burman Linguistic Morphology: With special reference to the prefixes, infixes and suffixes of classical Tibetan and the languages of the Kachin, Bodo, Naga, Kuki-Chin and Burma groups.* London: Royal Asiatic Society of Great Britain and Ireland.
- Yang Fuquan. 2006. “Introduction”. *Collected Papers about Mosuo Society and Culture, 1960–2005 (Mosuo Shehui Wenhua Yanjiu Lunwenji 1960–2005)* ed. by Latami Dashi, 4–8. Kunming: Yunnan University Press.
- Yu, Dominic. 2009. *Lizu and Proto-Tibeto-Burman.* Qualifying paper, University of California at Berkeley. Available at <http://linguistics.berkeley.edu/~dom/Lizu-and-PTB.pdf>

## Zusammenfassung

Naxi, Na und Laze sind drei Sprachen, deren genaue Anbindung innerhalb der sino-tibetischen Sprachen kontrovers diskutiert wird. Wir schlagen in diesem Beitrag vor, dass die drei Sprachen nah verwandt sind und aus einer gemeinsamen, von uns 'Proto-Naish' genannten, Ursprache hervorgegangen sind. Anders als konservative sino-tibetische Sprachen, die wie Rgyalrong und Tibetisch über Konsonantencluster und finale Konsonanten verfügen, sind Naxi, Na und Laze aufgrund phonologischer Erosion durch eine einfache Silbenstruktur aus Konsonant, Glide, Vokal und Ton gekennzeichnet. Dieser Umstand wirft die Frage auf, wie die phonologischen Gemeinsamkeiten zwischen Naxi, Na und Laze zu interpretieren sind und was sie für die Rekonstruktion der phonologischen Struktur des Proto-Naish bedeuten. Wir interpretieren die Regularitäten, die sich aus dem Vergleich der drei Sprachen herauskristallisiert haben, vor dem Hintergrund möglicher verwandter Formen in konservativen sino-tibetischen Sprachen. Durch dieses Vorgehen ergeben sich zahlreiche Fälle in denen Vokale durch den Artikulationsort des vorangehenden Konsonanten bzw. Konsonantenclusters phonetisch konditioniert werden. Diese Ergebnisse lassen insgesamt die optimistische Schlussfolgerung zu, dass wesentliche Fortschritte in der Rekonstruktion der phonologischen Entwicklung von selbst hochgradig erodierten Sprachgruppen innerhalb der sino-tibetischen Familie möglich sind.

## Résumé

Le naxi, le na et le lazé sont trois langues dont la position précise au sein du sino-tibétain demeure un sujet de controverse. Nous défendons l'hypothèse selon laquelle elles partagent un ancêtre commun, le 'proto-naish'. A la différence de langues conservatrices telles que le rgyalrong et le tibétain, qui possèdent des groupes de consonnes à l'initiale et des consonnes finales, naxi, na et lazé partagent une structure syllabique simple, conséquence d'une érosion phonologique poussée. L'interprétation des correspondances régulières entre ces langues requiert la formulation d'hypothèses au sujet de la structure phonologique du proto-naish. L'analyse, en partie guidée par des formes potentiellement apparentées dans les langues conservatrices, fait ressortir de nombreux cas de conditionnement phonétique de la voyelle par le lieu d'articulation de l'élément consonantique qui la précédait. Cette étude illustre le fait que des avancées importantes sont possibles dans l'étude de la phonologie historique des langues sino-tibétaines, même celles ayant subi une usure phonétique poussée.

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## APPENDIX

# Approaching the historical phonology of three highly eroded Sino-Tibetan languages

Naxi, Na and Laze

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## Appendix 1. Background data about the Naish languages

This Appendix provides (i) information on the geographic coordinates of Naxi, Na and Laze, and a brief review of the literature; (ii) phylogenetic reflections on the Naish group and its position within Sino-Tibetan; and (iii) reasons why no comparison with languages closely related to the Naish languages was attempted in the present research.

### *Geographic coordinates and a brief review of the literature*

Naxi is the best-documented of the three languages studied in the present article. This is due in part to the scholarly attention devoted to the Naxi scripts (pictographic and syllabic), which indirectly stimulated linguistic work (Fang Guoyu & He Zhiwu 1995, Li Liancan, Zhang Kun et al. 1953, Rock 1963–1972). Annotated editions of Naxi ritual texts also constitute important resources for linguists (see in particular Fu Maoji 1981–1984 and the 100-volume *Annotated collection of Naxi Dongba manuscripts*, 1999–2000). Specialised linguistic work includes reflections on the position of Naxi respective to the Yi (a.k.a. Ngwi, Lolo) subgroup of Tibeto-Burman (Okrand 1974, Bradley 1975); preliminary field notes by Hashimoto Mantaro (Hashimoto 1988); and a book-length glossary (Pinson 1998) which provides data on several dialects (see Pinson 1996). Finally, the rudimentary word lists collected at the turn of the 20th century provide a few useful hints: on this topic, see Michaud & Jacques 2010.

The specific language varieties studied here are indicated on the map (Figure 1):

- i. Naxi (autonym: /naɿhiɿ/), as spoken in the hamlet of A-sher (/aɿʂəɿ/); Chinese coordinates: Wenhua township, Lijiang Municipality, Yunnan, China.
- ii. Yongning Na (autonym: /naɿH/), as spoken in Yongning township, Lijiang municipality, Yunnan, China.<sup>1</sup> A neighbouring dialect is described by Lidz (2006, 2007, forthcoming).
- iii. Laze (autonym: /laɿzeɿ/; referred to in China as Muli Shuitian 木里水田 or Lare 拉热), as spoken in Xiangjiao township, Muli prefecture, Sichuan, China. (See Huang Bufan 2009 for a general overview of a neighbouring dialect.)

The present research essentially relies on first-hand data collected by Alexis Michaud from 2002 to 2009. With apologies for self-references, here is a list of published results: analyses of the phonemic system of Naxi (Michailovsky & Michaud 2006, Michaud 2006a) and of its tone system (Michaud 2006b, Michaud & He Xueguang 2007); a phonemic and tonal analysis of Yongning Na (Michaud 2008); and a tonal analysis of Laze (Michaud 2009).

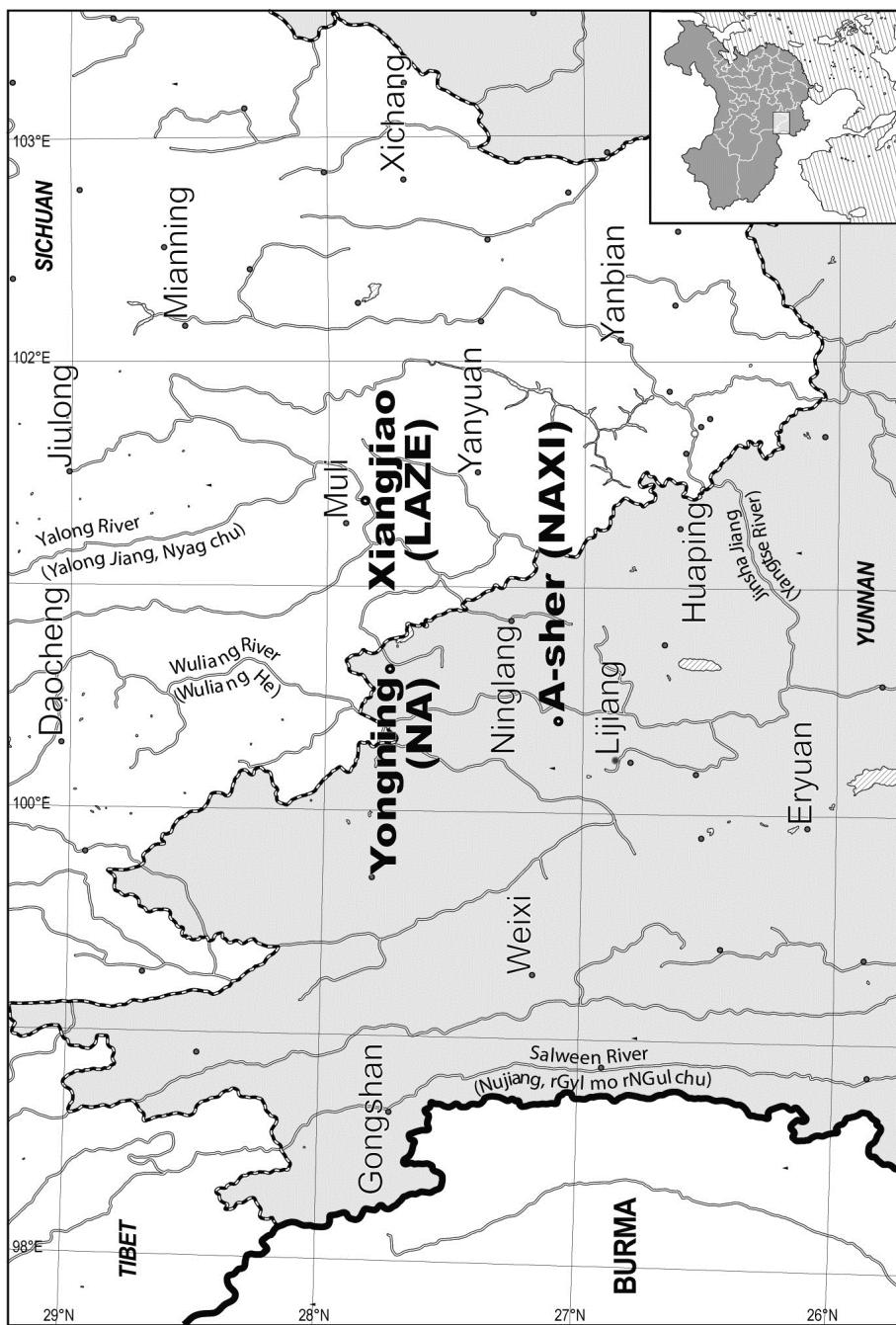
### *The Naish group and its position within Sino-Tibetan*

