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ABSTRACT

This report contains preliminary descriptive and comparative information on Gyalsumdo, a variety of Tibetan that is spoken in the lower Manang District of Nepal. Based on select lexico-phonetic data recorded from one speaker in 2009 and 2010, and on data available from other languages of Manang and nearby Gorkhā District, we hypothesize its location within Tibetic (Central Tibetan). Gyalsumdo shares more features with Nubri, but we also note additional similarities to Kyirong Tibetan, and to Tamangic languages with which Gyalsumdo has had regular contact over several generations.

KEYWORDS

Gyalsumdo language, Manang languages, Tibeto-Burman languages, Tibetic, Central Tibetan, lexico-phonetic correspondence, tonal phonetics

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1 Introduction

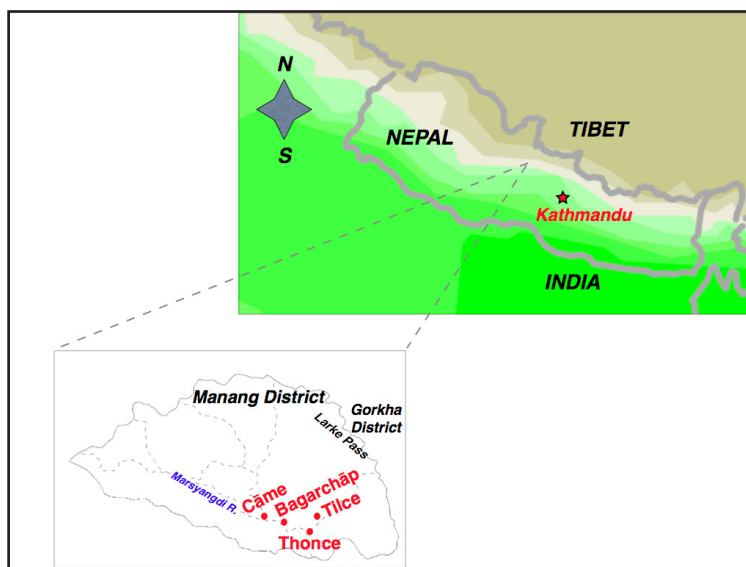
This report contains preliminary (lexical/phonetic) descriptive and comparative information on Gyalsumdo, a variety of Tibetan that is spoken in a cluster of villages in the lower Manang District of Nepal (Gandaki Zone, 22° 59' N; 84° 22' E). There is currently no ISO 639 code assigned to Gyalsumdo. To our knowledge and based on existing available literature, Gyalsumdo has very little prior documentation available on it aside from passing mention of Tibetan-speaking peoples in some Manang villages, and there is still question as to its specific placement/affiliation within lower levels of the Tibeto-Burman taxonomy. Our goal is to provide selected information on Gyalsumdo in order to hypothesize its location within the Tibetic grouping of Tibeto-Burman, and to set the stage for further investigative analysis of this variety.

While our observations here are restricted to a set of approximately 164 lexical items (see Appendix), we are able to locate these observations in a comparative context with available data from other (Tamangic) languages and with other Tibetan varieties spoken in nearby regions of Nepal, including Nubri (Gorkhā District) and Kyirong Tibetan (Rasuwā District and Kyirong County, Tibet). We are also able to provide some historical-comparative commentary on Gyalsumdo based on data from Classical Tibetan. In addition, we are able to paint a very early picture of the phonetics of tonal contrasts in Gyalsumdo. Our goal therefore is to propose that Gyalsumdo, while clearly a member of the Tibetic sub-grouping within Himalayish, is distinct enough to warrant further focused documentation efforts such that its classification can be established (perhaps within the Central Tibetan branch) with greater accuracy and certainty.

2 Other available information on Gyalsumdo

The presence of Tibetans in the region known as Gyalsumdo (lower Manang) is first mentioned by David Snellgrove (1961), who identifies three Tibetan villages, the names of which he notates as Tshā-me (Nep. Cāme, now the Manang district headquarters), Tshap (Nep. Bagarchāp), and Thang-jet (Nep. Thonce), as well as a mixed Gurung-Tibetan village called Tiljet (Nep. Tilce) (see Map 1). He makes little comment on the language, though he states that it is “as close to the dialect

of Central Tibet as to make little difference” (Snellgrove 1961: 238), and that children are taught to read and write Classical Tibetan.



Map 1. Location of Main Gyalsumdo Villages (adapted from World Atlas of Language Structures and Digital Himalaya)

Gurung (1976) adds the villages of Dharapani and Tal to the list of predominantly Tibetan settlements in Gyalsumdo, and states that the Gyalsumdo Tibetans have diverse origins within Nepal and Tibet, including Nubri (spoken in Gorkha District, to the east of Manang), Kyirong (Rasuwa District, also to the east) and Tingri, among other areas. Nowadays, Dharapani and Tal are considered by local residents to be Gurung settlements, although speakers of Gyalsumdo and Nyeshangte (Manange) also make their homes and livelihoods there. Based on an interview with one Gyalsumdo man, Mr. Norbu Lama of Cāme, there are around two hundred speakers, and the UNESCO Interactive Atlas of the World's Languages in Danger notes that there is no known estimate of the number of Gyalsumdo speakers; it is simply identified as ‘definitely endangered’ (<http://www.unesco.org/culture/languages-atlas/index.php>).

The most extensive work dealing with Tibetans in the Gyalsumdo area is an account of the interaction between Tibetan and Gurung religious practices in the region, by Stan Mumford (1989). Like the previous authors, Mumford does not include any description of the language, though he gives a number of Written Tibetan renditions of the place-names of the Gyalsumdo region, as well as of a variety of religious terms used in the area. Mumford states, apparently contrary to Snellgrove's view, that, despite having learned Lhasa Tibetan, “their dialect was so difficult that it would be months before I would be able to converse with them adequately.” (Mumford 1989: 4)

References to the language of Gyalsumdo in the linguistic literature are sparse. Michael Vinding (1979) provides a small list of kinship terms in the language and mentions that its speakers assert it to be closely related to the dialects of Nubri and Tsum. Khadgi (2006) reports in her socio-linguistic survey of Nubri (Gorkha District) that of 13 people surveyed regarding attitudes about clan-external marriage, one person responded that it would be permissible for a Nubri person to marry someone who is “Gyasumdar”, (mis-) identified apparently as “Gurungs in Lamjung” (6). The language is also mentioned by van Driem (2001), but is likewise misidentified as a Tamangic language.

3 Lexical correspondences with regional languages

The Gyalsumdo wordlist used in this account was recorded during a 2009 visit to the Manang District, from Mr. Norbu Lama, who was 65 years old in 2009 at the time of the recording, and who was born and raised in Cāme village. The data include words from the Swadesh Wordlist, along with some additional words as context provided opportunities, and a couple of elicited phrases. We are able to compare the phonetic and lexical correspondence patterns in Gyalsumdo with data from other Tibetan varieties and from various Tamangic languages of Manang District based on an array of primary and secondary sources.

