A grammar of Yakkha

Diana Schackow

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This grammar provides the first comprehensive grammatical description of Yakkha, a Sino-Tibetan language of the Kiranti branch. Yakkha is spoken by about 14,000 speakers in eastern Nepal, in the Sankhuwa Sabha and Dhankuta districts. The grammar is based on original fieldwork in the Yakkha community. Its primary source of data is a corpus of 13,000 clauses from narratives and naturally-occurring social interaction which the author recorded and transcribed between 2009 and 2012. Corpus analyses were complemented by targeted elicitation. The grammar is written in a functional-typological framework. It focusses on morphosyntactic and semantic issues, as these present highly complex and comparatively underresearched fields in Kiranti languages. The sequence of the chapters follows the well-established order of phonological, morphological, syntactic and discourse-structural descriptions. These are supplemented by a historical and sociolinguistic introduction as well as an analysis of the complex kinship terminology. Topics such as verbal person marking, argument structure, transitivity, complex predication, grammatical relations, clause linkage, nominalization, and the topography-based orientation system have received in-depth treatment. Wherever possible, the structures found were explained in a historical-comparative perspective in order to shed more light on how their particular properties have emerged.

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Finally, I thank Lennart (again): for making those Nepal journeys "our" journeys.

List of abbreviations

Linguistic abbreviations

1,2,3	person (1>3: first acting on third person, etc.)
SG/DU/PL/NSG	numerus: singular, dual, plural, nonsingular
A	most agent-like argument of a transitive verb
ABL	ablative
ADD	additive focus
AFF	affirmative
ALT	alternative
AUX	auxiliary verb
BEN	benefactive
B.S.	Bikram Sambat calender, as used in Nepal
CAUS	causative
CL	clause linkage marker
COM	comitative
COMP	complementizer
COMPAR	comparative
COMPL	completive
COND	conditional
CONT	continuative
COP	copula
CTMP	cotemporal (clause linkage)
CTR	contrastive focus
CVB	converb
EMPH	emphatic
ERG	ergative
EXCL	exclusive
EXCLA	exclamative
G	most goal-like argument of a three-argument verb
GEN	genitive
GSR	generalized semantic role
HON	honorific

HORT	hortative
REP	reportative marker
IGN	interjection expressing ignorance
IMP	imperative
INCL	inclusive
INF	infinitive
INIT	initiative
INS	instrumental
INSIST	insistive
INT	interjection
IRR	irrealis
ITP	interruptive clause linkage
LOC	locative
MDDL	middle
MIR	mirative
NATIV	nativizer
NC	non-countable
n.a.	not applicable
n.d.	no data
NEG	negation
Nep.	Nepali
NMLZ	nominalizer
NPST	non-past
OPT	optative
P	most patient-like argument of a transitive verb
POL	politeness
PLU.PST	plupast
PRF	perfect tense
POSS	possessive (prefix or pronoun)
PROG	progressive
PST	past tense
PST.PRF	past perfect
PTB	Proto-Tibeto-Burman
PURP	purposive
Q	question particle
QUANT	quantifier
QUOT	quotative
RC	relative clause
RECIP	reciprocal
REDUP	reduplication

REFL	reflexive
REP	reportative
RESTR	restrictive focus
S	sole argument of an intransitive verb
SBJV	subjunctive
SEQ	sequential (clause linkage)
SIM	simultaneous
SUP	supine
T	most theme-like argument of a three-argument verb
TAG	tag question
TEMP	temporal
TOP	topic particle
TRIPL	triplication
V2	function verb (in complex predication)
VOC	vocative

Abbreviations of kinship terms

B	brother
BS	brother's son
BD	brother's daughter
BW	brother's wife
e	elder
D	daughter
F	father
FB	father's brother
FF	father's father
FM	father's mother
FZ	father's sister
H	husband
M	mother
MB	mother's brother
MF	mother's father
MM	mother's mother
MZ	mother's sister
S	son
W	wife
y	younger

Z	sister
ZS	sister's son
ZD	sister's daughter
ZH	sister's husband

Contents

1 Phonology

This chapter deals with the phoneme inventory and phonological and morphophonological rules and processes that are relevant in Yakkha. The orthography used here is explained in §??. The examples in this chapter, unlike in the other chapters, have two lines representing the Yakkha data: the upper line shows the data after the application of all phonological and morphophonological rules, and the lower line shows the underlying phonemic material with morpheme breaks. The orthography is used in both of these representations, and IPA is only used when it is necessary in the explanations in prose. Section 1.1 presents the phoneme inventory of Yakkha, §1.2 treats the syllable structure and §1.3 discusses the treatment of loan words, as they nicely illustrate the phonological features of Yakkha. Section 1.4 lays out the conditions by which stress is assigned. The abundant morphophonological processes and their connections to syllable structure, stress and to diachronic processes are the concern of §1.5.

1.1 Phoneme inventory and allophonic rules

1.1.1 Vowel phonemes

Yakkha has only five basic vowels; it has two close vowels, the front /i/ and the back /u/, two close-mid vowels, the front /e/ and the back /o/, and an open vowel /a/. In contrast to other Kiranti languages, there are no central vowels like /ɨ/, /ʌ/ or /ə/. A chart with the vowel inventory is provided in Figure 1.1. In addition to these vowels, a front vowel [ɛ] may occur, but only as the contracted form of the diphthong /ai/ (see §1.1.2), not in any other environments. Minimal pairs are provided in Table 1.1. Tone, length or nasal articulation do not constitute phonemic contrasts in Yakkha.

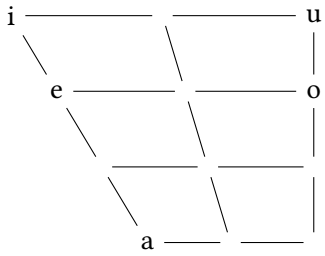


Figure 1.1: Yakkha vowel phonemes

Table 1.1: Minimal pairs for vowel phonemes

PHONEMES	EXAMPLES			
/e/ vs. /i/	*nema*	'lay, sow seed'	*nima*	'know, see'
	tema	'lean on an angle'	*tima*	'put down, invest'
/e/ vs. /a/	*tema*	'lean on an angle'	*tama*	'come'
	yepma	'stand'	*yapma*	'be rough, uncomfortable'
/o/ vs. /u/	*okma*	'shriek'	*ukma*	'bring down'
	hoʔma	'prick, pierce'	*huʔma*	'push, stuff'
/o/ vs. /a/	*thokma*	'spit'	*thakma*	'weigh, hand up, send up'
	hoʔma	'prick, pierce'	*haʔma*	'scrape off/out'
/u/ vs. /i/	*ukma*	'bring down'	*ikma*	'chase'
	umma	'pull'	*imma*	'sleep'

1.1.2 Diphthongs

Given that adjacent vowels are generally avoided in Yakkha, it does not come as a surprise that diphthongs, i.e., adjacent vowels in the same syllable, are rare. The four diphthongs /ai/, /ui/, /oi/ and /au/ were found, occuring marginally, as in *ŋhai* (a dish made from fish

stomach), *hoi!* 'enough!', *uimalaŋ* 'steeply downhill', *(h)au* (a sentence-final exclamative particle) and *ambau!* (an exclamative expression indicating that the speaker is impressed by huge or dangerous things). Some speakers pronounce underlying sequences like /ŋond-siʔ-ma/ and /thend-siʔ-ma/ with nasalized diphthongs, [ŋoĩsiʔma] and [theĩsiʔma], respectively (instead of the more common pronunciations [ŋonsiʔma] and [thensiʔma]).[1]

Most diphthongs have their origin in a multimorphemic or in a multisyllabic environment. The adverb *uimalaŋ*, for instance, like many other spatial adverbs in Yakkha, is composed of a stem (diachronically most probably a noun) and the possessive prefix *u-*. The marginal nature of the diphthongs is confirmed also by the fact that they are found more in names and discourse particles than in lexemes with semantic content, and never in verbal roots. Occasionally, diphthongs are just one stage in a larger process of contraction. Consider the inflected form *waiʔ.na* '(he/she/it) exists', which is also found as [wɛʔ.na]. Its nonpast semantics and synchronically available contracted forms of verbs suggest that [waiʔ.na] used to be **[wa.me.na]* historically. Table 1.2 provides an exhaustive list of lexemes containing diphthongs from the more than 2400 lexemes in the current lexical database.

1.1.3 Consonant phonemes

Table 1.3 below shows the central and the marginal consonant phonemes of Yakkha. The phones that are not in parentheses clearly have phonemic status; they occur in basic, uninflected stems. The phonemic status of the phones in parentheses is not always straightforward (discussed below). Where my orthography deviates from IPA, this is indicated by angle brackets.

[1] The nasalization is exceptional here. Usually, the prosody of Yakkha supports the opposite process, namely the change of nasal vowels to nasal consonants, e.g. in borrowed Nepali lexemes (see §1.3). Nasals may, however, regularly change to nasalization of the preceding vowel in intervocalic environment and before glides and liquids, as in *mẽ.u.le* 'without entering' (/meN-us-le/) and *mẽ.yok.le* 'without searching' (/meN-yok-le/), see §1.5.5.2.

Table 1.2: Lexemes containing diphthongs

/au/	/oi/	/ui/	/ai/
(h)au	*coilikha*	*uimalaŋ*	*ŋhai*
(EXCLA)	(a village)	‘steeply downhill’	‘fish stomach’
ambau!	*hoi!*	*phakkui*	*Yaiten*
‘holy smoke!’	‘enough!’	‘pig droppings’	(a village)
		waghui	*lai*
		‘chicken droppings’	(EXCLA)

Table 1.3: Yakkha consonant phonemes

	BILABIAL	ALVEOLAR	RETROFLEX	PALATAL	VELAR	GLOTTAL
PLOSIVES	p	t	(ʈ)		k	ʔ
ASP.	ph	th	(ʈh)		kh	
VOICED	(b)	(d)	(ɖ)		(g)	
VOICED-ASP.	(bh)	(dh)	(ɖh)		(gh)	
AFFRICATES		ts <c>				
ASP.		ts^h <ch>				
VOICED		(dz) <j>				
VOICED-ASP.		(dz^h) <jh>				
FRICATIVES		s				h
NASALS	m	n			ŋ	
NAS. ASP.	(mh)	(nh)			(ŋh)	
RHOTICS		r				
LATERALS		l				
GLIDES	w			y		
GLIDES ASP.	wh					

1.1.3.1 The main phonemic distinctions in the consonants

Yakkha distinguishes six places of articulation: bilabial, alveolar, retroflex (or post-alveolar), palatal, velar and glottal. Retroflex plosives most probably made their way into Yakkha via Nepali loan words. They are found only in a few Yakkha lexemes, and no proper minimal pairs could be established. The retroflex series lacks a nasal, too. However, in the few words that are found with retroflex stops, they are robust, and pronouncing these words with an alveolar stop is not an option.

Yakkha fits well into the Eastern branch of Kiranti, for instance in the loss of phonemic contrast between voiced and unvoiced plosives. Generally, plosives, unless they are found in an environment that triggers voicing, are pronounced voiceless. As always, a few exceptions occur that cannot be explained by some rule. The exact parameters of the voicing rule are laid out in §1.5.1. A robust phonemic contrast is that between aspirated and unaspirated consonants, found in the plosives (except for the glottal stop), the affricate and the bilabial glide /w/. Aspiration of a stem-initial consonant, historically a morphological means to increase the transitivity in Tibeto-Burman (Michailovsky 1994; Jacques 2012b; Hill 2014), has become purely phonemic in Yakkha. The aspirated plosives have a strong fricative component. Three nasals are distinguished by their place of articulation: bilabial /m/, alveolar /n/ and velar /ŋ/. Yakkha has two fricatives /s/ and /h/, and two liquids, /l/ and /r/. The rhotic does not occur word-initially. In this position, */r/ has changed to the palatal glide /y/ (see also Table **??** in Chapter **??** and the references therein).[2] The distribution of the rhotic consonant deserves a closer look, also in the perspective of other Eastern Kiranti languages (see §1.1.3.4 below). Table 1.4 provides minimal pairs for the basic consonant phonemes, mostly from verbal stems or citation forms.

1.1.3.2 Marginal consonant phonemes

Several of the phonemes occur only marginally, either in Nepali loan words, or in just a handful of Yakkha lexemes. This basically applies to

[2] Furthermore, /y/ may be omitted before /e/ in some lexemes, but this process is subject to considerable individual variation.