Although language classification is not the main focus of the present paper, it is essential to provide evidence of the close phylogenetic relatedness of Na, Laze and Naxi in order to legitimate the attempt made in the present article: to contribute to the reconstruction of their common ancestor, ‘Proto-Naish’, and to document the evolution from this common ancestor to Naxi, Na and Laze, which are referred to as ‘Naish languages’.

It is widely accepted in Chinese scholarship that Naxi and Na are closely related. He Jiren & Jiang Zhuyi (1985: 107) consider them as dialects of the same language, which they call “Naxi”, even though speakers of Na do not call their own language ‘Naxi’. The boundaries of ‘Naxi’ as defined by He & Jiang are so broad that they actually coincide with what we call Naish languages. ‘Naxi’ in the sense used in the present article (i.e. restricting its extent to the area where speakers use the name ‘Naxi’ for their own language) coincides with what He & Jiang refer to as ‘Western Naxi’ (纳西语西部方言), whereas they consider Na as part of a looser set of dialects to which they refer as ‘Eastern Naxi’ (纳西语东部方言). Laze is not mentioned in He & Jiang (*ibid.*); the question of its inclusion within Naish (‘Naxi’ as defined by He & Jiang) has been the object of some controversy in Chinese scholarship. With fewer than 300 proficient speakers, Laze is less well documented than the other two varieties. In their *History of the Naxi People*, Guo Dalie and He

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1. This language is also known as ‘Mosuo’; for a discussion of this exonym, see Yang Fuquan 2006.



**Figure 1.** Map showing the locations of fieldwork on Naxi, Na and Laze (in bold). The shaded area corresponds to the province of Yunnan.

Zhiwu, adopting the same broad understanding of the term ‘Naxi’ as He & Jiang, classify the Laze as one out of eight subgroups within the Naxi ethnic group on the basis of cultural and linguistic similarities with another proposed Naxi subgroup, the Nari 纳日 (Guo Dalie & He Zhiwu 1994 [2nd ed. 1999]: 6–7). Huang Bufan (2009: 55) expresses reservations on this topic, concluding that “...the relationship [of Laze] with Naxi, and its position within Tibeto-Burman, call for more in-depth investigation”. Our own research results point to a degree of closeness between Naxi, Na and Laze which is clearly greater than with other languages of the area. In addition to a fair amount of basic vocabulary, they share some lexical innovations. A short list of such probable innovations is provided in Table 18, including two disyllables: “medicine” and “noble”. Not all the words in the list belong to the basic vocabulary, witness the word for the Bai ethnic group. On the other hand, their correspondences for initials and rhymes all coincide with one of the regular phonetic correspondences brought out in this article, suggesting that they may all be actual cognates.

**Table 18.** A short list of probable Naish lexical innovations.<sup>[2]</sup>

meaning	Naxi	Na	Laze	Proto-Naish
to stumble	peɿ	k <sup>h</sup> uu.pi <sup>M</sup>		*(S)pa
cloud <sup>2</sup>	kiɿ	tçɪɿ	tçɪɿsʊɿ	*ki
village	hiɬmbɛɿ	f <sup>y</sup> .bi <sup>L</sup>	ɖwɿbɛɿ	*mba
Bai ( <i>ethnic group</i> )	leɬbyɿ	ɬi.bv <sup>M</sup>		*Sla
noble		sui.p <sup>h</sup> i <sup>M</sup>	suilp <sup>h</sup> ieɿ	*si p <sup>h</sup> a
medicine (2nd syllable)	tʂ <sup>h</sup> əɬuɿ	tʂ <sup>h</sup> æ.uɿ <sup>#H</sup>	ts <sup>h</sup> uɬfiɿ	*rts <sup>h</sup> i Swri

Moreover, Laze, Na and Naxi share structural properties of numeral-plus-classifier determiners which are not found in other languages of the area (Michaud forthcoming)

The boundaries of the Naish branch remain to be worked out in detail; the list of «subfamilies» (支系) of the “Naxi nationality” (纳西族) provided by Guo & He (1999: 5–9) can serve as a starting-point, keeping in mind that this list was essentially based on anthropological criteria, and that the inclusion of a language in the Naish branch requires a systematic comparative study such as the present one.

2. Lookalikes to this etymon are found in Lizu: /tce<sup>35</sup>/, Shangyou Shixing: /tçɪ<sup>55</sup>rō<sup>21</sup>/, and Xiayou Shixing: /ti<sup>55</sup>rō<sup>21</sup>/, as pointed out by Katia Chirkova (p.c.). The Shixing form, however, is more profitably compared instead to Proto-Lolo-Burmese \*C-dim<sup>1</sup> and Rgyalrong /zdum/. As for Lizu /tce<sup>35</sup>/, more research is needed to determine whether or not this could be an external cognate.

As for the position of the Naish languages within the Sino-Tibetan family, it remains controversial. Naxi was initially classified within the Loloish branch of Tibeto-Burman (Shafer 1955); however, Bradley (1975: 6) shows that it does not share the innovations that characterise this group and concludes that Naxi is “certainly not a Loloish language, and probably not a Burmish language either”. Thurgood (2003: 19) lists Naxi among the unsubgrouped languages of the Sino-Tibetan family. This issue links up with more general uncertainties about subgroupings within a relatively large portion of the family, which encompasses Lolo-Burmese and Qiangic. The Naish languages appear closely related to the Shixing language, spoken in Muli county, Sichuan, and which was initially classified by Sun Hongkai 2001 within a ‘Southern Qiangic’ branch on purely typological grounds. A relatively close relationship with other languages likewise classified as ‘Southern Qiangic’, such as Namuyi (a.k.a. Namuzi, Namzi) and Ersu, Tosu and Lizu, is also plausible; specific investigations are required to ascertain the degree of closeness between these languages. Bradley (2008) proposes the following set of hypotheses: Naxi and Na are closest to Namuyi, the second closest is Shixing, and the third closest is Ersu. In the family tree proposed in Figure 2, the name “Naic” is proposed for a node grouping Naish with Shixing and Namuyi.

