

# THE COMPLEXITY OF TONE IN NUBRI

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*This paper introduces the tonal system of the amagaun dialect of Nubri. We first present an introduction to linguistic tone, with a focus on tone as it is found in Tibetan languages, before moving on to describe the tones in Samagaun Nubri monosyllables and disyllabic expressions. We conclude that the tonal system in Nubri cannot be accounted for by exclusive reference to Tibetan languages. The implication is that contact with a non-Tibetan language has played a significant role in the history of the language.*

Keywords: tone, prosody, Sama, Nubri, Tibetan

## 1. Introduction to linguistic tone

Tone is typically conceived of as specifications of pitch in the lexicon; all languages make use of pitch in the construction of intonation contours, but most languages do not specify pitch at a lexical level. In many languages linguistic tone can be thought of as more than simply pitch contrasts, with other phonetic parameters (e.g. non-modal phonation types, coincidental vowel changes (see ex. Donohue 2012; Donohue 2014) contributing to the prosodic contrasts. However, auditory pitch contrasts, not predictable from linguistic information outside the lexicon, are a necessary defining feature of tone. That is, some of these ‘secondary cues’ become regularized such that differences in the segmental phonology may predict the realization of a certain pitch contour, such as a low pitch with voiced plosives, falling pitch with creaky phonation, or low (rising) pitch with breathy phonation (see, for example, Garellek et al. 2013, and others). Cross-linguistically there is a large variation in how tone is realized (see, for example, Fromkin 1978; Maddieson 1978; Yip 1989, 2002; Donohue 1997). It may vary in terms of the height and shape of the contrasts, or the domain in which tone is realized or contrasted.

Different features are used to describe tone, typically referring to relative pitch height. Table 1 summarizes the different systems that have been used to describe differences in pitch height.

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Table 1. Tone feature representations

High (H)	5	[+upper]	[+high]
	4		[-high]
Mid (M)	3		
	2	[-upper]	[+high]
Low (L)	1		[-high]

The number and complexity of tonal contrasts varies between languages. There are languages with very small systems of tone contrast, and of these the majority include a contrast of H(igh) vs. L(ow); this is found in 87% of tonal languages with only a two-way contrast in tone. Some other examples of contrasts in very small tone systems include contour tones, where pitch is not constant at a particular (specified) height, but moves from one level to another. Attested contrasts in languages with only two contrasts are listed in (1).

(1) Tone contrasts in languages with only two tones other than H vs. L.

- High pitch vs. Falling pitch H vs. HL
- High pitch vs. Rising pitch H vs. LH
- Falling pitch vs. Rising pitch HL vs. LH
- Falling vs. Dipping HL vs. HLH
- High falling vs. Low falling HM vs. ML

While the systems above are the smallest possible (attested) tone systems, there are also languages with much larger systems of tonal contrasts, such as Wobé (Kru; Côte d'Ivoire, Africa), which has reportedly 14 different contrastive pitch contours (Bearth & Link 1980).

As noted another way in which tone languages vary is the domain over which the pitch contours contrast, or are realized. This can be the mora, the syllable, the foot, the word, the phrase and so on. Nepal represents a part of the world where a modally non-tonal linguistic ecology, the South Asian plains and their linguistic extension into the Nepalese hills, meets a modally tonal linguistic ecology, attested in most of the Tibeto-Burman languages of more northern parts of Nepal, including the Tibetan languages.

2. Tone in Tibetan

Tibetan languages in the Central group have developed tone. There are three main dialect groups in Tibetan, and tone is only present in the Central Tibetan languages, and some south-eastern (Khams) languages. The Tibetan languages of Baltistan, Ladakh and Leh, and of the Amdo group, are not tonal.



Figure 1. Regions where main Tibetan dialect groups are spoken in the Tibetan Autonomous Region of China.

The degree of tonality found in the Central and south-eastern languages varies. The different tonality is typically ascribed to there being tonogenesis in Central Tibetan dialects, none in Western and North-eastern varieties, and the South-eastern dialects having multiple tonogenesis events (see, amongst others, Zhang 1987; Caplow 2009).

This fact of having multiple tonogenetic events has led to great variety in Central Tibetan. A sample of languages, representing the different tone systems found in different Central Tibetan languages, is shown in (2) (Lhasa Tibetan: Duanmu 1992; Shigatse: Haller 2000; Dingri: Herrmann 1989; Denjongkha: Yliniemi 2005; Drokpa: Kretschmar 1986; Sherpa: Kelly 2004; Kyirong: Huber 2005; Sherpa (Hile): Graves 2007; Dzongkha: van Driem & Tshering 1998). These same contrasts are represented graphically in Figure 2.