Table 1.4: Minimal pairs for consonants

PHONEMES	EXAMPLES			
/k/ vs. **/kh/**	*keʔma*	'come up'	*kheʔma*	'go'
	kapma	'carry along, have'	*khapma*	'thatch, cover'
/p/ vs. **/ph/**	*pakna*	'young guy'	*phak*	'pig'
	pekma	'fold'	*phekma*	'slap, sweep'
/t/ vs. **/th/**	*tumma*	'understand'	*thumma*	'tie'
	tokma	'get'	*thokma*	'hit with horns'
/c/ vs. **/ch/**	*cikma*	'age, ripen'	*chikma*	'measure, pluck'
	cimma	'teach'	*chimma*	'ask'
/k/ vs. **/ʔ/**	*okma*	'shriek'	*oʔma*	'be visible'
/t/ vs. **/ʔ/**	*-met*	(CAUS)	*-meʔ*	(NPST)
/p/ vs. **/ʔ/**	*opma*	'consume slowly'	*oʔma*	'be visible'
/t/ vs. **/r/**	*ot*	'be visible' (stem)	*or*	'peel off'
/l/ vs. **/r/**	*khelek*	'ant'	*kherek*	'hither'
/y/ vs. **/w/**	*yapma*	'be uncomfortable'	*wapma*	'paw, scrabble'
	yamma	'disturb'	*wamma*	'attack, pounce'
/y/ vs. **/l/**	*yapma*	'be uncomfortable'	*lapma*	'accuse, blame'
/w/ vs. **/wh/**	*wapma*	'paw, scrabble'	*whapma*	'wash clothes'
	waŋma	'curve, bend'	*whaŋma*	'boil'
/s/ vs. **/h/**	*sima*	'die'	*hima*	'spread'
	somma	'stroke gently'	*homma*	'fit into'
/k/ vs. **/ŋ/**	*pekma*	'break'	*peŋma*	'peel'
	okma	'shriek'	*oŋma*	'attack'
/ŋ/ vs. **/m/**	*toŋma*	'agree'	*tomma*	'place vertically'
	tuŋma	'pour'	*tumma*	'understand'
/ŋ/ vs. **/n/**	*=ŋa*	(ERG)	*=na*	(NMLZ.SG)
/m/ vs. **/n/**	*makma*	'burn'	*nakma*	'beg, ask'
	miʔma	'think, remember'	*niʔma*	'count, consider'

the already mentioned retroflex plosives and to all voiced obstruents, as voicing is generally not distinctive in Yakkha.[3] Some sounds are never found in uninflected lexemes, so that they only emerge as the result of some morphophonological processes that are triggered by the concatenation of morphemes with certain phonological features. Voiced-aspirated consonants and the aspirated nasals [mʰ], [nʰ] and [ŋʰ] belong to this group. The marginal sounds are included in parentheses in Table 1.3. The reader is referred to §1.5 for the details of the various morphophonological processes that lead to marginal phonemes.

1.1.3.3 The phonemic status of the glottal stop

The glottal stop is contrastive, as several minimal pairs in Table 1.4 show. The glottal stop surfaces only before nasals and laterals, so that one can find minimal pairs like *meŋ.khuʔ.le* 'without carrying' and *meŋ.khu.le* 'without stealing', or *men.daʔ.le* 'without bringing' and *men.da.le* 'without coming'. However, the glottal stop can also be the result of a phonological operation. Unaspirated stops, especially /t/, tend to get neutralized to [ʔ] syllable-finally (aspirated stops do not occur in this position). The glottal stop is also prothesized to vowel-initial words to maximize the onset. In certain grammatical markers, the glottal stop may also be epenthesized at the end of the syllable when it is followed by nasal consonants or glides (see (1)). This may happen only when the syllable is stressed, but the conditions for this epenthesis are not fully understood yet. It never occurs at the end of a word (if the word is defined by the domain to which stress is assigned).

(1) a. *tu.mok.peʔ.na* *ma.mu*
/tumok=pe=na mamu/
Tumok=LOC=NMLZ.SG girl
'the girl from Tumok'

[3] There are quasi minimal pairs such as *apaŋ* 'my house' and *abaŋ* 'I came', but both are inflected words and the difference is that *a-* in *apaŋ* is a prefix, and the rule that is responsible for the voicing of plosives excludes prefixes.

b. *men* *ba?.lo!*
/men pa=lo/
COP.NEG EMPH=EXCLA
'Of course not!'

The glottal stop is less consonant-like than the other plosives. In certain environments, stems that end in a glottal stop may behave identically to stems consisting of open syllables (CV). For instance, if the stem vowel /e/ or /i/ (of a CV stem or a CV? stem) is followed by a vocalic suffix like *-a* (marking past or imperative), it changes into a glide [j] and becomes part of the onset (written <y>). This process is illustrated by the behavior of *khe?ma* 'go' and *pi?ma* 'give', cf. Table 1.5. If the stem vowel (of a CV stem or a CV? stem) is a back vowel, a glide [j] is inserted between stem and suffixes. If open or /?/-final stems are followed by the suffix sequence *-a-u*, this sequence of suffixes is not overtly realized. Examples of these processes are provided in Table 1.5, contrasted with the behavior of stems with open syllables and stems that end in /p/, /t/ or /k/. The first column shows the underlying stem, the second column provides the citation form and the gloss, the third column shows the behavior before /l/, by means of the forms of the negative converb. The fourth and the fifth column show the behavior before vowels, by means of intransitive 3.SG past forms (in *-a*),[4] and transitive 3SG>3SG past forms (in *-a-u*).[5]

To wrap up, the intervocalic environment distinguishes /?/-final stems from stems that end in /p/, /t/ or /k/, while the infinitive and the environment before /l/ distinguishes /?/-final stems from open stems.

The glottal stop at the end of verbal stems can be reconstructed to */t/, in comparison with other Eastern Kiranti languages (cf. Section **??** on the structure of the verbal stems).

[4] Or detransitivized, depending on the original valency of the stem.

[5] The verb *cama* 'eat' is the only transitive verb that has an open stem in /a/. It is exceptional in having an ablaut. Open stems are rare, and not all of them are found among both transitive and intransitive verbs, so that some fields of the table cannot be filled.

Table 1.5: The glottal stop stem-finally, compared to vowels and other plosives

STEM	CITATION FORM	/_-l (NEG.CVB)	/_-a (3SG.PST)	/_-a-u (3SG>3SG.PST)
/ʔ/-final stems				
/khuʔ/	*khuʔma* 'carry'	*meŋ.khuʔ.le*	*khu.ya.na*	*khu.na*
/waʔ/	*waʔma* 'wear, put on'	*mẽ.waʔ.le*	*wa.ya.na*	*wa.na*
/soʔ/	*soʔma* 'look'	*men.soʔ.le*	*so.ya.na*	*so.na*
/kheʔ/	*kheʔma* 'go'	*meŋ.kheʔ.le*	*khya.na*	-
/piʔ/	*piʔma* 'give'	*mem.biʔ.le*	*pya.na*	*pi.na*
V-final stems				
/ca/	*cama* 'eat'	*men.ja.le*	*ca.ya.na*	*co.na*
/a/	*ama* 'descend'	*mẽ.a.le*	*a.ya.na*	-
/u/	*uma* 'enter'	*mẽ.u.le*	*u.ya.na*	-
/si/	*sima* 'die'	*men.si.le*	*sya.na*	-
/p/-, /t/-, /k/-final stems				
/lap/	*lapma* 'seize, catch'	*mẽ.lap.le*	*la.ba.na*	*la.bu.na*
/yok/	*yokma* 'search'	*mẽ.yok.le*	*yo.ga.na*	*yo.gu.na*
/phat/	*phaʔma* 'help'	*mem.phat.le* ~ *mem.phaʔ.le*	*pha.ta.na*	*pha.tu.na*

1.1.3.4 The status of /r/ in Yakkha and in Eastern Kiranti perspective

The rhotic /r/ does not occur word-initially in genuine Yakkha lexemes, due to the typical Eastern Kiranti sound change from */r/ to /y/ in word-initial position (see §**??** and Bickel & Gaenszle (in press)). There are words like *lok* 'anger' and *yok* 'place', but no words starting with /r/.[6] It can, however, occasionally be found in complex onsets, and syllable-initially in intervocalic environment. Table 1.6 shows that /r/ and /l/ can be found in very similar environments, even though proper minimal pairs are rare. In some instances, intervocalic /r/ can be traced back to historical */t/, as in the complex predicates in (2).

(2) a. *pe.sa.ra.ya.na*
fly[3SG]-PST-V2.COME-PST=NMLZ.SG
'It came flying to me.'
b. *phuŋ* *chik.tu.ra=na*
flower pluck-3.P-V2.BRING-PST-3.P=NMLZ.SG
'She plucked and brought a flower.'

According to van Driem 1990, [l] and [r] have a complementary distribution in Eastern Kiranti: [l] occurs word-initially and syllable-initially after stops, and [r] occurs between vowels and as the second component of complex onsets. The complementary distribution of [l] and [r] is a consequence of the general Eastern Kiranti sound change from */r/ to /y/ in word-initial position, which left /r/ only in word-internal position.[7] It is plausible that [l] and [r], now partly in complementary distribution, were reanalyzed as allophones as a consequence of this sound change. Van Driem's claim, however, could only partly be confirmed for Yakkha. In contrast to (Phedappe) Limbu (van Driem 1987, Schiering, Hildebrandt & Bickel 2010: 688ff) and other languages from

[6] There are a few exceptions, such as the ritual bipartite *raji-raŋma* which means 'wealth of land'. It might be a word that preserved an archaic phonological structure, or a loan (*rājya* means 'kingdom' in Nepali). Both options are possible and attested for the ritual register (the *Munthum*) of other Kiranti languages (Gaenszle et al. 2011).

[7] The sound change is evident from correspondences such as Yakkha and Limbu *yum* 'salt' and its non-Eastern cognates, e.g. *rum* in Puma (Central Kiranti, Bickel et al. 2009: 393) or *rim* in Dumi (Western Kiranti, van Driem 1993a: 412).

Table 1.6: The phonemes /r/ and /l/ in similar environments

/r/	/l/
khorek 'bowl'	*ulippa* 'old'
phi?waru a kind of bird (Nep.: *koṭerā*)	*chalumma* 'second-born daughter'
tarokma 'start'	*caloŋ* 'maize'
kherek 'this side, hither'	*khelek* 'ant'
caram 'yard'	*sala* 'talk'
khiriri 'spinning round very fast'	*phililí* 'jittering'
phimphruwa 'soap berry' (Nep.: *riṭṭhā*)	*aphlum* 'hearth stones'
hobrek 'rotten'	*phoplek* '[pouring] at once'
ṭoprak 'leaf plate'	*khesapla* 'a kind of fig tree'

the Greater Eastern branch of Kiranti such as Lohorung (van Driem 1990: 85), the rhotic is not found as allophone of /l/ in intervocalic environment in Yakkha (compare the term for 'second-born daughter', *chalumma* (Yakkha) and *sarumma* (Limbu), Limbu data from van Driem & Davids (1985: 131)). Allophonic variation between /l/ and /r/ was not found for any environment in Yakkha. For instance, the negative converb *me(n)…le* does not have an allomorph [me(n)…re] after CV-stems in Yakkha, in contrast to the same converb in Limbu. Furthermore, the question whether C + /r/ are syllabified as .Cr and C + /l/ as C.l could not be answered satisfactorily for Yakkha, based on auditory and phonological evidence. For instance, /r/ as well as /l/ may trigger voicing in a preceding consonant, without any obvious regularity (see Table 1.6). To sum up, there is more than sufficient evidence for the phonemic status of /r/ in Yakkha.[8]

[8] The postulation of a phoneme /r/ has implications for a possible orthography for future Yakkha materials. One of the current local orthographies, used e.g. in Kongren (2007b) and in several school books (Jimi, Kongren & Jimi 2009), conflated /r/ and /l/ under the grapheme <ल>, the Devanagari letter for <l>. This turned out to be very impractical for the readers. It is not only too much abstracted away from the actual pronunciation, but also not justified by the phonological facts. It is my recommendation to change this in future publications, i.e. to write <र> (r) when

It is possibly a rather new development that the rhotic may also appear in syllable-final position. As shown in (3), it may occur at the end of verbal stems that historically used to have a stem-final /t/-augment (cf. §??). This syllabification is only licensed when the following syllable starts in /w/. When the stem is followed by vowel material, /r/ will be syllabified as onset. Another process leading to syllable-final rhotics is metathesis. It is found in free allophonic variation, as in *tepruki* ~ *tepurki* 'flea' or *makhruna* ~ *makhurna* 'black'.

(3) a. *thur-wa-ŋ=na*
sew-NPST[3.P]-1SG.A=NMLZ.SG
'I will sew it.'
b. *nir-wa-ŋ-ci-ŋ=ha*
count-NPST-1SG.A-3NSG.P-1SG.A=NMLZ.SG
'I will count them.'

1.1.3.5 Aspirated voiced consonants

Aspirated voiced plosives can result from the voicing rule (cf. §1.5), or from sequences of morphemes with consonants followed by /h/, as in (4a). In this way, aspirated consonants can be created that are not found in simple lexemes; they always involve a morpheme boundary, at least diachronically.[9] Another process leading to aspirated voiced consonants is vowel elision. If there is an underlying multimorphemic sequence of the shape /C-V-h-V/, the first vowel gets elided and /h/ surfaces as aspiration of the first consonant (see (4b)).

(4) a. *khe.i.ŋha*
/khe?-i-ŋ=ha/
go[PST]-1PL-EXCL=NMLZ.NSG
'We went.'

a sound is pronounced as a rhotic and <ल> (l) when a sound is pronounced as a lateral.