Some of the groupings in Figure 2 are by now well-established, in particular the Rgyalrongic group (Sun 2000a). Higher-level groupings are more controversial. Under the present proposal, the Qiangic group only includes Rgyalrongic, Tangut, Pumi (a.k.a. Prinmi), Muya and Qiang, i.e. languages that can be shown to have an extensive amount of uniquely shared vocabulary (there remain doubts concerning Zhaba). Ersu, Tosu and Lizu are generally considered to be Qiangic languages, following Sun Hongkai’s 1983 classification (see e.g., Yu 2009), but evidence for their inclusion in this subbranch is weak; our hypothesis is that these languages may in fact belong to the Burmo-Qiangic group but not to Qiangic proper; more research is needed before any conclusion can be reached on this issue.<sup>3</sup>

The family tree outlined in Figure 2 reflects the hypothesis that Naish is closely related to Lolo-Burmese and Qiangic, and that it belongs in an independent branch of a larger Burmo-Qiangic group. This Burmo-Qiangic group is close to ‘Eastern Tibeto-Burman’ as proposed by Bradley 1997. This hypothesis will be briefly defended here on the basis of lexical evidence, since Lolo-Burmese and Naic languages have not preserved much morphology.

3. Fieldwork on these languages is underway, so that the necessary basis for comparative studies should become available in the near future: see in particular Chirkova 2008, 2009. Further research will also be necessary to clarify the relationship of Guiqiong and Tujia to the Burmo-Qiangic group as defined here.

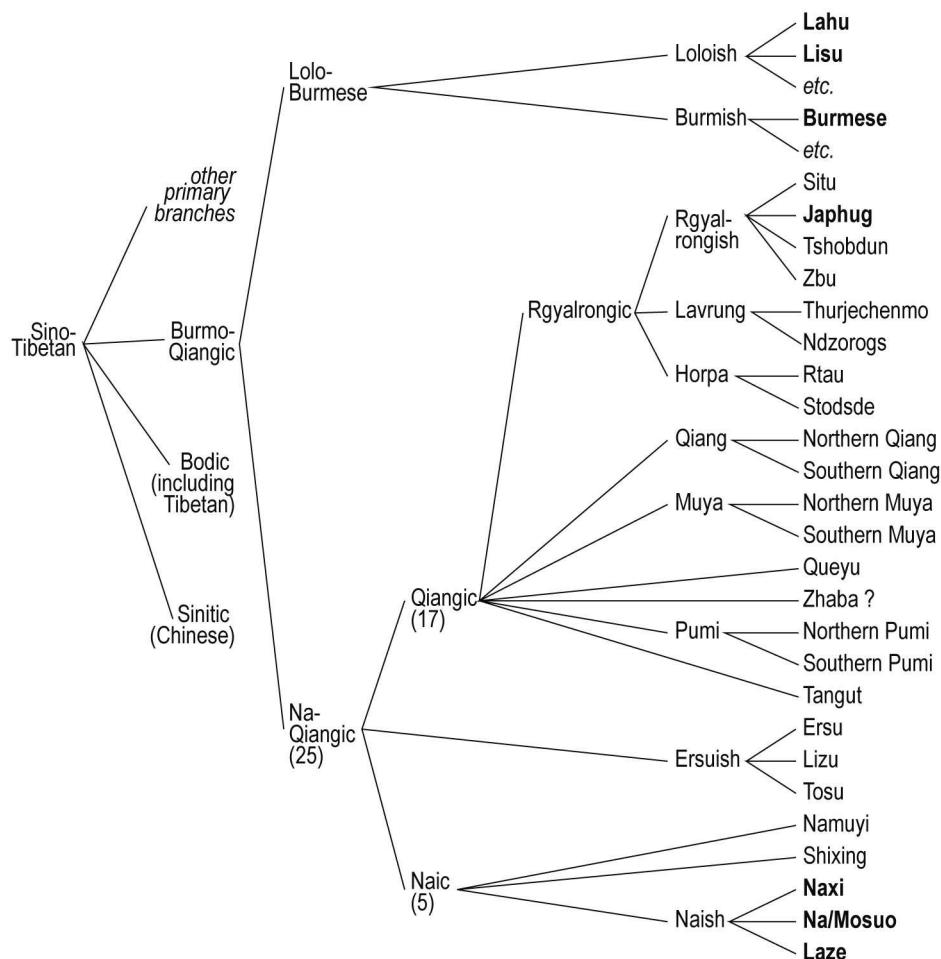


Figure 2. A tentative family tree showing the position of Naxi, Na and Laze within a Burmo-Qiangic branch of Sino-Tibetan.

One such piece of evidence is the suppletion found for the noun “year”, with a labial-initial root (Proto-Tangut \*C-pja) in “this year, next year, last year” and a different root (Proto-Tangut \*kjuk) with numerals: see Table 19. Rgyalrong has generalized the labial form (“next year” is innovative) and the velar root was lost. In Lolo-Burmese languages, only the root related to Tangut \*kjuk is found.

**Table 19.** Suppletion for the noun “year” in several Burmo-Qiangic languages. About the Proto-Naish forms, see Appendix 2, items a7.20 and u3.14

meaning	Tangut	Rgyalrong	Shuiluo Pumi	Muya	Proto-Naish
last year	.ji <sup>2</sup> .wji <sup>1</sup>	japa	zépə	jo <sup>33</sup> za <sup>24</sup>	...*C-ba
this year	pji <sup>1</sup> .wji <sup>1</sup>	γwipa	pəpá	pə <sup>33</sup> βə <sup>53</sup>	...*C-ba
next year	sji <sup>1</sup> .wji <sup>1</sup>	fsq̥h <sup>e</sup> < *psanj-q <sup>h</sup> o-j	zək <sup>h</sup> iú	sæ <sup>33</sup> βə <sup>53</sup>	...*C-ba
one year	.a-kjiw <sup>1</sup>	tū-xpa	tá-kó	te <sup>55</sup> -kui <sup>53</sup>	...*k <sup>h</sup> u
two years	nji <sup>1</sup> -kjiw <sup>1</sup>	vnwi-xpa	jí-kó		...*k <sup>h</sup> u

Table 20 presents a preliminary list of common etyma between Qiangic, Naish and LB not found elsewhere in ST (to the best of our knowledge). It should be kept in mind that finding uniquely shared lexical innovations is a difficult task. This short list will require revision in future; if the hypothesis is correct, it is expected that an increasing number of cognates and uniquely shared lexical innovations will come to light.

**Table 20.** Correspondences for lexical items that may constitute Burmese-Qiangic innovations. The Naish forms are Na, apart from those marked as NX, which are from Naxi. Achang belongs to Burmish, and Hani to Loloish.

meaning	Rgyalrong (S=Situ)	Tangut	Naish (NX=Naxi)	Proto- Naish	Burmese	Achang	Hani
copula	ŋu	ŋwu <sup>2</sup>	ŋiH	?			ŋui <sup>31</sup>
star	zŋgri	gjj <sup>1</sup>	kui <sup>1</sup>	*kri	kray <sup>2</sup>	k <sup>h</sup> zə <sup>55</sup>	a <sup>31</sup> gu <sup>55</sup>
forget	jmuut	mji <sup>2</sup>	my.p <sup>h</sup> æ <sup>L+MH#</sup>	*mi	me <sup>1</sup>	ji <sup>35</sup>	ni <sup>55</sup>
be ill	ngo < *nganj	ŋo <sup>2</sup>	guJ	*go			
flint	zduurtsa		tse.mi <sup>H#</sup>	*tsa			
to hide	nŋtsuu		tsuł NX	*tsu			
to swallow	mqlaš		ŋy <sup>1</sup>	*NqU < *Nqak			
dry	spuu		py <sup>1</sup>	*Spu			
thick	jaš	laa <sup>1</sup>	loł <sup>1</sup>	*laC <sub>2</sub>			
jump	mtsaš		ts <sup>h</sup> oł	*ts <sup>h</sup> aC <sub>2</sub>			
winter	qartsuu	tsur <sup>1</sup>	ts <sup>h</sup> ił	*ts <sup>h</sup> u	c <sup>h</sup> on <sup>3</sup>	tc <sup>h</sup> ɔη <sup>31</sup>	ts <sup>h</sup> ɔ <sup>31</sup> ga <sup>33</sup>
knee	tə-mŋa S	ŋwer <sup>2</sup>	ŋwŋ.ko <sup>H#</sup>	*ŋwa			
sun	vnbyi	be <sup>2</sup>	bił NX	*bi			

Note that the inclusion of Rgyalrongic within Qiangic contradicts LaPolla's hypothesis of a Rung group, distinct from Qiangic, that would include Rgyalrongic as well as Kiranti and Dulong/Rawang. LaPolla's proposed grouping is based on the hypothesis that the morphology found across these languages is a common innovation (LaPolla 2003: 30 and references therein). However, the comparison of Rgyalrong to Kiranti reveals very little common vocabulary: a careful examination of Boyd Michailovsky's unpublished Kiranti etymological dictionary brought out less than 150 potential cognates, which are too widespread within the Sino-Tibetan family to be convincing instances of shared innovation. If Rgyalrong and Kiranti were closely related in the Sino-Tibetan family tree, one would expect more cognate vocabulary, including some lexical innovations.