We are also able to compare the Gyalsumdo data with identical wordlists recorded from two Nubri speakers, Mr. Sonam Nyengtse ('Dorje') Lama, age 31, who was born and raised in Bihi village, Gorkha District, and from Mr. Tshowang Gyeltsang, age 56, who was born and raised in Lö village, Gorkha District. These data were recorded, with the same equipment from the Gyalsumdo encounter, in 2010 in Kathmandu. Transcribed entries from these recordings may be found in the Appendix.

We are able to check our recordings and observations with material on Kyirong Tibetan (Huber 2002), and with Written Tibetan (Jäschke 1881/1995, Matisoff 2003). Additionally, Webster (1992) has comparative wordlists from Central Tibetan languages and varieties from Gorkha, Nepal, including Nubri, Tsum, Kyirong, Central Tibetan, Ghale (Northern, Southern, Kutang), Gurung (Gorkha varieties) and Western Tamang. The occasional comparisons to Nar, Nyeshangte (Manange) and Thakali come from Noonan (2003), Hildebrandt (2004) and Georg (1996), respectively.

3.1 Lexical correspondences and subgrouping

A very great majority of the elicited lexical items have clear cognates in Classical Tibetan. Those lexical items without a clear correspondence often have a reflex in Nubri or Kyirong Tibetan. Examples of this include Gyalsumdo [kʰiuri] 'cat', which is also found in Nubri and Kyirong but, to our knowledge, in no other Tibetan dialect.¹ Kyirong and Nubri also share with Gyalsumdo the irregular development of CT *gsar-pa* 'new' to [sāmpa] in all of these varieties, rather than expected *sārpa*.²

As can be seen in the Appendix, Nubri and Gyalsumdo share a very large proportion of their vocabulary, including a number of words not found in surrounding dialects or in Central Tibetan. Examples of this include the word [pʰütsi] 'mouse', which appears to be a conflation of two distinct lexemes, attested in Written Tibetan as *phu-se* and *tsi-tsi*, the latter of which is also found in Nubri. The two dialects also share an unusual form of the word for 'nose' – Gyalsumdo [nārki], Nubri [nārki]. The first element can be unproblematically linked to the Written Tibetan *sna*, but the remainder of the word does not seem to have an obvious source. The remainder of the vocabulary shared between Gyalsumdo and Nubri seems for the most part to be composed of shared retentions, rather than innovations. However, the quantity of these do seem to point towards a shared origin.

1 However, one of our reviewers has pointed out that Hale (1973) lists *kuhri* as the word for 'cat' in Sahu Tamang.

2 Again, our reviewer has pointed out that is not unique to these specific Tibetan varieties, and is found in Tibetan varieties throughout Nepal, as well as nearby Tamangic languages Thakali, Seke and Nyeshangte.

There are a few elements which Gyalsumdo shares with Kyirong Tibetan but not with Nubri. One shared irregular development can be seen in the word for ‘big’. The initial syllable in Nubri [tʃ^hēmpo] has the original vowel of WT *chen-po*. In both Kyirong and Gyalsumdo this becomes [u] – Gyalsumdo [tʃ^hūmpu], Kyirong /tʃ^hūmmo/. The word for ‘ashes’ is also shared between Gyalsumdo and Kyirong – we observe Gyalsumdo [t^hāla] and Kyirong /t^hālā/ opposed to Nubri [kɔktal].

Given the large proportion of shared vocabulary in Gyalsumdo, Nubri and Kyirong Tibetan, it seems reasonable to link the three languages together within the Central Tibetan sub-grouping of Sino-Tibetan. Webster (1992) shows that Nubri and Kyirong share a significantly larger proportion of their vocabulary than either language does with Central Tibetan proper, and, on the basis of the data gathered so far, Gyalsumdo seems to share more with the two languages than either do with each other. Whether this connection is genetic or areal, however, is something that cannot be firmly stated at this point. Certainly Gyalsumdo and Nubri are very closely connected, and it would be difficult to account for all their shared vocabulary (and especially those items unique to the two languages) without supposing a relatively recent common ancestor. A proposed subgrouping illustrating the position of these languages within Tibetic is shown in Figure 1 below. The specific relationship amongst all three languages is more difficult to pin down, as we may also be witnessing contact effects. The items of vocabulary which Kyirong and Gyalsumdo share to the exclusion of Nubri are perhaps best accounted for by continued contact between Kyirong and Gyalsumdo after the latter split with Nubri. This would accord with the assertion of Mumford (1989) that the earliest Tibetan settlers in the Gyalsumdo region had their origins in Kyirong.

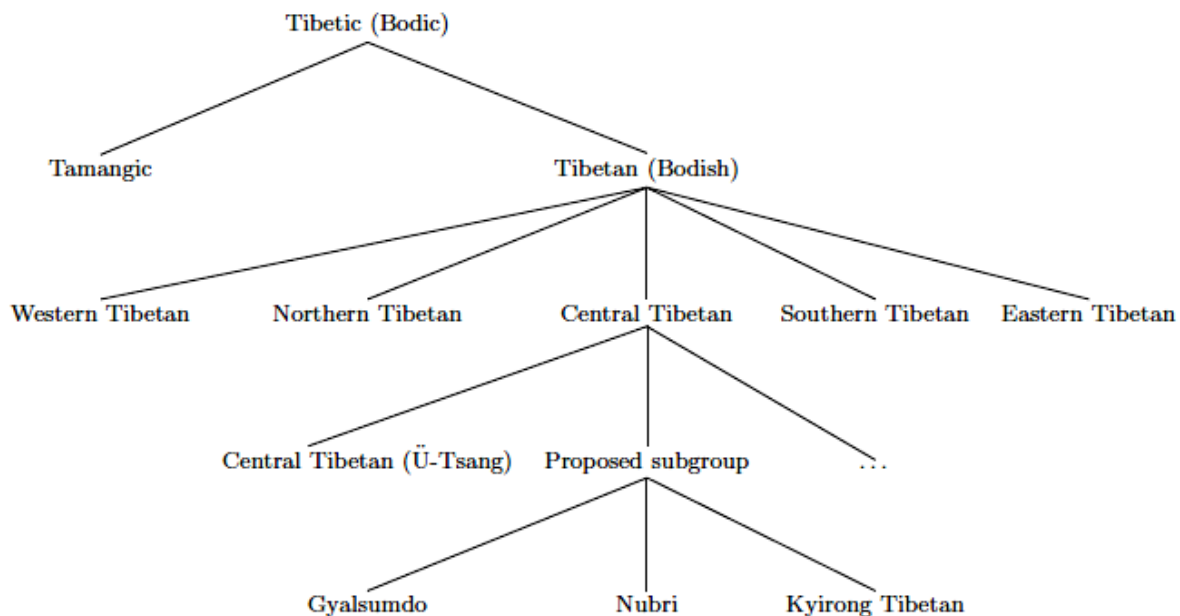


Figure 1. Proposed classification of Gyalsumdo within Tibetic. Names of subgroups given are from Ethnologue, with alternatives in parentheses where appropriate.