[9] An exception is the word *ŋhai* 'fish stomach (dish)', for which no transparent multimorphemic etymology is available.

b. *ca.mha.ci*
/ca-ma=ha=ci/
eat-INF[DEONT]=NMLZ.NSG=NSG
'They have to be eaten.'

The environment that is required for the vowel elision is also provided by other forms of the verbal inflectional paradigm. In (5), the underlying sequence /-ka=ha/ ([-gaha] due to intervocalic voicing) licenses the elision of the preceding vowel, which results in the realization of /h/ as aspiration of [g].

(5) a. *tun.di.wa.gha*
/tund-i-wa-ka=ha/
understand[3A]-2.P-NPST-2=NMLZ.NSG
'He/she/they understand(s) you.'
b. *tum.me.cu.ci.gha*
/tund-me?-ci-u-ci-ka=ha/
understand-NPST-DU.A-3.P-3NSG.P-2=NMLZ.NSG
'You (dual) understand them.'

1.2 Syllable structure

This section describes the parameters for the possible syllable in Yakkha. The structure of the syllable is maximally CCVC, i.e. VC, CV, CCV and CVC are possible as well. If a word-initial syllable starts in a vowel, a glottal stop is prothesized to yield a minimal onset. Syllables with CVV structure occur only in the form of diphthongs (see §1.1.2 above). They are exceedingly rare, and they can generally be traced back to bisyllabic or bimorphemic contexts. Syllables containing diphthongs are always open.

In a simple onset, any consonant can occur, with the exception of /r/, which got replaced by /y/ diachronically in Eastern Kiranti. Among the complex onsets, two sets have to be distinguished. The first set has the general shape CL, where L stands for liquids and glides. In this type of syllable, the first consonant can be a plosive, a fricative, an affricate or a nasal, while the second consonant can only be a liquid (/l/ or /r/)

or a glide (/y/ or /w/). The onsets containing /y/ or /w/ result from contracted CVCV sequences diachronically. Some alternations between a monosyllabic and a bisyllabic structure, like *cwa ~ cu.wa* 'beer', *chwa ~ chu.wa* 'sugarcane', *nwak ~ nu.wak* 'bird' and *yaŋcuklik ~ yaŋcugulik* 'ant' suggest this. Comparison with related languages like Belhare and Chintang provides further evidence for a former bisyllabic structure: Chintang and Belhare have *cuwa* and *cua*, respectively, for 'water', and Belhare furthermore has *nua* for 'bird' (Bickel 1997a; Rai et al. 2011). For Athpare, both bisyllabic and monosyllabic forms are attested (Ebert 1997a).

On the other hand, complex onsets are not uncommon in Tibeto-Burman. Word-initially, the status of CL sequences as complex onsets is robust, but word-internally, alternative syllabifications would be theoretically possible. This possibility can be ruled out at least for the clusters involving aspirated plosives, because aspirated plosives may never occur syllable-finally. A segmentation like [kith.rik.pa] or [aph.lum] would violate the restriction on a well-formed syllable coda in Yakkha, so that it has to be [ki.thrik.pa] and [a.phlum] ('policeman' and 'hearth'), respectively. For unaspirated plosives, it is hard to tell how they are syllabified. Not all logically possible onsets occur, and some are only possible in morphologically complex (both inflected and derived) words. Some examples of complex onsets are provided in Table 1.7 and Table 1.8. Onset types not shown in the tables do not occur.

Table 1.7: Complex onsets with liquids

	/l/	/r/
/p/	*i.plik* 'twisted'	*ca.pra* 'spade'
/ph/	*a.phlum* 'trad. hearth'	*phim.phru.wa* 'soap berry'
/k/	*saklum*'frustration'	*thaŋ.kra* 'store for grains'
/kh/	(-)	*ʈu.khruk* 'head'
/s/	(-)	*mik.srumba* 'blind person'
/n/	nlu.ya.ha 'they said'	(-)

Table 1.8: Complex onsets with glides

	/w/	/y/
/p/	(-)	*pyaŋ.na* 'he/she gave it to me'
/ph/	*tam.phwak* 'hair'	*tu.ga.bhyek.sa.na* 'he/she is about to get ill'
/t/	*twa* 'forehead'	(-)
/ʈh/	*ʈhwaŋ* 'smelly' (IDEOPH)	(-)
/c/	*cwa* 'heart'	*cya* 'child'
/ch/	*chwa* 'sugarcane'	*op.chyaŋ.me* 'firefly'
/k/	(-)	*kya* 'Come up!'
/kh/	*o.sen.khwak* 'bone'	*khya* 'Go!'
/s/	*swak* 'secretly'	*sya.na* 'He/she died.'
/n/	*nwak* 'bird'	*(ayupma) nyu.sa.ha* 'I am tired.'

The second set of onsets has the shape NC, where N stands for an unspecified nasal and C for any stem-initial consonant. This type of onset is found only when one of the nasal prefixes is attached to a stem, never in monomorphemic syllables, and never in syllables inside a word. The value of the nasal is conditioned by the place of articulation of the following consonant. Based on auditory evidence, I conclude that the nasal is not syllabified. However, as the processes related to prosody or to morphophonology either exclude prefixes from their domain or they apply across syllable boundaries as well, I could not find independent evidence for this claim. The nasal prefixes may have the following morphological content: 3PL.S/A and negation on verbs (see (6a) and (6b)), a second person possessive on nouns (see (6c)), and a distal relation in spatial adverbs and demonstratives (see (6d) and (6e)).

(6) a. *mbya.gha*
/N-piʔ-a-ka=ha/
3PL.A-give-PST-2.P=NMLZ.NSG
'They gave it to you.'

b. *ŋkhyan.na*
/N-kheʔ-a-n=na/
NEG-go[3SG]-PST-NEG=NMLZ.SG
'He did not go.'

c. *mbaŋ*
/N-paŋ/
2SG.POSS-house
'your house'

d. *ŋkhaʔ.la*
/N-khaʔ.la/
DIST-like_this
'like that'

e. *nnhe*
/N-nhe/
DIST-here
'there'

The coda is restricted to nasals, unaspirated plosives and, rarely, /r/ (cf. §1.1.3.4 above). The plosives are often unreleased or neutralized to [ʔ] in the coda, unless they are at the end of a word. While the glottal stop frequently occurs in syllable codas, it is never found at the end of a phonological word (as defined by the stress domain).

Figure 1.2 summarizes the possible syllable in Yakkha. If the form of a morpheme does not agree with the syllable structure, several strategies may apply. If, for instance, a verbal stem ends in two consonants (C-s, C-t), as *chimd* 'ask' or *yuks* 'put', and a vowel follows the stem in an inflected form, the stem-final consonant becomes the onset of the next syllable (see (7)). If a consonant follows the stem, the final consonant of the stem is deleted (see (8)).

(7) a. *chim.duŋ.na*
/chimd-u-ŋ=na/
ask-3.P[PST]-1SG.A=NMLZ.SG
'I asked him.'

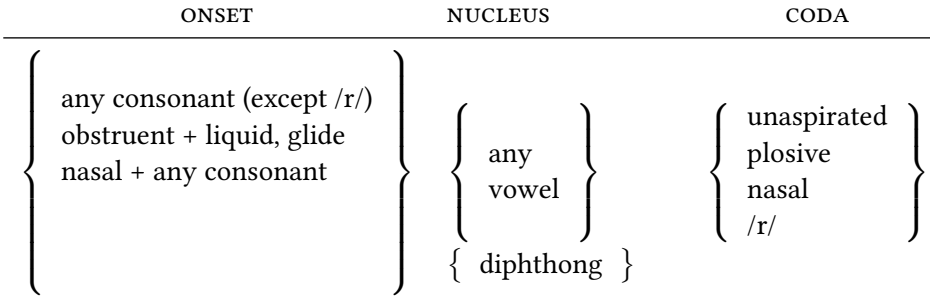


Figure 1.2: The syllable

b. *chim.daŋ*
/chimd-a-ŋ/
ask-IMP-1SG.P
'Ask me!'

(8) a. *chim.nen.na*
/chimd-nen=na/
ask-1>2[PST]=NMLZ.SG
'I asked you.'

b. *men.chim.le*
/men-chimd-le/
NEG-ask-CVB
'without asking'

In certain morphological environments and in fast speech, more complex onsets are possible, with the form NCL (nasal-consonant-liquid/glide), but this is restricted to particular inflected verb forms, namely third person plural or negated nonpast forms of verbs with open stems (or with CVʔ stems) (see (9)). Each part of the onset belongs to another morpheme. The complex cluster is a consequence of the deletion of the stem vowel. This process is further restricted to stems with back vowels (/a/, /u/ and /o/).

(9) a. *nlwa.na*
/N-luʔ-wa=na/
3PL.A-tell-NPST[3.P]=NMLZ.SG
'They will tell him.'
b. *njwa.ŋan.na*
/N-ca-wa-ŋa-n=na/
NEG-eat-NPST-1SG.A[3.P]-NEG=NMLZ.SG
'I will not eat it.'

1.3 The phonological treatment of Nepali and English loans

The phonological features of Yakkha are also reflected by the treatment of Nepali and English loans, as shown in Tables 1.9 and 1.10. Several processes may apply to adjust non-native lexemes to Yakkha phonology. Apart from the regular processes discussed below, one can encounter many changes in the vowel qualities, but they cannot be ascribed to any regular sound change.

As adjacent vowels are a marked structure in Yakkha, sequences of vowels, as well as vowels which are separated only by /h/, are typically changed to one vowel. The intervocalic /h/ is, however, not completely lost, but preserved as aspiration of the preceding consonant, shown by the last three examples of Table 1.9. This process happens irrespective of how the words are stressed in Nepali.

Another typical process is the change of nasal vowels to nasal consonants:[10] hortative verb forms like *jum* 'Let's go!' or *herum* 'Let's have a look!' seem to have been built in analogy to the shape of Yakkha hortative verb forms, which also end in *-um*, at least in the transitive verbs. The words *ʈhoŋ*, *alenci* and *gumthali* illustrate the same process (and also the change of diphthongs to simple vowels).

Some loans show the neutralization of voiced and voiceless consonants that is typical for Eastern Kiranti, e.g. *tukkhi* (from Nepali *dukha*

[10] Marginally, nasal vowels may occur in Yakkha, but the environments are highly restricted, and a nasal realization of a vowel is always motivated by an underlying nasal consonant (cf. §1.5).

'sorrow, pain'). Probably, such words entered the Yakkha language in an earlier stage of the Nepali-Yakkha contact, when people were not yet bilingual. Nowadays there are many Nepali loans in Yakkha that are pronounced as in Nepali.

The word *duru* (from Nepali *dudh* 'milk') shows a strategy to satisfy the constraint against aspirated plosives at the end of the syllable or word (and against aspirated voiced plosives in general).[11]

Another typical process encountered was closing word-final open syllables by /k/. For example, *belā* 'time' becomes [belak], *bihāna* 'morning' becomes [bhenik] and *duno ~ duna* 'leaf bowl' becomes [donak] in Yakkha. Words that end in other consonants than /k/ may also be modified to end in /k/, e.g. *churuk* 'cigarette', from Nepali *churoṭ*.

Some English loan words, shown in Table 1.10, illustrate that complex codas and voiced codas are not acceptable in Yakkha. Word-initial clusters of fricative and plosive are also marked, and a vowel is prothesized to yield a syllable that corresponds at least to some of the prosodic constraints of Yakkha (but this also happens in the pronunciation of Nepali native speakers). Finally, as Yakkha has no distinctions of length or tenseness of vowels, the difference between e.g. English *sheep* and *ship* is usually not noticed or produced if such words are borrowed. Both words are pronounced with a short [i], that is however slightly more tense than in English *ship*.[12]

The words selected here illustrate how some of the principles of the Yakkha sound system and the phonological rules are applied to non-native material. The Yakkha phonology in borrowed lexemes is not equally prominent among speakers. It depends on many factors, most obviously the proficiency in the donor languages, the time-depth of the borrowing.

[11] The use of cow or goat milk or milk products is very rare in Yakkha culture (noted also by Russell 1992: 128-30), and thus, the borrowing of this word is not surprising.

[12] The words displayed in the tables occurred regularly in at least some speaker's idiolects. Nevertheless, I do not want to make any strong claims about what is borrowed and what is code-switching, as this is not the purpose of my study.

Table 1.9: Nepali loans in Yakkha

YAKKHA	NEPALI	GLOSS
jum	*ˈjā.aũ*	‘Let us go.’
herum	*ˈhe.raũ*	‘Let us have a look.’
ʈhoŋ	*ʈhāũ*	‘place’
gumthali	*gaũthali*	‘swallow’
alenci	*alaĩci*	‘cardamom’
tuk.khi	*dukha*	‘sorrow, pain’
du.ru	*dudh*	‘(animals’) milk’
chen	*ca.ˈhĩ*	(topic particle)
bhenik	*bi.ˈhā.na*	‘morning’
bhya	*ˈbi.hā*	‘wedding’

Table 1.10: English loans in Yakkha

YAKKHA	ENGLISH
ˈroʈ	‘road’
ˈphlim	‘film’
ˈphren	‘friend’
is.ˈʈep	‘step’
is.ˈkul	‘school’

1.4 Stress assignment

This section deals with the rules for stress assignment and the domain to which these rules apply. The rules for stress assignment can be laid out as follows: by default, the first syllable carries main stress. Closed syllables, however, attract stress. If there are closed syllables, the main stress moves to the last closed syllable, as long as it is not the final syllable of a word, demonstrated by the examples in Table 1.11 for nouns,[13] and in (10) for inflected verbal forms. The forms in these examples differ with regard to the position of the last closed syllable in the word, and thus, by the condition that makes the stress move from the first syllable towards the end (but only up to the penultimate syllable). Predicates that consist of more than one verbal stem behave like simple verbs in this respect (see (11)).