(2) Tone systems in Central Tibetan languages

- i. Lhasa Tibetan:  
H vs. LH
- ii. Shigatse, Dingri:  
upper H vs. HM, lower M vs. ML
- iii. Denjongka, Drokpa, Sherpa:  
H vs. L
- iv. Kyirong:  
H, M, L
- v. Sherpa (Hile)  
H, HM, L, LM
- vi. Dzongkha  
H, L, MH, ML

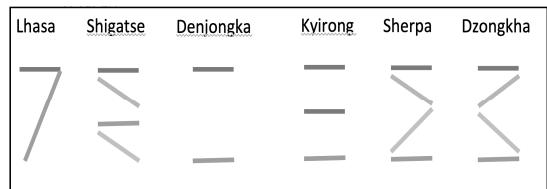


Figure 2. Schematic representation of tonal contrasts in six Tibetan varieties

In polysyllabic words, there is no variation in the Central Tibetan varieties. In Lhasa Tibetan we observe one of the two patterns shown in Figure 2, regardless of the monosyllabic contrasts, and this is true of other Central Tibetan varieties for which data has been reported as well. In other words, the variation in tonal behaviour in Central Tibetan languages hinges on the variation in number and type of contrasts in monosyllabic words, while polysyllabic words present the same system across languages.

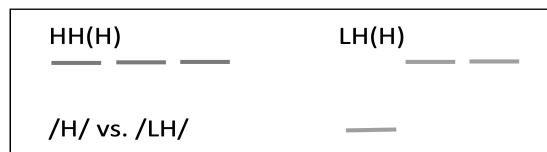


Figure 3. Tonal contrasts in polysyllables in Lhasa Tibetan

3. Nubri language

Nubri is a valley in northern Gorkha district, and is home to a culture that identifies as ethnically

Tibetan. Nubri is spoken roughly between Prok and Samagaun villages as shown in Figure 4. It has been described as a Tibetan variety (e.g. Dhakal 2018) and has a number of Tibetan ‘shibboleths’ (LaPolla 2012; Tournadre 2014) which characterize the Central Tibetan languages are true of a description of Nubri as well. Some of these are listed in (3); the list in Tournadre 2014 is largely attested in Nubri, as are the characteristics listed by LaPolla as typical of Tibetan varieties).

(3) Tibetanisms in (Samagaun) Nubri

- a. khyo ‘2SG’, < \*khyot
- b. kho ‘3SG.M’, < \*kho
- c. dyn ‘seven’, < \*bdun

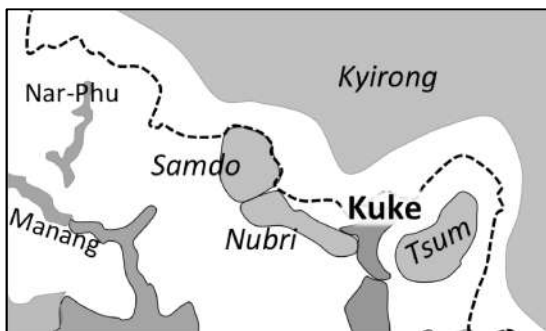


Figure 4. Linguistic map identifying the region where Nubri is spoken in northern Nepal.

There is documented diversity within Nubri with at least three clear dialect groups emerging as partitioned in Figure 5, which crucially separates Samdo in the north, which is much closer to Kyirong Tibetan and Kwak, Bihi and others in the Kutang region in the east where Kuke is spoken. (see Donohue 2019 (this volume) for results from a recent sociolinguistic survey). This dialectal diversity has been discussed elsewhere in a different linguistic context (e.g. Donohue 2018).



Figure 5. The major dialectal divides in Nubri Valley.

4. Tone in Nubri

The data that we draw on here is taken from the dialect spoken in Sama village (known locally as *Hrö*). Given its position in the upper Nubri valley, there is less influence from Kuke in the lexicon than is found in more eastern varieties. Given the position away from the large monasteries in Lho, we do not see as much (Plateau) Tibetan lexical or morphological influences either.

There are five tonal contrasts on monosyllables in Samagaun Nubri. The first two we could characterize as high falling vs a high level tone:

- (4) Tonal contrasts:
- |                                                        |         |
|--------------------------------------------------------|---------|
| high falling: [tɕ <sup>53</sup> ]                      | ‘horse’ |
| ~high level: [tɕ <sup>45</sup> ] ~ [tɕ <sup>44</sup> ] | ‘tiger’ |

A H vs. HM contrasting tonal system is widely attested in Ü-Tsang Central Tibetan varieties outside Lhasa. For example, this pair of tones is reported to contrast in descriptions of Shigatse (Haller 2000), Dingri (Herrmann 1989), and Dzongkha (van Driem & Tshering 1998; Watters 1996, Downs 2011), so this is in some sense an expected contrast. Indeed, for nearly half of the documented Central Tibetan varieties a two-tone contrast is all of the prosodic material present, though it is more frequently two level tones. Nubri presents a more complicated case, however. In addition to the two high (upper register) tones there is a lower register equivalent pair of tones, a mid-level and a mid-fall as shown in (5).

