

# UC Santa Barbara

## Himalayan Linguistics

### Title

Observations on the phonology of Gamāle Khām

### Permalink

<https://escholarship.org/uc/item/7fh890tc>

### Journal

Himalayan Linguistics, 10(1)

### Author

Wilde, Christopher

### Publication Date

2011

### DOI

10.5070/H910123577

### Copyright Information

Copyright 2011 by the author(s). This work is made available under the terms of a Creative Commons Attribution-NonCommercial-NoDerivatives License, available at <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Peer reviewed

# himalayan linguistics

A free refereed web journal and archive devoted to the study of the  
languages of the Himalayas

## Himalayan Linguistics

---

*Observations on the phonology of Gamāle Khām*

**Christopher P. Wilde**  
SIL International

### ABSTRACT

The aim of this study is to present preliminary findings from ongoing research of the Gamāle Khām language. The Gamāle variants presented here are spoken in the Gām, Kuipādhārā and Tamāli villages in north-eastern Rolpā of mid-western Nepal. I concentrate on the vowel and consonant contrasts of words elicited in isolation. Observations concerning phonotaxis are also considered. Phonation, tone and stress are only treated cursorily at present since their patterns are yet to be determined with any certainty. Where necessary, certain aspects of Gamāle phonology are compared with related Tibeto-Burman languages.

### KEYWORDS

Gamale Kham, Magar, Rolpa, Gam, phonology, labial-palatal, phonation

This is a contribution from *Himalayan Linguistics*, Vol. 10(1) [*Special Issue in Memory of Michael Noonan and David Watters*]: 273–290.

ISSN 1544-7502

© 2011. All rights reserved.

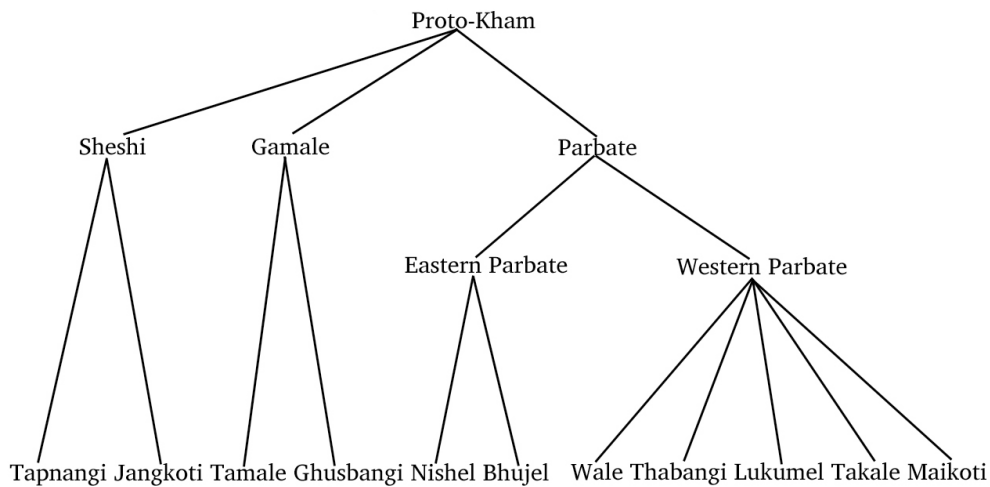
This Portable Document Format (PDF) file may not be altered in any way.  
Tables of contents, abstracts, and submission guidelines are available at  
[www.linguistics.ucsb.edu/HimalayanLinguistics](http://www.linguistics.ucsb.edu/HimalayanLinguistics)

# *Observations on the phonology of Gamāle Khām<sup>1</sup>*

**Christopher P. Wilde**  
SIL International

## 1 Introduction

In this article I describe the phonemic elements of Gamāle Khām. Gamāle Khām is a southern Khām language spoken in the Rolpā district of mid-western Nepal by approximately 13,000 speakers (Lewis 2009). The Khām languages belong to the Magarish/Khām-Magar branch of (Central) Himalayish (following Watters 2002: 16; 2005: 340; Noonan 2003b). Watters (2002: 12; also 2005: 341) presents the following subgroupings of Proto-Khām:



**Figure 1. Subgrouping of Proto-Khām (from Watters 2002: 12)**

1 In 2004 David Watters approached me and asked whether I would work alongside him in studying some of the variants of Khām. He said that he had conducted approximately three months of field study on Gamāle Khām in the village of Tamāli, but that there was a need for a great deal more field work. This piqued my interest, and in 2008–2009 I was privileged to have the opportunity to work on Gamāle Khām. I benefitted immensely from David’s guidance and suggestions. He was a friend and a mentor. He is missed tremendously.

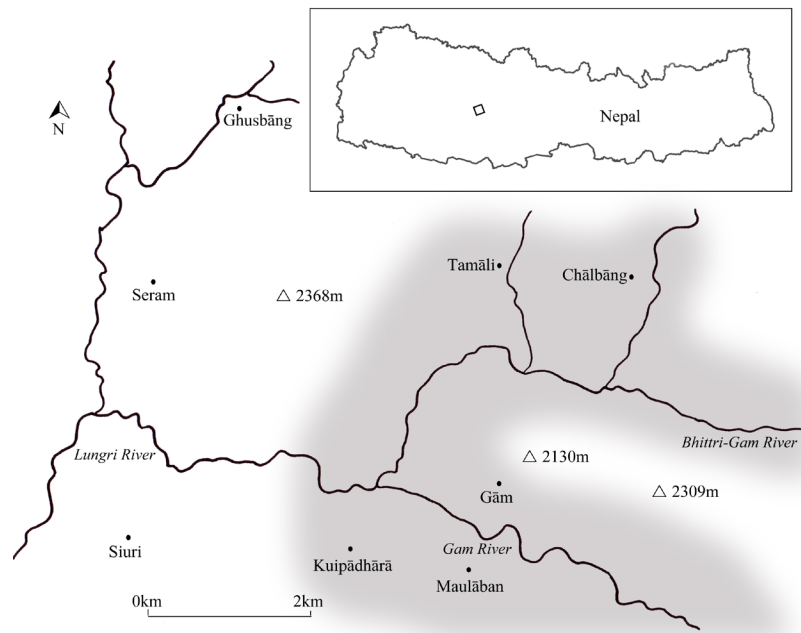
I would like to extend grateful thanks to Mr. Purna Lāl Gharti Magar (Gām, Rolpā), Mr. Prasād Budhā Magar (Kuipādhārā, Rolpā), Mr. Prem Bahādur Budhā Magar (Tamāli, Rolpā), Mr. Harka Bir Gharti Magar (Maulāban, Rolpā) and Ms. Agitā Budhā Magar (Chālābāng, Rolpā) for their assistance during the collection of the corpus. Likewise I would like to thank Mr. Jagesar Gharti Magar (Ghumlibāng, Rukum), Mr. Rām Dās Budhā Magar (Bāchhigāū, Rukum) and Mrs. Sapanā Pun (Bāchhigāū, Rukum) for their assistance in collecting data from the Western Parbate variety. Thanks are also due to James A. Matisoff, Stephen A. Watters, Peter E. Wilde, and the reviewers of this paper for their valuable comments and kind assistance.