3.2 Distinguishing features of Gyalsumdo

One argument against a genetic grouping of Gyalsumdo (and Nubri) with Kyirong Tibetan is the differing fate of initial *Pr* clusters in the two languages. In Kyirong Tibetan (as well as in Langtang and Helambu dialects, according to Huber [2002]), initial *Pr* clusters are preserved, whereas in Gyalsumdo it seems that these clusters become retroflex stops or affricates, as in Central Tibetan. We can therefore contrast Gyalsumdo [tʃiāk] ‘hill’ with the first syllable of Kyirong Tibetan /prak̥e:/ ‘echo = cliff-sound’, both derived from Written Tibetan *brag* ‘cliff’. This is, however, the only reflex of a *Pr*-initial Written Tibetan word that we have noted, and it may be premature to draw conclusions from a single lexical item.

Turning to a comparison with Nubri, while the two languages share a large amount of lexemes, Gyalsumdo has a number of distinguishing phonological features. The first of these is the realization of word-final *o* as [u]. For example, the common Tibetan nominal suffixes *-po* and *-mo* are realized throughout the Gyalsumdo lexicon as [pu] and [mu].

Another feature unique to Gyalsumdo is the complete loss of word-final glottal stops, retained in Nubri. Interestingly, final glottal stops have two different endpoints in Gyalsumdo. The first is simply zero, as in [kʃiɛ] ‘eight’ (Nubri [kʃeʔ]), or [mʃinto] ‘flower’ (Nubri [mɛdoʔ]). However, we also see at least one instance of a word-final glottal stop becoming [k]: The Gyalsumdo word for ‘blood’ is [tʰāk] (Nubri [tʰāʔ]). The reason for this is not clear; it does not seem to be conditioned by the preceding vowel (we also see Gyalsumdo [pʃiata] opposed to Nubri [bɛdaʔ] for ‘root’). It might therefore be speculated to be the result of contact between different dialects, or with Tamangic (cf. 3.3). Given the diversity of origins of the Gyalsumdo Tibetan population that has been reported, this certainly seems plausible. Nubri itself already seems to show a distinction between word-final /ʔ/ and /k/, the latter of which is retained by Gyalsumdo. Hence we see /ʃik/ ‘louse’ and /tʃak/ ‘hill’ in both varieties.

A further development in Gyalsumdo is the loss of front-rounded vowels from many words. For example, we see Gyalsumdo [tʃhēma] ‘small’ opposed to Nubri [tʃōma], or Gyalsumdo [rokʃio] ‘bone’ opposed to Nubri [zyba] (both being derived from WT *rus-*). However, this process seems to be somewhat incomplete. We find at least two lexical items with front rounded vowels in our elicited data, namely [tʃhō] ‘eat, drink (honorific)’, and [tyn] ‘seven’. This apparent lexical diffusion is, like the behavior of /k/ above, suggestive of dialect or Tamangic contact.

3.3 Shared correspondence with Tamangic

The Gyalsumdo villages are located geographically at a major cross-roads area of lower Manang. In particular, Cāme is the District political and commerce headquarters. This factor, along with the ample availability of timber and a longer growing season has resulted in the area becoming populated with many Nyeshangte, Gurung and Nar-Phu families over the past two-to-three generations. Bagarchāp and Thonce are also located near Gurung villages such as Nace and Thancowk. Personal correspondence with speakers of these Tamangic languages indicates that contact with Gyalsumdo has been regular and ongoing for a long time, with no clear lingua-franca (although some variety of Tibetan is frequently heard when people from different language backgrounds meet and Nyeshangte functions as a kind of regional lingua franca in upper Manang). Since Gyalsumdo has been in this contact context for an extended period of time, we might expect to see an influence from these languages in the lexicon and possibly in other areas of the grammar of Gyalsumdo.

In terms of lexical borrowing, at least, this does not seem to be the case. One possible Tamangic borrowing in the data – [lapt̪i] ‘leaf’ (cf. Phu /lept̪e/), is also found in Kyirong (where it is identified as a Tamangic borrowing by Huber).³ Also observed is the word [n̪amtse(n)] ‘morning,’ which is much more similar in form to Nar /namtoŋ/, Nyeshangte /n̪ân̪aŋ/ and Thakali /n̪aŋke/ than either the Classical Tibetan zhogs-pa or snga-dro, or the Nubri [d̪oŋoŋ]. However, we also find the Gyalsumdo form in South Mustang Tibetan (Kretschmar 1995), where <n̪amt̪s̪en> means ‘dawn’. It might therefore be reasonably assumed that this is the proximate source for the borrowing.

However, the changes to Gyalsumdo segmental phonology, in particular the loss of final [ʔ] and the lack of the front rounded vowels [y, ø] might potentially be explained as due to contact-induced phonological change. Noonan notes that for Nar, glottal stop only occurs in words of Tibetan origin, and its phonetic realization is variable, frequently alternating with final [k, p] or else with a long vowel (e.g. [k̪h̪i̪t̪p̪e] ~ [k̪h̪i̪t̪p̪e:] ‘eighth’) (2003: 338). Also in Nyeshangte, the glottal stop is rare in final position, occurring in only a couple of words (e.g. [p̪éʔ] ‘really, very’) (Hildebrandt 2004: 24-25). The front rounded vowels are absent altogether in Nyeshangte, and in Nar these vowels are usually articulated as diphthongs (e.g. [ø] ~ [w̪e]). These diphthongs are not otherwise attested, and are likely a reflex of the front close-mid rounded vowel (Noonan 2003: 337). It might be that Gyalsumdo phonology is also undergoing similar types of segmental changes via contact with Tamangic, but this is a possibility that is open to further investigation.

3.4 Final remarks on classification

It is clear from the shared lexical items discussed above that Gyalsumdo is a Tibetan language within the Sino-Tibetan family, and is connected to Nubri. It also shows a number of significant divergences from Nubri and is certainly a distinct variety, perhaps owing some of its variation to contact with Tamangic. Unfortunately, however, given the limited data available for both Gyalsumdo and Nubri, it is difficult to assess the true extent of the divergence between them, not only on the lexical and phonological level but also with regard to morphology and syntax. More work will need to be accomplished before the exact relationship between these languages can be made clear.

