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An Overview of Khaling Verbal Morphology*

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This article presents a comprehensive description of the Khaling intransitive and transitive verbal paradigms, focusing on the complex system of stem alternations, which is unmatched in the Sino-Tibetan family. Using internal reconstruction, we posit a reconstructed root and a set of rules from which all attested alternations can be derived. Paradigms generated by a computerized version of these rules have been validated by several speakers. This reconstruction serves as a tool to efficiently classify and describe morphophonological alternations, and as a basis for further research on diachronic morphology involving comparison with other closely related languages such as Dumi and Koyi.

Key words: morphophonology, internal reconstruction, portmanteau morpheme, templatic morphology, tonal alternations, Kiranti, Khaling, Dumi

1. Introduction¹

Despite the fact that Khaling is one of the earliest Kiranti languages to have been described, its morphology is still poorly known in comparison with other neighbouring languages such as Dumi (van Driem 1993). Previous work on Khaling failed to mark

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¹ The abbreviations in this paper follow the Leipzig Glossing Rules. Additionally, the following symbols are used in the description of the data and the definitions of the rules:

L: lengthening of the vowel; F: falling tone; C: any consonant; Cf: final consonant.

Internally reconstructed verb roots (see §5.1) are represented between vertical bars | |.

tone alternations in verbs and vowel length, and gave an incomplete account of the verbal paradigms.

The present article, based on recent fieldwork, provides a comprehensive account of basic verb stem alternations in Khaling, covering the non-past, past and imperative paradigms for all categories of verbs. Reflexive, negative, and auxiliary paradigms will be treated in further publications.

This article is organized in three major parts. First, we provide a general account of the Khaling language, including sociolinguistic data, synchronic phonology, and a basic account of the verbal system. Second, we present a set of morphophonological rules, based in part on the insights in Michailovsky (1975), to derive the attested stems from reconstructed verb roots. Third, the paradigms of CVC intransitive, CVC transitive, CVCt transitive and CV roots are described in four separate sections. Two appendices provide a list of all possible stem alternations and a computer-generated list of all regular verbal paradigms, based on the rules set out in this article.

2. General overview

Khaling is a Sino-Tibetan language belonging to the Kiranti subbranch, spoken by around 15,000 people in Solukhumbu, Eastern Nepal. It is in contact with Sherpa, Thulung, Kulung and Nachiring. Nearly all speakers of Khaling are also bilingual in Nepali, but the language is still being acquired by children, even by some non-Khaling children (Sherpa, Tamang, or Kami) living in the Khaling-speaking area. The following map (Opgenort 2011:254, reproduced here with permission of the author), presents the distribution of Kiranti languages, including Khaling:



Map 1: The Kiranti languages (Opgenort 2011:254)

The data presented here were collected in July 2011, by a team of linguists during a month of intensive elicitation and discussion with Dhan Bahadur Rai in Paris, and in early 2012 by Guillaume Jacques during two months of fieldwork in Kathmandu and in the district of Solu Khumbu, mainly in the villages of Phuleli and Kanku.

The main existing source of data on Khaling is a dictionary by linguists of the Summer Institute of Linguistics (Toba & Toba 1975). This dictionary is a preliminary work with many errors, and thirty years after its publication its authors advised one of the authors of the present article not to rely on it. Still, it remains quite rich, with over 500 verbs, and it facilitated our search for verbs of different root categories.

On the basis of the infinitive and the 1SG>3SG form² cited for transitive verbs in the dictionary,³ Michailovsky (1975) was able to internally reconstruct verbal roots (e.g. |lop| ‘to catch’) of the form (C)V(Cf)(t), with a system of five reconstructed vowels, largely confirmed by the present research, and to show that the ‘high tone’ (in fact a falling tone) marked on verbs in the dictionary predictably correlated with root-final (Cf)

² In the Leipzig Glossing System, this notation indicates a transitive form with first singular agent and third singular patient.

³ The 1SG form cited for intransitive verbs provided no more information than the infinitive.

stop as indicated (usually) by the 1SG>3SG form. But the morphology remained incompletely described (I. Toba 1973, S. Toba 1984). The morphological paradigms presented here reveal a complex morphophonology involving stem rimes, including tones, and a previously undescribed opposition of quantity.

Khaling is a relatively homogeneous language. The data in this article is based on the dialect of Phuleli, but some marginal dialectal differences are briefly mentioned.

3. Phonology

This section presents a summary of the phonological inventory of Khaling, which is necessary to understand the verbal system.

Khaling has a rich vowel system of ten distinctive timbres. In our recent research, we found an opposition of length on eight of these.

Table 1: Vowel inventory

i i:	ɨ ɨ:	u u:
e e:	ø ø:	o o:
ɛ ɛ:	ʌ	oo
	a a:	

There is no opposition of quantity on /ʌ/ (which is always short) and /oo/ (always long) in the Phuleli dialect. In other varieties some speakers also have a long /ʌ:/ phoneme. There is no opposition of quantity in syllables with sonorant finals.

The inventory of syllable-initial consonants comprises the following 26 phonemes:

Table 2: Consonant inventory

p	t	ts	k	ʔ
p ^h	t ^h	ts ^h	k ^h	
b	d	dz	g	
b ^h	d ^h	dz ^h	g ^h	
m	n		ŋ	
	s			fi
	l	r		
w			j	

The phoneme status of the glottal stop /ʔ/ is debatable, as words with initial glottal stop could be alternatively analyzed as having zero-initial. However, its presence is conspicuous word-internally in forms such as *ʔiʔi* ‘you are angry’ and word-initially in quasi-minimal pairs such as:

- (1) *ʔoɔ̃jɲɛ* ‘to pronounce ritual words’
woɔ̃jɲɛ ‘to put in’

Few clusters are allowed in the syllable onset: only velar or labial stops followed by *r* or *l* are observed. No medial *-j-* or *-w-* are found. Apparent examples of medial *-w-* occur in realizations of the diphthong /oɔ̃/, e.g. /k^hoɔ̃nɲɛ/ ‘to go’.

Only ten consonants are found syllable-finally: *p t k m n ŋ r l s j*, to which we must add the marginal phoneme /ç/. No complex codas are possible.

The segment [ç] is originally the allophone of /t/ before velars and labials. It also appears however before the 1P.PST suffixes *-tiki* and *-tɪkɪ*. Two hypotheses are proposed to explain the appearance of [ç] in this position. First, we could propose that *-tiki* and *-tɪkɪ* come from *-ktiki* and *-ktɪkɪ*, forms still attested in open-vowel root paradigms, and that the *-k-* of the cluster was simplified in consonant-final stems. Second, these forms could be the result of analogy. If we take the verb |set| ‘to kill’ (cf §7), the expected 1PI>3 forms, assuming the rules *t > ç / _ [+velar|+labial] would be:

- | | | | | |
|-----|----------|-----------|---|----------|
| (2) | 1PI.NPST | *set+ki | > | seçki |
| | 1PI.PST | *set+tiki | > | *settiki |

It is therefore possible that attested *seçtiki* is analogically renewed after the non-past form *seçki*.

Whatever its origin, /ç/ is in opposition with both /t/ and /s/ as the first element of an internal cluster before /t/ (VtV, VstV and VçtV are all possible), so it must be assigned phonemic status despite its limited distribution.

Tone is phonemic (1) on open syllables with long vowels and (2) on syllables with resonant finals. There are two tones: level and falling. We transcribe the former with a macron *ā* and the latter with a circumflex accent *â* following the Africanist tradition.

Open syllables may be short without contrastive tone, long with level tone, or long with falling tone, as exemplified by (3) and (4):

- | | | | |
|-----|---------------|---|----------------|
| (3) | <i>tsene</i> | ‘be spoiled (of flour)’ | (root tse) |
| | <i>tsē:ne</i> | ‘sieve’ | (root tseŋ) |
| | <i>tsê:ne</i> | ‘close’ | (root tsekt) |
| (4) | <i>mɛ</i> | ‘that’; ‘to do (3S>3.NPST)’ | |
| | <i>mē:</i> | ‘over there’ (the reduced form of <i>mejo</i>) | |
| | <i>mê:</i> | ‘completely (ideophone)’ (used with the verb root rumt ‘to coil’) | |

Syllables with a resonant final have either level or falling tone, with no opposition of length. We find scores of minimal pairs of infinitives like the following:

- (5) *lōm̄n̄e* ‘to look for (infinitive)’
lōm̄n̄e ‘to catch (infinitive)’

Syllables ending in *p*, *t*, or *k* may be short or long. There is no opposition of tone, but we redundantly transcribe the phonetically falling tone heard on long syllables with stop finals, e.g. *rê:p* ‘he stands’.

One further tonal phenomenon occurs in a specific morphological context. In the purposive construction, level tone monosyllabic nouns (but not verbs) have low-tone allomorphs when they function as locative-marked complements of the verb $|k^h\text{ot}|$ ‘to go’. We find the following minimal set:

- (6) a. *b̄l̄i* *ʔu-g^has* *k̄ēm-bi* *k^hə̄s-t-ε*
 cow 3S.POSS-grass chew-LOC go-PST-2/3S
 ‘The cow went to chew the grass.’ (from the verb *k̄ēm̄n̄e* ‘to chew’)
- b. *k̄ēm-bi* *k^hə̄s-t-ε*
 elk-LOC go-PST-2/3S
 ‘He went (to hunt) for the elk.’ (from the noun *k̄ēm* ‘elk’)
- c. *k̄ēm-bi* *k^hə̄s-t-ε*
 work-LOC go-PST-2/3S
 ‘He went for his work.’ (from the noun *k̄ēm* ‘work’)

The tonal contrast between (a) and (c) is morphologically determined: verbs with level-toned infinitive stems have their usual high level tone before the locative suffix in the purposive construction, but lexically level-toned nouns appear with a low level tone. Such nouns may be considered to have low-toned allomorphs in this context. Minimal pairs are easily found, and have been rechecked with several speakers.⁴

Syllables in polysyllabic words may be stressed or unstressed. In verb forms, the verb stem is always stressed, as is the first syllable of a bi- or tri-syllabic suffix string. Given its predictable nature in verb forms, stress is not indicated in the present paper.