Table 1.11: Default stress

Yakkha	**gloss**
ˈom.phu	'verandah'
ˈkho.rek	'bowl'
ˈca.ram	'yard'
ˈko.ko.mek	'butterfly'
ˈol.lo.bak	'fast'
ˈtok.ca.li	'buttocks'
ˈyok.yo.rok	'beyond, a bit further'
ˈkam.ni.bak	'friend'
wa.ˈriŋ.ba	'tomato'
cuʔ.ˈlum.phi	'stele, stick'
nep.ˈnep.na	'short one'
op.ˈchyaŋ.me	'firefly'
cik.ci.ˈgeŋ.ba	'Bilaune tree'

[13] Both simple and complex nouns (at least historically) can be found in this table, their etymology does not affect the stress assignment.

(10) a. *ˈtum.me.cu.na*
/tund-meʔ-ci-u=na/
understand-NPST-DU.A-3.P=NMLZ.SG
'They (dual) understand him.'
b. *ˌndum.men.ˈcun.na*
/n-tund-meʔ-n-ci-u-n=na/
NEG-understand-NPST-NEG-DU.A-3.P-NEG=NMLZ.SG
'They (dual) do not understand him.'
c. *ˌtum.meʔ.ˈnen.na*
/tund-meʔ-nen=na/
understand-NPST-1>2=NMLZ.SG
'I understand you.'

(11) a. *ˈluk.ta.khya.na*
/lukt-a-kheʔ-a=na/
run-PST-V2.GO-PST[3SG]=NMLZ.SG
'He ran away.'
b. *luk.ta.ˈkhyaŋ.na*
/lukt-a-kheʔ-a-ŋ=na/
run-PST-V2.GO-PST-1SG=NMLZ.SG
'I ran away.'

Examples like *ˈkam.ni.bak* 'friend' show that the stress never moves to the final syllable, even when the syllable is heavy. Patterns where the final syllable is stressed are possible though, because prefixes are not part of the stress domain. In monosyllabic nouns that host a possessive prefix, the stress generally remains on the stem, as in (12).

(12) a. *a.ˈpaŋ*
/a-paŋ/
1SG.POSS-house
'my house'
b. *u.ˈphuŋ*
/u-phuŋ/
3SG.POSS-flower
'his/her flower'

Yakkha has a category of obligatorily possessed nouns, and some of them, mostly kin terms, have undergone lexicalization. They are all monosyllabic. With regard to stress, the prefix is no longer distinguished from the stem, as examples like *ˈa.mum* 'grandmother', *ˈa.pum* 'grandfather', *ˈa.na* 'elder sister', *ˈa.phu* 'elder brother' show.[14] The words are, however, not morphologically opaque, as the first person possessive prefix *a-* can still be replaced by other prefixes in a given context, and then, the stress pattern changes to the expected one, e.g. *u.ˈmum* 'his grandmother'. An example for lexicalized obligatory possession beyond the domain of kinship is the word *ˈu.wa* 'liquid, nectar, water'.

The shift of stress described above occurs only in monosyllabic kin terms. In bisyllabic words, the stress is again on the first syllable of the stem or on the syllable that is closed. Terms like *a.ˈnun.cha* 'younger sibling' (both sexes) or *a.ŋo.ˈʈeŋ.ma* 'sister-in-law' illustrate this.

As Yakkha is a predominantly suffixing language, there are not many prefixes that could illustrate the fact that the domain of stress does not include prefixes. Apart from the possessive prefixes, evidence is provided by reduplicated adjectives and adverbs like *pha.ˈphap* 'entangled, messy' or *son.ˈson* 'slanted, on an angle'. The base for these words are verbal stems, in this case *phaps* 'entangle, mess up' and *sos* 'lie slanted'. Their stress pattern allows the conclusion that this kind of reduplication is a prefixation (for the other morphophonological processes involved cf. §1.5).

Clitics generally do not affect stress assignment, since they are attached to the phrase and thus to a unit that is built of words to which stress has already been assigned.[15] Examples are provided in (13) for case clitics and in (14) for discourse-structural clitics.

[14] In the domain of kinship, forms with first person singular inflection are also used in default contexts, when no particular possessor is specified. The default possessive prefix for nouns denoting part-whole relations is the third person singular *u-*.

[15] The term 'clitic' may have two readings: (i) affixes that are categorically unrestricted (represented by the equals sign '=' instead of a hyphen '-'), or (ii) phonologically bound words, like demonstratives. The latter are written separately in the orthography used in this work, as they may also appear independently and they have the ability to head phrases.

(13) a. *'kho.rek.ci*
/khorek=ci/
bowl=NSG
'the bowls'

b. *'taŋ.khyaŋ.bhaŋ*
/taŋkhyaŋ=phaŋ/
sky=ABL
'from the sky'

c. *'kam.ni.bak.ci.nuŋ*
/kamnibak=ci=nuŋ/
friend=NSG=COM
'with the friends'

(14) a. *a.'yu.bak.se*
/a-yubak=se/
1SG.POSS-goods=RESTR
'only my goods'

b. *u.'kam.ni.bak.ko*
/u-kamnibak=ko/
3SG.POSS-friend=TOP
'his friend(, though)'

An exception to this rule is the nominalization in *=na* and *=ha*. These nominalizers may attach to the verbal inflection, in relative clauses, complement clauses or in main clauses (see §??). They are categorically unrestricted (i.e., taking not only verbal hosts), and not an obligatory part of the verbal inflection. However, if they attach to the verb, they are part of the stress domain. If this was not the case, stress assignment as in *luk.ta.'khyaŋ.na* 'I ran away.' would be unexpected, because then the stress would be on the final syllable of the stress domain, which violates the prosodic constraints of Yakkha. The anomalous behavior of the nominalizers is not unexpected in light of the fact that they are being reanalyzed from discourse markers to part of the inflectional morphology.[16]

[16] For instance, they also show number agreement with verbal arguments, with *=na* indicating singular and *=ha* indicating nonsingular or non-countable reference.

It is hard to tell whether there is secondary stress. Even in words with five syllables, like in (14b), no secondary stress could be detected. Secondary stress was clearly audible in compounds such as those shown in Table 1.12. It is found on the first syllable of the second part of the compound, while the main stress remains on the first syllable of the whole compound. Such compounds may override the general restriction against stress on word-final syllables. In inflected verb forms, secondary stress can be found on the verbal stem, e.g. in *ˌndum.men.cu.ˈŋan.na* 'We (dual) do not understand him.', cf. also examples (10b) and (10c) above.

Table 1.12: Stress in compounds

YAKKHA	GLOSS
ˈko.len.ˌluŋ	'marble stone' ('smooth-stone')
ˈpi.pi.ˌsiŋ	'straw, pipe' ('([redup]suck-wood')
ˈyo.niŋ.ˌkhe.niŋ	'hither and thither' ('while thither-while hither')
ˈmo.niŋ.ˌto.niŋ	'up and down' ('while down-while up')
ˈsa.meʔ.ˌchoŋ	'protoclan' ('clan-top')
ˈlim.bu.ˌkhim	a clan name, composed of the term for the Limbu ethnic group and a word for 'house' in many Kiranti languages

Finally, one exception to the stress rules has to be mentioned. Yakkha has several triplicated ideophonic adverbs, where the first syllable is the base and the second and third syllable rhyme on the vowel, but replace the initial consonant with a liquid, a glide or a coronal stop, e.g. [se.reˈre:] 'drizzling', or [hi.wi.ˈwi:] 'pleasantly breezy' (cf. §??). In addition to the triplication, the vowel of the last syllable is lengthened, and the stress is always on the last syllable in these adverbs.

1.5 Morphophonological processes

This section discusses the various morphophonological processes in Yakkha. The domains to which certain rules and processes apply are not always congruent. The existence of more than one phonological domain and the problems for theoretical approaches that assume a prosodic

hierarchy have already been discussed for Limbu, another Eastern Kiranti language (Hildebrandt 2007; Schiering, Hildebrandt & Bickel 2010). Yakkha adds further support to challenges for the assumption that domains of prosodic rules are necessarily hierarchically ordered.

The following phonological domains could be identified in Yakkha morphophonology: the rules for stress assignment disregard prefixes and phrasal affixes. In contrast, the vowel harmony establishes a relation between the prefix and the stem only, ignoring the suffixes. The voicing rule has the broadest domain (cf. §1.5.1 below). Furthermore, some rules differentiate between morphologically simple and compound words. The voicing rule and also various repair operations of marked structures like adjacent obstruents are sensitive to morpheme boundaries, the latter, more precisely, to stem boundaries.

Figure 1.3 provides an overview of the different domains to which the morphophonological processes apply.[17] Section 1.5.1 deals with the voicing rule. The prefixation of underspecified nasals is treated in §1.5.2. A case of vowel harmony is described in §1.5.3. Adjacent vowels are not preferred in Yakkha, and strategies to avoid such undesirable sequences are treated in Section 1.5.4. Section 1.5.5 deals with consonants in intervocalic environments. Section 1.5.6 describes assimilations. The employment of nasals to repair marked sequences of adjacent obstruents as well as adjacent vowels in complex predicates is discussed in §1.5.7. Finally, §1.5.8 is concerned with a process of nasal copying which is found in the verbal inflection of many Kiranti languages.

1.5.1 Voicing

In Yakkha, unaspirated plosives and the affricate are voiced in intervocalic and postnasal environments and before liquids and glides, as schematized in Figure 1.4, where C stands for unaspirated plosives and the affricate, N for nasals and L for liquids and glides. Voicing predominantly applies at morpheme boundaries, but also inside words that,

[17] The morphological structure of the word is slightly simplified in the table, disregarding complex predicates that consist of more than one verbal stem. Complex predicates are treated identically to simple words by the stress rule and the voicing rule (except for the behavior of /c/).

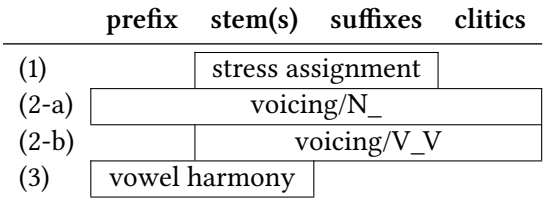


Figure 1.3: Summary of phonological domains

at least synchronically, cannot be split up further into separate morphemes. The rule is illustrated by example (15), with the stem-final /k/ of the verb *yokma* 'search', and by (16), with the stem-initial /t/ of the verb *tama* 'come'.

C.UNVOICED ⟶ C.VOICED/N_
C.UNVOICED ⟶ C.VOICED/V_V
C.UNVOICED ⟶ C.VOICED/_L

Figure 1.4: Voicing rules

(15) a. *yoknenna*
/yok-nen=na/
search-1>2[PST]=NMLZ.SG
'I looked for you.'

b. *yogu*
/yok-u/
search-3.P[IMP]
'Look for it!'

(16) a. *tame?na*
/ta-me?=na/
come[3SG]-NPST=NMLZ.SG
'He will come.'

b. *ndamenna*
/N-ta-meʔ-n=na/
NEG-come[3SG]-NPST-NEG=NMLZ.SG
'He will not come.'

Some environments containing liquids and glides that trigger voicing are shown in Table 1.13, with both monomorphemic and multimorphemic words. Some words are found with either pronunciation, and the current conclusion is that allegro speech leads to voicing, and that this became the norm for some words, but not for others.

Table 1.13: Voicing before liquids and glides

	Yakkha	**gloss**
/pl/	*taplik ~ tablik*	'story'
	hoblek	[manner of throwing or pouring] 'the whole/ at once'
/pr/	*hobrek*	'completely [rotten]'
	khibrum.ba	'fog' (also derogative for people of Caucasian phenotype)
/tr/	*hoŋdrup*	'pig as present for in-laws'
/kw/	*cogwana*	'he does it'
/pw/	*ubwaha*	'he earns [money]'
/khy/	*maghyam*	'old woman'
/tr/	*phetrak ~ phedrak*	'petal'
/pr/	*capra ~ cabra*	'spade with long handle'
/pl/	*lupliba ~ lubliba*	'earthquake'

As shown above, the voicing rule applies to lexical stems, but it also applies to inflectional morphemes and phrasal affixes (see (17)). Thus, the domain for voicing is bigger than the domain that is relevant for stress, as phrasal affixes undergo voicing, and as prefixes may trigger voicing as well.