4 A preliminary phonetic analysis

Although any observations are preliminary at this point, it is useful to provide some basic descriptive analysis on suprasegmental trends that turn up in data gathered from our single Gyalsumdo speaker. Based on close correspondence with Central Tibetan for a great deal of the lexemes in this study, we can hypothesize that Gyalsumdo possesses a modern tonal patterning that aligns with the four series of initial stops present in Central Tibetan. In Central Tibetan proper, (Ü-Tsang) this is reflected as a high tone (unaspirated), high tone (aspirated), low tone (aspirated) and low tone (unaspirated), respectively. These four series are represented in Written Tibetan, and are presented here:

3 However, this particular item may not, in fact, even be Tamangic. Our reviewer points out that it is also found in both Classical Newar and Modern Kathmandu Newar, and has been identified by Jacques (2004) as being linked to Written Tibetan ‘*dab-ma*’.

Central Tibetan Series	Characteristics in Written Tibetan
1 (high, unaspirated)	voiceless unaspirated, with or without prefixes, e.g. <i>k-</i> , <i>rt-</i>
2 (high, aspirated)	voiceless aspirated, with or without prefixes, e.g. <i>ph-</i> , <i>mtsh-</i>
3 (low, aspirated)	voiced stops without prefixes, e.g. <i>g-</i>
4 (low, unaspirated)	voiced stops with prefixes, e.g. <i>sg-</i> , <i>bd-</i>

In Nubri, for words beginning with obstruent consonants, Central Tibetan series one through four are realized as the following, based on transcribed data from Webster (1992) and our own transcriptions from data from the two Nubri speakers, with *p* representing any unvoiced stop, *p^h* representing any unvoiced aspirated stop, *b* representing any voiced stop, and *v* representing any vowel:

Central Tibetan Series	Nubri Representation
1 (high, unaspirated)	<i>pv</i> ~ <i>p^v</i>
2 (high, aspirated)	<i>p^hv</i> ~ <i>p^hv</i>
3 (low, aspirated)	<i>b_ɣ</i> ~ <i>p_ɣ</i> ~ <i>bv</i>
4 (low, unaspirated)	<i>bv</i> ~ <i>b_ɣ</i> ~ <i>b^v</i>

The only exception to this trend in Nubri is the word for ‘nine’, a series 4 word, which is recorded as variably [*k_u*] ~ [*g_u*] Webster (1992: 45), but is transcribed from our recordings as [*k_ɦɦu*]. In Webster’s account, this could be the result of the perception of a semi-voiced vowel as aspiration on the onset. Given the similarities between the Central Tibetan series and the modern reflexes in Nubri, and the attested lexical connections between Nubri and Gyalsumdo, it would not be surprising to observe acoustic cues that align with these reflexes in recorded Gyalsumdo data.

In our transcription of Gyalsumdo, we have frequently heard and transcribed, a degree of murmur in words from Central Tibetan series 3, including [*t_ɦɦopa*] ‘belly’, [*k_ɦɦaŋri*] ‘mountain’ and [*t_ɦɦupa*] ‘smoke’ (*grod-pa*, *gangs-ri* and *dud-pa* in Written Tibetan, respectively), or else we have perceived the initial stop to be voiced. This murmur/onset voicing is less regular, and more variably present in words corresponding to series 4, e.g. [*k_ɦɦe* ~ *k_ɦɦe*] ‘eight’ and [*k_ɦɦo*] ‘head’ (Written Tibetan *brgyad*, *mgo*). Additionally, Duanmu (1992) notes in his survey of tone in four Tibetan dialects that words in low tones have voicing on initial stops. As such, it is worth investigating trends across obstruent-initial words in Gyalsumdo to draw a preliminary picture of how the Central Tibetan series patterns in this variety.

This study is based on an acoustic analysis of 50 obstruent-initial words in our overall sample: eleven words corresponding to series 1, thirteen words corresponding to series 2, eleven words corresponding to series 3 and fifteen words corresponding to series 4, all with obstruent (plosive, affricate) onsets.⁴ As all words that we recorded were produced in isolation (in a list format), any pitch patterns will be unreliable, at least in terms of whether or not a contour is present (i.e. all words display either a rising or falling contour), but an examination of the average pitch height properties and other suprasegmental values across the vowel of the first syllable can at least provide

4 All words were recorded with a Marantz PMD60 solid-state recorder and using an Audio-Technica headset microphone. Words were recorded in mono with a 22 kHz. sampling rate and digitized to a .wav format for analysis with Praat acoustic analysis software.

an early picture of relative registers and other characteristics. In this study, due to a small number of data, all mono- and disyllabic words are examined together. Only the initial syllable has been included for all measurements, under the assumption that more patterns and contrasts are located on the initial syllable of disyllabics. This is the case, for example, with Kyirong Tibetan, as described in Huber (2002). However, a more comprehensive study should treat mono- and disyllabic words separately to see if this assumption holds up.

The first trend that we present is the overall pitch pattern for each series. Chart 1 displays the average fundamental frequency values (F_0 , measured in Hz.) for the starting, mid-point and end-point of the vowels (either the only vowel in a monosyllabic or the initial syllable vowel in a disyllabic word).

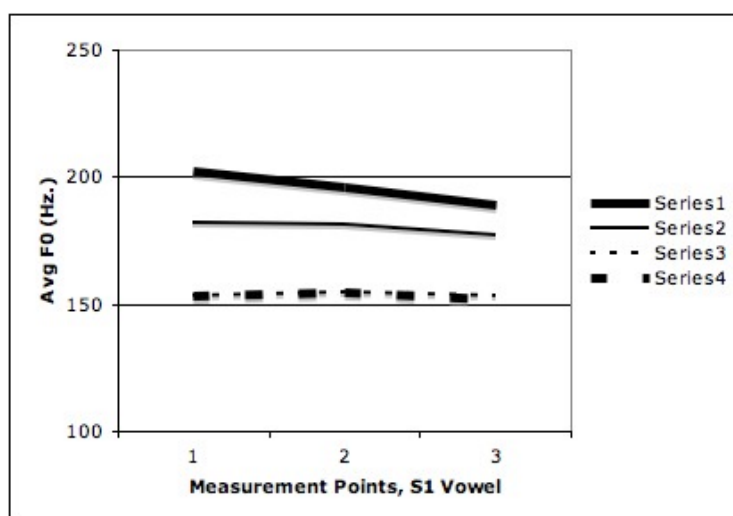


Chart 1. Average F_0 values Across Three S1 Vowel Points

The patterns suggest a two-way (possibly a three-way) differentiation, such that the Central Tibetan series 3 and 4 are merged into a ‘lower’ clustering, while series 1 and 2 are (marginally) separated at a higher register. At this point, due to a small sample number, the standard deviations are large for words in series 1 and 3 (51/51/45 Hz., and 30/31/29 Hz., respectively at start, mid-point and end-point), so these trends are not statistically significant.