4. Verb morphology: the affix paradigm

Both the stem and the affixes of a Khaling verb vary throughout the tense and agreement paradigm. The stem-forms show alternations which can be related to the morphological characteristics of an internally reconstructed root, whose derivation for each verb will be presented in §5. The affixes are drawn from a single morphological

⁴ For instance *s̄āŋ-bi kh̄oste* ‘He went to ask’ from the verb root $|s̄iŋ|$ ‘to ask’ vs. *s̄āŋ-bi kh̄oste* ‘He went for the firewood’ from the noun *s̄āŋ* ‘tree, firewood’.

paradigm which applies essentially to all verbs. The present section is a general introduction to the affix morphology.

The template in Table 3 presents a synthetic view of the affixes that may appear in a finite verb form with their relative order and position with respect to the verbal stem (Σ). The affixes are organized according to a templatic, rather than layered, principle (see Bickel & Nichols 2007).

Table 3: The Khaling verbal template

prefix	stem	person (I)	auxiliary	person (II)	TAM	person (III)	reflexive ⁵	number
-1	0	+1	+2	+3	+4	+5	+6	+7
ʔi- (2 or INVERSE)	Σ	-ŋ- (1SG)	-de(t-)	-ŋΛ/-Λ (1SG.S/O)	-t- past	-ε (2/3)	-si	-su (2/3DU)
mu- (NEG)		-i- (DU)	-t ^h er(d-)	-u (1SG>3)	-w- irrealis	-ŋΛ/-Λ (1SG.S/O)	-su (1SG.PST)	-nu (2/3PL)
mΛ- (2.NEG)		-k- (1PL)	-k ^h Λ(t)- etc	-i (1DU)		-u (1SG>3)	-n (3PL.PST)	-ni (2PL NPST, 1>2.PST)
		-n- (2PL, 1>2, INF)		-k (1PL.PST)		-i (1DI)		
				-nε (1>2, INF)		-u (1DE)		
						-(i)ki (1PI)		
						-(Λ)kΛ (1PE)		

There are one prefixal position and seven suffixal positions. Some inflectional suffixes (position +1) originate from ‘trapped’ morphemes in Harris & Faarlund’s (2006) sense, i.e. affixes sandwiched between the stem and a clitic (which afterwards became integrated in the verbal template).

Many pairs of affixes are in relations of mutual exclusion, so that the number of possible combinations is far less than the table would suggest. In the following examples, taken from texts, the position class of each affix is marked as a superscript in the transcription:

- (7) *tsətstsəsu-ʔΛ mē:sΛ sŋ-t⁴-ε⁵-su⁷ ʔe*
 children-ERG thus ask-PST-2/3-DU HEARSAY
 ‘The two children asked her in this way.’ (Solme and Lamalit II, 3)

- (8) *kām-bΛ-jΛ tsēmhō:-t⁴-Λ⁵ mām-t⁴-ε⁵-si⁶*
 house-LOC-down forget-PST-1SG remember-PST-2/3-REFL
melo lô-n¹-pe²-nε³ g^{hr}rē:s-t⁴-ε⁵
 at.that.time fetch-INF-REACH-INF be.reluctant-PST-2/3
 ‘He thought that he had forgotten (his plough) in the house, but he was reluctant/hesitated to go to fetch it at that time.’ (The plough, 7)

⁵ The reflexive suffix sometimes appears between the suffixal slots +2 and +3 as in *mām-si⁶-ŋΛ³-t⁴-Λ⁵* ‘I thought’.

- (9) *g^hoðlpe g^hrô:t me nôr-ʔe mu⁻¹-kɬ-k^hʌt²-w⁴-e⁵ fiola*
 big goat that tiger-ERG NEG-eat-COMPLETELY-IRR-2/3 maybe
 ‘That tiger probably did not eat the big goat.’ (Tiger and fern, 29)

The present article describes the non-negative indicative and imperative paradigms. Forms containing auxiliary verbs (suffixal position 2), which express either Aktionsarten or Associated Motion (go to, come to etc), will not be treated, nor will reflexive or negative forms.

Tables 4 and 5 present the non-past paradigms of the intransitive verb ‘to have enough’ and the transitive verb ‘to catch’, whose reconstructed roots (§5.1) are respectively |sop| and |lop|. In the transitive paradigm, the row-headers in the first column indicate the person and number of the agent and the column headers those of the patient. To simplify the presentation, the suffix string of tense and agreement markers is transcribed and glossed as a single unit: thus the suffix *-iti* is glossed as a portmanteau ‘1DI:PST’ rather than as a combination of three morphemes *-i³-t⁴-i⁵*.

Table 4: Intransitive non-past paradigm: |sop| ‘to have enough’

1S	soðm-ηΛ	Σ-ηΛ
1DI	səp-i	Σ-i
1DE	səp-u	Σ-u
1PI	soɔp-ki	Σ-ki
1PE	soɔp-kΛ	Σ-kΛ
2S	ʔi-soɔp	ʔi-Σ
2D	ʔi-səp-i	ʔi-Σ-i
2P	ʔi-soðm-ni	ʔi-Σ-ni
3S	soɔp	Σ
3D	səp-i	Σ-i
3P	soðm-nu	Σ-nu

Table 5: Transitive non-past paradigm: |lop| ‘to catch’

	1S	1DI	1DE	1PI	1PE	2S	2D	2P	3S	3D	3P
1S						loðm-ne	loðm-su	loðm-nu	lob-u	lob-usu	lob-unu
1DI										ləp-i	
1DE						ʔi-loɔp	ʔi-ləp-i	ʔi-loðm-ni		ləp-u	
1PI										loɔp-ki	
1PE						ʔi-loɔp	ʔi-ləp-i	ʔi-loðm-ni		loɔp-kΛ	
2S	ʔi-loðm-ηΛ								ʔi-lə:b-ɯ	ʔi-lə:p-su	ʔi-lə:p-nu
2D	ʔi-loðm-ηΛsu									ʔi-ləp-i	
2P	ʔi-loðm-ηΛnu									ʔi-loðm-ni	
3S	ʔi-loðm-ηΛ	ʔi-ləpi	ʔi-ləpu	ʔi-loɔp-ki	ʔi-loɔp-kΛ	ʔi-loɔp	ʔi-ləp-i	ʔi-loðm-ni	lə:b-ɯ		
3D	ʔi-loðm-ηΛsu									lə:p-su	
3P	ʔi-loðm-ηΛnu										lə:p-nu

Note that the correlation between syntactic transitivity and conjugation class is not 100% congruent. We find one *intransitive deponent* verb |ʔet| ‘to say’ (1SG ʔɛijA) with intransitive conjugation which is syntactically transitive, as agreement occurs with an argument marked with the ergative marker -ʔɛ. We also find several morphologically transitive verbs (including CVCT) which do not allow any argument in the ergative, and which we call *transitive deponent*. These verbs (for instance |ʔomt| ‘to ripen’, 3.NPST ʔoʔmdʔ) only allow non-animate arguments, and are restricted to 3SG forms. In the rare cases where 3DU and 3PL forms are found, these agree with the absolutive argument. Deponent verbs will not be discussed in any detail in this article, but some examples can be found in the annex, as for some root types (such as |Comt|) only transitive deponent verbs are known.

In the paradigms, the verb stem alternant is marked off from prefixes and suffixes by hyphens. The boundary between stem and suffix does not necessarily correspond to a syllable-boundary. In particular, the final consonant of a CVC stem functions phonologically as the syllable-initial before a vowel-initial suffix, and as a result, the vowel of a CVC stem may occur in a phonologically open syllable.

As noted above, essentially the same affixal paradigm applies to all verbs. The transitive paradigm, in which agreement with two arguments may be shown, is in general a superset of the intransitive one. Thus inverse⁶ transitive forms with 1st and 2nd person object (see the row with 3SG agent in Table 5) have the same suffixes as the 1st and 2nd person intransitive forms, except that they carry the inverse prefix ʔi-⁷ and may have an extra suffix to mark dual or plural number of the 3rd person agent. These shared or partially shared forms will be referred to as ‘inverse/intransitive’ below. Affixes unique to the transitive paradigm are found in 1SG>2 forms and in certain ‘direct’ forms with 3rd person object (e.g. 1S>3, 2S, 3S>3S) in Table 5.

In the more complete paradigms below it will be seen that all past tense forms have the marker *t* in the suffix string, often with a supporting vowel.

5. Verb roots and stems

After a short general introduction to stem alternations, we shall show how these

⁶ ‘Inverse’ refers to forms of the transitive paradigm in which the patient outranks the agent on the person hierarchy 1>2>3; the converse is ‘direct’. 3>3 forms in Khaling are direct forms. True direct/inverse systems are found in related languages, such as Rgyalrong (Sun & Shi 2002, Jacques 2010).

⁷ This prefix has two overlapping functions: it marks all forms with 2nd person arguments except 1>2 forms, and it marks all inverse forms. For a historical account of the origin of this prefix, see Jacques (2012) and DeLancey (2011).

can be used to reconstruct a root form for each lexical verb.

The basic stem alternations of all but open syllable roots are illustrated in Tables 4 and 5, which show the alternations in roots with the final $[-p]$. Stop finals in CVC roots generally show nasalization before a nasal-initial suffix (as in the infinitive), and are often voiced before a vowel initial suffix, alternations that do not affect the stems of roots with continuant finals. Among root-final stops and nasals, bilabials have the most straightforward stem derivations: dental root-finals undergo more complex changes, while velar root-finals are dropped in some forms, with compensatory lengthening.