(17) a. *hoŋmacibego*
/hoŋma=ci=pe=ko/
river=NSG=LOC=TOP
'in the rivers(, though)'

b. *tummecuganabu*
/tum-me?-c-u-ka=na=pu/
understand-NPST-DU-3.P.-2.A=NMLZ.SG=REP
'(People say that) you (dual) understand him/her.'

After this outline of the basic properties of voicing in Yakkha, let us now turn to its details. The voicing rule needs further specification for prefixes. While nasal prefixes trigger voicing, vocalic prefixes are excluded from the voicing domain, irrespective of other factors such as stress. I have shown in Section 1.4 above that voicing is triggered neither in *a.ˈpaŋ* 'my house' nor in *ˈa.pum* '(my) grandfather'. Only prefixes that consist of a nasal trigger voicing, as shown in (18).

(18) a. *mbaŋ*
/N-paŋ/
2SG.POSS-house
'your house'
b. *ŋ-gamnibak*
/N-kamnibak/
2SG.POSS-friend
'your friend'

In §1.4 on stress assignment, I mentioned reduplicated adjectives and adverbs. They also provide further evidence for the restriction of the voicing rule to nasal prefixes. I will exemplify this with the two adjectives *bumbum* 'compact and heavy' and *tutu* 'far up' (cf. §**??** for more examples). The base of the adjective *bumbum* has the corresponding verbal stem *pups ~ pum* 'fold, press, tuck up', while the base of *tutu* is the adverbial root *tu* 'uphill'. In analogy to the stress behavior, my default assumption is that the reduplication is a prefixation, although the voicing facts would support either option. The stem allomorph *pum* is reduplicated to /pum-pum/ (the stem *pups* surfaces only before vowels) and, subsequently, the stem undergoes voicing, which is then spread to the first syllable to preserve the identity between the base and the reduplicated morpheme. In contrast to this, in *tutu* 'far up', the intervocalic environment that results from the reduplication does not trigger voicing.

As stated in the beginning of this section, voicing does not apply to aspirated plosives, at least not in the Tumok dialect (see (19)). Exceptions are found only in a handful of lexemes, mostly in ideophonic adverbs (see §??). However, aspirated plosives (and the affricate) get voiced when they occur as function verbs,[18] i.e., in word-medial position (see (20)). These complex predicates also constitute one domain for stress assignment, in contrast, for instance, to the southern neighbour language Chintang, where each verbal stem in a complex predicate constitutes a stress domain on its own (Bickel et al. 2007a: 57).

(19) a. *ŋkhyanna*
/N-khy-a-n=na/
NEG-go[3SG]-PST-NEG=NMLZ.SG
'He did not go.'

b. *mempha?le*
/meN-phat-le/
NEG-help-CVB
'without helping'

(20) a. *kam cog-a-ghond-a-ga=i*
/kam cok-a-khond-a-ka=i/
work do-IMP-V2.ROAM-IMP-2=EMPH
'Go on working.'

b. *hab-a-bhoks-a=na*
/hap-a-phoks-a=na/
cry-PST-V2.SPLIT[3SG]-PST=NMLZ.SG
'She broke out in tears.'

Yakkha has a class of composite predicates that consist of a noun and a verb. They show varying degrees of morphosyntactic freedom, but they are generally not as tightly fused as the verb-verb predicates. This is also reflected by stress: noun and verb each have their own stress, even if this results in adjacent stress. Voicing, too, treats both components as separate items (see (21)).[19]

[18] Function verbs are grammaticalized verbs, glossed as 'V2', see Chapter ??.

[19] These predicates form a lexical unit though, and the nouns do not enjoy the syntactic freedom that is expected of full-fledged arguments. These predicates are best

(21) a. *ˈsa.ya* *ˈpok.ma*
/saya pok-ma/
head.soul raise-INF
'to raise the head soul' (a ritual)

b. *ˈluŋ.ma* *ˈtuk.ma*
/luŋma tuk-ma/
liver pour-INF
'to love'

c. *ˈsak* *ˈtu.ga.nai?*
/sak tug-a=na=i/
hunger ache[3SG]-PST=NMLZ.SG=Q
'Are you hungry?/ Is he hungry?/ Are they hungry?'

Between vowels, voiced stops may further assimilate to their surrounding material and become continuants, as several alternations between intervocalic [b] and [w] show. Thus, *kamnibak* 'friend' may also be pronounced [kamniwak], or the imperative of *apma* 'to come (from a visible distance on the same level)' can alternate between [aba] and [awa]. Like in Belhare (Bickel 1998), intervocalic /t/ may also become a continuant /r/, as some historical stem changes (e.g. **thut* → *thur*) and some function verbs show, e.g., the function verb *ris* that originates in the lexical stem *tis* 'apply, invest', or *ra?* originating in the lexical stem *ta?* 'bring (from further away)'.

The suffix *-ci* does not get voiced, neither in verbal nor in nominal inflection, as example (17) has already shown. This exceptional behavior might point towards a more complex historical form of this suffix. The only instance of a voiced marker *-ci* is in the second person dual pronoun *njiŋda* (you), which is complex at least from a historical perspective.

The affricate /ts^{h}/ (written <c>) behaves exceptionally in other contexts, too. In the function verb *ca* 'eat' it does not undergo voicing (see (22a)),[20] for which there is no neat explanation yet. Example (22b) shows that voicing does apply to plosives in function verbs, and as example (23) shows, stem-initial /c/ does get voiced in other environments.

understood as idiomatic phrases (cf. Chapter **??**).

[20] This function verb is the only one with initial /c/.

In some morphemes, the affricate shows free variation, as in the additive focus clitic *=ca*. It is found both voiced and unvoiced, neither related to individual nor to dialectal differences.

(22) a. *incama*
/in-ca-ma/
trade-V2.EAT-INF
'to sell'

b. *hambi?ma*
/ham-pi?-ma/
distribute-V2.GIVE-INF
'to distribute (among people)'

(23) a. *njogwana*
/n-cok-wa=na/
3PL.A-do-NPST=NMLZ.SG
'They will do it.'

b. *men-ja-le*
/men-ca-le/
NEG-eat-CVB
'without eating'

Another exception to the voicing rule has to be mentioned, shown in (24a) and (24b). Stem-final /t/ remains voiceless between vowels. If the stem ends in a nasal and /t/, voicing applies, as in (24c), and stem-initial /t/ undergoes voicing as well. The absence of voicing at the end of stems can be explained with the history of the /-t/ final stems. Comparison with Chintang and Belhare (Bickel 2003; Bickel et al. 2007a) shows that there must have been geminated /tt/, resulting from a CVt stem to which the augment *-t* was added (discussed in §??). Voicing does not apply when there is more than one underlying consonant between the vowels.

(24) a. *mituna*
/mit-u=na/
remember[PST]-3.P=NMLZ.SG
'He remembered it.'

b. *phatuci!*
/phat-u-ci/
help-3.P[IMP]-NSG.P
'Help them!'

c. *chem endugana?*
/chem ent-a-u-ka=na/
song apply-PST-3.P-2.A=NMLZ.SG
'Did you put on music?'

1.5.2 The prefixation of underspecified nasals

Yakkha has several nasal prefixes that do not constitute syllables of their own, but result in onsets that consist of prenasalized consonants. The prefixes are underspecified for the place of articulation, and thus they always assimilate to the place of articulation of the following consonant. The nasal prefixes also trigger voicing stem-initially, as could already be seen in §1.5.1 above. These nasal prefixes have several morphemic values, already mentioned in §1.2, and repeated here for convenience: they index third person plural S and A arguments on verbs (25a) and verbal negation (25b). The nasal prefixes also encode second person singular possessors on nouns (25c), and in adverbs, they encode a distal relation (see (25d)). If the nasal prefix is attached to a nasal-initial stem, it yields an initial nasal geminate (see (26)).

(25) a. *m-by-a-ga-n=ha*
3PL.A-give-PST-2.P-NEG=NMLZ.NSG
'They gave it to you.'

b. *ŋ-khy-a-n=na*
NEG-go[3SG]-PST-NEG=NMLZ.SG
'He did not go.'

c. *m-baŋ*
2SG.POSS-house
'your house'

d. *ŋ-kha?la*
DIST-like_this
'like that'

(26) a. *m-ma*
2SG.POSS-mother
'your mother'
b. *n-nhe*
DIST-here
'there'

If the stem begins in a vowel or in /w/, the nasal is realized as velar nasal (see (27)). This fact might lead to the conclusion that actually /ŋ/ is the underyling form and gets assimilated. This would, however, be the only instance of a morphophonological change from a velar nasal to [m] or [n] in Yakkha, and thus, this option seems unlikely to me.

(27) a. *ŋ-og-wa-ci=ha*
3PL.A-peck-NPST-3NSG.P=NMLZ.NSG
'They (the roosters) peck them (the chicks).'
b. *ŋ-ikt-haks-u-ci*
3PL.A-chase-V2.SEND-3.P[PST]-3NSG.P
'They chased them away.'
c. *kham ŋ-wapt-u=ha*
soil 3PL.A-scratch-3.P[PST]=NMLZ.NSG
'They (the chicken) scratched the ground (they scrabbled about on the ground).'

A syllable with a nasal before the consonant is marked in terms of the sonority hierarchy (Jespersen 1904; Selkirk 1984; Hall 2000). Therefore, the following process can be noticed: if the preceding word (in the same clause) ends in a vowel, the nasal will resyllabify to the coda of the preceding word (see (28)), just as in Belhare (Bickel 2003: 547). I have shown above that the domains for stress and for voicing are not identical. This process adds a third domain of phonological rules to the picture, encompassing two words in terms of stress assignment, as each of the words carries its own stress. Even though the nasal belongs to the preceding word in terms of syllable structure, the choice of the nasal is determined by the following consonant, which also undergoes voicing due to the nasal. This suggests a sequence of morphophonological processes, of which this resyllabification is the last to apply.

(28) a. *liŋkhaci* *namnuŋ* *bagari**n*** *jog-a*
/liŋkha=ci nam=nuŋ bagari **N**-cok-a/
Linkha=NSG sun=COM bet 3PL-do-PST
'The Linkha clan had a bet with the sun.' [11_nrr_01.003]

b. *chuʔma**ŋ*** *gaksanoŋ*
/chuʔ-ma **N**-kaks-a-n=hoŋ/
tie-INF NEG-agree[3SG]-PST-NEG=SEQ
'It (the cow) was not okay with being tied.' [11_nrr_01.011]

c. *nna**m*** *borakhyamanna*
/nna **N**-por-a-khy-a-ma-n=na/
that NEG-fall-PST-V2.GO[3SG]-PST-NEG=NMLZ.SG
'That (stele) did not topple over.' [18_nrr_03.026]

d. *ka* *heʔniŋca**m*** *mandiʔŋanna*
/ka heʔniŋ=ca **N**-mandiʔ-ŋa-n=na/
1SG when=ADD NEG-get_lost-1SG-NEG=NMLZ.SG
'I would never get lost.' [18_nrr_03.015]

1.5.3 Vowel harmony

Vowel harmony in Yakkha applies only to one prefix, namely to the possessive prefix *u-* for third person. It has an allomorph *o-* that is triggered when the stressed syllable of the stem contains the mid vowels /e/ or /o/, illustrated by Table 1.14. Suffixes do not undergo vowel harmony in Yakkha, and neither do other prefixes.

One exceptional case has to be mentioned, the inflected form *khohetu* 'he/she carried it off'. This is a complex verb that consists of the two verbal stems *khuʔ* 'carry (on back)' and *het* (a V2, indicating caused motion away from a reference point). Apparently, the V2 makes the vowel in the first stem change to [o]. However, this is the only instance of vowel harmony that has been encountered beyond the domain defined above.

Table 1.14: Vowel harmony

before /e/ and /o/		before /u/, /i/, /a/	
o-heksaŋbe	'behind her/him'	*u-paŋ*	'her/his house'
o-hop	'her/his nest'	*u-hiŋgilik*	'alive'
o-tokhumak	'alone'	*u-ʧukhruk*	'her/his body'
o-senkhwak	'her/his bone'	*u-mik*	'her/his eye'
o-yok	'her/his place/spot'	*u-tiŋgibhak*	'its thorn'
o-poŋgalik	'(its) bud'	*u-ʧaŋ*	'its horn'
o-phok	'her/his belly'	*u-muk*	'her/his hand'
o-ʧesraŋ	'reverse'	*u-nabhuk*	'her/his nose'

1.5.4 Operations to avoid adjacent vowels

The processes that avoid vowel hiatus apply to adjacent vowels as well as to vowels that are separated by a glottal stop.[21] They are found in the verbal domain, since there are no suffixes or clitics beginning with a vowel in the nominal domain.

1.5.4.1 Vowel deletion

The suffixes *-a* and *-u* can get deleted when they are adjacent to another vowel. In sequences of /-a-u/, for instance, /a/ gets deleted (see (29a)). This rule, however, also interacts with the morphology. While the past (and imperative) suffix *-a* is deleted when it is followed by the third person patient marker *-u*, the same sequence, when it results from the nonpast marker *-wa*, results in the deletion of *-u* (see (29b)).