The data for the current study comprises approximately 1000 words collected between September and November 2008 from one informant from the central village of Gām, and 600 words collected from an informant from the village of Kuipādhārā on the southern fringes of the language area. These findings were also compared with over 1000 words elicited in the first months of 2009 from an informant from the northern village of Tamāli. Various language data was also collected from the villages of Maulāban and Chālābāng. No phonological differences in the Gamāle Khām spoken in these villages were encountered.<sup>2</sup>

Conversely, Gamāle informants report that the Khām spoken in Ghusbāng, Siuri and Seram, a little to the west of the main Gamāle area, is significantly different from the Khām spoken in the central Gamāle villages. This observation coincides with Watters S. (1988: 6,9) who maintains:

Ghusbāngi is similar to Gamāle and needs to be further tested for intelligibility. [...] It is interesting to note that Ghusbāngi is 76% lexically similar both with Takale and Gamāle. Ghusbāngi is only a days walk from Gam Khola, whereas a three day walk from Taka. Perhaps through contact it is more intelligible with Gam Khola.<sup>3</sup>

This current work has not considered the phonology from these peripheral villages and it is therefore not possible to verify the degree of phonological similarity. Figure 2 shows the locations of the villages where Gamāle is spoken.



**Figure 2. Map of Gamāle villages in north-eastern Rolpā (language area shown in grey shading)**

2 Phonemes and their allophonic variations were determined perceptually, based on the elicitation of minimal or closely-minimal pairs. Transcriptions were also checked according to digital recordings. Variation in the pronunciation of the informants from the three villages have been noted in the examples. Verification of the findings based on acoustic analysis has not been attempted in this paper.

3 Likewise, Watters (2002: 12) notes that Ghusbāngi has only preliminarily been grouped with Gamāle.

Although the phonemic representation is still tentative, the data in this analysis is presented for the most part in both the phonemic form (slanted brackets / /) and the phonetic form (square brackets [ ]). However in some cases, due to uncertainty as to the phonemic form, only the phonetic form has been given.

## 2 Segmental phonology

In this section I will consider vowel and consonant contrasts, including vowel nasalization and length.

It is necessary to begin by introducing Gamāle phonation types, features which permeate the entire phonology. Gamāle Khām distinguishes between two, possibly three phonation types. Modal phonation contrasts (1a) with breathy (murmur) phonation (1b). The data from the corpus also attests words which are articulated variably with stiff voice or creaky voice (following terminology from Maddieson and Ladefoged 1996: 48, 55). These words are always accompanied by relatively higher pitch than words with modal or breathy phonation.<sup>4</sup> I will refer to such words as having “tense phonation” (1c). Phonation and tone will be considered further in section 4.

- (1) a. modal phonation /waʔ-/ [waʔ-] ‘scoop up (water; food)’  
 b. breathy phonation /wḁ-/ [wḁ-] ‘feel/be hot’  
 c. tense phonation /wáʔ-/ [wáʔ-] ‘spew (out of mouth)’

### 2.1 Vowel contrasts

#### 2.1.1 Oral Vowels

Gamāle has (at least) six phonemic oral vowels: /i/, /e/, /a/, /ə/, /o/ and /u/. The status of a possible seventh vowel [ɛ] is still uncertain (cf. section 2.1.3 for further discussion).

	Initial	Medial	Final
i	/iŋ-/ [iŋ-] ‘sleep’	/pima/ [pi:ma] ‘wheat’	/si-/ [si:-] ‘wipe; sweep’
e	/e-/ [e:-] ‘defecate’	/préʔ-/ [préʔ-] ‘eat (greedily)’	/dze-/ [dze:-] ‘make’
a	/áʔ-/ [áʔ-] ‘shoot’	/paʔ-/ [paʔ-] ‘break.TR’	/za/ [za] ‘child’
ə	/ə-/ [ə-] ‘3POSS’	/pəl-/ [pəl-] ‘cut; carve’	/sə/ [sə] ‘with’
o	/o-/ [o:-] ‘drink’	/poʔ-/ [poʔ-] ‘wrap’	/goso/ [goso] ‘locust’
u	/uṛ-/ [uṛ-] ‘carry’	/pul/ [pul] ‘chaff’	/tsu/ [tsu] ‘vegetables’

Table 1. Oral vowel distribution

4 Since Gamāle words with tense phonation are not consistently articulated with laryngealization, but are invariably articulated with high pitch, I have tentatively transcribed tense phonation with the (high pitch) accent / ˈ /.

### 2.1.2 Nasalised vowels

Gamāle has (at least) six contrastive nasalised vowels: /ĩ/, /ẽ/, /ã/, /õ/, /õ/ and /ũ/. The status of /ẽ/ is still uncertain (cf. section 2.1.3 for further discussion). It is also unclear why nasalised vowels do not occur frequently in word-initial position.

	word-initial	word-medial	word-final
i	-	/sĩ-/ [sĩ:-] ‘die’	/prĩ?-/ [prĩ?:-] ‘beat with a stick’
e	-	/sẽ?-/ [sẽ?:-] ‘comb hair’	/pẽ-/ [pẽ:-] ‘tell’
a	-	/tãdə/ [tã:də] ‘a platform on which fodder is stored for cattle’	/hã/ [hã:] ‘face’
ə	/ẽsi/ [ẽsi] ‘smell’	/sãj-/ [sãj-] ‘laugh’	-
o	-	/tsẽtsẽkõkõ/ [tsẽtsẽkõkõ] ‘fart[ONOMATOPOEIC]’	/mõ-/ [mõ:-] ‘fry (corn, nuts)’
u	-	/bũ(j)gĩ/ [bũjĩ] ‘belly’	/kũ-/ [kũ:-] ‘steal’

**Table 2. Nasalised vowel distribution (excluding words with nasal codas or voiceless nasal onsets)**

Contrastive nasalisation is found in all three phonation types (2a-c).

- (2) a. modal /ɸe?-/ [ɸe?:-] ‘sell’ vs. /ɸẽ-/ [ɸẽ:-] ‘taste; sheer/shave’  
 b. breathy /gwe?-/ [g<sup>h</sup>wɛ?:-] ‘dig (hole)’ vs. /klɛ̃/ɛ̃-/ [klɛ̃:-] ‘break’  
 c. tense /pré?-/ [pré?:-] ‘eat (greedily)’ vs. /ké?-/ [ké?:-] ‘put in crack/slit’

Conditioned nasalisation occurs in syllables with a nasal coda (3a-b), or a voiceless nasal onset (3c-e).