We identify a basic alternation, affecting most rimes, between strong and weak vowels. In Tables 4 and 5 the alternation is between $o\omega$ (strong) and θ (weak). The strong alternants of back root vowels are backed (here to o) before the 1S>3 suffix u . Table 6 shows the basic strong and weak vowel alternants of roots in final $[-p]$:

Table 6: Vowel alternations in stems from $[CVp]$ roots

root vowel	ip	ep	ap	op	up
strong	Δp	ep	ɛp	oɔp	Δp
weak	ip	ep	ɛp	ɛp	ʌp

The falling tone of the infinitive and some other forms of $|lop|$ and $|sop|$ (e.g. *loʔmne* ‘to catch’) is correlated with the stop root-final (cf. the infinitive *loʔmne* ‘to look for’, root $|lom|$), but stems with level tones or with toneless short vowels also appear in the paradigms of these verbs.

A verb may have up to ten different stem alternants. The following Table lists the stem alternants of the verb $|fiod|$ ‘to bring’.

Table 7: Forms showing the 10 stem alternants of $|fiod|$ ‘to bring’

STEM	TENSE	Person	‘to bring’ (transitive)
1	NPST	1S>3	fiod-u
2	NPST	1DI>3	fioʔs-i
3	NPST	1PI>3	fioʔɕ-ki
4	NPST	2P>3	ʔi- fioʔn-ni
5	NPST	3S>3	fio:d-u
6	NPST	3P>3	fio:t-nu
7	PST	1S>3	fio:t-tA
8	PST	1DI>3	fio:s-ti
9	PST	3S>3	fio:t-tɛ
10	NPST	3S>1S	ʔi- fioʔj

This complexity is lessened by three factors: (1) Stems have a simple structure, CV(C)(t) (with tone and length), in which only the rime, never the onset, alternates. (2) Although

the set of stem-alternants of a verb may be relatively large, it can be fully determined from a much smaller number of key forms: for many transitive verbs, the 1S>3S non-past alone is enough. In other cases, one or more of the dual, the third person past and the second plural non-past are required. This implies that (3) the number of possible alternation sets is much smaller than the number of alternants in each might suggest.

5.1 Internal reconstruction of verb roots

Following the basic insights in Michailovsky (1975, in press), it is possible to posit an internally reconstructed or morphophonological root form from which the occurring stem forms can be derived.

The reconstructed root form and the transitivity type (intransitive vs. transitive) are all that is needed to assign each verb to its conjugation class. This reconstructed root has a diachronic reality — it represents, with probably some minor changes due to analogy, the pre-Khaling form of the verbs, and it is the form which should be used in comparative work. It is unlikely that this root has a synchronic reality for speakers, but the diachronic perspective greatly simplifies the classification of observed alternations. Synchronically, the reconstructed root form is the most economical statement of the information needed to distinguish one Khaling verb from another (barring homonymy), and the inventory of possible root forms (defined by the inventories of reconstructed onsets, vowels and finals) defines the space of possible lexical verb roots. In the course of our research, this allowed us to *predict* the existence of some conjugation types (in particular the |-enɔ| root type) and all their correct forms before finding actual verbs which exemplify them.

In the following sections, we shall first present the complete inventories of consonantal and vocalic alternation sets. Then, from these alternation sets (presented in §5.2 for consonants and §5.3 for vowels), we shall posit the reconstructed form of the root final consonant and vowel. Since initial consonants present no alternations, the root onset will at times be identified by a default C (representing a consonant or a C(l/r) cluster). Finally, the set of rules necessary to derive the surface stem forms from the reconstructed roots will be presented.

The stem derivation rules state the root segments or rimes affected, the result, and the morphophonological and morphological contexts that condition application of the rule. For computational simplicity, the rules are defined so as to avoid feeding or bleeding relationships. Each rule applies independently to the root if the stated conditions are met. The resulting stem reflects all of the alterations to the root contributed independently by the applicable rules.

The rules by which we propose to derive occurring stem forms from the roots do not in general belong to the synchronic phonology of the language; they are conditioned by specific morphophonological contexts. They no doubt to a large extent reflect earlier

phonological rules by which verbal stems were influenced by suffixes. But although we believe that our reconstructed roots give an idea of the pre-Khaling form of verbal stems, we have no reconstruction of the earlier forms of the suffixes, so the reconstruction of these phonological processes must remain a subject for future research.

5.2 Consonantal alternations

There are sixteen alternation sets of stem final consonants,⁸ fifteen with transitive verbs and eight with intransitives. In the following table, these are presented with a default onset *C* and the stem vowel *e*; *e* is chosen because it is the vowel with the fewest alternations, limited to tone changes and length.

Table 8: Stem final consonant alternation sets⁹

	1SG>3SG.NPST (TR)	3SG.NPST (IT)	INF	1DE.NPST	1PI.NPST	1DI.PST	3SG>3SG.PST (TR)
1	Ceg-u	Cê:	Cê:mɛ	Cek-u	Cek-ki	Cek-iti	Cê:k-tɛ
2	Ceb-u	Ce:p	Cê:mɛ	Cep-u	Cep-ki	Cep-iti	Cê:p-tɛ
3	Ced-u	Cêi	Cê:nɛ	Cets-u	Ceç-ki	Ces-ti	Cê:-tɛ
4	Ceŋ-u	Cêŋ	Cê:nɛ	Ceŋ-u	Cêŋ-ki	Ceŋ-iti	Cêŋ-tɛ
5	Cem-u	Cêm	Cê:mɛ	Cem-u	Cêm-ki	Cem-iti	Cêm-tɛ
6	--	Cěj	Cějɛ	Ce:ts-u	Cěj-ki	Ce:s-ti	--
7	Cer-u	Cêr	Cê:rɛ	Cer-u	Cêr-ki	Cer-iti	Cêr-tɛ
8	Cel-u	Cêl	Cê:lɛ	Cel-u	Cêl-ki	Cel-iti	Cêl-tɛ
9	Cekt-u		Cê:nɛ	Cek-u	Cek-ki	Cek-iti	Cek-tɛ
10	Cept-u		Cê:mɛ	Cep-u	Cep-ki	Cep-iti	Cep-tɛ
11	Cett-u		Cê:nɛ	Cets-i	Ceç-ki	Ces-ti	Cet-tɛ
12	Cend-u		Cê:nɛ	Ceŋ-u	Cěj-ki	Ceŋ-iti	Cên-tɛ
13	Cemd-u		Cê:mɛ	Cem-u	Cêm-ki	Cem-iti	Cêm-tɛ
14	Cend-u		Cê:iɛ	Cêts-u	Cěj-ki	Cê:s-ti	Cên-tɛ
15	Cerd-u		Cê:rɛ	Cer-u	Cêr-ki	Cer-iti	Cêr-tɛ
16	Celd-u		Cê:lɛ	Cel-u	Cêl-ki	Cel-iti	Cêl-tɛ

The lack of synchronic phonological motivation for the morphophonological alternations is seen in the table. The suffixes 1SG.NPST (tr) *-u* and 1DE.NPST *-u* and (seen in the first and fourth columns in Table 8) are homophonous, but they occur with different stem alternants. Thus, one cannot describe the stems only in terms of phonetic environment:

⁸ Open root verbs, with no final consonant, will be treated separately, in §7.

⁹ Verbs with CVCT roots (lines 9-16) are all transitive and thus do not have the intransitive form of column 2. Alternation set № 6 is not attested with transitive verbs, hence the grey cells in columns 1 and 7.

most of the alternations are determined by the morphological context, and only occur with a specific set of suffixes (The precise list of suffixes associated with each stem will be presented in the appendix).

Of all verb forms, the 1SG>3SG.NPST of transitive verbs is one of the most informative: all alternation sets (except those numbered 12 and 14 in Table 8, for which a dual form is also required) can be distinguished by this form alone.¹⁰ We reconstruct the root-final consonant (Cf) based on this form. For intransitive verbs, the 3SG.NPST is similarly useful.

Table 9: The reconstructed root final consonants for each alternation set

	1SG>3SG.NPST (TR)	3SG.NPST (IT)	INF	Reconstructed Cf
1	Ceg-u	Cê:	Cê:ne	k
2	Ceb-u	Ce:p	Cêmne	p
3	Ced-u	Cêj	Cênne	t
4	Ceŋ-u	Cêŋ	Cê:ne	ŋ
5	Cem-u	Cēm	Cēmne	m
6		Cěj	Cějne	n
7	Cer-u	Cēr	Cērne	r
8	Cel-u	Cēl	Cēlne	l
9	Cekt-u		Cê:ne	kt
10	Cept-u		Cêmne	pt
11	Cett-u		Cênne	tt
12	Cēnd-u		Cê:ne	ŋt
13	Cēmd-u		Cēmne	mt
14	Cēnd-u		Cějne	nt
15	Cērd-u		Cērne	rt
16	Cēld-u		Cēlne	lt

In Table 9, each alternation set is associated with a reconstructed Cf (sometimes with additional postfinal *t*) which identifies it. The stem in 1SG>3SG.NPST (tr) differs from the reconstructed form only by voicing of the Cf, and in the case of ŋt-final roots by assimilation of *ŋ* to the following dental.

The sixteen rules of Table 10 derive the surface forms from the reconstructed final consonant of the root:

¹⁰ 1SG>3SG.NPST is the form listed (with the infinitive) in Toba & Toba (1975).