(29) a. *tunduŋna*
/tund-a-u-ŋ=na/
understand-PST-3.P-1SG.A=NMLZ.SG

[21] Diachronically, stems ending in a glottal stop used to be CVt stems, and the /t/ got reduced to a glottal stop. Synchronically, stems ending in glottal stop often behave identical to stems that end in a vowel, in terms of morphophonological rules.

‘I understood her/him.’

b. *tundwaŋna*
/tund-wa-**u**-ŋ=na/
understand-NPST-3.P-1SG.A=NMLZ.SG
‘I understand her/him.’

Suffix sequences of the underlying form /-a-i/ also result in the deletion of the suffix *-a* (see (30)). When /a/ is part of the stem, however, nothing gets deleted (see (30c)). Note also that intervocalic /h/ may become [j] (<y>), as in (30a).

(30) a. *kheiya*
/kheʔ-a-i=ha/
go-PST-1PL=NMLZ.NSG
‘We went.’

b. *tundigha*
/tund-a-i-ka=ha/
understand[3.A]-PST-2PL-2=NMLZ.NSG
‘They understood you (plural).’

c. *hakokŋa caiwa*
/hakok=ŋa ca-i-wa/
later=INS eat-1PL-NPST
‘We will eat later.’

Underlying sequences of three vowels are possible with open (CV and CVʔ) stems, in past and imperative forms with a third person patient. In these verb forms, both suffixes are deleted.

(31) a. *piŋ.na*
/piʔ-a-u-ŋ=na/
give-PST-3.P-1SG.A=NMLZ.SG
‘I gave it to him.’

b. *soŋ.na*
/soʔ-a-u-ŋ=na/
look-PST-3.P-1SG.A=NMLZ.SG
‘I looked at it.’

c. *ha!*
/haʔ-a-u/
bite-IMP-3.P
'Bite (into) it!'

d. *cam.na*
/ca-a-u-m=na/
eat-PST-3.P-1PL.A=NMLZ.SG
'We ate it.'

1.5.4.2 Ablaut

Ablaut is found only in one verb, in *cama* 'eat'. Ablaut in some verbs in not unusual in Kiranti perspective. The stem *ca* has an allomorph *co* that is not predictable from the phonological environment. It occurs when followed by other vowels, but not in all environments that would predict such a change if this was the condition. Its distribution over the paradigm is shown in Chapter **??**, on page **??**.

1.5.4.3 Insertion of glides

If the back vowels (/a/, /o/ and /u/) belong to a verbal stem and are followed by the suffix *-a*, the glide /y/ is inserted to avoid vowel hiatus. The morphological environment for these vowel sequences is provided by intransitive verbs, as well as in in transitive verb forms with first or second person patients (see (32)). A similar process can be encountered with stems that end in /ʔ/, with /ʔ/ being replaced by /y/, as in (32d).

(32) a. *mima* *uhoŋbe* *uyana*
/mima u-hoŋ=pe u-a=na/
mouse 3SG.POSS-hole=LOC enter[3SG]-PST=NMLZ.SG
'The mouse entered her mousehole.'

b. *nam* *ayana*
/nam a-a=na/
sun descend[3SG]-PST=NMLZ.SG
'The sun went down.'

c. *tayana*
/ta-a=na/
come[3SG]-PST=NMLZ.SG
'He came.'

d. *soyaŋgana*
/soʔ-a-ŋ-ka=na/
look-PST-1SG.P-2.A=NMLZ.SG
'You looked at me.'

1.5.4.4 Gliding

Front vowels of verbal stems may also be reduced to glides when they are adjacent to /a/. The syllable nucleus of the stem becomes part of the onset, and the word is again reduced by one syllable, which is obvious because of the stress pattern. Example (33a) and (33b) illustrate this for stems ending in glottal stops and (33c) shows the same process with an open stem.

(33) a. *'khyaŋ.na*
/kheʔ-a-ŋ=na/
go-PST-1SG=NMLZ.SG
'I went.'

b. *'pyaŋ.na*
/piʔ-a-ŋ=na/
go[3SG.A]-PST-1SG.P=NMLZ.SG
'He gave it to me.'

c. *'sya.na*
/si-a=na/
die[3SG]-PST=NMLZ.SG
'He/she died.'

This may also happen when the stem has a back vowel. So far, this was only encountered for the verb *luʔma* (see (34)). Other verbs, e.g. *chuʔma* 'tie' appear in the expected form, e.g. *chuyaŋna* 'he tied me (to something)'.

(34) a. *'lyaŋ.na*
/luʔ-a-ŋ=na/
tell[3SG.A]-PST-1SG.P=NMLZ.SG
'He told me.'
b. *'lya.ha*
/luʔ-a=ha/
tell[3SG.A;1.P]-PST=NMLZ.NSG
'He told us.'

1.5.5 Consonants in sonorous environment

1.5.5.1 Intervocalic /h/ and /w/

Intervocalic /h/ and /w/ also trigger vowel deletion. If the two vowels surrounding /w/ or /h/ have the same quality, the preceding vowel is deleted, even if this is the stem vowel. The deletion leads to new consonant clusters, i.e., to consonants followed by /w/ (see (35a)), or to aspirated voiced plosives (see (35b)).

(35) a. *njwan.na*
/n-ca-wa-n=na/
NEG-eat[3SG.A]-NPST-NEG=NMLZ.SG
'He/she does not eat it.'
b. *tun.di.wa.gha*
/tund-i-wa-ka=ha/
understand[3.A]-2PL.P-NPST-2=NMLZ.NSG
'He/they understand you (pl).'

If the vowels do not have the same quality, and there is a transition from a close to an open vowel, intervocalic /h/ may also change to [y] (see (36)).

(36) a. *tun.dwa.ci.ya*
/tund-wa-ci=ha/
understand[3SG.A]-NPST-3NSG.P=NMLZ.NSG
'He/she understands them.'

b.	*ci.ya*	*maŋ.cwa*
	/ci=ha	maŋcwa/
	get_cold=NMLZ.NSG	water
	'cold water'	

The change of vowels to glides and the realization of underlying /h/ as aspiration can even cross stem boundaries, as the following complex predicate, consisting of three verbal stems, shows (37). The underlying stems /piʔ/ and /heks/ fuse into [bhyeks].[22]

(37)	*a.cya*	*tu.ga.bhyek.sana*
	/a-cya	tuk-a-piʔ-heks-a=na/
	1SG.POSS-child	get_ill[3SG]-PST-V2.GIVE-V2.CUT-PST=NMLZ.SG
	'My child is about to get ill.'	

1.5.5.2 Nasals in sonorous environment

Nasals in sonorous environments are prone to phonological alternations. Nasal vowels are not part of the phoneme set of Yakkha. They may be generated, however, in intervocalic environments at morpheme boundaries, or when a nasal occurs between a vowel and a liquid or a glide. This happens when the negative converb (marked by prefix and suffix: *meN-*Σ*-le*) attaches to an open stem, or to a stem with initial /w/, /y/ or /l/. The nasal in *meN-*Σ*-le* is not specified. If it attaches to stems that have initial consonants, it assimilates to their place of articulation. Examples are provided in Table 1.15.

Another process producing nasal vowels was noticed in allegro forms of complex predicates such as *ŋonsipma* 'feel shy' and *thensipma* 'fit, suit', which were pronounced *ŋoĩsipma* and *theĩsipma* in fast speech.

1.5.6 Assimilations

Syllable-final coronals assimilate to coronal fricatives, yielding a geminated fricative [s:] (written <ss>) (see (38)). This assimilation is con-

[22] The V2 *-piʔ* indicates that some participant (the speaker, the subject or even someone else) is affected by the event, and the V2 *-heks* specifies the temporal reference of the event as immediate prospective. In pronunciation, they get fused to [bhyeks].

Table 1.15: Nasals in sonorous environment

STEM	CITATION FORM	NEGATIVE CONVERB
/waʔ/	*waʔma* ‘wear, put on’	*mẽ.waʔ.le* ‘without wearing’
/a/	*ama* ‘descend’	*mẽ.a.le* ‘without descending’
/u/	*uma* ‘enter’	*mẽ.u.le* ‘without wearing’
/lap/	*lapma* ‘seize, catch’	*mẽ.lap.le* ‘without wearing’
/yok/	*yokma* ‘search’	*mẽ.yok.le* ‘without wearing’

nected to stress. In unstressed syllabes, no assimilation occurs, and the stem-final /t/ is simply deleted before fricatives (see (38c)). Occasionally, stem-final glottal stops can also undergo this assimilation, but this is subject to free variation.

(38) a. *es.se*
/et-se/
apply-SUP
‘in order to apply’

b. *mis.saŋ*
/mit-saŋ/
remember-SIM
‘remembering’

c. *ki.si.saŋ*
/kisit-saŋ/
be_afraid-SIM
‘being afraid’

The following examples show that this gemination does not apply to the other plosives /k/ and /p/. Stems ending in a glottal stop are treated like open stems, illustrated by (39c). Stems that have a coronal augment yield an underlying sequence of three consonants when followed by /s/. In this case, nothing gets assimilated. The general rule for augmented stems followed by consonants applies, i.e., the augment is simply omitted, as illustrated in (40).

(39) a. *ap.se*
/ap-se/
shoot-SUP
'in order to shoot'
b. *cok.se*
/cok-se/
do-SUP
'in order to do'
c. *so.se*
/soʔ-se/
look-SUP
'in order to look'

(40) a. *un.se*
/und-se/
pull-SUP
'in order to pull'
b. *chep.se*
/chept-se/
write-SUP
'in order to write'

Furthermore, stems ending in a coronal stop, and occasionally also stems ending in a glottal stop, show a regressive assimilation to a velar place of articulation, yielding the geminate [kː] as shown in (41).

(41) a. *phak.khuba*
/phat-khuba/
help-NMLZ
'helper'
b. *khek.khuba*
/khet-khuba/
carry_off-NMLZ
'the one who carries it off'
c. *sok.khuba*
/soʔ-khuba/
look-NMLZ

‘the one who looks’

An optional regressive assimilation, conditioned by fast speech, can be found in underlying sequences of nasals followed by a palatal glide or a lateral approximant (/y/ or /l/), both stem-initially and stem-finally. In such environments, the nasal assimilates further, giving up its feature of nasality (see (42)).

(42) a. *lleŋmenna*
/N-leks-me?-n=na/
NEG-become[3SG]-NPST-NEG=NMLZ.SG
‘It will not happen./It is not alright.’
b. *mẽyelle*
/meN-yen-le/
NEG-obey-CVB
‘without listening/obeying’
c. *yyupmaci*
/N-yupma=ci/
2SG.POSS-tiredness=NSG
‘your tiredness’[23]

1.5.7 Operations involving nasals

1.5.7.1 Nasality assimilation

The nasal consonants themselves also trigger several regressive assimilation processes, either in place of articulation or in nasality. Coronals and the glottal stop are particularly prone to assimilations, while the velar and the bilabial stop are less inclined to assimilate. Stem-final /t/ and /?/ will assimilate completely if they are followed by stressed syllables starting in /m/ (see (43a)). Under the same condition, stems ending in velar stops (both plain and augmented) undergo nasal assimilation, with the place of articulation being retained (see (43b) and (43c)).

[23] Some nouns are obligatorily marked for nonsingular, especially in experiential expressions.

(43) a. *pham.ˈmeŋ.na*
/phat-me-ŋ=na/
help[3SG.A]-NPST-1SG.P=NMLZ.SG
'He/she helps me.'
b. *peŋ.ˈmeʔ.na*
/pek-meʔ=na/
break[3SG]-NPST=NMLZ.SG
'It breaks.'
c. *naŋ.ˈmeʔ.na*
/nakt-meʔ=na/
ask[3SG]-NPST=NMLZ.SG
'He asks.'

In stems that end in /n/ or /nd/ (with augmented /t/), the coda completely assimilates to [m]. In contrast to the assimilation discussed above, this assimilation is not sensitive to stress. For instance, stems like *tund* 'understand' and *yen* 'obey' have the infinitival forms *tumma* and *yemma*, respectively, with the stress falling on the first syllable. Stems ending in a velar stop or in a bilabial stop never assimilate completely; their place of articulation is retained. Compare, e.g. *pekma* 'break' (stem: *pek*) with (43b) above. Following a general rule in Yakkha, augmented stems (ending in two consonants) block assimilation and also other morphophonological processes, e.g. *chepma* 'write' (stem: *chept*). Furthermore, velar and bilabial nasals never assimilate to other nasals, in contrast to languages like Athpare and Belhare (Ebert 1997a; Bickel 2003).

1.5.7.2 Nasalization of codas

Nasalization of obstruents does not only happen as assimilation to nasal material. When obstruents are adjacent in complex predicates, the first obstruent, i.e., the stem-final consonant of the first stem, becomes a nasal in order to avoid a marked structure. Examples are provided in Table 1.16.[24] Within complex predicates this process is most frequently

[24] The V2 *-piʔ* has a suppletive form *-diʔ*, which cannot be explained by phonological operations. It occurs only in intransitive uses of *-piʔ* ~ *-diʔ* 'give' as a function verb.

found in infinitival forms, as in the inflected forms morphological material (suffixes with vowel quality) gets inserted between the verbal stems, thus resolving the marked sequences of adjacent obstruents.