A look at initial-syllable vowel duration (Chart 2) indicates only that Gyalsumdo vowels found in Central Tibetan series 4 are longer (in milliseconds) than vowels in other series, although words in series 2 are marginally longer overall as well:

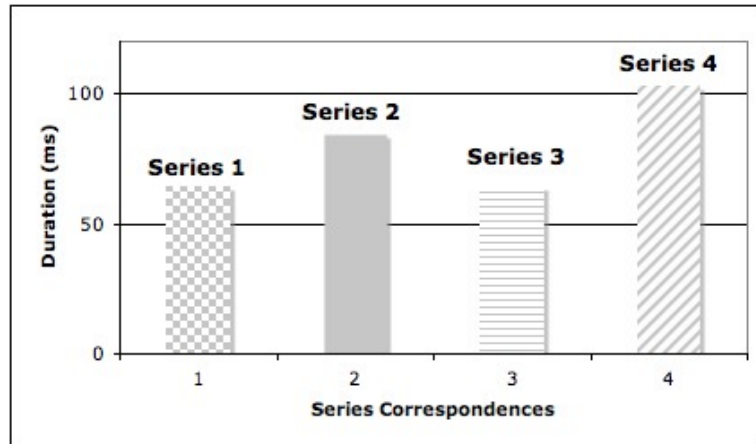


Chart 2. Average Initial-Syllable Vowel Durations

The words in this study were all recorded in isolation utterances, and that there is therefore a risk that the duration measurements are exaggerated; however, these findings might serve as useful in a comparative context, and a more comprehensive investigation might reveal that vowel duration differences are a reliable acoustic cue to words originating from Central Tibetan series 4.

Not surprisingly, as most Gyalsumdo words corresponding to Central Tibetan series 2 are aspirated, the average Voice Onset Time (VOT) for onsets in this series is much greater than for words in the other series, shown in Chart 3:

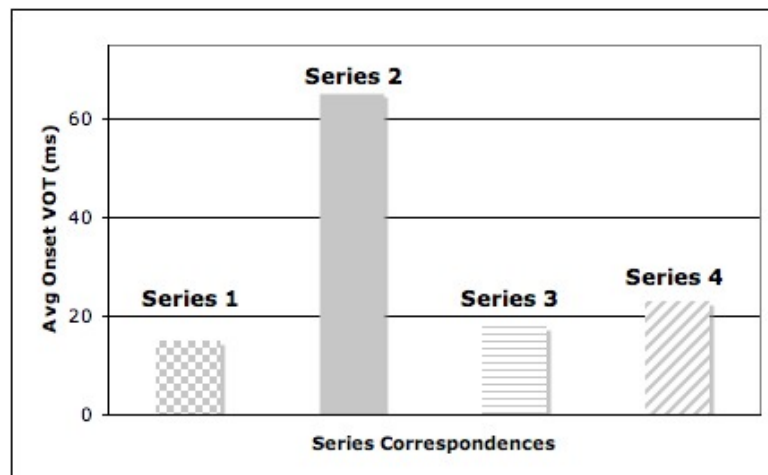


Chart 3. Average VOT, Obstruent Onset Consonants

Interestingly, despite our perception of voicing on obstruent onset consonants in words from series 3 and 4, the average VOT values are almost identical to words from series 1, suggesting that to the extent that there is a phonologized tone system in Gyalsumdo, it does not manifest itself primarily through relative onset VOT for obstruent consonants.

Other potentially useful acoustic cues to tone (particularly phonation-prominent tone systems) include the overall intensity of the vowel (measured in decibels, dB), “spectral tilt” (measured also in decibels, dB), and jitter (measured in relative percentages). Blankenship (2002) demonstrat-

ed the reliability of a Fast-Fourier Transform (FFT) spectrum analysis in quantifying differences between modal and non-modal phonations in several languages which have contrastive phonation types. Known also as “spectral tilt”, the difference in energy between the first two harmonics (H_1/F_0-H_2) is greater for breathy phonations than it is for modal/fully voiced sounds. Chart 4 shows average spectral tilt differences for vowels in Gyalsumdo words corresponding to the four Central Tibetan series:

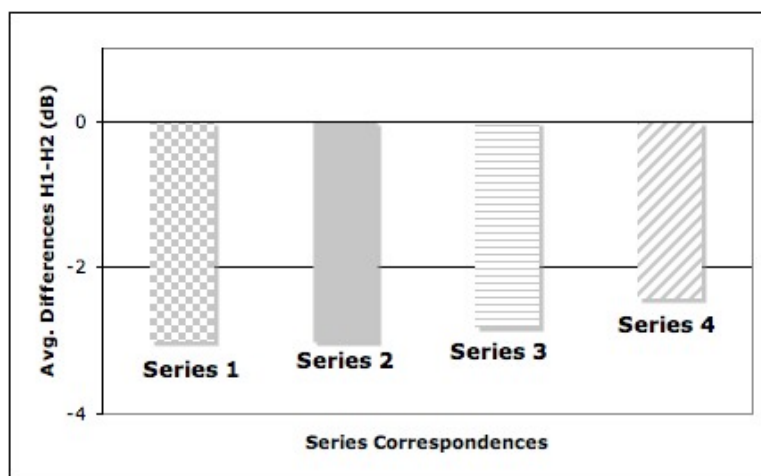


Chart 4. Initial-Syllable Averages for Vowel H1-H2 Differences

Here we notice an overall very slight rise in energy differences between H_1 and H_2 , resulting in a negative difference for vowels from all series. Words from series 1 and 2 have slightly greater negative (i.e. rising slope) values on average than do words from series 3 and 4. This could be a tantalizing hint of a phonation difference between words from the higher vs. lower series (i.e. perhaps vowels in series 1 and 2 are more modal, and vowels in series 3 and 4 are more breathy), but this needs more study with a larger lexeme sample.