Table 10: Morphophonological rules for root final consonants¹¹

	Rule	Reconstructed form	Outcome	Context
1.1	voicing	p t k	b d g	all vowel-initial suffixes except the dual <i>-i/-iti</i> and <i>-u/-utu</i>
1.2	affrication 1	n	L ts	dual non-past <i>-i</i> and <i>-u</i>
		t	ts	
1.3	affrication 2	n	L s	dual past <i>-iti</i> and <i>-utu</i> ; all past suffixes in -tV for the intransitive and transitive inverse paradigms; imperative plural <i>-nuje</i>
		t	s	
1.4	fricativization	t	ç	all suffixes of the form -kV and -pV
1.5	nasalization 1	p	F m	nasal-initial suffixes (except the imperative plural <i>-nuje</i>)
		k	F L	
		ŋ	L	with <i>-k</i> final roots, this rule either yields long vowel with falling tone or nasalization to <i>-ŋ</i> and falling tone
1.6	nasalization 2	t	F n	nasal-initial suffixes except 1S.S/O <i>-ŋʌ</i> and the imperative plural <i>-nuje</i>
1.7	lenition 1	t	F j	when not followed by any suffix or followed by 1S.S/O <i>-ŋʌ</i>
1.8	lenition 2	t	F L	past transitive direct -tV suffixes
1.9	lenition 3	n	j	i) nasal-initial suffixes (except the imperative plural <i>-nuje</i>) ii) when not followed by any suffix iii) with 1P <i>-ki/-tiki</i> and <i>-kaʌ/-taʌka</i>
1.10	lenition 4	k	F L	i) nasal-initial suffixes (except the imperative plural <i>-nuje</i>) ii) when not followed by any suffix with ik roots, the rhyme changes to <i>û</i> :
1.11	lenition 5	ŋ	L	i) nasal-initial suffixes (except the imperative plural <i>-nuje</i>) ii) when not followed by any suffix
1.12	simplification 1	Ct	C	dual <i>-i/-iti</i> and <i>-u/-utu</i> and all inverse forms; 1P <i>-ki/-tiki</i> and <i>-kaʌ/-taʌka</i>
1.13	simplification 2	Ct	C	3D/P.NPST all past -tV suffixes in direct forms except 1P
1.14	assimilation 1	ŋt	nt	all contexts except those affected by the rule simplification 1 (but not simplification 2)
1.15	assimilation 2	ŋ, k	F n	1S>2D/P.NPST; 1S>2.PST

¹¹ As mentioned in footnote 1, F and L refer to changes to the root vowel seen in the stem (F=falling tone, L=lengthening) in addition to changes to the final consonant. Note that changes in the quality of the vowels in the stems are discussed separately in the next section.

5.3 Vowel alternations

Despite the fact that eighteen vowel phonemes occur in Khaling, only ten categories of vowel alternations are attested for consonant-final roots, exemplified in Table 11 with roots in $[-k]$ and $[-p]$.

Table 11: Vowel alternation sets: roots in $[-k]$ and $[-p]$

	INF	1DE.NPST	1PL.NPST	1DI.PST	1S.NPST (TR)	3S.NPST (IT)	3S.PST (TR)
1	ak, TR	Câ:-ne	CAk-u	CAk-ki	CAk-iti	CAg-u	Câ:k-te
2	ak, IT	Câ:-ne	Cɛ-ju	CAk-ki	Cɛ-jti?	Câ:	
3	ek	Cê:-ne	Cek-u	Cek-ki	Cek-iti	Ceg-u	Cê:k-te
	ep	Cêm-ne	Cep-u	Cep-ki	Cep-iti	Ceb-u	Cê:p-te
4	ik	Cû:-ne	Cik-u	CAk-ki	Cik-iti	Cig-u	Cî:k-te
5	ok	Cô:-ne	Cok-u	Cok-ki	Cok-iti	Cog-u	Cô:k-te
6	uk	Cû:-ne	Cuk-u	Cuk-ki	Cuk-iti	Cug-u	Cû:k-te
7	ɛp	Cɛm-ne	Cɛp-u	Cɛp-ki	Cɛp-iti	Cɛb-u	Cɛ:p-te
8	ip	Câm-ne	Cip-u	CAp-ki	Cip-iti	Cib-u	Cî:p-te
9	op	Coðm-ne	Cop-u	Coɔp-ki	Cop-iti	Cob-u	Cô:p-te
10	up	Câm-ne	Cup-u	CAp-ki	Cup-iti	Cub-u	Cû:p-te

In alternation set 4, there is free variation between the realization u and $\#$ in the infinitive and 3S.NPST (cf rule 1.10).

Each alternation set represents a single root vowel. We do not need to posit 10 different root vowels, however, because some pairs of sets (hence of potential root vowels) are in complementary distribution, as shown in Table 12.

Table 12: Complementary distribution between alternation sets

alternation set number	intransitive	transitive	$[-\eta]$, $[-k]$	non-velar Cf
1		+	+	+(one example)
2	+		+	
3	+	+	+	+
4	+	+	+	
5	+	+	+	
6	+	+	+	
7	+	+		+
8	+	+		+
9	+	+		+
10	+	+		+

Only alternation set 3 occurs in all contexts; the other sets fall into pairs related by complementary distribution.

Sets 1 and 2 are in complementary distribution with regard to the transitivity of the verb: set 1 is restricted to transitive and set 2 to intransitive verbs. We consider that these two sets taken together are almost in complementary distribution with set 7, conditioned by velar (sets 1/2) vs non-velar (set 7) root finals. There is one exception, however: *jālne* ‘to strike’ (1SG *jalu*) is a set 1 verb with a non-velar root-final, whose expected form would be **jēlne* (1SG **jelu*). Compare *pēlne* ‘to coil’ (1D *pelu*). |a| and |ε| certainly both originate from one proto-phoneme *a, given their quasi-complementary distribution and the numerous alternations between /a/ and /ε/ in the paradigms of intransitive |-ak| verbs and |-ε| verbs. The irregular vocalism of |jal| can be explained in two ways. First, it could be due to a special dissimilatory rule of |ε| after |j|. This hypothesis appears problematic however since we do find verbs with initial |j| and |ε| vocalism, such as |jet| ‘to like’. Second, it could be a borrowing from Thulung *jal-* (Lahaussais 2003:13).

Sets 4, 5, 6 are in complementary distribution with 8, 9, and 10 respectively, with regard to the final consonant: the first group (1-6) only occurs with velar final consonants |-ŋ| and |-k| (including the clusters |-kt| and |-ŋt|, cf §7), while the second group (7-10) appears with all other final consonants.

As a result, and ignoring the irregular stem rime of the verb *jālne*, only five vowels need to be reconstructed in non-open verb roots (Table 13).

Table 13: Reconstructed root vowels and their correspondence with alternation sets

	set
a	1/2, 7
e	3
i	4, 8
o	5, 9
u	6, 10

The following six rules of Table 14 are needed to derive the surface forms from the root:

Table 14: Morphophonological rules for root vowels

Rule	Reconstructed form	Outcome	Context
2.1 fronting 1	o u	ø u	i) CVC it. roots, inverse forms: dual <i>-i/-iti</i> and <i>-u/-utu</i> and all past and imperative except 1P ii) CVC tr. roots: all suffixes except 1S <i>-u/-(u)ta</i> , 1P <i>-ki/-tiki</i> and <i>-ka/-taka</i> , 2P.NPST <i>-ni</i> and the infinitive <i>-ne</i> iii) CVCT roots: only dual <i>-i/-iti</i> and <i>-u/-utu</i> and 2P.PST <i>-tenu</i>

2.2	fronting 2	a	ε	This rule applies to all [-aC] roots where -C is not a velar, except for the verb <i>jālne</i> ‘to strike’.
2.3	opening	i o u	Λ oɔ Λ	i) CVC it. non-velar roots, inverse forms: 1/2/3S.NPST, 1P <i>-ki/-tiki</i> and <i>-ka/-taka</i> ii) CVC tr. non-velar roots: 1P <i>-ki/-tiki</i> and <i>-ka/-taka</i> , 2P.NPST <i>-ni</i> and the infinitive <i>-ne</i> iii) CVCt non-velar roots: all forms except dual <i>-i/-iti</i> and <i>-u/-utu</i> and 2P.PST <i>-tenu</i> and imperative dual and plural
2.4	backing 1	o u i	o u Λ	i) CVC it. velar roots, inverse forms: 1/2/3S.NPST, 1P <i>-ki/-tiki</i> and <i>-ka/-taka</i> ii) CVC tr. velar roots: 1P <i>-ki/-tiki</i> and <i>-ka/-taka</i> , 2P.NPST <i>-ni</i> and the infinitive <i>-ne</i> iii) CVCt velar roots: all forms except dual <i>-i/-iti</i> and <i>-u/-utu</i> and 2P.PST <i>-tenu</i> and imperative dual and plural
2.5	centralization	a	Λ	i) velar roots and [jal]: 1/2D <i>-i/-iti</i> and <i>-u/-utu</i> , 1S <i>-u/-uta</i> ; never occurs with consonant-initial suffixes such as 2PL>3.PST <i>-tenu</i> or 2PL>3.IMP <i>-nuje</i> ii) 1S.PST [ak] intransitive roots
2.6	backing 2	o u	o u	1SG>3SG this represents a later backing due to the 1S suffix <i>-u</i> ; this change is distinct from 2.4

5.4 Synthesis

The internally reconstructed verb root fits the template CVC(t). The initial C can be any one of the regular Khaling consonant initials or stop+resonant clusters (§3). The final consonants of the verb roots differ in two ways from the inventory of word or syllable codas: (1) final *-s*, which is attested in nouns (for instance *hɨs* ‘man’), is not attested in verb roots.¹² (2) roots allow final Ct clusters.

The reconstructed vocalic inventory of the roots, with only five vowels, is considerably reduced compared to the 18 phonological vowels found in Khaling, but is consistent with what can be reconstructed in neighboring Kiranti languages with rich vowel systems; e.g. Bahing (Michailovsky 1975), Thulung (Allen 1975), Wambule (Ogenort 2004), and Dumi (Michailovsky in press).

¹² Ancient *-s* root verbs have become open-syllable roots. For instance, [k^he] ‘to steal’, has an irregular derived noun *k^hespø* ‘thief’, which preserves a trace of the final consonant.