The nasal often retains the place of articulation of the underlying obstruent, but some assimilations are possible too, e.g., /sos-kheʔ-ma/ becoming *soŋkheʔma* 'slide off' (slide-go). If the underlying obstruent is a glottal stop, the place of articulation of the nasal is always conditioned by the following consonant, e.g., *han-cama* /haʔ-cama/ 'devour' (bite-eat).

As Table 1.16 shows, both simple (CVC) and augmented stems (CVC-s and CVC-t) are subject to this change from obstruent to nasal. The same change can be observed in reduplicated adverbs and adjectives, e.g., in *sonson* 'slanted' (derived from the verbal stem /sos/) or *simsim* 'squinting, blinking' (derived from the verbal stem /sips/).

This process is also sensitive to stress. The last example of Table 1.16, *um.ˈkheʔ.ma*, with the stress on the second syllable, can be contrasted with the nominalized *ˈup.khu.ba* 'something that collapes', with the stress on the first syllable. Here, the stem appears in the general form of *t*-augmented stems that are followed by consonants: the augment is simply omitted.

1.5.7.3 Insertion of nasals

In addition to the nasalization of obstruents, nasals can be inserted in complex predication, if the following condition is met: if the V2 in a complex predicate starts in a vowel or in /h/, either the preceding consonants (the complete coda or only the augment of the first verbal stem) will become nasals, or, when the first stem has CV or CVʔ shape, the default nasal /n/ will be inserted between the two stems. Table 1.17 provides examples of citation forms of complex predicates with inserted nasals, and their underlying stems.

The process is not a blind insertion of phonetic material, i.e., it is not simply epenthesis. Remarkably, it is triggered by the phonological quality of non-adjacent morphological material: the change of stops to

The inflected forms show that the underlying stem is *-piʔ*.

Table 1.16: Nasalization of obstruents stem-finally

CITATION FORMS		STEMS
yuncama	'laugh, smile'	/yut/ + /ca/
suncama	'itch'	/sus/ + /ca/
incama	'play'	/is/ + /ca/
hancama	'devour'	/haʔ/ + /ca/
sendiʔma	'get stale'	/ses/ + /piʔ/
mandiʔma	'get lost'	/mas/ + /piʔ/
pendiʔma	'get wet'	/pet/ + /piʔ/
phomdiʔma	'spill'	/phopt/ + /piʔ/
sonsiʔma	'slide, slip'	/sos/ + /siʔ/
tomsiʔma	'get confused'	/tops/ + /siʔ/
yaŋsiʔma	'get exhausted'	/yak/ + /siʔ/
homkheʔma	'get damaged'	/hop/ + /kheʔ/
soŋkheʔma	'slide off'	/sos/ + /kheʔ/
umkheʔma	'collapse'	/upt/ + /kheʔ/

nasals or the insertion of nasals is conditioned by the availability of nasals in the morphology that attaches to the stem. The suffixes containing nasals have to attach directly to the complex stem in order to trigger the insertion of nasals. Compare the examples in (44). In (44a) and (44b), the sequence /pt/ becomes [mn], and the following /h/ is realized as the aspiration of [n]. In (44c), the inflection does not immediately contain a nasal, and thus the phonological material of the stem remains as it is. It gets resyllabified, however, and the /h/ is realized as aspiration of the preceding consonant. Example (45), with the verb *le?nemma* 'let go, drop' illustrates the insertion of /n/ when a CV-stem (or CV?) and a vowel-initial stem are adjacent in complex predication. The same condition as in (44) can be observed. Only nasal material in the suffix string licenses the insertion of /n/ between the two verbal stems.

(44) a. *lem.nhaŋ.ma*
/lept-haks-ma/
throw-V2.SEND-INF
'to throw away/out'

b. *lem.nhaŋ.nen?*
/lept-haks-nen/
throw-V2.SEND-1>2
'Shall I throw you out?'

c. *lep.thak.suŋ.na*
/lept-haks-u-ŋ=na/
throw-V2.SEND-3.P[PST]-1SG.A=NMLZ.SG
'I threw her/him out.'

(45) a. *le?.nen.saŋ*
/le?-end-saŋ/
drop-V2.INSERT-SIM
'stretching down'

b. *u.laŋ* *le.?en.du.ci.ya*
/u-laŋ le?-end-a-u-ci=ha/
3SG.POSS-leg drop-V2.INSERT-PST-3.P-NSG.P=NMLZ.NSG
'It (the aeroplane) lowered its landing gear.'

Table 1.17: The insertion of nasals in complex predication

CITATION FORMS	STEMS
hu.nhaŋ.ma 'burn down'	/huʔ/ + /haks/
lem.nhaŋ.ma 'throw away/out'	/lept/ + /haks/
khu.nhaŋ.ma 'rescue'	/khus/ + /haks/
iŋ.nhaŋ.ma 'chase off'	/ikt/ + /haks/
pheʔ.na.ma 'drop at'	/phes/ + /a/
et.na.ma 'enroll, install somewhere (and come back)'	/et/ + /a/
tik.na.ma 'take along'	/tikt/ + /a/
tiʔ.na.ma 'deliver, bring (and come back)'	/tis/ + /a/
yuk.na.ma 'put for s.b. and leave'	/yuks/ + /a/
leʔ.nem.ma 'drop'	/leʔ/ + /end/
hak.nem.ma 'send down'	/hakt/ + /end/
aʔ.nem.ma 'wrestle down'	/a/ + /end/
ak.nem.ma 'kick down'	/ak/ + /end/
leʔ.nem.ma 'drop'	/leʔ/ + /end/
lep.nem.ma 'throw down'	/lept/ + /end/

The insertion of /n/ can affect the coda of the first stem, too. Stems ending in /s/ may change to CV-ʔ when followed by a vowel-initial stem, as in *tiʔnama* 'deliver' (/tis + a/). This again suggests a sequence of processes, i.e., the insertion of /n/, followed by the change of /s/ to [ʔ]. It is not clear, however, why these citation forms do not simply resyllabify, e.g., to [tisama] instead of [tiʔnama], because this resyllabification is exactly what happens in the corresponding inflected forms. Apparently, speakers prefer to keep morpheme boundaries and syllable boundaries congruent in citation forms. Note that V2s starting in /h/ behave differently from V2s starting in a vowel, because a complex predicate consisting of /khus/ + /haks/ does not become [khuʔ.nhaŋ.ma] but *khu.nhaŋ.ma*.

Table 1.18 summarizes the processes of the preceding two sections, with examples for each process. To sum up, the insertion of nasals and the transformation of obstruents to nasals are employed to avoid marked structures such as adjacent vowels, adjacent obstruents, and impossible syllable codas, while also maintaining the identity of morpheme boundaries and syllable boundaries. This stands in contrast to inflected forms, where resyllabification is unproblematic.

Table 1.18: Repair operations in complex predicates involving nasals

OPERATION	CITATION FORM	V.LEX + V2
/$C_{[1]}$+C/ ⟶ **N**$_{[1]}$.C	*hom.kheʔ.ma* 'get damaged'	/hop/ + /kheʔ/
/$C_{[1]}C_{[2]}$+V/ ⟶ $C_{[1]}$.**n**V	*mak.ni.ma* 'surprise'	/maks/ + /i/
/$C_{[1]}C_{[2]}$+hV/ ⟶ **N**$_{[1]}$.**n**hV	*lem.nhaŋ.ma* 'throw away/out'	/lept/ + /haks/
/s+hV/ ⟶ .**n**hV	*khu.nhaŋ.ma* 'rescue'	/khus/ + /haks/
/s+V/ ⟶ ʔ.**n**V	*maʔ.ni.ma* 'lose'	/mas/ + /i/
/V+V/ ⟶ Vʔ.**n**V	*aʔ.nem.ma* 'wrestle down'	/a/ + /end/

1.5.8 Nasal copying

In the verbal inflection of Kiranti languages, nasal morphemes can be realized up to three times in the suffix string, a process that was termed

'affix copying' or 'nasal copying', e.g. in van Driem (1987); Doornenbal (2009); Ebert (2003c); Bickel (2003). Alternative analyses have been proposed to explain this process: recursive inflection in Bickel et al. (2007a) and radically underspecified segments in Zimmermann (2012).

Yakkha nasal copying is illustrated by (46). Suffixes that consist of nasals or that contain nasals occur more than once under certain conditions, and without any semantic consequences. There are no contrasting forms that lack the copied suffixes. It is morphologically most economical to assume regressive copying, with the last nasal suffix serving as base. A comparison of the inflected forms in (46) below supports this reasoning, because the slots after the suffixes *-me?* and *-u* are filled with varying material.[25] What is remarkable about the nasal copying is that the value of the underspecified nasal is determined by non-adjacent segments.

(46) a. *piŋ.ciŋ.ha*
/pi?-a-u-**N**-ci-**ŋ**=ha/
give-PST-3.P-**[copy]**-3NSG.P-**1sg.A**=NMLZ.NSG
'I gave it to them.'

b. *tun.dum.cim.ŋha*
/tund-a-u-**N**-ci-**m**-ŋ=ha/
understand-PST-3.P-**[copy]**-3NSG.P-**1pl.A**-EXCL=NMLZ.NSG
'We understand them.'

c. *ndum.men.cun.ci.ga.nha*
/n-tund-me?-**N**-ci-u-**N**-ci-ga-**n**=ha/
NEG-Σ-NPST-**[copy]**-DU.A-3.P-**[copy]**-3NSG.P-2.A-**NEG**=NMLZ.NSG
'You (dual) do not understand them.'

The motivation for this copying process might be a phonological re-

[25] Note that the glosses '1sg.A' and 'EXCL' refer to the same morpheme, if the structure of the whole paradigm is taken into account. It is defined by the property [non-inclusive]. This collapse of markers is also found in the intransitive forms of the Belhare verbal inflection (Bickel 1995). For the sake of the readability of the glosses, the morphological analysis as well as the alignment patterns of particular morphemes are kept out of the glosses as far as possible.

pair operation to yield closed syllables.[26] Repair operations involving nasals would not be uncommon for Yakkha, as I have pointed out in §1.5.7. An obvious shortcoming of this explanation is that nasals are not copied to all syllables that one would expect in light of a purely phonological condition (compare (47a) and (47b)).

(47) a. *ŋ-khy-a-ma-ga-n=na* (not
NEG-GO-PST-PRF-2-NEG=NMLZ.SG
**ŋkhyanmanganna)*

'You have not come.'

b. *ŋ-khy-a-ma-n-ci-ga-n=ha*
NEG-GO-PST-PRF-**[copy]**-DU-2-**neg**=NMLZ.NSG
'You (dual) have not come.'

An alternative analysis has been proposed by Zimmermann (2012), resulting from a comparison of several Kiranti languages. In her approach, the copying is a morpheme-specific process, happening only in the vicinity of certain suffixes. In line with her observations, all instances of copied nasals in Yakkha directly precede the suffix *-ci* (with the two morphological values 'dual' and '3NSG.P', see the paradigm tables in §**??**). Hence, it is the suffix *-ci* that licenses the nasal copying in Yakkha. The process as such and the phonological content of the copies are morphologically informed; they are based upon the presence of certain morphological markers. In the absence of *-ci* nothing gets copied, and the same holds for inflectional forms in which no nasals are available to serve as base. Hence, nasal copying is not just the blind fulfillment of a phonological constraint, as epenthesizing any nasal material would be. On the other hand, since no semantic content is added by the nasal copies, the operation is not purely morphological either, but located at the boundary between phonology and morphology.

Another observation made is that the nasal suffixes compete about the choice which suffix will serve as base for the copying. If we com-

[26] Cf. Schikowski (2012: 22) for the same explanation on Chintang suffix copying, although on p. 25 he points out that this explanation is not watertight, since some copying processes may even create open syllables.

pare (48a) and (48b), we can see that here, the preferred choice is /n/, instantiated by the negation marker, although the closest available base in (48b) would be the velar nasal from the suffix *-ŋ*. This shows that the choice is not determined by the linear succession of the available nasals. The negation is the only morphological contrast between the two verb forms, and the nasal that is copied changes from /ŋ/ to /n/, compared to (48a). In (48c), there is a competition between /n/ and /m/ as bases, which is won by /m/. This selection principle holds throughout the inflectional paradigm, so that the hierarchy for the choice of the base must be /m/ > /n/ > /ŋ/.

(48) a.

tum.meŋ.cuŋ.ci.ŋha
/tund-me?-**N**-ci-u-**N**-ci-**ŋ**=ha/
understand-NPST-**[copy]**-DU.A-3.P-**[copy]**-3NSG.P-**excl**=NMLZ.NSG
'We (dual, excl.) understand them.'