The view of the Sino-Tibetan family presented in Figure 2 has the important implication that any morphology that is found in both Rgyalrong and Kiranti, or Rgyalrong and Tibetan, must be of great antiquity (predating the split between Proto-Burmo-Qiangic and other branches), and that it was lost almost without traces in Lolo-Burmese and Naish. In this light, vestigial phenomena such as the traces of vowel alternation found in the Naic language Shixing (Chirkova 2009) deserve special attention: they may point to an earlier verb conjugation system.

#### *Why no comparison with languages closely related to the Naish languages was attempted in the present research*

The phylogenetic distance between Naish, Rgyalrong and Burmese is relatively great — although we believe that they belong together with the Naish languages in a Burmo-Qiangic branch of Sino-Tibetan, as explained above. The distance between Naish and Tibetan is even greater. Some justifications must be provided for referring to these distant languages in the reconstruction of Proto-Naish, instead of relying on data from Shixing, Namuyi and Ersu/Tosu/Lizu, which, while they do not belong to the Naish branch by our criteria, appear to be its closest relatives and could belong in a Naic group (see Figure 2). There are in fact three pressing reasons not to attempt to incorporate data from these languages at the present stage. (i) Available phonemic analyses for these languages are not fully satisfactory. A thorough synchronic description, including a complete inventory of syllables, is required before these languages can be put to use in historical comparison. In the case of the Naish languages, a preliminary to the present research consisted in elaborating a comprehensive synchronic phonological analysis. By 'comprehensive', we mean an analysis which, in addition to the inventory of vowel and consonant phonemes in the language, comprises a list of all attested syllables. As the Naish languages tend to present many phonological contrasts in restricted contexts, the inventory of syllables is necessary to study the full extent of gaps

in the combinations of onsets and rhymes. For Shixing, Namuyi and Ersu, such inventories are not yet available. (ii) In addition to this practical reason, there is a methodological reason for postponing comparison with these languages: they are almost as eroded as the Naish languages, and therefore extremely difficult to use for comparative purposes. Naish, Shixing, Namuyi and Ersu have undergone an enormous amount of phonological changes independently from one another, and do not share most of their phonological innovations. Comparing them directly to one another only yields a lengthy list of opaque correspondences, offering precious few insights as to how these correspondences should be sorted out and reconstructed. Since these languages are mostly isolating and have almost no inflections (except in their tonology), we cannot rely on the reconstruction of vowel alternations to solve these issues. (iii) Last but not least, areal diffusion has had a conspicuous influence on Shixing and Namuyi, whose speakers are currently multilingual, raising with extreme acuteness the classical issue of inheritance versus borrowing (about which see Aikhenvald & Dixon 2001, among others).

## **Appendix 2. Examples of five rhymes of Proto-Naish (\*a, \*i, \*o, \*u and \*aC<sub>1</sub>/\*aC<sub>2</sub>) with comparanda in the conservative languages and proposed reconstructions.**

The question mark after a reconstructed form indicates that this form has other possible origins, and that the form indicated is a rule-of-thumb hypothesis. The “Ref[erence]” consists of (i) the proto-vowel, (ii) the number assigned to the vowel correspondence among the three Naish languages under study, and (iii) the number assigned to the cognate set. In the “HTB” column, we indicate the page number corresponding to the etymon in Matisoff’s handbook (2003). The words provided in the “Rgyalrong” column are Japhug Rgyalrong forms, except those with the mention “(Situ)”, which are Situ Rgyalrong forms from Huang Liangrong & Sun Hongkai 2002. The notation of the tones for Na disyllables follows the conventions set out in Michaud (2008). Finally, it must be emphasised that the data in the “other languages” column are not part of the comparative study carried out here: these potential cognates are provided solely as stepping-stones for future comparative work with these languages (Tangut, Pumi and Lisu). For Pumi, SL refers to the Shuiluo dialect (unpublished fieldwork data), and LP to the Lanping dialect (Lu Shaozun 2001). Personal communications from James Matisoff are labelled “(JAM)”.

Table 21. Rhyme \*-a

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	other languages	Naxi	Na	Laze	Proto-Naish
to win	a1.01		β̥a				ŋgaɻ	ŋaɻ		ŋga/aC <sub>1</sub>
strength <sup>4</sup>	a1.02	170–4				Tangut yie <*C-ka	kaɻtuiɻ	ŋaɻ	ŋaɻziɻ	Nka/aC <sub>1</sub>
bitter	a1.03	164–8		kha <sup>3</sup>	kʰa		kʰaɻ	qʰaɻ	kʰaɻ	kʰa/aC <sub>1</sub>
to step across	a1.04		mbla					ŋaɻ	(dɯɻ) ŋaɻ	ŋga/aC <sub>1</sub> (or Nka/aC <sub>1</sub> )
difficult <sup>5</sup>	a1.05		nqa		dka			lo.ha <sup>M</sup>	luɻhaɻ	Cka/aC <sub>1</sub>
knee <sup>6</sup>	a2.01		tə-mnja (Situ)			Tangut ŋwer <sup>2</sup> <*rŋwa	ŋwŋ.ko <sup>H#</sup>	ŋwaɻtuɻ	ŋwa	
bowl	a2.02				Pumi kʰwǎ	kʰwal	qʰwŋH	kʰwŋJ		kʰwa
hoof	a2.03	170	tui-qa		Pumi kwá	kʰwaɻ	qʰwŋ.ʂe <sup>L#</sup>	kʰwŋɻbieɻ		kʰwa
a pair	a3.01						dzeɻ	dzeɻ		dza
to lock	a3.02						tseɻ	tseɻ		tsa
wheat <sup>7</sup>	a3.03	162–5	ndza	ca <sup>3</sup>	za		dzeɻ	dze.lu <sup>M</sup>	dzeɻ	dza
naemorhedus goral	a3.04						seɻ	seɻ	seɻ	sa
steel (for flint)	a3.05		ŋduurtsa				tseɻmaɻ	tse.mi <sup>H#</sup>	tseɻmieɻ	tsa
salt	a3.06	172		cha <sup>3</sup>	tsʰwa		tsʰeɻ	tsʰeɻ	tsʰeɻ	tsʰa

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	other languages	Naxi	Na	Laze	Proto-Naish
nephew	a3.07	171–2	tuu-ftsa		ts <sup>h</sup> a-bo		dzeɻuɻ	ze.y <sup>L</sup>	zeɻ	Cdza
to walk	a3.08						seɻ	seɻseɻ	sa	
to borrow	a4.01	162–5		hnja <sup>3</sup>	rjna		ŋjɻ	ŋjɻ	ŋjɻ	ŋji/a
fish	a4.02	162		ŋa <sup>3</sup>	ŋa		ŋjɻ	ŋj.i.zu <sup>#H</sup>	jilzəɻ	ŋji/a
span	a5.01		tuu-tya	thwa <sup>2</sup>	mt <sup>h</sup> o			tiɻ		twa
					< *mtwa					
tooth	a5.02	171–2	tuu-cya	swa <sup>3</sup>	so < *swa		huɻ	hiɻ	fiɻt <sup>h</sup> uɻ	Swa
rain	a5.03	171–3		rwa <sup>2</sup>			huuɻ	hiɻ	fiɻ	Swa
lake	a5.04				mts <sup>h</sup> o		huuɻ	hi.na.	fiɻ	Swa
					< *m-swa			mi <sup>LM+#H</sup>		
cow	a5.05				Tangut ŋwe <sup>2</sup> < *ŋwa	urɻ	iɻ	viɻ	wa	
to fall (rain)	a6.01		ŋgra “to fall”	kya <sup>1</sup>			guɻ	giɻ		gra
meat	a6.02			sa <sup>3</sup>	ca		ʂurɻ	ʂeɻ	ʂurɻ	ca
earth <sup>8</sup>	a6.03						ʈʂurɻ	ʈʂeɻ	ʈʂurɻ	tra
axe	a7.01	171–2	tuu-rpa				laɻmbeɻ	bi.mi <sup>L</sup>		(S)mba
to stumble	a7.02						peɻ	k <sup>h</sup> u.pi <sup>M</sup>		(S)pa
Bai ( <i>ethnic group</i> )	a7.03						leɻbyɻ	ti.bi <sup>M</sup>		Sla
linen	a7.04						p <sup>h</sup> eɻ	p <sup>h</sup> iɻ		(S)p <sup>h</sup> a