The set of rules presented above suffices to generate most forms, but the three additional rules relating to vowel length and tone are also needed:

Table 15: Additional rules: quantity and tone

	Context
3.1	The vowel is lengthened in transitive CVC 2SG>3, 3>3 (past and non-past), transitive or intransitive IMP.SG.
3.2	Sonorant-final stems have a falling tone when directly followed by 2/3 dual <i>-su</i> , 2/3 plural <i>-nu</i> and 2/3 past singular <i>-te</i> , except in imperative and 1SG>2SG forms — that is, in 3D/P.NPST (TR), 2S.PST (TR. and IT.), 3S.PST (TR. and IT.), 3D/P.PST (TR.) forms.
3.3	The vowel is lengthened in intransitive/inverse Cep and Cep root verbs in 3>2SG and 2/3SG, that is, when the stem appears without a suffix. These two rimes are the only obstruent-final ones which do not undergo either 1.2-1.11 or 2.3/2.4.

In addition, the forms of intransitive |*-ak*| verbs present a series of idiosyncrasies and need to be treated separately.

By combining the 24 rules presented above, one can derive stems from the reconstructed root. There are no non-alternating verbs, although some categories (such as |*-er*|) alternate less than others.¹³ Transitive CVC verbs have at most 10 stems, CVCt verbs at most 6 stems, and CVC intransitive verbs at most 5 stems.

A Perl script implementing these rules produced the list of 123 regular paradigms in Appendix B. This computational application (and the validation of the results by speakers) confirms the validity of the rules presented in this section.

Providing a genuine historical analysis of the Khaling verbal system will require a systematic comparison with the closely related Dumi and Koyi: some of the rules (for instance 1.2, 1.3) are shared with Dumi and Koyi and should be reconstructed back to proto-Dumi-Khaling, while other rules (all the vowel change rules) are probably recent innovations, that took place long after the split with Dumi. The ordering of the sound changes will require a thorough comparison, and cannot be undertaken without taking nouns into account. The analysis provided here is in fact the *prerequisite* for historical comparison; a comparable analysis of Dumi (Michailovsky in press) and Koyi (Lahaussais 2009) is necessary before attempting any comparison between the three languages.

6. CVC intransitive verbs

Intransitive verbs have at most five different stems. These stems are derived using the rules defined in §5. In the tables below, the rules which must be applied to derive the form for each person/number/tense combination are given. Where the rules are separated

¹³ The only changes to the stems for |*er*| are tone changes and lengthening.

by a slash, it is because different rules apply in mutually exclusive contexts depending on the phonology of the root. The application of the rules is exemplified with two distinct root types, $[-ot]$ and $[-ur]$.

To clarify the discussion of these forms, we shall give distinct labels to all the stems, which will also be used in the appendix. The labels are composed based on the rules that produced the stem.

Stems which have undergone the *opening* rule 2.3 (for non-velar roots) and the *backing* rule 2.4 (for velar roots) are called *strong* stems; stems that have not undergone these rules are called *weak* stems.

For intransitive verbs, two weak stems need to be distinguished, the basic one $\Sigma(w)$ and the lengthened (or geminated) weak stem $\Sigma(w,l)$ found in the imperative singular exclusively. Dental-final root verbs have an additional past weak stem $\Sigma(w,p)$ which undergoes rule 1.3.

Strong stems need to be divided into three sub-stems:

a) The plain strong stem $\Sigma(s)$, which undergoes rule 1.7 in the case of dental-final roots, and rule 3.1 in the case of $[-Vp]$ roots.

b) The assimilating strong stem $\Sigma(s,a)$, which undergoes rules 1.5 and 1.6. Note that rule 1.5 applies to the 1SG, while 1.6 does not. This implies that dental roots (which undergo 1.6) have the plain strong stem in the 1SG.NPST, while other root classes have the assimilating strong stem. Velar final stems are a special case: rule 1.5 only optionally applies to the 1SG.NPST, so that for $[CVk]$ roots both $C\hat{V}:\eta\lambda$ and $C\hat{V}\eta\eta\lambda$ are possible, while for $[CV\eta]$ roots both $C\hat{V}:\eta\lambda$ and $C\hat{V}\eta\eta\lambda$ are possible. In the appendices, only the first variant is presented.

c) The 1P strong stem $\Sigma(s,1P)$, which undergoes rule 1.4. This stem is distinct from $\Sigma(s)$ only in velar and $-p$ final roots.

Table 16: Deriving non-past stems from intransitive verb roots

Non-past	$[k^hot]$ 'to go'	$[b^hur]$ 'to become crazy'	Stem id., affixes	Rules
1S	$k^ho\delta j-\eta\lambda$	$b^h\bar{\lambda}r-\eta\lambda$	$\Sigma(s,a)-\eta\lambda$	(1.5/1.7/1.9/1.10/1.11) (2.3/2.4)
1DI	$k^h\theta ts-i$	$b^h\theta r-i$	$\Sigma(w)-i$	(1.2) (2.1/2.5)
1DE	$k^h\theta ts-u$	$b^h\theta r-u$	$\Sigma(w)-u$	(1.2) (2.1/2.5)
1PI	$k^ho\theta\zeta-ki$	$b^h\bar{\lambda}r-ki$	$\Sigma(s)-ki$	(1.4/1.9) (2.3/2.4)
1PE	$k^ho\theta\zeta-k\lambda$	$b^h\bar{\lambda}r-k\lambda$	$\Sigma(s)-k\lambda$	(1.4/1.9) (2.3/2.4)
2S	$?i-k^ho\delta j$	$?i-b^h\bar{\lambda}r$	$?i-\Sigma(s)$	(1.7/1.9/1.10) (2.3/2.4) (3.3)
2D	$?i-k^h\theta ts-i$	$?i-b^h\theta r-i$	$?i-\Sigma(w)-i$	(1.2) (2.1/2.5)
2P	$?i-k^ho\delta n-ni$	$?i-b^h\bar{\lambda}r-ni$	$?i-\Sigma(s,a)-ni$	(1.5/1.6/1.7/1.10/1.11) (2.3/2.4)
3S	$k^ho\delta j$	$b^h\bar{\lambda}r$	$\Sigma(s)$	(1.7/1.9/1.10) (2.3/2.4) (3.3)
3D	$k^h\theta ts-i$	$b^h\theta r-i$	$\Sigma(w)-i$	(1.2) (2.1/2.5)
3P	$k^ho\delta n-nu$	$b^h\bar{\lambda}r-nu$	$\Sigma(s,a)-nu$	(1.5/1.6/1.7/1.10/1.11) (2.3/2.4)

The first singular and dual past tense suffixes appear with or without a leading vowel: *-tΛ*, *-iti*, *-utu* or *-tΛ*, *-ti*, *-tu*. The latter set is restricted to |CVt| and |CVn| roots, while the former appears with all other root types.

Table 17: Deriving past stems from intransitive verb roots

Past	k ^h ot	b ^h ur	Stem id., affixes	Rules
1S	k ^h əs-tΛ	b ^h ur-tΛ	Σ(w,p)-(Λ)tΛ	(1.3) (2.1/2.5)
1DI	k ^h əs-ti	b ^h ur-iti	Σ(w,p)-(i)ti	(1.3) (2.1/2.5)
1DE	k ^h əs-tu	b ^h ur-utu	Σ(w,p)-(u)tu	(1.3) (2.1/2.5)
1PI	k ^h oɔç-tiki	b ^h ur-tiki	Σ(s)-tiki	(1.4/1.9) (2.3/2.4)
1PE	k ^h oɔç-tΛkΛ	b ^h ur-tΛkΛ	Σ(s)-tΛkΛ	(1.4/1.9) (2.3/2.4)
2S	?i-k ^h əs-tɛ	?i-b ^h ur-tɛ	?i-Σ(w,p)-tɛ	(1.3) (2.1/2.5) 3.2
2D	?i-k ^h əs-ti	?i-b ^h ur-iti	?i-Σ(w,p)-(i)ti	(1.3) (2.1/2.5)
2P	?i-k ^h əs-tenu	?i-b ^h ur-tenu	?i-Σ(w,p)-tenu	(1.3) (2.1/2.5) 3.2
3S	k ^h əs-tɛ	b ^h ur-tɛ	Σ(w,p)-tɛ	(1.3) (2.1/2.5) 3.2
3D	k ^h əs-ti	b ^h ur-iti	Σ(w,p)-(i)ti	(1.3) (2.1/2.5)
3P	k ^h əs-tenu	b ^h ur-tenu	Σ(w,p)-tenu	(1.3) (2.1/2.5) 3.2

Intransitive 2SG forms have two variants, either with a lengthened vowel or with the *-je* suffix. In |-t| roots, we find geminated |tsts| in imperative singular forms instead of expected *tʃj.

Table 18: Deriving imperative stems from intransitive verb roots

Imperative	k ^h ot	b ^h ur	Stem id., affixes	Rules
2S	k ^h ətsts-e,	(mu)b ^h ur-je,	Σ(w)-je	(1.2) (2.1/2.5) 3.1
	k ^h ə̃:ts-e	(mu)b ^h ur-r-e	Σ(w,l)-e	
2D	k ^h əts-ije	(mu)b ^h ur-ije	Σ(w)-ije	(1.2) (2.1/2.5)
2P	k ^h əs-nuje	(mu)b ^h ur-nuje	Σ(w,p)-nuje	(1.3) (2.1/2.5)

Almost all intransitive CVC root verbs can be conjugated using the paradigms of Tables 16-18. The only exceptions are |Cak| intransitive roots, which present two conjugations.

The first conjugation is quite irregular, in that it includes forms apparently influenced by |Cɛ| intransitive verbs. It only applies to the verb |b^hak| ‘go (honorific)’ and |dak| ‘want’, a defective verb only occurring in third person forms. The paradigm is too irregular to be generated automatically (or it would involve too many ad hoc rules):

Table 19: Irregular paradigm of |b^hak| ‘to go (hon.)’