Gordon and Ladefoged (2001) have noted that another possible indicator of phonation differences may be found in the overall amplitude of the vowel, known as “acoustic intensity”. Breathy phonation is associated with a relatively reduced or lowered intensity in comparison to modal phonation. The average intensity values for vowels in Gyalsumdo words from the four Central Tibetan series is presented in Chart 5:

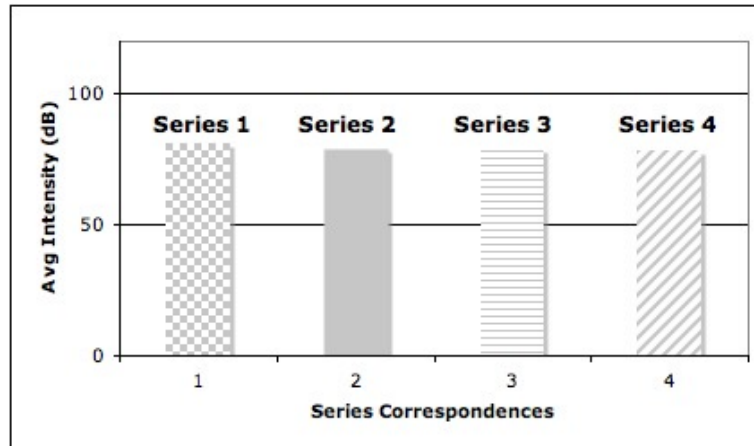


Chart 5. Average Vowel Intensity (dB), Initial Syllables

As Chart 5 indicates, vowel intensity is virtually identical across the four series, suggesting that while F_0 and possibly VOT and spectral tilt might be indicators of phonation differences, vowel intensity might not be a reliable indicator.

Another possible cue to phonation differences can be found in a measurement of relative vowel “jitter”, which is the variation in the duration of successive F_0 cycles. A high degree of duration variation, indicating aperiodic voicing of the vowel, is marked by a high degree of jitter (resulting in higher comparative percentages). Chart 6 shows the average jitter percentage values for vowels of words in the four series:

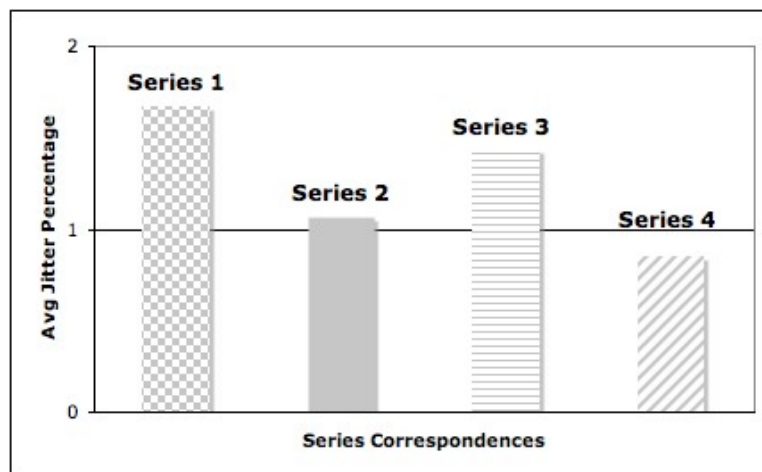


Chart 6. Average Initial-Syllable Vowel Jitter Percentages

Interestingly, jitter percentages are highest for words from Central Tibetan series 1, a series which otherwise corresponds with cues for modal vowel phonation. Words from series 3 also show a relatively higher degree of jitter, which is in line with a hypothesis that the reflex of this series is manifested in non-modal phonation of the initial vowel. But the mixed results for jitter for these two series suggests either that jitter is not a reliable cue, or else that a bigger lexeme sample is needed.

Overall, then, the reflexes of the four series of initial stops in Central Tibetan are possibly manifested in Gyalsumdo as an amalgam of differences in relative pitch (two high series and a possibly non-contrastive low series), differences in onset VOT (with initial obstruents in series two being aspirated), and perhaps differences in spectral tilt and vowel duration. However, these cues do not systematically distinguish between all words from all series; they are relevant to different degrees in different series, with a high degree of variation. Again, at this point these observations are preliminary, being based on a small sample, and require further and more systematic examination.

5 Concluding comments

Gyalsumdo is a probable Central Tibetan variety that has been located amongst Tamangic languages for a long period of time, and has presumably become more separated from the Tibetan varieties to which it is most closely affiliated genealogically. We note that at least at the lexical level, Gyalsumdo retains close affiliation with Central Tibetan, but that there may be evidence of some contact-induced change in the phonology outside of the Central Tibetan sub-grouping.

Our observations in this account are based only on data from a single Gyalsumdo speaker. Nevertheless, these observations open an important door to future studies from a more comprehensive sample across a larger representation of the speech community. Based on the current population estimate of 200 or so speakers, and by the observation from Mr. Norbu Lama himself that younger Gyalsumdo are only passive users of the language, there is an urgent need to gather this information while there is still access to regular speakers.

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APPENDIX

NOTES: The words are arranged by English part-of-speech (nouns, adjective/property concepts and quantifiers, numerals, and verbs). Within each subgrouping, the words are further organized alphabetically by the English gloss (with the exception of numerals, which are ordered). Currently, beyond segmental information in Gyalsumdo, we also note relative pitch height by diacritics in words where we feel fairly certain we perceive it (e.g. $\bar{a}$ for high pitch and $\underline{a}$ for low pitch), and we also transcribe any breathy/murmured phonations [fi] before the relevant vowel. Empty cells mean that the word is not available. Classical Tibetan words are given in Wylie transliteration.

Nouns, Pronouns

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
1 singular	ŋa	ŋa	ŋa	ŋa	nga
1 plural (inclusive)	oraŋ t ^h āmɕe	fi ^o raŋtso	(ŋ)oraŋ t ^h āmɕe	orā:	‘o(-rang)
1 plural (exclusive)	oraŋ ŋi	oraŋ	ŋoraŋ	ŋirā:	nyid(-rang)
2 singular	k ^h jēraŋ	c ^h ēraŋ	c ^h ērΛŋ	c ^h irā:	khyed(-rang)
2 plural	k ^h intso	c ^h ēraŋtso		c ^h ārā:	khyed(-rang)
3 singular	k ^h entso	k ^h ōŋ	k ^h ēnamba	k ^h ō	khong, mo, kho
3 plural	hārəŋ t ^h āmɕe (?)	k ^h ōŋtso/k ^h ōraŋ tso	t ^h āmɕe	k ^h ō:	khong
ashes	t ^h āla	kotΛn	kotΛl	t ^h ālā	tal
bark/peel	pākpu	pākpa	fiŋ pākpaΛ (bark)		pags-pa
belly	t ^h opa	tΛgba	dogba	təpā	grod-pa
bird	t ^h ipi	t ^h āɕuŋ	ɕjaɕuŋ	təa(bi:)	byi ba
blood	t ^h āk	t ^h Λ?	t ^h ā?	t ^h ā:	khrag
bone	rok ^h io	zyba	zyba ~ zywa		rus-pa
boy/male human	kjep toya, bītsa	pu	bu	pu (nb. podzā 'child')	bu
breast	fiom ^h ia	fo?	ɕy:		nu-ma
cat	k ^h uri	kuri	guri	guri	byi-la
cloud	mūkpa	mūkpa	mūkpa	mūkpā	rmugs-pa
cow	p ^h oke	pālΛŋ, tōlmo	bagom		ba-gog
day/afternoon	ŋimu	ŋiŋgū	ŋimu	ŋimā	nyi-ma, nyin-mo
dog	kjūpu	kī	k ^h i	c ^h ibō	khyi-po
ear	āmɕo	?āmɕo?	?āmɕo?	(n)āmɕò:	rna-mchog