- (3) a. /kaŋ/ [kãŋ] ‘boiled corn meal; rice’  
 b. /dɔŋ-/ [d<sup>h</sup>õŋ-] ‘escape; run away’  
 c. /ŋa-/ [ŋã-] ‘go’  
 d. /ŋəj/ [ŋõj̃-] ‘snatch away’  
 e. /m̩we/ [m̩wẽ] ‘shadow’

### 2.1.3 Contrast between [e] and [ɛ]

Preliminary observations suggest that there may be a difference in vowel quality between [e] and [ɛ]. Whether [e] and [ɛ] are contrastive, or whether they are perhaps in complementary distribution (e.g. conditioned by phonotactic or suprasegmental considerations) will need to be determined in further research. As shown in examples (4a-b), (5a-d) and (6a-e), there are perhaps grounds to posit a contrast between the three front vowels [i], [e] and [ɛ].<sup>5</sup>

5 If this is the case, the Gamāle front vowels may resemble the front vowels of Hayu which have been described as /i/, /ɪ/ and /ɛ/ (Michailovsky and Mazaudon 1973: 140). Hayu, previously classified alongside Chepang and Magar (and therefore also alongside Khām), has recently been proved to have closer affiliation with the Kiranti languages (Michailovsky 2003: 518; Ebert 2003: 505-506).

- (4) a. /bɛʔ nja/ [b<sup>h</sup>ɛ:ʔ nja] ‘basket bring-IMP’  
 b. [b<sup>h</sup>ɛ:ʔ-nja] ‘decay-INF’
- (5) a. /kī-/ [kī:-] ‘pick up; plough’  
 b. /kɛ-/ [kɛ:-] ‘drop’  
 c. /kěʔ-/ [kěʔ-] ‘put in a crack/slit’  
 d. [kě:-] ‘put a flower, *tikā* (on someone else)’
- (6) a. /tsī-/ [tsī:-] ‘take’  
 b. /ts<sup>h</sup>eʔ-/ [ts<sup>h</sup>e:ʔ-] ‘be afraid’  
 c. /ts<sup>h</sup>éʔ-/ [ts<sup>h</sup>é:ʔ-] ‘for a forehead to ache after carrying a load’  
 d. [ts<sup>h</sup>ě:-] ‘for water to become clear’ (high pitch)  
 e. [ts<sup>h</sup>ě:-] ‘pick up’

Examples (7a-c) indicate that, by comparison with those examples which have the vowel [ɛ] in (4b), (5d) and (6d-e), there is also a distinct contrast between [ɛ] and [a].

- (7) a. /bɔʔ-nja/ [b<sup>h</sup>ɔ:ʔ-nja] ‘share’  
 b. /kaʔ-/ [kaʔ-] ‘to hit the dried thread-like insides of a hemp plant with a small stick in order to clean and soften them’  
 c. /ts<sup>h</sup>a-/ [ts<sup>h</sup>a:-] ‘graze.TR’

#### 2.1.4 Vowel length

Watters (2005: 343) maintains that “most Kham dialects make a distinction between long and short vowels, though in most the distinction is contrastive only for monosyllabic verb roots.” Examples (8a-b), transcribed from speakers from two villages in the Takale area (c.f. Figure 1), provide evidence of this length contrast:

- (8) a. /pa-/ [pa-] ‘fall down; stumble’ (Bācchigāū and Ghumlibāng, Rukum district; cf. Watters 2004: 245)  
 b. /pa:-/ [pa:-] ‘break’ (Bācchigāū and Ghumlibāng, Rukum district; cf. Watters 2004: 246)

Conversely, there is no evidence of contrastive length in Gamāle Khām. Initial observations suggest that lengthening in Gamāle is due to environmental conditioning alone: breathiness on the vowel nucleus tends to add slight length to the vowel, and vowels in open syllables tend to be longer in duration than those in closed syllables.

From a diachronic perspective, the length contrast in Western Parbate is reported to be a compensatory lengthening due to the loss of syllable-final consonants (Watters 2002: 18). In comparison, the lengthened vowel in (8b) above is substituted in the Gamāle Khām equivalent (9a) by a short vowel and syllable-final glottal plosive (cf. section 2.2.1 for discussion on the origin of the Gamāle glottal). Examples (9b-c) indicate the same pattern.

- (9) a. /paʔ-/ [paʔ-] ‘break’ (Gām, Kuipādhārā and Tamāli, Rolpā district)  
 b. /po:-/ [po:-] ‘tie (as a turban or waistband)’ (Bācchigāū and Ghumlibāng, Rukum district; cf. Watters 2004: 254)  
 c. /poʔ-/ [poʔ-] ‘wrap a waistband’ (Gām, Kuipādhārā and Tamāli, Rolpā district)

## 2.2 Consonant contrasts

The consonant phonemes in Table 3 have been indentified in Gamāle Khām:

		Bilabial	Alveolar	Labial-palatal	Palatal	Velar	Glottal
Plosive	vl.unasp.	p	t			k	ʔ
	vl.asp.	p <sup>h</sup>	t <sup>h</sup>			k <sup>h</sup>	
	vd.	b	d			g	
Affricate	vl.unasp.		ts				
	vl.asp.		ts <sup>h</sup>				
	vd.		dz				
Fricative	vl.		s				h
	vd.		z				
Nasal	vd.	m	n			ŋ	
	vl.	m̥	n̥				
Approximant	lateral		l				
	lateral vl.		ɭ				
	central			ɕ	j	w	
	central vl.			ɕ̥		ɰ	
				r			

**Table 3. Consonant phonemes**

### 2.2.1 Plosives

Voiceless unaspirated, voiceless aspirated, and voiced plosives are found to contrast stem-initially in three places of articulation: bilabial (10a-c), alveolar (11a-c) and velar (12a-c).

- (10) a. /p/ /po-/ [po:-] ‘give birth’  
 b. /p<sup>h</sup>/ /p<sup>h</sup>oʔ-/ [p<sup>h</sup>oʔ:-] ‘pay; weigh’  
 c. /b/ /bi/ [bi(ʔ)] ‘rat’



- (11) a. /t/ /təʔ-/ [təʔ-] ‘play (an instrument)’  
 b. /tʰ/ /tʰəŋ-/ [tʰəŋ-] ‘dry’  
 c. /d/ /dəm-/ [dəm-] ‘remain peacefully (of grazing animals)’
- (12) a. /k/ /kū-/ [kū:-] ‘steal’  
 b. /kʰ/ /kʰul-/ [kʰul-] ‘call over’  
 c. /g/ /gū-/ [gū-] ‘shake (involuntarily)’

The alveolar plosives are articulated with the tongue blade on the alveolar ridge.

The glottal plosive is phonemic in stem-final position, as (13a-b) and (14a-b) indicate. Quite often glottal plosive articulation falls short of a complete closure of the vocal cords. In such a case, it is realised as a partial stricture at the glottis, and is sometimes accompanied by laryngealization on the preceding vowel.

- (13) a. /bɔ-/ [bʰɔ:-] ‘flow (over)’  
 b. /bɔʔ-/ [bʰɔ:ʔ-] ‘uproot’
- (14) a. /ja-/ [ja(:)-] ‘give’  
 b. /jaʔ-/ [jaʔ-] ‘get slightly burnt’

A word-final glottal contrast is also found with nouns, as (15a-b) and (16a-b) demonstrate.