Person	NPST	PST	IMP
1S	b ^h âŋ-ŋΛ, b ^h â:-ŋΛ	b ^h Λ-ŋΛtΛ	
1DI	b ^h ε-ji	b ^h ê-jti	
1DE	b ^h ε-ju	b ^h ê-jtu	
1PI	b ^h ak-ki	b ^h ak-tiki	
1PE	b ^h ak-kΛ	b ^h ak-tΛkΛ	
2S	?i-b ^h â:	?i-b ^h â:-tε	b ^h â:-je
2D	?i-b ^h ε-ji	?i-b ^h ê-jti	b ^h ê-ije
2P	?i-b ^h â:-ni	?i-b ^h a-tnu	b ^h â-nje
3S	b ^h â:	b ^h â:-tε	
3D	b ^h ε-ji	b ^h ê-jti	
3P	b ^h â:-nu	b ^h a-tnu	

The second conjugation is more regular, but seems restricted to the verb |dak| ‘to bicker’ (also |d^hak| in the southern dialect), a verb root only occurring in the collocation *tsinger dâ:ne* ‘to bicker’. This verb presents regular forms for the dual such as 1DI *daki*, but still has irregular forms for the 2/3SG.

7. CVC transitive verbs

In the transitive paradigm, stem alternations presented in the intransitive paradigms in the previous section also occur, but a few additional stems must be added.

The transitive paradigm can be broadly divided into three sections: direct forms (with a third person patient), inverse forms (3>1, 3>2 and 2>1), and somewhat marginal 1>2 forms. The inverse forms are generally (except for |-ak| roots) identical with the corresponding intransitive forms, with the addition of the inverse prefix ?i- (thus for instance the 3S>1S and 2S>1S are identical with 1S intransitive forms except for the inverse prefix).

Certain direct forms, on the other hand, are quite distinct from intransitive ones. In this part of the paradigm, the stems are always followed by a suffix. Apart from the weak stems, strong stems and strong assimilated stems, we must distinguish five additional stems for some verbs (especially for |-ut| and |-ot| roots). The two verbs |set| ‘to kill’ and |lop| ‘to catch’ illustrate all possible stem alternations.

The non-past direct paradigm includes three stems that have no equivalent in the intransitive paradigm: the weak voiced back stem $\Sigma(w,v,b)$ which undergoes rules 1.1 and 2.6 (for |-o-| and |-u-| verbs), the weak voiced lengthened stem $\Sigma(w,v,l)$, which undergoes rules 1.1, 2.1 and 3.1 (in the first singular) and the weak lengthened stem $\Sigma(w,l)$ which only undergoes rules 2.1 and 3.1 (in the second and third singular). In this

last stem the falling tone is phonetic; as mentioned in §2, there are no tonal constraints in obstruent-final syllables.

Table 20: Deriving non-past stems (direct forms) from transitive verb root

Non-past	set ‘to kill’	lop ‘to catch’	Stem id., affixes	Rules
1S>3S	sed-u	lob-u	$\Sigma(w,v,b)$ -u	(1.1) 2.6
1S>3D	sed-usu	lob-usu	$\Sigma(w,v,b)$ -usu	(1.1) 2.6
1S>3P	sed-unu	lob-unu	$\Sigma(w,v,b)$ -unu	(1.1) 2.6
1DI>3	sets-i	løp-i	$\Sigma(w)$ -i	(1.2) 2.1
1DE>3	sets-u	løp-u	$\Sigma(w)$ -u	(1.2) 2.1
1PI>3	seç-ki	loɔp-ki	$\Sigma(s,1p)$ -ki	(1.4) (2.3/2.4)
1PE>3	seç-kλ	loɔp-kλ	$\Sigma(s,1p)$ -kλ	(1.4) (2.3/2.4)
2S>3S	?i-sê:d- ʰ	?i-lô:b- ʰ	?i- $\Sigma(w,v,l)$ - ʰ	1.1 2.1 3.1
2S>3D	?i-sê:t-su	?i-lô:p-su	?i- $\Sigma(w,l)$ -su	2.1 (3.1/3.2)
2S>3P	?i-sê:t-nu	?i-lô:p-nu	?i- $\Sigma(w,l)$ -nu	2.1 (3.1/3.2)
2D>3	?i-sets-i	?i-løp-i	?i- $\Sigma(w)$ -i	(1.2) 2.1
2P>3	?i-sên-ni	?i-loðm-ni	?i- $\Sigma(s,a)$ -ni	(1.5/1.6/1.7/1.10/1.11) (2.3/2.4)
3S>3	sê:d- ʰ	lô:b- ʰ	$\Sigma(w,v,l)$ - ʰ	(1.1) 2.1 3.1
3D>3	sê:t-su	lô:p-su	$\Sigma(w,l)$ -su	2.1 (3.1/3.2)
3P>3	sê:t-nu	lô:p-nu	$\Sigma(w,l)$ -nu	2.1 (3.1/3.2)

In the past direct paradigm, |Cvt| roots have two additional stems: the weak past back assimilated stem $\Sigma(w,p,b,a)$, which undergoes 1.8 and 2.6 (in first singular), and the weak past assimilated stem $\Sigma(w,p,a)$, which undergoes either 1.8, 3.1, or 3.2 depending on the final consonant.

As with intransitive verbs, the 1S>3.PST, 1DI>3.PST and 1DE>3 suffixes have two distinct allomorphs *-utλ*, *-iti*, *-utu* and *-tλ*, *-ti*, *-tu*, the latter restricted to |Cvt| roots and the former appearing with all other root types.

Table 21: Deriving past stems (direct forms) from transitive verb roots

Past	set	lop	Stem id., affixes	Rules
1S>3S	sê:t- tλ	lob-utλ	$\Sigma(w,p,b,a)$ -(u)tλ	(1.1/1.8) 2.6
1S>3D	sê:t-tλsu	lob-utλsu	$\Sigma(w,p,b,a)$ -(u)tλsu	(1.1/1.8) 2.6
1S>3P	sê:t-tλnu	lob-utλnu	$\Sigma(w,p,b,a)$ -(u)tλnu	(1.1/1.8) 2.6
1DI>3	ses-ti	løp-iti	$\Sigma(w)$ -(i)ti	(1.3) (2.1/2.5)
1DE>3	ses-tu	løp-utu	$\Sigma(w)$ -(u)tu	(1.3) (2.1/2.5)
1PI>3	seç-tiki	loɔp-tiki	$\Sigma(s,1p)$ -tiki	(1.4) (2.3/2.4)
1PE>3	seç-tλkλ	loɔp-tλkλ	$\Sigma(s,1p)$ -tλkλ	(1.4) (2.3/2.4)
2S>3S	?i-sê:t-te	?i-lô:p-te	?i- $\Sigma(w,p,a)$ -te	(1.8/3.1/3.2) 2.1
2S>3D	?i-sê:t-tesu	?i-lô:p-tesu	?i- $\Sigma(w,p,a)$ -tesu	(1.8/3.1/3.2)
2S>3P	?i-sê:t-tenu	?i-lô:p-tenu	?i- $\Sigma(w,p,a)$ -tenu	(1.8/3.1/3.2)

2D>3	ʔi-ses-ti	ʔi-ləp-iti	ʔi-Σ(w)-(i)ti	(1.3) (2.1/2.5)
2P>3	ʔi-ses-tənu	ʔi-ləp-tənu	ʔi-Σ(w)-tənu	(1.3) 2.1
3S>3	sê:te	lê:p-te	Σ(w,p,a)-te	(1.8/3.1/3.2) 2.1
3D>3	sê:tesu	lê:p-tesu	Σ(w,p,a)-tesu	(1.8/3.1/3.2) 2.1
3P>3	sê:tənu	lê:p-tənu	Σ(w,p,a)-tənu	(1.8/3.1/3.2) 2.1

Only [ot] and [ut] root verbs have distinct Σ(w,p,b,a) and Σ(w,p,a) stems. For example, [hot] ‘to bring’ has 1S>3.PST *hōt-ta* and 3S>3.PST *hōt-te*. Note that [aC] transitives have one particularity: rule 2.5, unlike 2.1, does not apply in the 2P>3.PST form. Thus the root [sak] ‘to choose’ has 1S>3.PST *saguta*, but 2P>3.PST *ʔisaktənu* not *ʔisaktənu as would be expected if rule 2.5 operated in the same environments as 2.1.

The realization of the forms of all ten stems can be predicted by applying the rules, but the full list of all stems for each root type is indicated in the appendix for reference.

The inverse forms, as mentioned above, are quite similar to the intransitive ones:

Table 22: Deriving non-past stems (inverse forms) from transitive verb roots

Non-past	[set]	[lop]	Stem id., affixes	Rules
3/2S>1S	ʔi-sêj-ηa	ʔi-loôm-ηa	ʔi-Σ(s)-ηa	(1.5/1.7/1.10/1.11) 2.3
3/2D>1S	ʔi-sêj-ηasu	ʔi-loôm-ηasu	ʔi-Σ(s)-ηasu	i-loôm-ηa
3/2P>1S	ʔi-sêj-ηanu	ʔi-loôm-ηanu	ʔi-Σ(s)-ηanu	i-loôm-ηa
3/2>1DI	ʔi-sets-i	ʔi-ləp-i	ʔi-Σ(w)-i	(1.2) (2.1/2.5)
3/2>1DE	ʔi-sets-u	ʔi-ləp-u	ʔi-Σ(w)-u	(1.2) (2.1/2.5)
3/2>1PI	ʔi-seç-ki	ʔi-loəp-ki	ʔi-Σ(s)-ki	(1.4) 2.3
3/2>1PE	ʔi-seç-ka	ʔi-loəp-ka	ʔi-Σ(s)-ka	(1.4) 2.3
3>2S	ʔi-sêj	ʔi-loəp	ʔi-Σ(s)	(1.7/1.9/1.10) (2.3/2.4) (3.3)
3>2D	ʔi-sets-i	ʔi-ləp-i	ʔi-Σ(w)-i	(1.2) (2.1/2.5)
3>2P	ʔi-sên-ni	ʔi-loôm-ni	ʔi-Σ(s,a)-ni	(1.5/1.6/1.7/1.10/1.11) (2.3/2.4)

In the past paradigm, rule 2.5 does not apply in the 3>2S and 3>2P forms of [aC] stem verbs, so that for the root [sak] ‘to choose’ one finds 3>2S.PST *ʔisakte* instead of †*ʔisakte*, which would be expected if the context of rule 2.5 had been the same as for rule 2.1.