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	other languages	Naxi	Na	Laze	Proto-Naish
knife	a7.05	162		dha <sup>3</sup>			zu tʰe	sui.tʰi <sup>L</sup>		tʰa
noble	a7.06							sui.pʰi <sup>M</sup>	sui.pʰie	pʰa
soul <sup>9</sup>	a7.07	162	tuu-rla	see footnote	bla/brla		olhe	æ.i <sup>L+H</sup>	æ.jie	la
thin	a7.08	162	mba	pa <sup>3</sup>			mbe	bil	tʰa bie	mba
snow	a7.09	172	tʂ-jpa				mbe	bil	vie	Smba
village	a7.10						hi mbe	fy.bi <sup>L</sup>	du bie	mba
to do	a7.11		pa		byed		be	i	vie	Cba
tea	a7.12	48					le	li	lie	la
moon	a7.13	162–4	tuu-sla	la <sup>1</sup>	zla-ba		le	ti.mi <sup>M</sup>	tie mie	Sla
ear	a7.14	162–5	tuu-rna	na <sup>3</sup>	rna		he tsu	ti.pi <sup>L#</sup>	tie tu	la
trousers	a7.15	163–5				Tangut ljii <sup>1</sup> < *ljaa	le	ti.qʰwʂ <sup>L</sup>	tie kʰwʂ	Sla
female	a7.16	175		ma (suffix)			me	mi	mie	ma
ask for	a7.17						me	mi	mie	ma
butterfly	a7.18		qambaluла				pʰe le	pʰi.li <sup>L#</sup>	pʰie lie	pʰa la
rabbit <sup>10</sup>	a7.19		qala				tʰo le	tʰu.li <sup>M</sup>	tʰu lie	la
this year	a7.20		tuu-xpa				tsʰur be	tsʰi.i <sup>(M)</sup>	tsʰu vie	Cba
who	a7.21						əne	ni		na

4. It is likely that “to win” \*ŋga/aC<sub>1</sub> and “strength” \*Nka/aC<sub>1</sub> originally belong to the same root, but they need to be distinguished at the Proto-Naish stage. A relationship with Burmese a<sup>3</sup> and its Lolo-Burmese cognates (Matisoff 2003: 170) is possible.

5. We also find forms such as Lahu /ha<sup>11</sup>/ “difficult” (Matisoff 1988: 1066), which could point to an alternative etymology.

6. The Na word is pronounced [ŋwɔ̝]. Since the combination of an initial velar and a rhyme /wa/ is not attested in Na, one may consider that the contrast between the rhymes /wɔ̝/ and /wa/ is neutralised in this context, and hence compare Na [ŋwɔ̝] with Laze [ŋwa].
7. This was originally a nominalised form of the verb ‘to eat’; a semantic change from ‘food’ to ‘wheat’ occurred in this etymon. The free verb “to eat” in Naish, /dzul/ in Na and /ndzul/ in Naxi, points to a reconstruction \*ndzi in Proto-Naish, which is not compatible with the vowel in the languages of reference. The \*-a / \*-i alternation found in this pair of words can only be a trace of morphology. The rhyme \*-i of the verb might be the result of the fusion of the root with a suffix. Such a phenomenon is found in Rgyalrongic languages: in Japhug Rgyalrong, transitive verbs with open-syllable -a final (including *ndza* “to eat”, the cognate of Proto-Naish \*ndzi) have a non-past form singular stem in -e (for instance /ndze/ “he eats”) that results from the fusion of the root vowel with a suffix \*-jø attested as a free form in other Rgyalrongic languages (Jacques 2004: 356). An explanation for the form \*ndzi in Naish is that it represents the generalisation of the non-past form of the verb, thereby preserving a trace of a historical stage when Naish languages had verbal morphology of the type that Rgyalrong preserves to this day.
8. This form is perhaps relatable to the second syllable of Lahu /mi<sup>21</sup>cha<sup>53</sup>/ “earth” (JAM).
9. Two competing Burmese etymologies exist for this etymon: *lip pra*<sup>1</sup> “soul” and *hla*<sup>1</sup> “beautiful” (Matisoff 2003: 62).
10. Similar names are found in other languages, for instance Lahu /t<sup>b</sup>ɔ̝<sup>53</sup>la<sup>21</sup>/ “year of the rabbit” (JAM).

Table 22. Vowel \*-i

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other languages	Naxi	Na	Laze	Proto-Naish
goat	i1.01	315	ts <sup>h</sup> ȝt	chit			ts <sup>h</sup> uŋ	ts <sup>h</sup> uŋ	ts <sup>h</sup> uŋ	ts <sup>h</sup> i
oat <sup>11</sup>	i1.02	189					muŋzurŋ	my.zuu <sup>L</sup>	my.zuuŋ	zi
south	i1.03						iŋ[ʂ <sup>h</sup> uŋmuŋ] MHL	i.ʂ <sup>h</sup> uu.mi	iŋ[ʂ <sup>h</sup> uŋmieŋ]	tç <sup>h</sup> i
grass	i1.04						zuŋ	zuŋ	zuŋ	zi
skin	i1.05	189	tui-ndži	re <sup>2</sup>			uŋp <sup>h</sup> iŋ	uŋ	zuaŋkyŋ	ri
yellow	i1.06	191					ʂuŋ	ʂuŋ kɔŋ laeŋ	ci	
to know	i1.07	206	suis	si <sup>1</sup>	ces		suŋ	suŋ	suŋ	si
to die <sup>12</sup>	i1.08	189	si	se <sup>2</sup>	ci		ʂuŋ	ʂuŋ	suŋ	rsi
to thread (beads)	i1.09					Lisu suu <sup>33</sup>		suŋ	suŋ	si
new	i1.10	344	ɛŋγy	sac			ʂuŋ	ʂuŋ	ʂuŋtsaŋ	ci
to tie	i1.11		ts <sup>h</sup> ik <sup>33</sup> (Situ)				tsuŋ	tsuŋ	tsuŋ	tsi
morning	i1.12						myʂsuŋturŋ	my.su L+MH#		si
girl	i2.01	187	tui-me	min <sup>3</sup>			miŋ	myŋ	myŋ	mi
fire	i2.01	206	smi	mi <sup>3</sup>	me		miŋ	myŋ	myŋ	mi
to hear	i2.02					Pumi mɛ̃ <sup>3</sup>	k <sup>h</sup> oŋmiŋ	myŋ	myŋ	mi