- (15) a. /jĕ-/ [jĕ/ĕ:] ‘work’  
 b. /jĕʔ-/ [jĕ/ĕ:ʔ] ‘price’
- (16) a. /m̩we-/ [m̩wē] ‘shadow’  
 b. /kreʔ-/ [kre:ʔ] ‘(long-throated) lice comb’

The stem-final glottal plosive is not related to tense phonation. This is demonstrated in the following verbs, where the glottal plosive follows breathy nuclei as in (17a-b), as well as nuclei with modal (17c) or tense (17d) phonation. The stem-final glottal plosive does not obligatorily accompany words with tense phonation, as exemplified by (17e).

- (17) a. breathy phonation, C-initial /geʔ-/ [gʰe:ʔ-] ‘step over’  
 b. breathy phonation, CC-initial /br̩iʔ-/ [br̩i:ʔ-] ‘smack; whack’  
 c. modal phonation /ɸeʔ-/ [ɸe:ʔ-] ‘sell’  
 d. tense phonation /wáʔ-/ [wá/áʔ-] ‘spew (out of mouth)’  
 e. tense phonation /tá/ [tá/á] ‘intestines’

The stem-final glottal plosive is the remnant of a historical stem-final plosive, such as /p/ (18a), /t/ (18b), or /k/ (18c).<sup>6</sup>

6 I am grateful to David Watters (p.c., 2008) for this observation and for providing the Proto-Kham forms presented here. Cf. also Watters (2005: 343): “Gamale has [...] developed a syllable final [ʔ] in diphthongs which come from the loss of *-t*”, and Watters (2004: 12) “In Gam, final *\*-s* contrasts with final *\*-t*, in that final *\*-t* produces a glottal, where *\*-s* does not.”

- (18) a. /gəʔ-/ [gəʔ-] ‘draw water’ < \*gəp- ‘draw water’  
 b. /dzeʔ-/ [dze:ʔ-] ‘make’ < \*dzət- ‘make’  
 c. /bɔʔ-/ [b<sup>h</sup>ɔ:ʔ-] ‘uproot’ < \*bohk- ‘uproot’

The glottal plosive is non-contrastive in other environments. The glottal plosive occurs word-initially preceding a vowel, but this generally occurs only in words with tense phonation (19a), or variably in words with modal phonation (19b). Conversely, the glottal plosive tends not to be articulated in word-initial position when preceding a breathy vowel (19c). The word-initial glottal in these cases is interpreted to be conditioned by the environment and phonation type.

- (19) a. tense phonation /áʔ-/ [ʔá/áʔ-] ‘shoot; throw (a stone)’  
 b. modal phonation /iŋ-/ [(ʔ)iŋ-] ‘sleep’  
 c. breathy phonation /ɛ-/ [ɛ-] ‘defecate’

Additionally, an epenthetic glottal plosive is found intervocally in stem-initial position, irrespective of the phonation type of the stem. The stem-initial glottal in these cases is interpreted to be environmentally conditioned. Compare for example (20a) with (20b-c), and (19c) with (20d-e):

- (20) a. /o-/ [ʔo-] ‘drink’  
 b. /gə-õ/ [gə-ʔõ] (IMP-drink) ‘drink! (non-honorific)’  
 c. /mə-o-ŋ/ [mə-ʔõ-ŋ] (NEG-drink-1sg) ‘I don’t drink’  
 d. /gə-ɛ/ [gə-ʔɛ(ʔ)] (IMP-defecate) ‘defecate! (non-honorific)’  
 e. /ja-ɛ-rə/ [ja-ʔɛ:rə] (3-defecate-PL) ‘they defecated’

### 2.2.2 Affricates

Voiceless unaspirated, voiceless aspirated and voiced affricates are articulated at the alveolum (21a-c) and contrast only in stem-initial position.

- (21) a. /ts/ /tsəl/ [tsəl] ‘bamboo; material for weaving a basket’  
 b. /ts<sup>h</sup>/ /ts<sup>h</sup>əm/ [ts<sup>h</sup>əm] ‘wooden foot bridge’  
 c. /dz/ /dzəŋ/ [dzəŋ] ‘back’

### 2.2.3 Fricatives

There are three fricatives in Gamāle: /s/ (22a), /z/ (22b) and /h/ (22c). Note that the fricative /z/ (22b) contrasts with the affricate /dz/ (22d). All three fricatives occur in stem-initial position.

- (22) a. /so-/ [so:-] ‘itch’  
 b. /zɔʔ-/ [zɔ:ʔ-] ‘jump’  
 c. /har/ [ha/ɑr] ‘cow’  
 d. /dzɔ/ [dz<sup>h</sup>ɔ] ‘hornet’

The voiceless palatal fricative [ç] was found in rapid speech as an allophone of /j/ when following aspiration on the preceding voiceless consonant (23a). Also, a voiced velar plosive tends to palatalize and merge with a following palatal glide, resulting in a voiced palatal fricative (23b). Both [ç] and [j] in these cases are considered to be environmentally conditioned.

- (23) a. /k<sup>h</sup>j/ [çç] as in /k<sup>h</sup>jeka/ ‘from’ pronounced [ççeka] / [çeka]  
 b. /gʲ/ [jj] as in /ə-gjʲ/ ‘this-like’ pronounced [əjjʲ] / [əjʲ]

#### 2.2.4 Nasals

Gamāle has two sets of nasals: voiced (24a-c) and voiceless (25a-b). Voiced nasals occur in both stem-initial and stem-final position, whereas voiceless nasals occur only stem-initially. Whether the voiceless set should be interpreted as [h+nasal] clusters is considered in section 2.2.6. It is unclear at this stage why the phonology lacks the voiceless counterpart of the velar nasal [ŋ].<sup>7</sup>

- (24) a. /m/ /məŋ-/ [m̩əŋ-] ‘be under the influence of alcohol’  
 b. /n/ /nəm/ [n̩əm] ‘sky’  
 c. /ŋ/ /ŋən/ [ŋ̩ən] ‘spinach’
- (25) a. /ṃ/ /ṃo-/ [ṃ̩o-] ‘drink by lowering one’s mouth into the drink’  
 b. /ṅ/ /ṅə-/ [ṅ̩ə-] ‘look’

#### 2.2.5 Approximants

Five voiced (26a-e) and three voiceless (27a-c) approximants have been encountered.<sup>8</sup> All eight approximants occur in stem-initial position, while only /j/, /r/, /l/ and /w/ occur in stem-final position (28a-d).

7 Matisoff (2003: 37) maintains, “Many TB languages, including Burmese, Pumi, and the Chin group, have a series of voiceless or aspirated nasals, which can easily be shown to derive from earlier combinations of \*s- or \*ʔ- with a nasal root-initial [...]. Voiceless nasals are widely distributed in TB, being found in Himalayish [...]; Qiangic [...]; Lolo-Burmese [...]; Nungish [...] and Kamarupan.” Voiceless nasals are not found in the northern Khām varieties. Closely related Tanahu and Syangja Magar (Himalayish) feature only modal voice and murmured nasals (Grunow-Härsta 2008: 52-53). Voiceless nasals are, however, found in Chepang (Himalayish; cf. Caughley 1970; 1982; 2000), which according to Caughley (1982: 36) also has a word-initial voiceless velar nasal.