Table 23: Deriving past stems (inverse forms) from transitive verb roots

Past	[set]	[lop]	Stem id., affixes	Rules
3/2S>1S	ʔi-ses-ta	ʔi-ləp-ta	ʔi-Σ(w,p)-(a)ta	(1.3) (2.1/2.5)
3/2D>1S	ʔi-ses-tasu	ʔi-ləp-tasu	ʔi-Σ(w,p)-(a)tasu	(1.3)
3/2P>1S	ʔi-ses-tanu	ʔi-ləp-tanu	ʔi-Σ(w,p)-(a)tanu	(1.3)
3/2>1DI	ʔi-ses-ti	ʔi-ləp-iti	ʔi-Σ(w,p)-(i)ti	(1.3) (2.1/2.5)
3/2>1DE	ʔi-ses-tu	ʔi-ləp-utu	ʔi-Σ(w,p)-(u)tu	(1.3) (2.1/2.5)
3/2>1PI	ʔi-seç-tiki	ʔi-loəp-tiki	ʔi-Σ(s)-tiki	(1.4) 2.3
3/2>1PE	ʔi-seç-taka	ʔi-loəp-taka	ʔi-Σ(s)-taka	(1.4) 2.3

3>2S, 1D/PE>2S	ʔi-ses-te	ʔi-ləp-te	ʔi-Σ(w,p)-te	(1.3) 2.1 (3.2)
3>2D, 1D/PE>2D	ʔi-ses-ti	ʔi-ləp-iti	ʔi-Σ(w,p)-(i)ti	(1.3) (2.1/2.5) (3.2)
3>2P, 1D/PE>2P	ʔi-ses-tenu	ʔi-ləp-tenu	ʔi-Σ(w,p)-tenu	(1.3) 2.1 (3.2)

Notice that 3/2>1DI, 3>2D and 2D>3 are always identical. The same is true of 2P>3 and 3>2P.

The 1S>2 forms present a special Σ(s,a) for |-k| and |-ŋ| final roots (here |fɯŋ| ‘to wait’ and |phrok| ‘to untie’) due to rule 1.16.

Table 24: Deriving stems of 1>2 forms from transitive verb roots

NP	set ‘to kill’	lop ‘to catch’	p ^h rok ‘to untie’	fɯŋ ‘to wait for’	Stem id., affixes	Rules
1S>2S	sên-ne	loôm-ne	p ^h rô:-ne	fû:-ne	Σ(s,a)-ne	(1.5/1.6/1.7/1.10/1.11) (2.3/2.4) 3.2
1S>2D	sên-su	loôm-su	p ^h rôn-su	fûn-su	Σ(s,a)-su	(1.5/1.6/1.7/1.10/1.11/1.16) (2.3/2.4) 3.2
1S>2P	sên-nu	loôm-nu	p ^h rôn-nu	fûn-nu	Σ(s,a)-nu	(1.5/1.6/1.7/1.10/1.11/1.16) (2.3/2.4) 3.2
Past					Stem	Rules
1S>2S	sên-teni	loôm-teni	p ^h rôn-teni	fûn-teni	Σ(s,a)-teni	(1.5/1.6/1.7/1.10/1.11/1.16) (2.3/2.4)
1S>2D	sên-tensu	loôm-tensu	p ^h rôn-tensu	fûn-tensu	Σ(s,a)-tensu	(1.5/1.6/1.7/1.10/1.11/1.16) (2.3/2.4)
1S>2P	sên-tennu	loôm-tennu	p ^h rôn-tennu	fûn-tennu	Σ(s,a)-tennu	(1.5/1.6/1.7/1.10/1.11/1.16) (2.3/2.4)

In the 1S>2D/P non-past forms, |-p| final and |-m| final roots have the same forms due to the addition of the falling tone to all sonorant-final forms (rule 3.2). Thus, while the 1SG>2SG forms *loômne* (from |lom| ‘to look for’) and *loômne* (from |lop| ‘to catch’) are distinct, their 1SG>2DU and 1SG>2PL non-past forms *loôm-su* and *loôm-nu* are identical. This is the only case of homonymy in the entire paradigm between these two classes.

The imperative forms are the following:

Table 25: Imperative forms for |set| ‘to kill’, and |lop| ‘to catch’

	3S	3D	3P
2S	sē:d-e		
2D	sets-ije		
2P	ses-nuje		
	1S	1DE	1PE
2S	sets-ʌje	sets-uje	seç-kʌje
2D	sets-ʌsúje		
2P	sets-ʌnúje		

	3S	3D	3P
2S	l̥ɔ:b-e		
2D	l̥ɔp-ije		
2P	l̥ɔp-nuje		
	1S	1DE	1PE
2S	l̥ɔp-ɔje	l̥ɔp-uje	l̥ɔɔp-kɔje
2D	l̥ɔp-ɔsujɛ		
2P	l̥ɔp-ɔnuje		

Table 26: Rules and stems for transitive imperatives

Imperative	Stem	Rules
2S>3	$\Sigma(w,v,l)$ -e	1.1 2.1 3.1
2>3(D)	$\Sigma(w)$ -ije	(1.2) (2.1/2.5)
2>3(P)	$\Sigma(w,p)$ -nuje	(2.1/2.5)
2S>1S	$\Sigma(w)$ -ɔje	(1.2) (2.1/2.5)
2D>1S	$\Sigma(w)$ -ɔsujɛ	(1.2) (2.1/2.5)
2P>1S	$\Sigma(w)$ -ɔnuje	(1.2) (2.1/2.5)
2>1D	$\Sigma(w)$ -uje	(1.2) (2.1/2.5)
2>1P	$\Sigma(s,1P)$ -kɔje	(1.4) 2.3

8. CVCT transitive verbs

|CVCT| verbs have a conjugation that differs from both regular transitive and intransitives. The context of application of the rules presented above is slightly different in |CVCT| root verbs.

The weak stem only occurs in 1D/2D forms, and it is characterized by loss of the postfinal |-t| (rule 1.12), so that in these forms |CVCT| verbs are identical to the equivalent |CVC| transitive and intransitive forms. Thus *k^hɔsti* is both the 1DI/3D.PST of the intransitive |k^hɔt| ‘to go’ and the 1DI.PST of |k^hɔtt| ‘to bring’.

Due to a different context of application of the rules 2.3 and 2.4, the strong stem appears in all forms except the dual and 2P>3.PST. However, four strong stems must be distinguished: the reduced strong stem $\Sigma(s,r)$ in 1P, which undergoes the loss of the postfinal |-t| (1.13) but not most assimilatory changes; the plain strong stem $\Sigma(s)$, which is the only one preserving the reconstructed postfinal |-t|; the assimilated strong stem $\Sigma(s,a)$. Only in the infinitive and 2P>3.NPST; and the falling tone strong stem $\Sigma(s,f)$, which only differs from $\Sigma(s,r)$ by the failure to apply 1.4 and 1.9 and by the falling tone (rule 3.2).

We exemplify the |CVCT| paradigms with the two verbs |mimt| ‘to remember’ and |sent| ‘to look at’.

Table 27: Deriving non-past stems (direct forms) from CVCt transitive roots

Non-past	mimt ‘to remember’	sent ‘to look at’	Stem id., affixes	Rules
1S>3S	mλmd-u	sēnd-u	Σ(s)-u	(2.3/2.4)
1S>3D	mλmd-usu	sēnd-usu	Σ(s)-usu	(2.3/2.4)
1S>3P	mλmd-unu	sēnd-unu	Σ(s)-unu	(2.3/2.4)
1DI>3	mim-i	sē:ts-i	Σ(w)-i	(1.2) (2.1/2.5) 1.12
1DE>3	mim-u	sē:ts-u	Σ(w)-u	(1.2) (2.1/2.5) 1.12
1PI>3	mλm-ki	sēj-ki	Σ(s,r)-ki	(1.4/1.9) (2.3/2.4) 1.13
1PE>3	mλm-kλ	sēj-kλ	Σ(s,r)-kλ	(1.4/1.9) (2.3/2.4) 1.13
2S>3S	?i-mλmd- u	?i-sēnd- u	?i-Σ(s)- u	(2.3/2.4)
2S>3D	i-mλm-su	?i-sēn-su	?i-Σ(s,f)-su	(2.3/2.4) 1.13 3.2
2S>3P	?i-mλm-nu	?i-sēn-nu	?i-Σ(s,f)-nu	(2.3/2.4) 1.13 3.2
2D>3	?i-mim-i	?i-sē:ts-i	?i-Σ(w)-i	(1.2) (2.1/2.5) 1.12
2P>3	?i-mλm-ni	?i-sēj-ni	?i-Σ(s,a)-ni	(1.5/1.6/1.7/1.9/1.10/1.11) (2.3/2.4) 1.13
3S>3	mλmd- u	sēnd- u	Σ(s)- u	(2.3/2.4)
3D>3	mλm-su	sēn-su	Σ(s,f)-su	(2.3/2.4) 1.13 3.2
3P>3	mλm-nu	sēn-nu	Σ(s,f)-nu	(2.3/2.4) 1.13 3.2