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other languages	Naxi	Na	Laze	Proto-Naish
to forget	i2.03		jmuṭ	me <sup>1</sup>			le̤mil	my.p <sup>h</sup> æ L+MH#	læ̤lm̩yJ	mi
lower side	i2.04						mṳltʰæ̤l	my.t <sup>h</sup> æ̤M	y̤t <sup>h</sup> æ̤l	mi
name	i2.05	296	tʂ-rmi	maŋ <sup>2</sup>	ming		miJ	my.ʈʂæ̤MH#		mi
star <sup>13</sup>	i3.01	212	zŋgri	kraŋ <sup>2</sup>			kuuJ	kuuL	tsiH	kri
gallbladder	i3.02	189	tui-ckrutt	sap <sup>3</sup> khre <sup>2</sup>	mkʰris		kuuJ	kuuL	tsiJ	kri
medicine	i3.03	189		che <sup>3</sup>	rtsi		ʈʂʰə-kuuH	ʈʂʰə.uu <sup>#H</sup>	tsʰuHfiH	rtsʰi Swri
tight	i3.04	305			grim-po		kuuL	tsiL		kri
liver	i4.01	297	tui-mtsʰi	sap <sup>3</sup>	mtcʰin		səL	siH	siL	siN
wood	i4.02	347	si	sac	çin		səH	siL	siL	siN
to shave	i4.03						siH	siLsiH		siN
hot	i4.04						tsʰəH	tsʰiH	tsʰiH	tsʰiN
to plane down	i5.01						tʰiJ	tʰiJ		tʰi
water	i5.02		tui-ci				giJ	dziJ		gi
to flow	i5.03		jit				iJ	ziH		ji
tongue	i5.04	215		lhya <sup>2</sup>	ltce		hiL	hi.miL	çilmieJ	hi
two	i5.05	434	ʂnuus	hnac	gnis		ŋiH	ŋiH	ŋilgyJ	ŋi/a
sweet <sup>14</sup>	i5.06		cʰi				kʰiJ	tçʰiJ	tsʰiJ	kʰi
to sell	i5.07		ntsye				tçʰiH	tçʰiH	tçʰi	tçʰi
thorn	i5.08						kʰiH	tçʰiH	tçʰiHtuJ	tçʰi

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other languages	Naxi	Na	Laze	Proto-Naish
muntjac	i5.09	189		khye <sup>2</sup>			kʰi˥	tɕʰi˥	tsʰi˥	kʰi
saliva <sup>15</sup>	i5.10		tuu mci				kil	tci˥	tci˥	tci
saddle	i5.11				Pumi: stʃé tʂhő (LP), ci <sup>2</sup> (SL)	zwaɻkil kʰo˩	tci˥	tci˩qʰɔ˥	tci	
small	i5.12		xtci				kil	tci <sup>L</sup>	tci˩	tci
to sleep <sup>16</sup>	i5.13	500	nwuzuw	'ip			il	zi˥	zi˩	ji
to walk	i5.14		ŋke				ŋgi˧			ŋgi
to lose	i5.15						ŋi˥			ni
cloud	i5.16						ki˩	tci˧	tci˩sui˥	tci
urine	i5.17		tuu-rmbi		Pumi bī <sup>2</sup> (SL)	mbi˧				mbi
pus	i6.01			praj <sup>2</sup>			mbə˩	bæ˧	bæ˩	priN
short	i6.02						ndə˧	dæ˧	dæ˧l	rdiN
grain	i6.03						lə˧	ɟæ˧	læ˩	rliN
neck <sup>17</sup>	i6.04				mgrin	Pumi kẽ <sup>2</sup> (SL)	kjə˧pə˩	kæ˧.t̪y <sup>H#</sup>	kæ˧sə˧pə˧	C-NkriN
resin	i6.05						tho˧ŋjə˩	tʰo.ka˧	thu˧ka˧	C-ŋriN
rope	i6.06		tuu-mbri		mbren			bæ˧		briN
guest	i6.07		tuu-pi				bə˧	hĩ.bæ˧ <sup>H</sup>		briN

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other languages	Naxi	Na	Laze	Proto-Naish
long	i6.08	280–2	zri		riŋ	Pumi ſɛ <sup>1</sup> (SL)	ʂəɻ	ʂæɻ		ciN
hunt	i6.09						ʂəɻ	kʰv̥ʂæɻ		ciN
articulation	i7.01		tui-rtsʰy	chac	tsʰigs		ʈʂəɻ	ʈʂæɻ	tsuɻ	rtsi
wash	i7.02		χtci (Situ rtci)				ʈʂʰæɻ	ʈʂʰæɻ	ballal tsʰuuɻ	rtsʰi
medicine	i7.03			che <sup>2</sup>	rtsi		ʈʂʰəɻuɻ	ʈʂʰæ.u.ɯ <sup>#H</sup>	tsʰuɻ fiɻ	rtsʰi
waist	i7.04						i.ʈʂæ <sup>L+MH#</sup>	iɻtsuɻ		rtsi

11. Proto-Lolo-Burmese \*zəy<sup>2</sup> “barley” (JAM).

12. The reconstruction of the cluster \*rs for this word results from the application of the same principle as for other cases where a retroflex initial in Na and Naxi corresponds with a dental initial in Laze. This reconstruction is not supported by comparative evidence from the conservative languages. The cluster in \*rsi could be a trace of morphology that had developed in Proto-Naish.

13. Matisoff (1980) has proposed a detailed etymology for this etymon common to Naish, Lolo-Burmese and Qiangic languages.

14. This etymon is perhaps related to Burmese *khyui*<sup>2</sup> (cf. Matisoff 2003: 182).

15. This root could be related to ‘water’ (cf. Matisoff 2003: 451).

16. The correspondence of initials for this item is problematic. The reconstruction proposed here rests on the hypothesis that \*ji changed to /zi/ in Laze. Crucial evidence would come from other instances of the correspondence /i:zi:zi/.

17. The rhyme in the Naxi dialect studied here is /æ/ /kjaɻpəɻ/; however, this is due to an innovation found in this dialect: the merger of /ə/ and /æ/ (to /æ/) after S-, TS- and Kj-, where S- stands for coronal fricatives, TS- for coronal affricates, and K for velar stops. The conservative form is /kjaɻpəɻ/, as found in the variety of Naxi spoken in the city of Lijiang (Fang Guoyu & He Zhiwu 1995: 432), where the contrast between /ə/ and /æ/ is preserved in these contexts. Note that \*NkriN and \*ngriN do not follow the same phonetic evolution as \*kri, otherwise one would expect the correspondence n̩gu:ku:ndzi.

Table 23. Vowel \*-o

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
bright <sup>18</sup>	o1.01						mbuɬ	buɬ		mbo
dike	o1.02						mbuɬ	buɬ	buɬtuɬ	mbo
home	o1.03						miɬuɬ	a.ku <sup>LM</sup>	aɬuɬ	o
younger	o1.04						guɬmeɬ	gu.mi <sup>M</sup>	guɬmieɬ	go
sister										
winnowing	o1.05						muɬ	p <sup>h</sup> .mu <sup>L#</sup>	muɬ	mo
fan										
lunch	o1.06						zuɬ	zu.dzu <sup>L</sup>	zuɬ	Cro
cold	o1.07	262	γγndzo		graŋ-mo			dzuɬ	dzuɬ	ndro
(weather)										
this morn-	o1.08							[s <sup>h</sup> wa.ʂu <sup>(M)</sup>	ts <sup>h</sup> iʂuɬ	co
ing										
to run away	o1.09	294	p <sup>h</sup> yo		mbros		p <sup>h</sup> uɬ	p <sup>h</sup> uɬ	p <sup>h</sup> uɬ	p <sup>h</sup> o
head <sup>19</sup>	o1.10		tuu-ku		mgo		kulliyɬ	eu.q <sup>h</sup> wɔ <sup>L#</sup>	uɬtuɬ	SNko
corpse	o1.11	265				Tangut mjj <sup>2</sup>	ʂuɬmuɬ	hĩ.mu <sup>L#</sup>	hĩɬmuɬ	mo
to spread	o1.12		ck <sup>h</sup> o	khan <sup>3</sup>			k <sup>h</sup> uɬ	k <sup>h</sup> oɬ	k <sup>h</sup> uɬ	k <sup>h</sup> o
tomorrow <sup>20</sup>	o1.13		fso		san jin		soɬŋiɬ	so.nj <sup>H#</sup>	miɬsuɬ	so
pine	o1.14	264	tɔt <sup>h</sup> o	than <sup>3</sup>	t <sup>h</sup> aŋ		t <sup>h</sup> oɬndzæɬ	t <sup>h</sup> o.dzi <sup>L#</sup>	t <sup>h</sup> uɬsiɬ	t <sup>h</sup> o
be ill	o1.15		ngo				ŋguɬ	goɬ		ŋgo
mushroom	o1.16	183–4	tɔ jmɔŋ	hmui <sup>2</sup>	mog ca		mul	muɬ	muɬ[s <sup>h</sup> wɔɬ]	mo

18. Possibly related to Lahu /ba<sup>33</sup>/ “bright”, though the vowel correspondences are problematic.
19. A comparison with Tibetan *dbu* “head” and Burmese *u<sup>2</sup>* “head” is tempting, but the vowels do not match.
20. In Lolo-Burmese, one finds cognates that point to a rhyme \*-ak rather than \*-aŋ as do the Naish and Tibetan forms.