8 Voiceless approximants do not feature in northern Khām varieties or Magar (Himalayish) either, but they are found in Chepang (Himalayish), and in more distantly related Tamangic languages (Bodish) and Hayu (Kiranti). In general, Matisoff (2003: 38) maintains that languages “with voiceless nasals frequently have voiceless resonants (liquids and/or semivowels) as well, e.g. Burmese, Dhimal. Manang (Tamangic group of Himalayish) has voiceless liquids /hl hr/, but no voiceless nasals.”

Mazaudon’s (1996: 105) reconstruction of Proto-TGTM (comprising Tamang, Gurung, Thakali and Manangi) initials includes four voiceless approximants: [hl], [hr], [hj] and [hw]. Noonan (2003a: 338) finds the voiceless lateral and the voiceless rhotic approximant in Nar-Phu. Honda (2002: 195) maintains that Seke has “[...] two sets of liquids, voiceless (/L/ and /R/) and voiced (/l/ and /r/). Voiceless liquids are also found in Thakali (all three dialects), Manangba, Nar-Phu [...] and Western Tamang (/R/ only).” Gurung (Michailovsky 1988: 30) and Hayu (Michailovsky et al. 1973: 141; Michailovsky 2003: 519) have a voiceless lateral approximant, whereas Chepang (Caughley 1982; 2000) has voiceless lateral, rhotic, palatal and labial-velar approximants.

- (26) a. /w/ /weʔ-/ [weʔ-] ‘sprinkle’  
 b. /j/ /ja/ [ja:] ‘mouth’  
 c. /ɥ/ /ɥi-/ [ɥi:-] ‘leak’  
 d. /l/ /la/ [la] ‘day’  
 e. /r/ /raʔ-/ [raʔ-] ‘scatter’
- (27) a. /m/ /meʔ/ [meʔ] ‘over there’  
 b. /ɥ/ /ɥiʔ-/ [ɥiʔ-] ‘burn.TR’  
 c. /ʃ/ /ʃa/ [ʃa] ‘leaf’
- (28) a. /kəj-/ [kə<sup>i</sup>-] ‘eat (meat)’  
 b. /k<sup>h</sup>ər-/ [k<sup>h</sup>ər-] ‘fry in oil’  
 c. /k<sup>h</sup>əl-/ [k<sup>h</sup>əl-] ‘spin’  
 d. /dəw/ [d<sup>h</sup>ə<sup>w</sup>] ‘difficult’

Based on the data presented in Table 4, it is clear that the labial-palatal approximants [ɥ] and [j] are not the allophones of the approximants [w], [j], [m] or the glottal fricative [h].<sup>9</sup>

	/w/	/m/	/ɥ/	/ɥ/	/j/	/h/
i	-	-	/ɥi/ [ɥi] ‘yam’	/ɥi/ [ɥi] ‘hemp’	/jiŋ/ [jiŋ] ‘ox’	/hī/ [hī: ‘nose; pus’
e	/weʔ-/ [weʔ-] ‘blossom’	/mē/ [mē] ‘lower’	/ɥe/ [ɥe] ‘husband’	/ɥe/ [ɥe] ~evil spirit’	/jē/ [jē: ‘work’	-
a	/wa/ [wa] ‘axe; only’	/ma/ [ma] ‘tooth’	/ɥa-/ [ɥa:-] ‘turn around’	/ɥa/ [ɥja] ‘monkey’	/ja/ [ja: ‘mouth’	/hā/ [hā: ‘face’
ə	/wəj/ [wə <sup>i</sup> ] ‘flower’	-	-	-	-	/həŋsja/ [həŋsja] ‘sickle’
o	/wɔ r/ [wɔ r] ‘plough’	-	-	/ɥo/ [ɥjo] ‘fried seeds’	-	/hoŋ/ [hōŋ] ‘distant’
u	-	-	-	-	/juŋ/ [juŋ] ‘heart’	/huŋ/ [hūŋ-] ‘slurp’

**Table 4. Labial-velar, labial-palatal and palatal approximants and glottal fricative**

9 The labial-palatal approximant [ɥ] has been found in several (more distantly related) Tibeto-Burman (Bodish) languages of Nepal: the Risiangku dialect of Tamang, the Marpha dialect of Thakali and Nar-Phu.

According to Mazaudon (1973: 127) in Tamang the three triphthongs [iui], [ioi] and [iai] are pronounced as [ɥi] or [yi]. Additionally, the triphthong [iua:] in the word ‘*siua-pa*’ ‘to remove excess from a vessel’ is pronounced [ɥa:ba]. Cf. also Mazaudon (1973: 55-57; 2003: 292) and Namkung (1996: 359) in regards to Tamang diphthongs and triphthongs.

The vowel cluster [ui] is reported to be pronounced as [ɥi] after the dentals in the Marpha dialect of Thakali (Namkung 1996: 374, referring to Mazaudon 1994). Mazaudon (1996: 111) also notes a [yi]-diphthong in Nar-Phu: “\**ut* > *yi* ‘ball of wool’ *TGTM* \*<sup>B</sup>*thut* ‘to join at the end of a rope’ > *Nar* <sup>554</sup>*thyi*, *Phu* <sup>55</sup>*thy*/*thy*<sup>i</sup> (cf. Manang <sup>44</sup>*thi*).” The phone [ɥ] has also been encountered as an (idiolectal) allophone of [w] in the Bhujeli word /winʔ/ ‘bat’ (Ross Caughley p.c., 2008).

As demonstrated in Table 4, the labial-palatal approximants are articulated as [ɥ] and [ɥ̥] when preceding the front vowels [i] and [e], but as [ɥj] and [ɥ̥j] when preceding the vowel [a] or the vowel [o]. The palatal glide [j] in this case is considered to be a case of elision between a close front articulation of [ɥ] (i.e. corresponding to the vowel [y]) to the central open vowel [a] or the back vowel [o]. The three examples in Table 4 are therefore interpreted as (29a-c) respectively.

- (29) a. /ɥḁ-/ [ɥjḁ:-] ‘turn around’  
 b. /ɥḁ/ [ɥjḁ] ‘monkey’  
 c. /ɥo/ [ɥjo] ‘fried seeds’

Concerning the labial-palatal approximants in Gamāle,<sup>10</sup> Watters (2005: 343) maintains:

The Gamale and Eastern Parbate dialects have glides with [w] and [y] combined in *wya* and *wyi*, coming from the loss of prefixed \*p- or final \*p. [...] In Gamale, the glide vowels [ü] and [ö] can also occur as voiceless vowels/glides, as in *hwya* [ü̥æ] < \*p-s-ya ‘moon,’ and *hwyi* [ü̥i] < \*hi-p ‘to roast.’

I have, however, interpreted [ɥ] and [ɥ̥] as approximants in their own right due to syllabifunctional constraints. As shown in Table 5, in section 3.1, there are no cases of a central approximant in the initial position of a CC-cluster. The only certain example of any approximant in the initial position of a CC-cluster, in the data corpus thus far, is the rhotic in the sequence /rw/ (30a-b).