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
earth/world	tsamliŋ	dzamliŋ	dzamliŋ, tʰamḍe		‘dzam-gling
egg	kʰoŋa	kowā~koŋa	gowā	kɔ̃ŋā	sgo-nga
evening	koŋmu	koŋmo	goŋmo	kɔ̃ŋmō	dgong-mo
feather	(tʃja)pu	tʃʰapu, tʃʰoŋbu	ʃūkpa	tɔ̃	sgro, spu
fire	mʰe	mɛ	mɛ	mɛ	me
fish	ŋa	ŋa	ŋa	ŋa	nya
flesh	ʃjā				sa
flower	mʰinto	mɛdo?	mɛdo?		me-tog
girl/female human	kjep pumo	pō	bumo	pomō	bu-mo
goat	ra			ra	ra
ground/land	saptʃja	satsa	satʃa	sāḍā	sa
hair	tā	ṣā	ṣā	tā	skra
hand	tʰakpa			lakpā	lag-pa
head	kʰo	ko, kurki	go(?)	go:	mgo
heart	ŋiŋ	ŋiŋ	ŋiŋ		nying
hill	tʰia(k)	ri	ḍaʰk	rigā	brag ‘cliff’
horn	rakjo	arkjo?, rajkjo?	raj(g)jo?		rwa
horse	tāpu			tāpō	rta-pho
lard	tʃʰūku	tʃʰūlo	tsʰilu		tshil-bu
leaf	(tʰumpu) lap̃ti	lōma	lɛma	lap̃ti	lo-ma
liver	kʰālma	tʃim̃ba			mching-pa
louse	ʃik	ʃik	ʃik	ḥikē:	shig
meat	ʃjā	ʃā	ʃjā	ḥā	sha
milk	ʰoma	nā, ŋowā	oma	omā	‘o-ma
moon	tʰakar	ŋō	ḍagar	ḍagā:	zla-dkar
morning	namtsē ~ namtsen	tʰogō	ḍoyon	ŋātō	snga-dro
mountain	kʰaŋ(ri)	kaŋri	gaʰŋ	ri 'mountain', kaŋri 'snow mountain'	ri
mouse	pʰūtsi	tsitsi, pʰūtsi, pe (te?)	pʰūdzi	piā:	byi-ba, tsi-tsi, phu-se
mouth	kʰārki		kʰā	kʰā	kha
name	m̃iŋ	m̃iŋ	m̃iŋ	m̃i:	ming

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
neck	tʃiṃpa	tʃiŋba	ɕʒiŋba		‘jing-ba
night	tsʰimu	tʃʰāmo	tsʰēmo	kɔ̃ʰŋmō	mtshan-mo
nose	nārki	nātoʔ, nᵛrki	nᵛrki	nākò:	sna
person	mī ~ mᵛ	mᵛ	mᵛ	mᵛ	mi
rain	nām kʃhᵛpᵛtu	nᵛm gʒᵛp	nᵛm gʒᵛp	tʃʰāpā cāp-	gnam
road	lām	lᵛm(gʒaʔ)	lᵛm	lām	lam
root	tʃuṃpu pʰata	bᵛdaʔ	bᵛdaʔ	tsāwā	ba-thag
seed	sapen ~ sapen	sᵛben	sᵛbun		sa-bon
skin	pākpu	pākpa, pᵛu	pāgoʔ	pākò:	pags-pa
sky	nām	nᵛm	nᵛm	nām	gnam
smoke	tʃuṃpa	tᵛbᵛ	dɔ̃ba	tᵛpā	dud pa
snow	kʰā	kʰā	kʰā	kʰāwā:	kha-ba
star	kārma	kārma	kārma	kāmmā	skar-ma
sun	nᵛma ~ nᵛma	ɲō	ɲima	ɲimā	nyi-ma
tail	ŋāma	ŋōma, ŋowā	ŋā:		rnga ma
talon	sārmu	sērmu	sērmu		sder-mo, ser-mo “finger”
tongue	tʃēmu	tʃē, tʃēu	tʃēmo		lce
tooth	so	sō	sō		so
tree	tʃuṃpu	ʃiŋdoŋ	dɔ̃ŋbo	tɔ̃ʰŋbō	sdong po
water	tʃʰū	tʃʰū	tʃʰū	tʃʰū	chu
what	tʃʰi lāpa	tʃi	tʃi	kāi:, tʃi	ci
who	sū re	sū	sū	sū	su
wing	ʃjokpa				zhog-pa
yak	jāk			jākpō	g.yag

Property Concepts and Quantifiers

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
all/every	takraŋ	tʃʰāzᵛŋ		kᵛŋbō, tārē:	gang
alot/many	kʰatse maṃpu	maṃbo	maṃbo	mɔ̃, maṃmō 'much'	ga-tshod “how many”, mang-po “much”

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
bad	j ^h akpu m ^h intu	awe?	gokpo	tsōkpā, ṅembā	btsog-pa, ngan pa
big	tʃ ^h ūmpu	tʃ ^h ēmbō	tʃ ^h ēmbō	ṭēummō	chen-po
black	nakpu	nakpo	nakpo	nakpō	nag-po
blue	ṇūmpu	ṇōmo	ṇōmbō	ṇōmbō	sngon-po
cold climate	k ^h jāpu	t ^h añmo(?)	k ^h jā:bo	c ^h ā:bo	khyag-po
cold liquid	tāṇmo	ḍaṇmo	ḍaṇmo	c ^h ā:bo	grang-ba
dry	kāmtu ~ kāmpu	kāmbo	kāmbo		
empty	tōṇpa	tōṇba	tōṇba		stong-pa
fat	kjakpa	kjakpa	gjakpa	ca ^h kpā	rgyags-pa
full (of things)	kaṇso	kaṇ		kā:	gang-ba
full, satiated	taṇso		ḍopa ḍaṇs		‘grang
good	j ^h akpu	lēu	gaūdu?	ja:bō	yag-po
green	tʃaṇpu	tʃaṇgu	ḍjaṇgu	ṭa ^h ṅgū	ljang-khu
little bit	tēma	tʃōma, ɲuṇɲuṇ, ɲēɲe	ɲuṇɲuṇ	ṭē:ṭi	nyung-ba
long	riṇpu	riṇbo	zumbu	riṇmō	ring-ba
new	sāmpa	sāmba	sāmba	sāmbā	gsar-ba
old	nīṇpa	niṇba		nīṇbā	rnying-pa
red	mārpū	mārpo	mārpo	mapō	dmar-po
round	koro	kōra	k ^h īkip	kōrā	sgor
short	tēma	mō	maū	t ^h ūṇī	thuṇ-ba
small	tʃ ^h ēma	tēde?, tʃōma	tʃō:ma	ṭē ^h :ma	cung-ba, chod- pa “cut off”
thin	kāmpu	kāmbo	ḍyuba		srab-pa
warm climate	tʃ ^h ēpa	ts ^h aba	ts ^h ēpa ~ ts ^h āpa ~ ts ^h ēpa	ts ^h āndē (?)	tsha-ba
warm liquid	tʃ ^h ānti	ts ^h ābo	ts ^h ānde	ts ^h āndē	tsha
wet	lōmpa	t ^h añmo	lōmba		rlon-pa
white	kārpū	kārpo	kārpo	kāpō	dkar-po
yellow	sērpū	sērpo	sērpo		ser-po
young	kjēpa			zōmbā	gzhon-pa