Table 24. Vowel \*u

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
ring <sup>21</sup>	u1.01						laʃpəl	lo.pv <sup>L+MH#</sup>	laʃtʰwɔl	pru
comb <sup>22</sup>	u1.02						pəl	pv.mi <sup>L</sup>		pru
yak	u1.03		qambru		mbri		bəʃ	bv.H	bvʃ	bru
white <sup>23</sup>	u1.04		wyrum		mpʰrum		pʰəʃ	pʰvʃ	pʰvʃ	pʰru
to hoe up	u1.05						pəʃ	pvʃ	pvʃ	pru
vertical	u2.01						tsuʃ	gʃ̚.tsi <sup>LM</sup>		tsu
to sit	u2.02		mdzu				ndzuʃ	dziʃ	dzyʃ	ndzu
winter	u2.03		qartsu	chon <sup>3</sup>			muɻtsʰwɔʃ	tsʰil	muɻtsʰyʃbieʃ	tsʰu
to hide	u2.04		nʃ̚tsu				tsuʃ			tsu
bald	u3.01							ɛu.bv <sup>MH#</sup>	bvʃ	bu
bug	u3.01			pui <sup>3</sup>	mbu		biɻdiʃ	bvʃ		bu
to lay eggs	u3.02	57				Pumi pʒ <sup>3</sup> (SL)	bvʃ	bvʃ		bu
pan	u3.03					Tangut .wju <sup>1</sup> < Cpo	bvʃ	vʃ	vʃmieʃ	Cbu
maternal uncle	u3.04			u <sup>3</sup>	a-kʰu		əʃgvʃ	ə.v <sup>MH#</sup>	ævʃ	Cgu

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
to sew	u3.05	141	tʂwβ	khyup	ndrub		zy˧	zy˧˥	zy˧	C-ru
creased, wrinkled	u3.06		aʂruwru					la.zy.zy˧˥		C-ru
to pass (time)	u3.07						gy˧	gy˧	gy˧	gu
body	u3.08	198	tuu-skʰruu	kuiy <sup>2</sup>	sku		gy˧	gy.mi <sup>M</sup>	ɖuʂtgy˧ɖuʂtdzi˧	gu
plow	u3.09							æ.gy <sup>L</sup>	ʃʂgvy˧	gu
to fix <sup>24</sup>	u3.10			ku <sup>1</sup>			gy˩	gy˩	gy˩	gu
nice	u3.11						gy˧	gy˧		gu
bent	u3.12	357	ŋgɔŋy		gug		gy˩	la.gy <sup>LM</sup>	laŋgy˧	gu
owl	u3.13		pŋɔ-kʰuu				buʃfy˧		buʃluʃfy˧	hu
year	u3.14		fsɔŋqʰe			Pumi ko <sup>2</sup> (SL)	kʰy˧	kʰy˧˥	kʰy˧˥	kʰu
to steal	u3.15	182	muurkuu	khui <sup>3</sup>	rku		kʰy˩	kʰy˧	kʰy˧	kʰu
classifier (men)	u3.16						ky	ky	ky	ku
Bai ethnic group	u3.17						leʈby˧	ʈi.bv <sup>M</sup>		la bu
to bark <sup>25</sup>	u3.18						ly˩	kʰwɿ l y˧		lu
enough	u3.19	357		lok			ly˩	ly˩	ly˩	lu
to wind (thread) <sup>26</sup>	u3.20						ndy˧	ly˧		lu
larva	u3.21		qaŋuu				ly˧		muʈkʰyɿy˧	lu
to graze	u3.22		lŋy				ly˧	ly˧˥	ly˧	lu

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
beard	u3.23						my <sup>l</sup> tsu <sup>l</sup>	my.tsu <sup>MH#</sup>	my <sup>l</sup> tsu <sup>l</sup>	mu
to dig	u3.24	184		tu <sup>3</sup>			ndy <sup>l</sup>	dy <sup>l</sup>		ndu
poison	u3.25	357	t <sup>g</sup> -nd <sup>g</sup> y		dug		ndy <sup>l</sup>	dy <sup>l</sup>	dy <sup>l</sup>	ndu
wing	u3.26	285			Pumi diō <sup>3</sup> (SL)	ndy <sup>l</sup> p <sup>r</sup> i <sup>l</sup>	dy <sup>l</sup>	dy <sup>l</sup> ts <sup>b</sup> uu <sup>l</sup>		ndu
sickle	u3.27						ʂ <sup>l</sup> ky <sup>l</sup>	ʂ <sup>l</sup> .gy <sup>L</sup>	hū <sup>l</sup> gy <sup>l</sup>	Nku
to steam	u3.28				Pumi bu <sup>3</sup> (SL)	py <sup>l</sup>	by <sup>l</sup>	by <sup>l</sup>		Npu
saddlecloth	u3.29						kilny <sup>l</sup>	tçi.ny <sup>L+MH#</sup>		nu
thunder	u3.30						mu <sup>l</sup> ngy <sup>l</sup>	mv.gy <sup>#H</sup>	mu <sup>l</sup> gy <sup>l</sup>	ngu
sinew	u3.31		tuu-ŋgru				ŋgy <sup>l</sup>			ŋgu
nine	u3.32	182	kunguit	kui <sup>3</sup>	dgu		ŋgy <sup>l</sup>	gv(†)	gv <sup>l</sup> gy <sup>l</sup>	ŋgu
to cry	u3.33	182	γ <sup>g</sup> wu	ŋui <sup>2</sup>	ŋu		ŋy <sup>l</sup>	ŋy <sup>l</sup>	ŋy <sup>l</sup>	ŋu
silver	u3.34	414– 415		ŋwe <sup>2</sup>	dŋul		ŋy <sup>l</sup>	ŋy <sup>l</sup>	ŋy <sup>l</sup>	ŋu
price	u3.35	183– 184	uu p <sup>b</sup> uu	phui <sup>3</sup>			ka <sup>l</sup> p <sup>b</sup> y <sup>l</sup>	ka.p <sup>b</sup> y <sup>#H</sup>	ka <sup>l</sup> p <sup>b</sup> y <sup>l</sup>	p <sup>b</sup> u
male	u3.36				p <sup>b</sup> o		p <sup>b</sup> y <sup>l</sup>			p <sup>b</sup> u
uncle's uncle	u3.37		tuu-rpuu				p <sup>b</sup> y <sup>l</sup>	ə.p <sup>b</sup> y <sup>M</sup>	ælp <sup>b</sup> y <sup>l</sup>	p <sup>b</sup> u
bladder	u3.38				Lisu si <sup>31</sup> p <sup>b</sup> u <sup>31</sup>		su <sup>l</sup> py <sup>l</sup>	su <sup>l</sup> .py <sup>L#</sup>	su <sup>l</sup> py <sup>l</sup>	pu
amber	u3.39						py <sup>l</sup> ʂu <sup>l</sup>	py.ʂu <sup>L#</sup>	?	pu