- (30) a. /rwe(?)/ [rwe(?)] ‘above’  
 b. /rwe(?) ne?-/ [rwe(?) ne?-] ‘put above’

### 2.2.6 Analysis of voiceless nasals and approximants

Voiceless nasals and approximants are restricted to stem-initial position (31a-e). Prefixes do not normally cause the voicing of the following voiceless element (32a). However, in verb compound constructions the voiceless element (32b) is voiced by the preceding element (32c). Voiceless segments are distinct from segments which gain breathiness from the following breathy vowel nucleus, as a comparison of (31a-e) and (33a-e) indicates.

10 The Proto-Tibeto-Burman cluster \*yw has been noted by Benedict (1972: 51): “Initial \*yw- has not been established for any general TB root but appears in at least two Kuki-Naga roots: \*ywar ‘sell’ [...] \*ywi ‘follow.’” These roots are also discussed by Matisoff (1992: 161-162), who further comments (2003: 63): “The cluster \*yw appears in a couple of roots (\*ywar ‘sell’; perhaps a loan from Austro-Tai) and \*ywi ‘follow’, which I have shown to have a good Sino-Tibetan etymology.”

To determine whether the Proto-TB \*yw-cluster could be related to the Gamāle Khām labial-palatals would require further study. There was likely to have been a schwa between the two approximants, but the cluster may have developed into the labial-palatal in some daughter languages (James Matisoff p.c., 2011). The similarity of the Gamāle word /ɥe?-/ [ɥe:ʔ-] ‘sell’ to the Kuki-Naga root \*ywar is, however, interesting – according to James Matisoff (p.c., 2011) this “[...] may well be from \*ywar, in which case we’d have to say that this root is not restricted to Kuki-Chin.” The similarity between the Proto-TB root and the Khām equivalent(s) is also noted by Watters (2004: 347), who puts forward the Proto-Khām root \*p-yet.

- (31) a. /ṃo-/      [ṃō-] ‘drink by lowering one’s mouth into the drink’  
 b. /ṅa/      [ṅã] ‘solid grain mass which ferments to produce rice wine’  
 c. /ʈu/      [ʈu] ‘long’  
 d. /ma/      [ma] ‘tooth’  
 e. /ṽi-si-/    [ṽi:-si-] ‘learn’
- (32) a. /a-ṅe-rə/    [a-ṅē-rə] (1SG.POSS-friend-PL) ‘my friends’  
 b. /ṅa-/      [ṅã-] ‘go’  
 c.              [tsĩ-na-] (take-go) ‘go to take’
- (33) a. /mṃ-/      [ṃṃ:] ‘fry (corn, nuts)’  
 b. /ṅṅ:/      [ṅṅ:] ‘nasal mucus’  
 c. /lṅ-/      [lṅ:] ‘buy’  
 d. /wṗ-/      [wṗ:] ‘be hot’  
 e. /ṽi-si-/    [ṽi:-si-] ‘fart’

It is unclear whether these should be analysed as sequences of /h+sonorant/. Watters (2005: 342), for example, takes this stance for the Gamāle Khām and Sheshi Khām dialects, as does Caughley (1982: 36) for Chepang, and Michailovsky and Mazaudon (1973: 141) and Michailovsky (2003: 519) for Hayu. The fact that the voiceless sonorants occur only in stem-initial position (31a-e) may present distributional evidence for such an analysis. However, Gamāle syllable structure initially seems to pose syllabificational restrictions. Firstly, no initial CCC-clusters have been encountered to date, and therefore (34b) would seem a more likely interpretation of (34a) than (34c).

- (34) a. [ṃwṗṗṗ:-?] ‘tie up one’s hair’  
 b. /ṃwṗṗṗ-/  
 c. ? /hmwṗṗṗ-/

Secondly, a sequence analysis would mean that the nasals /m, n/ could occupy the second slot in a CC-cluster (35a-b). This is, however, unattested from the language data currently to hand (cf. Table 5 for an outline of CC-clusters).

- (35) a. [ṃōṅ] ‘moustache’ > /ṃoṅ/, but ?/hmoṅ/  
 b. [ṅṅṅ] ‘snatch away’ > /ṅṅj-/, but ?/hnṅj-/

Based on these syllabificational constraints, I have considered the voiceless sonorants to be phonological units in their own right.

### 3 Notes on onsets and codas

#### 3.1 *Word-initial consonants and consonant clusters*

All Gamāle consonants occur in stem-initial position. In addition, Table 5 presents preliminary findings of the existing word-initial consonant clusters. Gamāle contrasts with the northern Takale

dialect in that it has clusters of velar+liquid and bilabial+liquid.<sup>11</sup>

		Secondary consonant				
		j	w	l	r	ɣ
Primary consonant	k	✓	✓	✓	✓	
	k <sup>h</sup>	✓	✓	✓		
	g	✓	✓			
	t				✓	
	t <sup>h</sup>					
	d					
	p	✓	✓	✓		
	p <sup>h</sup>	✓	✓	✓		
	b	✓	✓	✓	✓	
	s	✓				
	z	✓				
	ts	✓				
	ts <sup>h</sup>	✓				
	dz	✓				

		Secondary consonant				
		j	w	l	r	ɣ
Primary consonant	m		✓			
	n	✓				(✓)
	ŋ	✓				
	ṁ		✓			
	ṅ					
	j					
	w					
	l					
	r		✓			
	ɣ	(✓)				
	ʌ					
	ɥ	(✓)				
	ʃ					
	h					

Table 5. Word-initial consonant clusters

Note that though the front vowels /i/ and /e/ tend to cause quite distinct palatalization on most consonants (36a-c), palatalization does not result in a [Cj]-sequence. The palatalized consonant /CV<sub>FRONT</sub>/ [C<sup>j</sup>V<sub>FRONT</sub>] (37a,c) contrasts with the /CjV<sub>FRONT</sub>/ [CjV<sub>FRONT</sub>] sequence (37b,d).

- (36) a. /pīʔ-/ [p<sup>j</sup>i:ʔ-] ‘undress’  
 b. /tīw/ [t<sup>j</sup>i<sup>u</sup>] ‘short’  
 c. /k<sup>h</sup>il-/ [c<sup>h</sup>il-] ‘spit’
- (37) a. /gēʔ-/ [g<sup>h</sup>jē:ʔ-] ‘step over’  
 b. /gjeŋ/ [j<sup>j</sup>ēŋ]/[gj<sup>j</sup>ēŋ] ‘neck’  
 c. /sēʔ/ [s<sup>j</sup>ēʔ] ‘comb’  
 d. /sjeʔ/ [sjēʔ] ‘tongue’

11 Watters (2005: 342) writes: “All dialects of Kham have syllable initial consonant clusters with the glides [y] and [w] [...] Most also have initial clusters with [r] or [l] as the second member [...] In a few dialects, like the Takale regional dialects, would-be clusters in [r] and [l], like *pəriŋ* ‘send’ and *pəle* ‘flat,’ are separated by an intervening epenthetic vowel.”