- (5) Register tonal contrasts:  
 H vs. HM (44,53)  
 matched by  
 M vs. ML (33, 21)

This is also not a surprising additional pair of contrasts. It is very natural to find similar contours in upper and lower pitch registers. Furthermore, such systems with paired high and low tones, the latter frequently accompanied by breathy phonation, are attested in (eastern) Tibetan Plateau varieties (Shigatse, Dingri). The closer varieties spoken in the Kyirong area appear to have more elaborate tone systems (Huber 2005), but the data from Nubri present a system quite different from at least the Lende dialect of Kyirong.

There is, however, one more contrastive tone in the Nubri tonal inventory – a rise-fall tone, LML (231). The full set of tonal contrasts are illustrated with near minimal pairs in (6).

(6) Nubri Tonal contrasts:

High:	H	44	[ta <sup>44~45</sup> ]
	‘tiger’		
High fall:	HM	53	[te <sup>53~52</sup> ]
	‘horse’		
Mid:	M(ML)	33(2)	[ta <sup>33~332</sup> ]
	‘tether’		
Low fall:	ML	21	[ta <sup>21</sup> ]
	‘arrow’		
Low convex:	LML	231	[to <sup>231~232</sup> ]
	‘potato’		

The mean fundamental frequency (f0) contours of a sample of representative tokens of each of these tones are plotted below in Figure 6a. The y-axis shows the frequency (Hz) and the x-axis shows the percentage point of the normalized duration as the contours were measured at 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100% intervals of token duration to enable sampling at comparable points of the tonal f0 trajectory over

time (for further elaborations on the methodology, please see e.g. C. Donohue 2012, 2013).<sup>1</sup>

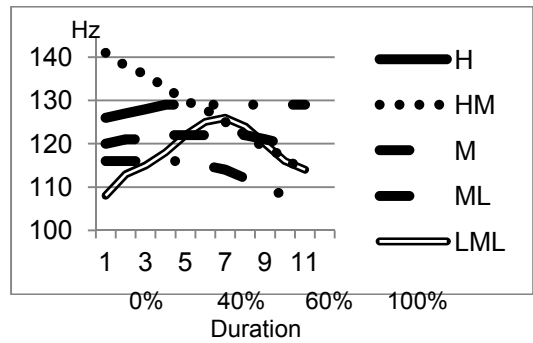


Figure 6a. Five basic tones in Nubri.

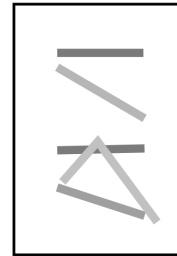


Figure 6b. Schematized Representation of tonal Contrasts in Nubri

The individual elements of the Nubri tone system are not unusual for a Central Tibetan language, if the 231 tone is treated as a LH(L) tone, underlyingly a rise. However, the combination is unprecedented.

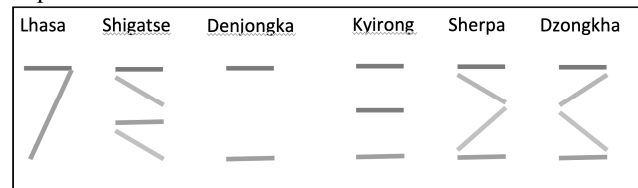


Figure 7. Schema of Central Tibetan tonal contrasts.

Figure 7 shows the different monosyllabic contours attested in different Central Tibetan

<sup>1</sup> Note there are significant differences in duration associated with these tones but for now we are assuming that the f0 is the primary contrastive cue.

languages (not all languages examined are listed, just example languages illustrating the different attested contours).

A great variety of tone systems are found in the Kham Tibetan dialects. Consider the examples in (7) (Dongwang: Bartee 2007; Rangakha: Suzuki 2007; Astong: Suzuki 2010; Cone: Jacques 2014; Brag-g.yab: Schwieger 1989; Rgyalthang: Hongladarom 1996, Wang 1996, Bodrong: Suzuki 2014; Tsharethong: Suzuki 2012; Batang: sKal-bzang 1984; sKobsteng: Suzuki 2013b; Dege: Häsler 1999; Sogpho: Suzuki 2011).