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
rock	u3.40				rdo (?)			æ.ɿ̥ <sup>LML</sup>		rtu
intestine	u3.41	180	tuu-pu	u <sup>2</sup>	p <sup>h</sup> o-ba		bṿl	ɿ̥nəl		Sbu
garlic	u3.42		cku		sgog	kỵl	kỵl	f̣ỵl		Sku
kidneys	u3.43		tuu-	mb̥g̥tum		mbỵllỵl	bṿ.luu <sup>L</sup>	ɿ̥lli <sup>L</sup>		Smbu
dry	u3.44		spw			pỵl	pỵl	læʃf̣ỵl		Spu
to go out <sup>27</sup>	u3.45			thut		t <sup>h</sup> ỵl	t <sup>h</sup> ỵl	t <sup>h</sup> ỵl		t <sup>h</sup> u
to contaminate	u3.46						tsṿl	tsṿl > ts̥ṿl[tsṿl]		tru
to plant	u3.47					tṿl	tṿl	tṿl		Stu
straight	u3.48		astu			tṿl	tṿ.tṿ <sup>L</sup>	[t̥ṿl[tṿl]læ]		Stu
thousand	u3.49	294		thonj	stonj		tỵl	tỵl		Stu
hole	u3.50			donj				pał tỵl		tu
sleeve	u4.01					lalj̥g̥lk̥oł	i.q <sup>h</sup> γ <sup>L</sup>	jałq <sup>h</sup> ɔł		q <sup>h</sup> U
swallow	u4.02		mqlas			koł	ɪỵl	ɛɔł		NqU
cave	u4.03	285				ŋgỵlk̥oł	ɛw̥g̥.q <sup>h</sup> γ <sup>M</sup>	læłq <sup>h</sup> ɔł		q <sup>h</sup> U
throat	u4.04		tuu-rqo		lkog		qṿ.tsæ <sup>MH#</sup>	qɔłtsał		qU
horn	u4.05	182	ta-ʂru	khyui <sup>2</sup>	ru	k <sup>h</sup> oł	q <sup>h</sup> ỵl	q <sup>h</sup> ɔł		q <sup>h</sup> U
fly	u5.01	255				mbəłłəł	bṿ.ɿ̥ <sup>#H</sup>	bɔłłɔł		bu r <sup>28</sup>
to hold	u6.01					ts <sup>hw</sup> əł	ts <sup>h</sup> ɿ̥ł	ts <sup>h</sup> ṿł	*rts <sup>h</sup> U	
lungs	u6.02		tuu-rts <sup>h</sup> g̥s <*rts <sup>h</sup> ɔs)	chut		ts <sup>hw</sup> əł	ts <sup>h</sup> ɿ̥ł	ts <sup>h</sup> ṿł	*rts <sup>h</sup> U	

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
to cough	u6.03						[ʂʷə˧]	[ʂ˩]	[tsy˧]	*rtsU

Table 25. Rhymes \*aC<sub>1</sub> and \*aC<sub>2</sub>

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
chest	C1.01					Tangut yar <*C-r- kaC	ka˩	ka˧ (ka. pV <sup>M</sup> )		Nka/aC <sub>1</sub>
to fell (a tree)	C1.02						nda˩	da˧˩	da˧˩	ndaC <sub>1</sub>
drum	C1.03						nda˧˩kʰg˩	da.kʰg <sup>L</sup>	dalkʰg˩	ndaC <sub>1</sub>
all	C1.04						ta˥	ta <sup>MH#</sup> (d <u>u</u> . ta <sup>MH#</sup> )	ta˥ (d <u>u</u> ˧ ta˥)	taC <sub>1</sub>
slanted	C1.05							la.ta <sup>LM</sup>	la˧ta˩	laC <sub>1</sub> taC <sub>1</sub>
how much	C1.06							qʰa.kv <sup>MH#</sup>	kʰa˧ il	kʰa/aC <sub>1</sub>
in front of	C1.07							zu.da <sup>M</sup>	u˧da˩	daC <sub>1</sub>
to cover	C1.08		fkaβ		ŋgebs bkab		ka˩	qa˩	qa˧	ka/aC <sub>1</sub>
to weave	C1.09	318	taʂ	rak	btags			da˩	da˧	daC <sub>1</sub>
black	C1.10	317	jaʂ	nak	nag po			na˩	na˧˩	naC <sub>1</sub>
sharp	C1.11	318– 319		thak			tʰa˩	tʰa˧˩	tʰa˧˩	tʰaC <sub>1</sub>
to hit	C1.12		lʂt				la˩	la˧˩	la˧˩	laC <sub>1</sub>
wolf <sup>29</sup>	C1.13		qapar		mpʰar		pʰa˩kʰw˧		pʰa˩	pʰaC <sub>1</sub>

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
vat, wooden basin	C2.01						lo˧	lo˧	lu˧	laC <sub>2</sub>
to be ashamed <sup>28</sup>	C2.01						ʂɔ˧lndo˩	ʂɔ˧.do <sup>MH#</sup>	hæ˧du˧	ndaC <sub>2</sub>
tasty	C2.02						so˩	so˩	su˩	saC <sub>2</sub>
to lean against	C2.03						t <sup>h</sup> o˩	t <sup>h</sup> o˩	t <sup>h</sup> u˩	t <sup>h</sup> aC <sub>2</sub>
slope	C2.04						to˩	to˩	tu˧bie˧	taC <sub>2</sub>
to hug	C2.05						to˩to˧	to.to <sup>M</sup>	tu˧	taC <sub>2</sub>
gruel	C2.06						ho˩	hu˧		haC <sub>2</sub>
to see	C2.07						do˩	do˩		daC <sub>2</sub>
valley	C2.08						lo˧	lo˧		laC <sub>2</sub>
to climb	C2.09						ndɔ˧˧	dɔ˧	gɔ˧˧du˧	ndaC <sub>2</sub>
to jump	C2.10		mtsaꝝ				ts <sup>h</sup> o˧	ts <sup>h</sup> o˧	ts <sup>h</sup> u˧	ts <sup>h</sup> aC <sub>2</sub>
needle	C2.11	342	taqaβ	ap	k <sup>h</sup> ab		ko˩	ku˧	u˧	NkaC <sub>2</sub>
to study	C2.12						so˩	so˩	su˧	saC <sub>2</sub>
to work	C2.13			lup			lo˧be˧	lo.i <sup>M</sup>	lu˧vie˧	laC <sub>2</sub>
pig		318– 319	paꝝ	wak	p <sup>h</sup> ag		bu˧	bu˧	wɔ˧˧	SbaC
hand		319	tuu-jas	lak	lag		la˩o˧	lo.q <sup>h</sup> wɔ˧LM	la˩p <sup>h</sup> ie˧	laC <sub>1</sub> /laC <sub>2</sub>
breath		317		sak	srog		sa˧	so˧˧	sa˧	saC <sub>1</sub> /saC <sub>2</sub>
thick			jas				la˧	lo˧˧	a˥pɔ˧˧lu˧	laC <sub>1</sub> /laC <sub>2</sub>

meaning	Ref	HTB	Rgyalrong	Burmese	Tibetan	Other	Naxi	Na	Laze	Proto-Naish
deep		317	rnaʂ	nak			hol	ɿɔɿl	haɿ	laC <sub>1</sub> /laC <sub>2</sub> / SnaC <sub>1</sub>
to kill								qʰoɿl	kʰaɿ	kʰaC <sub>1</sub> /aC <sub>2</sub>

21. Matisoff (2003:69, ft.101) cites Lahu and Pumi words that could be cognate to this root.
22. This form is probably related to Burmese *phri*<sup>3</sup> and other comparanda cited in Matisoff (2003:25–26), though the vowel correspondence remains to be explained.
23. Another possible etymology for this etymon is Burmese *phru*<sup>2</sup> and its Lolo-Burmese cognates (JAM). However, the Naish data do not allow to choose between these two hypotheses.
24. The corresponding Lolo-Burmese root means ‘recover from illness’ (JAM).
25. A comparison with Proto-Lolo-Burmese \*laŋ (Matisoff 2003:495) is tempting, but the vowels do not match, as Proto-Naish \*lo would be expected.
26. Plausibly related to Lahu /lɔŋ<sup>5</sup>/ “spindle” (JAM).
27. The Burmese form means ‘to take out’.
28. We suspect that the forms for ‘fly’ in Laze and Naxi result from right-to-left vowel harmony, a sporadic phenomenon in disyllables (the more frequent a word, the more propensity it has towards vowel harmony), likewise for ‘kidneys’ in Naxi.
29. The Tibetan and Rgyalrong cognates actually mean ‘dhole (*Cyon alpinus*)’.
30. A relation with the forms cited in Matisoff (2003:317) is possible but requires further research.