### 3.2 Stem-final consonants

Nasals /m, n, ŋ/ (38a-c), the lateral /l/ (39a), the rhotic /r/ (39b), the palatal approximant /j/ (39c) and the labial-velar approximant /w/ (39d) can occur in stem-final position. Also the glottal plosive /ʔ/ is found stem-finally (40). This applies to Khām stems alone – various other stem-final consonants occur in loan words from Nepali, Hindi and English.

- (38) a. /ts<sup>h</sup>əm/ [ts<sup>h</sup>ə̃m] ‘wooden foot bridge’  
 b. /ŋə̃n/ [ŋə̃n] ‘wasp’  
 c. /gjẽŋ/ [j/gjē̃ŋ] ‘neck’
- (39) a. /tsəl/ [tsəl] ‘bamboo; material for weaving a basket’  
 b. /d̥ur/ [d<sup>h</sup>ur] ‘seed’  
 c. /bə̃j/ [b<sup>h</sup>ə̃j] ‘(large) river’  
 d. /də̃w/ [d<sup>h</sup>ə̃w] ‘difficult’
- (40) /leʔ-/ [leʔ-] ‘lick’ < \*lep- (Watters 2004: 205)

Having said this, three exceptions have been found to this rule (41a-c).

- (41) a. [k<sup>h</sup>ə̃:k] ‘gum; inner lip’ (Kuipādhārā; Tamāli and Gām [gidza] ~ Nepali गिजा)  
 b. [tsok] ‘cheek bone’ (Kuipādhārā; Tamāli and Maulābāng [tsoʔ])  
 c. [k<sup>h</sup>ap] ‘jaw; chin’ (Tamāli; Gām [d<sup>h</sup>ə̃:ri] ~ Nepali दाढी ‘beard’)

The origin of (41a) is uncertain; two informants in fact maintain that this is a mistake. Conversely, (41b-c) can be traced back to the Proto-Khām forms. Example (41b) most likely originates from Proto-Khām \*r-tso ‘cheek; upper cheek; cheek bone’, which is still pronounced in Takāle Khām as [o-rtso] (cf. Watters 2004: 10,75). Two Gamāle informants consider the correct pronunciation of (41b) to be [tsoʔ]. Example (41c) is clearly related to the Proto-Khām form \*r-khap ‘jawbone’ (Watters 2004: 188).

Further research will need to determine how common these forms are, and whether they might be caused by language contact with other Khām varieties. This current study, however, has ruled out such stem-final obstruents from the phonotactic inventory.

## 4 Notes on phonation types and tone

As stated in section 2, three phonation types have been identified in the Gamāle corpus: modal (42a), breathy (42b), and tense (42c).

- (42) a. modal phonation /ta-/ [ta:-] ‘rise; come up (of plants)’  
 b. breathy phonation /tə̃-/ [tə̃:-] ‘smash’  
 c. tense phonation /táʔ-/ [táʔ:-] ‘bury; sink (something) into’

Breathy phonation is produced with a distinct murmur. Breathiness is not linked to the voicing of the plosive *per se* (43a-b). This is demonstrated in (44a-b) and (45a-b) where the feature



occurs with initial voiceless plosives, and (46a-b) where the feature occurs with a voiceless sibilant. Breathy phonation is accompanied by a pitch which is relatively lower than for words with modal or tense phonation.

- (43) a. /gəʔ-/ [gəʔ-] ‘draw water’  
b. /gɛʔ-/ [g<sup>h</sup>ɛ:ʔ-] ‘step over’
- (44) a. /təj-/ [təj-] ‘press’  
b. /tɛj-/ [tɛj-] ‘show’
- (45) a. /p<sup>h</sup>roʔ-/ [p<sup>h</sup>ro:ʔ-] ‘meet’  
b. /p<sup>h</sup>rɔ:ʔ-/ [p<sup>h</sup>rɔ:ʔ-] ‘have black on white; have white on black’
- (46) a. /səj-/ [səj-] ‘bear fruit’  
b. /sɛj-/ [sɛj-] ‘laugh’

Tense phonation is articulated variably with creaky (laryngealized) or stiff voice.<sup>12</sup> Tense phonation always has a pitch which is relatively higher than for words with modal or breathy phonation.

In addition, certain of the words identified thus far, such as (47a-b), (48a-b) and (49a-b), do seem to have a pitch distinction.

- (47) a. [kūŋ] ‘yoke (for cattle)’ (mid pitch)  
b. [kūŋ] ‘cave; hole’ (high pitch)
- (48) a. [gū-] ‘guard’ (mid pitch)  
b. [gū-] ‘shake/tremble (involuntarily)’ (high pitch)
- (49) a. [ts<sup>h</sup>ɛ:-] ‘pick up’ (mid pitch)  
b. [ts<sup>h</sup>ɛ:-] ‘for water to become clear’ (high pitch)

Whether high pitch in (47b), (48b) and (49b) is caused by tense phonation, or vice versa, is yet to be determined. In the latter case it would be tone, and not tense phonation, which would be considered to be phonemic.

The Takāle Khām variety studied by Watters (2002: 37) has a four-way tonal contrast based on a voice register system, as exemplified by Figure 3.

---

12 Maddieson and Ladefoged (1996: 48) characterize stiff voice as: “Vocal chords vibrating but more stiffly than in modal voice; slightly lower rate of airflow than in modal voice.”

	TONE-1		TONE-2	
	stem	suffix	stem	suffix
MODAL	—	— 1	—	— 3
LAX	—	— 2	↘	↗ 4

Figure 3. Khām four-tone system (from Watters 2002: 37)

It is possible that what I have preliminarily described as tense phonation in Gamāle is related to the Takale T-1/modal tone in Figure 3.<sup>13</sup> However, the reason for positing three phonation types in Gamāle – rather than two phonation types and one tone distinction – is because no contour contrasts have thus far been indentified. Further research is needed in order to fully determine the Gamāle tone system and its correspondence with the Takale tone system.

## 5 Summary

The phonological analysis of Gamāle Khām presented in this paper verifies some aspects of the analysis by Watters (1985b; 2002; 2003b; 2004; 2005), but comes to diverging conclusions in other aspects.

The corpus used for this paper comprises words elicited from villages both on the northern and the southern fringes of the language area. The Gamāle variant analysed by Watters is spoken in the northern village of Tamāli. The study here verifies that the Khām spoken in different villages along the upper and lower Gām valleys is very similar to that of Tamāli.

Though vowel length is contrastive in Takāle Khām, it is not found to be so in Gamāle Khām. This is likely due to the development of historical stem-final voiceless plosives: in Takale the stem-finals have given way to a vowel length distinction, whereas in Gamāle they have fused into a stem-final glottal plosive.

The voiceless sonorants have, based on syllabificational constraints, been considered to be phonemic units. This brings the number of Gamāle approximants to eight. Of particular interest are the voiced and voiceless labial-palatal approximants /ɥ/ and /ɥ̥/. Though some Tibeto-Burman languages feature the voiced segment, no reference to a voiceless counterpart was found in the literature.