(7) Kham Tibetan

- a. Dongwang:  
HM, M, LM
- b. Rangakha, Astong, Cone:  
H vs. L
- c. Brag-g.yab:  
Ø
- d. Rgyalthang:  
H, HL, LM, LML
- e. Bodrong (~Tsharethong, Yangthang, Batang):  
H, HM, LH, LML
- f. sKobsteng  
H, MH, ML, LML
- g. Dege  
H, HM, ML, LM
- h. Sogpho  
H, L, HM, LM, LML

These differences are once again represented schematically, shown in Figure 8.

What is striking is the near identity of the Nubri tone system with that of Sogpho, a Kham (South-eastern) Tibetan variety, and the fact that Nubri is quite distinct from a typical Central Tibetan system. We leave this conundrum to future work.

Indeed five tone contrasts on monosyllables has not been reported for any plateau Tibetan language. We do note that the heavily contact-affected Chöchangcakha variety of eastern Bhutan has this number of monosyllabic contrasts, though with different contours (H M L HL LH).

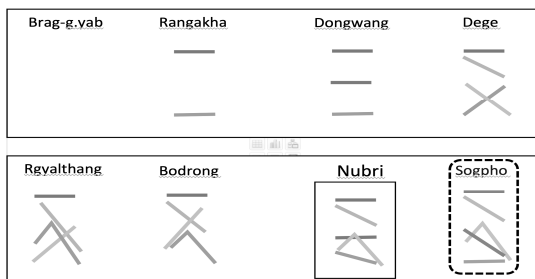


Figure 8. Schematic representation of tonal contrasts in a range of Kham Tibetan languages, plus Nubri.

Let us turn to the tonal patterns in polysyllables. Consider the words given in (8).

(8) Nubri polysyllables:

- [ɲöŋ<sup>355</sup> ma<sup>55</sup>] ‘bamboo’  
 [ja<sup>55</sup> ma<sup>22</sup>] ‘remainder’  
 [jöŋ<sup>33</sup> ʈöŋ<sup>33</sup>] ‘swastika’  
 [ne<sup>24</sup> ma<sup>42</sup>] ‘yarn’  
 [mo<sup>22</sup> mo<sup>44</sup>] ‘dumpling’

We can see that while the shapes are a little different to the contours on monosyllables, five contrasts are nonetheless maintained as schematized in Figure 9.

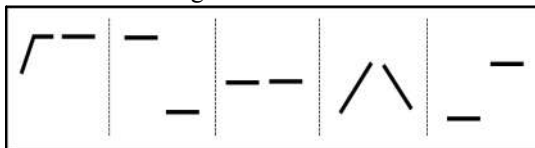


Figure 9. A schematic representation of the five contrastive tonal contours observed in Nubri polysyllables.

Importantly, no combinations other than those listed in (9) (or minor and alternating variants of these contours) are found; it is not possible, for instance, for a disyllabic word to consist of two syllables each with a high-falling tone (that is, \*[CV<sup>53</sup> CV<sup>53</sup>], for instance). In other words, the tonal possibilities for disyllabic words are not simply formed by combining separate monosyllables. We can map the polysyllabic contrasts to those found on monosyllables without too much difficulty.

## 5. Discussion and concluding remarks

It is clear that the tonal system of Nubri is very different from other Tibetan tone systems, particularly Central Tibetan tone systems.

### (9) Monosyllabic contrasts:

- Nubri: 5 contrasts
- Tibetan norms: 0, 2, 3, 4 contrasts
- Sogpho: 5 contrasts

As we have seen, crucially the Nubri tonal system is not just unusual in its number of contrasts on monosyllables, it is also distinct in preserving the same number of contrasts in polysyllables, something not elsewhere attested in Tibetan languages.

### (10) Polysyllabic tonal contrasts

- Nubri: five contrasts preserved on disyllables
- Tibetan norms: contrasts reduced to two: H vs LH<sup>2</sup>
- Tamangic norms: three or four contrasts
- Ghale: five contrasts

The Nubri tonal system is clearly different from most other Tibetan varieties; indeed, the system is more similar in many ways to non-Tibetan languages to the south, such as Ghale or Gurung. The only area in the Tibetosphere in which the monosyllabic contrasts carry over to polysyllabic words is at the eastern edge of the Khams region (e.g., Suzuki 2012).

Given that tonogenesis in Central Tibetan is not uniform, it is perhaps more likely to show convergence from multiple non-tonal sources than to represent divergence from a common tonogenetic innovation.

We conclude that the history of tone in Nubri cannot be accounted for by exclusive reference to Tibetan languages. The implication is that contact with a non-Tibetan language has played a significant role in the history of the language. A

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<sup>2</sup> We thank an anonymous reviewer for pointing out that Lhasa Tibetan marks tone on the first syllable of a polysyllabic word, so is quite a different system.

detailed etymological study of the development of Old Tibetan or Classical Tibetan words will be needed to fully understand.

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