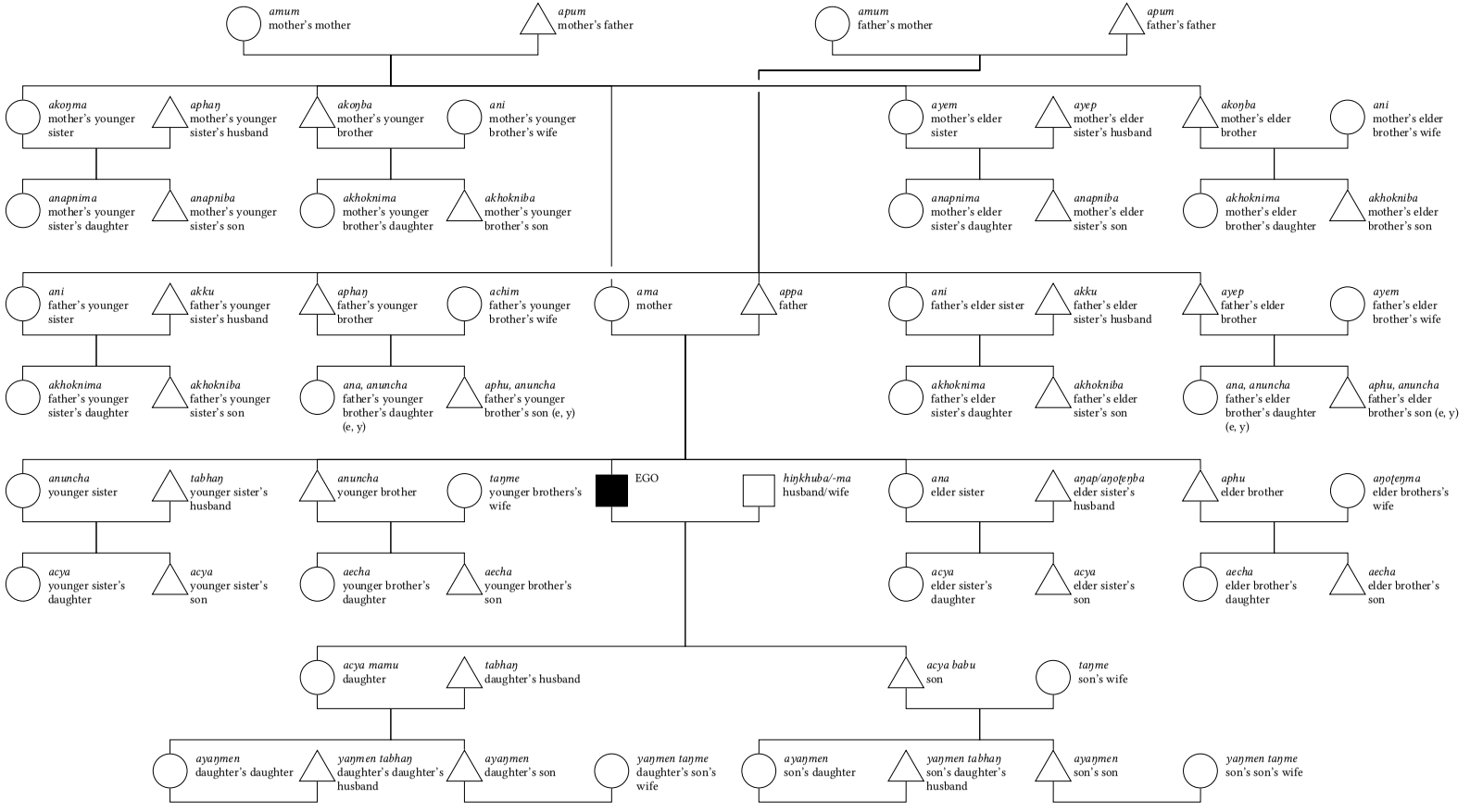
b.

ndum.men.cun.ci.ŋa.nha
/n-tund-me?-**N**-ci-u-**N**-ci-ŋ(a)-**n**=ha/
NEG-Σ-NPST-**[copy]**-DU.A-3.P-**[copy]**-3NSG.P-EXCL-**neg**=NMLZ.NSG
'We (dual, excl.) do not understand them.'

c.

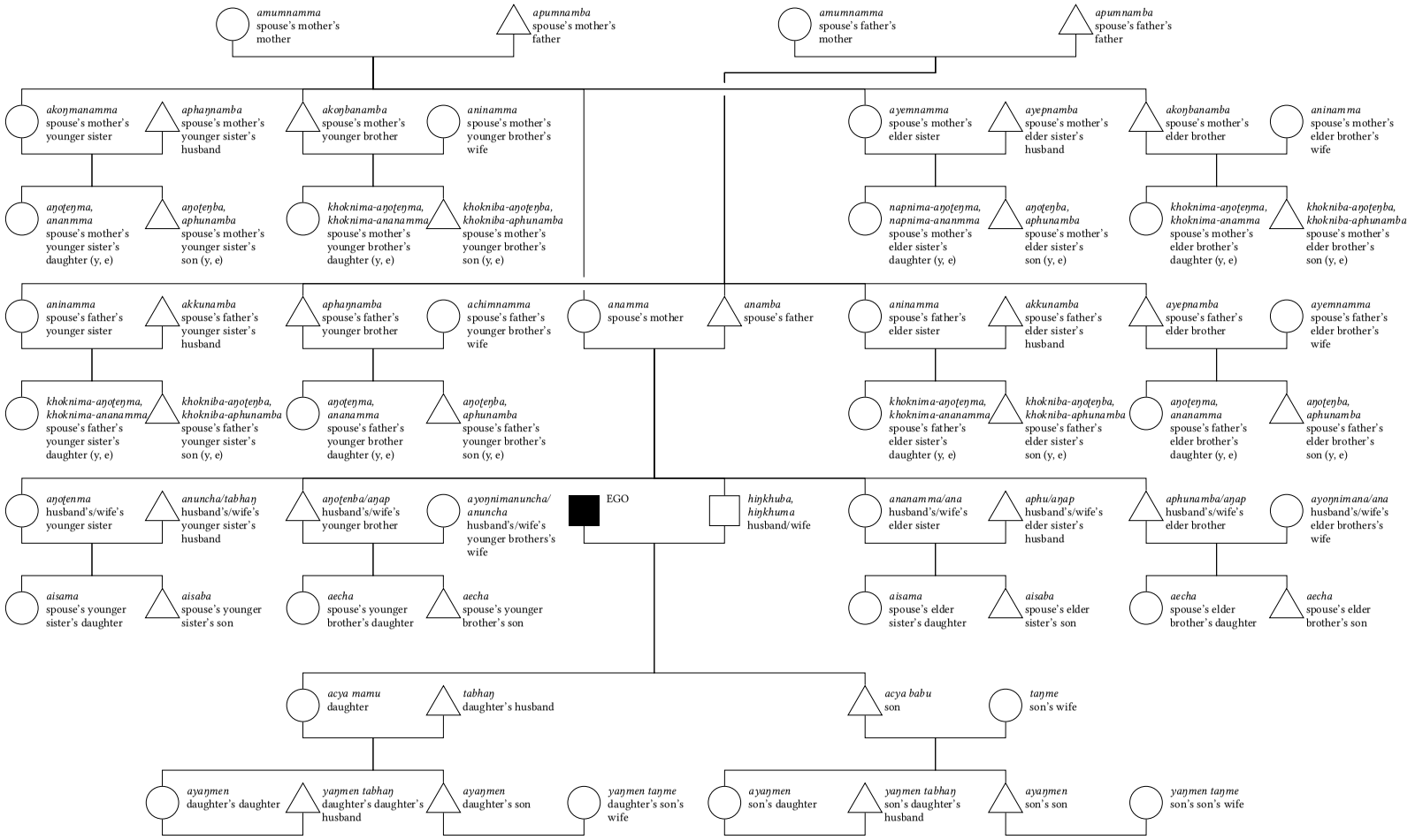
ndun.dwam.cim.ŋa.nha
/n-tund-wa-u-**N**-ci-**m**-ŋ(a)-n=ha/
NEG-understand-NPST-3.P-**[copy]**-3NSG.P-**1pl.A**-EXCL-NEG=NMLZ.NSG
'We (plural) do not understand them.'

YAKKHA KINSHIP TERMS
– own family –



Further terms: great-grandparents: *cottu*; great-great-grandparents: *kektu*; great-grandchildren: *sapsik*, *khopsik*; great-great-grandchildren: *po?loŋ*; great-great-great-grandchildren: *jo?loŋ*

YAKKHA KINSHIP TERMS
– in-laws –



Index of Yakkha formatives

MARKER	FUNCTION	SECTION
a-	possessive prefix, 1SG	??
-a	past	??
-a	imperative, subjunctive	??
-a	nativizer on loans	??
-a ~ -na	function verb, ‘leave’	??
-ap	function verb, ‘come’	??
-apt	function verb, ‘bring’	??
anciŋ-	possessive prefix, 1DU.EXCL	??
aniŋ-	possessive prefix, 1PL.EXCL	??
au	initiative particle	??
baŋna	complementizer	??
baŋha	complementizer	??
baŋniŋ	textual topic, quotative	??
-bhes	function verb, ‘deliver’	??
-bhoks ~ -bhoŋ	function verb, ‘split’	??
bhoŋ	conditional, complementizer, quotative	??, ??, ??
-ca	function verb, middle, reflexive	??, ??
ca	auxiliary, reciprocal	??
=ca	additive focus	??, ??
=chen	topic	??
-ci ~ -cin	dual (verbal)	??
-ci	3 nonsingular P (verbal)	??
=ci	nonsingular (nominal)	??
-eba	polite imperative	??
=em	alternation particle	??
eN-	possessive prefix, 1PL.INCL	??
-end	function verb, ‘insert’	??

MARKER	FUNCTION	SECTION
enciŋ-	possessive prefix, 1DU.INCL	??
=ge ~ =ghe	locative	??
-get	function verb, ‘bring up’	??
=gaŋ ~ =ghaŋ	ablative	??
-ghet ~ -het	function verb, ‘carry off’	??
-ghond	function verb, ‘roam’	??
=ha ~ =ya	nominalizer, NSG/NC	??
-haks ~ -nhaŋ	function verb, ‘send’	??
haksaŋ	comparative	??
ha?niŋ	comparative	??
-heks	function verb, ‘cut’	??
=hoŋ	sequential clause linkage	??, ??
=hoŋca	concessive clause linkage	??
hau	exclamative	??
=i	sentential focus	??
i	question marker	??
-i ~ -ni	completive	??, ??
-i ~ -in	1PL, 2PL (verbal)	??
-ka	2nd person (verbal)	??
=ka	genitive	??, ??
=kha?la	directional, manner	??
-khe?	function verb, ‘go’	??
-khuba	nominalizer	??
-khusa	reciprocal marker	??
=ko	topic	??
=lai	exclamative	??
=le	contrastive focus	??
-les	suffix of knowledge or ability	??
-lo	interruptive clause linkage	??
loppi	probability	??
-lo?a	equative	??
-m	1PL.A>3, 2PL.A>3	??
-ma	infinitive	??, ??, ??, ??
-ma	event numeral, ‘times’	??

MARKER	FUNCTION	SECTION
-ma	nominalizer	??
-ma ~ -mi	perfect	??
=maŋ	emphatic particle	??
-masa ~ -misi	past perfect	??
maʔniŋ	privative	??
meN-	negation	??
meN-...-le	negative converb	??
-met	causative	??
-meʔ	nonpast	??
N-	negation (verbal)	??
N-	3PL	??
N-	possessive prefix, 2SG	??
-n	negation	??
=na	nominalizer, SG	??
-nen	1>2 (verbal)	??
-nes	function verb, 'lay'	??
-nhaŋto	temporal ablative	??
-ni	optative	??
-nin	plural and negation (verbal)	??, ??
njiŋ-	possessive prefix, 2DU	??
=niŋ ~ =niŋa	cotemporal clause linkage	??
=niŋgobi	counterfactual clause linkage	??
nniŋ-	possessive prefix, 2PL	??
=nuŋ	comitative case and clause linkage	??, ??
-ŋ ~ -ŋa	1SG, EXCL	??
=ŋa	ergative case and clause linkage	??, ??
-pa	nominalizer	??
=pa	sentential focus	??
-paŋ	numeral classifier	??
=pe	locative	??
=phaŋ	ablative	??
=pi	irrealis	??
-piʔ	function verb, 'give'	??, ??
=pu	reportative marker	??

MARKER	FUNCTION	SECTION
rahecha	mirative	??
-raʔ	function verb, ‘come’	??
-raʔ	function verb, ‘bring’	??
-ris	function verb, ‘place’	??
-sa	infinitive	??, ??
-saŋ	simultaneous converb	??
-se	supine converb	??
=se	restrictive focus	??
-siʔ	progressive	??
-siʔ	middle	??, ??
-siʔ	function verb, ‘avoid’	??
-soʔ	function verb, ‘look’	??
-t	benefactive	??
u-	possessive prefix, 3SG	??
-u	3.P (verbal)	??
=u	vocative	??
-uks	function verb, ‘come down’	??
-uks ~ -nuŋ	perfect	??
-uks ~ -nuŋ	function verb, continuative	??
-uks ~ -uksa	past perfect	??
-ukt	function verb, ‘bring down’	??
uŋci-	possessive prefix, 3NSG	??
-wa	nonpast	??
=ʔlo	exclamative	??

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