13 There is a correspondence between Takale tone and phonation types as Watters (2002: 38; my emphasis) maintains: “Tones 1 and 2 (hereafter T-1 and T-2) clearly predate the register split, with *T-1* being associated with intensity or stress, and T-2 being associated with a lack of laryngeal stress.” For various analyses of Khām tone, cf. also Watters (1971; 1985a).

Further study into the development of the Gamāle labial–palatal series is needed. Other phonological features which require further study include: the status of the vowel [ɛ] in relation to the phoneme /e/, the behaviour of the stem-initial and intervocalic glottal plosive, the (seemingly rare) occurrence of Proto-Khām forms in Gamāle which still attest syllable-final obstruents, and the correspondence between Gamāle tone and phonation type.

Finally, a comparison of the phonology of the Khām spoken in the villages of Ghusbang, Siuri and Seram (to the west of the Gamāle area) would be necessary to verify the affinity of Ghusbangi to Gamāle Khām.

#### REFERENCES

- Benedict, Paul K. 1972. *Sino-Tibetan: A conspectus*. Cambridge: Cambridge University Press [Princeton-Cambridge Studies in Chinese Languages Series].
- Caughley, Ross C. 1970. “Chepang segmental synopsis”. In: Hale, Austin; and Pike, Kenneth (eds.), *Tone systems of Tibeto-Burman languages of Nepal. Part I: Studies on tone and phonological segments*, 279–299. Urbana: University of Illinois [Occasional Papers of the Wolfenden Society on Tibeto-Burman Linguistics, Volume III].
- Caughley, Ross C. 1982. *The Syntax and morphology of the verb in Chepang*. Canberra: Australian National University [Pacific Linguistics Series B, No. 84].
- Caughley, Ross C. 2000. *Dictionary of Chepang: A Tibeto-Burman language of Nepal*. Canberra: Australian National University [Pacific Linguistics 502].
- Ebert, Karen H. 2003. “Kiranti languages: An overview”. In: Thurgood, Graham; and LaPolla, Randy J. (eds.), *The Sino-Tibetan languages*, 505–517. London: Routledge [Routledge Language Family Series].
- Grunow-Härsta, Karen A. 2008. *A descriptive grammar of two Magar dialects of Nepal: Tanahu and Syangja Magar*, Vol. 1. Ph.D. diss, University of Wisconsin-Milwaukee.
- Honda, Isao. 2002. “Seke phonology: a comparative study of three Seke dialects”. *Linguistics of the Tibeto-Burman Area* 25.1: 191–210.
- Ladefoged, Peter; and Maddieson, Ian. 1996. *The Sounds of the world’s languages*. Oxford: Blackwell Publishers.
- Lewis, M. Paul, (ed.). 2009. *Ethnologue: Languages of the world*. Dallas: SIL International. (Web version: [www.ethnologue.com](http://www.ethnologue.com)).
- Matisoff, James A. 1992. “Following the marrow: Two parallel Sino-Tibetan etymologies”. *Linguistics of the Tibeto-Burman Area* 15.1: 159–177.
- Matisoff, James A. 2003. *Handbook of Proto-Tibeto-Burman: System and philosophy of Sino-Tibetan reconstruction*. Berkeley: University of California Press.
- Mazaudon, Martine. 1973. *Phonologie Tamang: Etude phonologique de dialecte Tamang de Risian-gku (Langue Tibéto-Birmane de Népal)*. Paris: Centre National de la Recherche Scientifique [Langues et Civilisations a Tradition Orale].
- Mazaudon, Martine. 1996. “An outline of the historical phonology of the dialects of Nar-Phu (Nepal)”. *Linguistics of the Tibeto-Burman Area* 19.1: 103–14.
- Mazaudon, Martine. 2003. “Tamang”. In: Thurgood, Graham; and LaPolla, Randy J. (eds.), *The*

- Sino-Tibetan languages*, 291–314. London: Routledge [Routledge Language Family Series].
- Michailovsky, Boyd. 1988. “Phonological typology of Nepal languages”. *Linguistics of the Tibeto-Burman Area* 11.2: 25–50.
- Michailovsky, Boyd. 2003. “Hayu”. In: Thurgood, Graham; and LaPolla, Randy J. (eds.), *The Sino-Tibetan languages*, 519–532. London: Routledge [Routledge Language Family Series].
- Michailovsky, Boyd; and Mazaudon, Martine. 1973. “Notes on the Hayu language”. *Kailash* 1.2: 135–152.
- Namkung, Ju (ed.). 1996. *Phonological inventories of Tibeto-Burman languages*. Berkeley: Centre for Southeast Asia Studies [STEDT Monograph Series No. 3].
- Noonan, Michael. 2003a. “Nar-Phu”. In: Thurgood, Graham; and LaPolla, Randy J. (eds.), *The Sino-Tibetan languages*, 336–352. London: Routledge [Routledge Language Family Series].
- Noonan, Michael. 2003b. “Recent language contact in the Nepal Himalaya”. In: Bradley, David; and LaPolla, Randy J.; and Michailovsky, Boyd; and Thurgood, Graham (eds.), *Language variation: Papers on variation and change in the Sinosphere and in the Indosphere in Honour of James A. Matisoff*, 65–87. Canberra: Pacific Linguistics.
- Shepherd, Gary; and Shepherd, Barbara. 1971. *Magar phonemic summary*. Kathmandu: SIL-Tribhuvan University [Tibeto-Burman Phonemic Summaries VIII].
- Watters, David E. 1971. *A guide to Kham tone*. Kathmandu: Tribhuvan University—SIL [Guide to Tone in Nepal II].
- Watters, David E. 1985a. “Emergent word tone in Kham: the evolution of a Tibeto-Burman half-way house”. *Linguistics of the Tibeto-Burman Area* 8.2: 36–54.
- Watters, David E. 1985b. “Some preliminary observations on the inter-relatedness of Kham Dialects”. Paper presented at the 18th International Conference on Sino-Tibetan Languages and Linguistics. Mahidol University and Ramkhamhaeng University, Bangkok.
- Watters, David E. 2002. *A grammar of Kham*. Cambridge: Cambridge University Press.
- Watters, David E. 2003a. “Kham”. In: Thurgood, Graham; and LaPolla, Randy J. (eds.), *The Sino-Tibetan languages*, 683–704. London: Routledge [Routledge Language Family Series].
- Watters, David E. 2003b. Some preliminary observations on the relationship between Kham, Magar, (and Chepang). Paper presented at the 36th International Conference on Sino-Tibetan Languages and Linguistics. La Trobe University, Melbourne.
- Watters, David E. 2004. *A dictionary of Kham: Taka dialect. (A Tibeto-Burman language of Nepal)*. Kathmandu: Tribhuvan University.
- Watters, David E. 2005. “An overview of Kham-Magar languages and dialects”. In: Yadava, Yogendra; and Bhattarai, Govinda; and Lohani, Ram Raj; and Prasain, Balaram; and Parajuli, Krishna (eds.), *Contemporary issues in Nepalese linguistics*, 339–374. Kathmandu: Linguistic Society of Nepal.
- Watters, Steve A. 1988. “A sociolinguistic profile of the Kham Magar.” Unpublished manuscript.