Numerals

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
one	ʈʰik	ʈʰik	ʈʰik		gcig
two	ni	ni	ni		gnyis
three	sūm	sūm	sūm		gsum
four	ʃhi	ʃi	ʃi:		bzhi
five	ŋa	ŋa	ŋā		lnga
six	ʈʰuk	ʈʰuk	ɖuk		drug
seven	tyn	tyn	dyn		bdun
eight	kʰje	kʰe?	gʰe?		brgyad
nine	kʰu	ku	gu		dgu
ten	ʈʰu	ʈʰu	ɖju		bcu
eleven	ʈʰuʈʰi	ʈʰuʈʰik	ʈʰuʈʰik		bcu-gcig
twelve	ʈʰuʈʰi	ʈʰuʈʰi	ʈʰy:ʈʰi		bcu-gnyis
thirteen	ʈʰuksum	ʈʰuksum	ʈʰuksum		bcu-gsum
fourteen	ʈʰuʈʰi	ʈʰuʈʰi	ʈʰuʈʰi		bcu-bzhi
fifteen	ʈʰeŋa	ʈʰoŋa	ʈʰje:ŋa		bco-lnga
sixteen	ʈʰuʈʰuk	ʈʰuʈʰuk	ʈʰuʈʰuk		bcu-drug
seventeen	ʈʰuʈʰun	ʈʰuʈʰyn	ʈʰyʈʰyn		bcu-bdun
eighteen	ʈʰjāpke	ʈʰupke?	ʈʰjāpke?		bco-brgyad
nineteen	ʈʰuʈʰrku	ʈʰirku	ʈʰuʈʰrku		bcu-dgu
twenty	niʃu	niʃu	niʃu		nyi-shu
twenty one	niʃu tsakʰik	niʃu tsakʰik	niʃu tsakʰik		nyi-shu rtsa-gcig
twenty two	niʃu tsani	niʃu tsanʈʰi	niʃu tsɛ:ʈʰi		nyi-shu rtsa-gnyis
twenty three	niʃu tsaksum	niʃu tsaxsum	niʃu tsaxsum		nyi-shu rtsa-gsum
twenty four	niʃu tsakʰi	niʃu tsapʰi	niʃu tsapʰi		nyi-shu rtsa-bzhi
twenty five	niʃu tsakŋa	niʃu tsanʈʰa	niʃu tsɛ:ŋa		nyi-shu rtsa-lnga
twenty six	niʃu tsakʰuk	niʃu tsakʰuk	niʃu tsɛ:ʰuk		nyi-shu rtsa-drug
twenty seven	niʃu tsaptun	niʃu tsaptyn	niʃu tsaptyn		nyi-shu rtsa-bdun
twenty eight	niʃu tsapke	niʃu tsapʰke	niʃu tsapʰke		nyi-shu rtsa-brgyad
twenty nine	niʃu tsarku	niʃu tsapku	niʃu tsarku		nyi-shu rtsa-dgu

Verbs

English	Gyalsumdo	Nubri (Bihi)	Nubri (Lø)	Kyirong	Classical Tibetan
bite	sakē	mūk	kīmu?	ā: cāp	rmug
burn	mñe taje	pAṛ	mę pAṛ	t ^h īp	‘ba
come	oŋē, (imp.) ʃjɔ	jōa	oŋ	qo	‘ong
come (Hon.)	(imp.) p ^h ēp ʃjo	p ^h ēp	p ^h ēp	p ^h ēp	phebs
die	ʃikjē	ʃī	ʃī (H dŋ)	ɕī	shi
drink	t ^h ūŋē	t ^h ū	t ^h ūŋ	t ^h ūŋ	‘thung
drink (Hon.)	ʃ ^h ē	ʃ ^h ø?	ʃ ^h ø?	ɬ ^h ō	mchod
eat	sēkē	sa	sɛ:	sā:	za
eat (Hon.)	ʃ ^h ō	ʃ ^h ø?	ʃɛ:		mchod
fly	p ^h īlkē	p ^h ūr	p ^h ūr	p ^h ū(r)	‘phur
give	tērkē	tē? (Hon. p ^h ūl)		tē(r)	ster
hear	nīnē	nīn	nɛn	kɔ	nyan
is	rñe	zɛ?	zɛ		red
is not	mñare	māre?	māre?		ma-red
kill	sākē	sē?	sē?	sē(d)	gsod
know	ŋa ʃ ^h āje	hāgo, moʃje	ʃ ^h ā jore?, kō moʃje	ɕè:	shes, cha “knowledge”
lie down	ŋo ʃjēke	nɛnso, ŋalso	ŋālsy?	nɛj	nyal
lie down (Hon.)	p ^h ēp				
listen	nīnē tama jin	nēntʃup	nɛmbo	ni	nyan
say	lapkē	tām labin	lap		lab
see/watch/look	tēkē (see), t ^h ōŋē (look)	t ^h ōŋ (see), tā (look)	tē: (look), t ^h ōŋ (see)	t ^h ōŋ (see), tā	mthong “see”, lta “look”
sit	tñekē	tɛ?	dɛ?	tø ^h (d)	sdod
sit (Hon.)	ʃū	ʃū?	ʃu:(h)	zɔ:	bzhugs
sleep	ŋjalkē	ŋjāl	ŋjal	ni:	nyal
speak	tām lapkē	tām lap	lap	mā	kha, cap lab
stand	laŋnē	laŋ	laŋ	laŋ	lang
stand (Hon.)	ʃjāŋ	ʃjāŋ	ʃjāŋ		bzhengs
swim	kjāl kjāpkē	ʃ ^h ū kjālkap	ʃjālgiap		rkyal
walk	tñokē	qo	qo		‘gro