Table 28: Deriving past stems (direct forms) from CVCt transitive roots

Past	mimt	sent	Stem id., affixes	Rules
1S>3S	mλm-tλ	sēn-tλ	Σ(s)-tλ	(2.3/2.4) 3.2 1.13
1S>3D	mλm-tλsu	sēn-tλsu	Σ(s)-tλsu	(2.3/2.4) 3.2 1.13
1S>3P	mλm-tλnu	sēn-tλnu	Σ(s)-tλnu	(2.3/2.4) 3.2 1.13
1DI>3	mim-iti	sē:s-ti	Σ(w,p)-iti	(1.3) (2.1/2.5) 1.12
1DE>3	mim-utu	sē:s-tu	Σ(w,p)-utu	(1.3) (2.1/2.5) 1.12
1PI>3	mλm-tiki	sēj-tiki	Σ(s,r)-tiki	(1.4/1.9) (2.3/2.4) 1.13
1PE>3	mλm-tλkλ	sēj-tλkλ	Σ(s,r)-tλkλ	(1.4/1.9) (2.3/2.4) 1.13
2S>3S	?i-mλm-te	?i-sēn-te	?i-Σ(s,f)-te	(2.3/2.4) 3.2 1.13
2S>3D	?i-mλm-tesu	?i-sēn-tesu	?i-Σ(s,f)-tesu	(2.3/2.4) 3.2 1.13
2S>3P	?i-mλm-tenu	?i-sēn-tenu	?i-Σ(s,f)-tenu	(2.3/2.4) 3.2 1.13
2D>3	?i-mim-iti	?i-sē:s-ti	?i-Σ(w,p)-(i)ti	(1.2) (2.1/2.5) 1.12
2P>3	?i-mim-tenu	?i-sē:s-tenu	?i-Σ(w,p)-tenu	(1.2) (2.1/2.5) 1.13
3S>3	mλm-te	sēn-te	Σ(s,f)-te	(2.3/2.4) 3.2 1.13
3D>3	mλm-tesu	sēn-tesu	Σ(s,f)-tesu	(2.3/2.4) 3.2 1.13
3P>3	mλm-tenu	sēn-tenu	Σ(s,f)-tenu	(2.3/2.4) 3.2 1.13

The inverse, 1>2 and imperative forms are identical to those of corresponding CVC verbs; |CVnt| roots, however, have special forms due to the absence of transitive |Cvn| roots, in particular concerning the application of rule 1.9:

Table 29: Deriving non-past stems (inverse forms) for CVCt transitive roots

Non-past	mimt	sent	Stem id., affixes	Rules
3/2S>1S	ʔi-mām-ηΛ	ʔi-sēj-ηΛ	ʔi-Σ(s)-ηΛ	(1.5/1.7/1.9/1.10/1.11) 2.3 1.12
3/2D>1S	ʔi-mām-ηΛsu	ʔi-sēj-ηΛsu	ʔi-Σ(s)-ηΛsu	(1.5/1.7/1.9/1.10/1.11) 2.3 1.12
3/2P>1S	ʔi-mām-ηΛnu	ʔi-sēj-ηΛnu	ʔi-Σ(s)-ηΛnu	(1.5/1.7/1.9/1.10/1.11) 2.3 1.12
3/2>1DI	ʔi-mim-i	ʔi-sē:ts-i	ʔi-Σ(w)-i	(1.2) (2.1/2.5) 1.12
3/2>1DE	ʔi-mim-u	ʔi-sē:ts-u	ʔi-Σ(w)-u	(1.2) (2.1/2.5) 1.12
3/2>1PI	ʔi-mām-ki	ʔi-sēj-ki	ʔi-Σ(s)-ki	(1.4/1.9) 2.3 1.12
3/2>1PE	ʔi-mām-kΛ	ʔi-sēj-kΛ	ʔi-Σ(s)-kΛ	(1.4/1.9) 2.3 1.12
3>2S	ʔi-mām	ʔi-sēj	ʔi-Σ(s)	(1.7/1.9/1.10) 2.3 (3.3) 1.12
3>2D	ʔi-mim-i	ʔi-sē:ts-i	ʔi-Σ(w)-i	(1.2) (2.1/2.5) 1.12
3>2P	ʔi-mām-ni	ʔi-sēj-ni	ʔi-Σ(s)-ni	(1.5/1.6/1.7/1.9/1.10/1.11) (2.3/2.4) 1.12

Table 30: Deriving past stems (inverse forms) for CVCt transitive roots

Past	mimt	sent	Stem id., affixes	Rules
3/2S>1S	ʔi-mim-AtΛ	ʔi-sē:s-tΛ	ʔi-Σ(w)-(Λ)tΛ	(1.2) (2.1/2.5) 1.12
3/2D>1S	ʔi-mim-AtΛsu	ʔi-sē:s-tΛsu	ʔi-Σ(w)-(Λ)tΛsu	(1.2) (2.1/2.5) 1.12
3/2P>1S	ʔi-mim-AtΛnu	ʔi-sē:s-tΛnu	ʔi-Σ(w)-(Λ)tΛnu	(1.2) (2.1/2.5) 1.12
3/2>1DI	ʔi-mim-iti	ʔi-sē:s-ti	ʔi-Σ(w)-(i)ti	(1.2) (2.1/2.5) 1.12
3/2>1DE	ʔi-mim-utu	ʔi-sē:s-tu	ʔi-Σ(w)-(u)tu	(1.2) (2.1/2.5) 1.12
3/2>1PI	ʔi-mām-tiki	ʔi-sēj-tiki	ʔi-Σ(s)-tiki	(1.4/1.9) 2.3 1.12
3/2>1PE	ʔi-mām-tΛkΛ	ʔi-sēj-tΛkΛ	ʔi-Σ(s)-tΛkΛ	(1.4/1.9) 2.3 1.12
3>2S	ʔi-mīm-te	ʔi-sē:s-te	ʔi-Σ(w)-te	(1.2) (2.1/2.5) 3.2 1.12
3>2D	ʔi-mim-iti	ʔi-sē:s-ti	ʔi-Σ(w)-(i)ti	(1.2) (2.1/2.5) 1.12
3>2P	ʔi-mim-tenu	ʔi-sē:s-tenu	ʔi-Σ(w)-tenu	(1.2) (2.1/2.5) 1.12

The 1>2 forms of |nd| verbs are the following, with a special strong assimilated falling tone stem Σ(s,a,f):

Table 31: Stems for 1>2 forms for CVCt transitive roots

Non-past	sent	Stem id., affixes	Rules
1s>2S	sēj-nε	Σ(s,a)-nε	(1.5/1.6/1.7/1.10/1.11) (2.3/2.4) 3.2 1.13
1s>2D	sēj-su	Σ(s,a,f)-su	(1.5/1.6/1.7/1.9/1.10/1.11/1.16) (2.3/2.4) 3.2 1.13
1s>2P	sēj-nu	Σ(s,a,f)-nu	(1.5/1.6/1.7/1.9/1.10/1.11/1.16) (2.3/2.4) 3.2 1.13
Past			
1s>2S	sēj-teni	Σ(s,a)-teni	(1.5/1.6/1.7/1.9/1.10/1.11/1.16) (2.3/2.4) 1.13
1s>2D	sēj-tensu	Σ(s,a,f)-tensu	(1.5/1.6/1.7/1.9/1.10/1.11/1.16) (2.3/2.4) 1.13
1s>2P	sēj-tennu	Σ(s,a,f)-tennu	(1.5/1.6/1.7/1.9/1.10/1.11/1.16) (2.3/2.4) 1.13

Imperatives of |nd| roots are as follows:

Table 32: Imperative forms for imperatives of CVCt transitive roots

	3S	3D	3P
2S	sēnd-e		
2D	se:ts-ije		
2P	se:s-núje		
	1S	1DE	1PE
2S	sē:ts-Λje	sē:ts-uje	sēj-kΛje
2D	sē:ts-Λsujе		
2P	sē:ts-Λnuje		

Table 33: Rules and stems for CVCt transitive roots

IMP	Stem id., affixes	Rules
2S>3	$\Sigma(w,v,l)$ -e	1.1 2.1 3.1
2>3.D	$\Sigma(w)$ -ije	(1.2) (2.1/2.5) 1.12
2>3.P	$\Sigma(w,p)$ -nuje	(2.1/2.5) 1.12
2S>1S	$\Sigma(w)$ -Λje	(1.2) (2.1/2.5) 1.12
2D>1S	$\Sigma(w)$ -Λsujе	(1.2) (2.1/2.5) 1.12
2P>1S	$\Sigma(w)$ -Λnuje	(1.2) (2.1/2.5) 1.12
2>1D	$\Sigma(w)$ -uje	(1.2) (2.1/2.5) 1.12
2>1P	$\Sigma(s,1P)$ -kΛje	(1.4/1.9) 2.3 1.12

9. Open root verbs

Stem alternations in open roots are quite different from those in consonant-final roots. There are no *weak* vs. *strong* stems, and most of the rules stated above (except 2.1 and 2.2, both *fronting* rules) do not apply. Instead, a past lengthened stem is found in past 2S and 3S of intransitive verbs. All other intransitive and transitive forms present the basic stem, except for transitive |a| roots, whose paradigm is more complex.

The suffixes used with open-syllable roots are also slightly different: dual suffixes *-ji* and *-ju*, past dual exclusive *-itu* (instead of *-utu*), past 1S *-ηΛtΛ* (instead of *-ΛtΛ*), past 1P with an additional *-k-* (*-ktiki* instead of *-tiki*) and past 2/3P *-tnu* (instead of *-tenu*).

Rules 2.1 and 2.2 apply to the basic stem (so that |a|, |o|, and |u| appear as ε, ø and u respectively), but not to the lengthened stem:

Table 34: Stems for intransitive open root verbs, by root vowel

Non-past	Ca	Ce	Ci	Co	Cu	
Meaning	to burn	to say	to come	to come to ripen	to be late	Stem id., affixes
1S	g ^{hr} ε-ηΛ	dze-ηΛ	pi-ηΛ	fiε-ηΛ	ts ^h ε-ηΛ	Σ-ηΛ
1DI	g ^{hr} ε-jj	dze-jj	pi-jj	fiε-jj	ts ^h ε-jj	Σ-jj
1DE	g ^{hr} ε-ju	dze-ju	pi-ju	fiε-ju	ts ^h ε-ju	Σ-ju
1PI	g ^{hr} ε-ki	dze-ki	pi-ki	fiε-ki	ts ^h ε-ki	Σ-ki
1PE	g ^{hr} ε-kΛ	dze-kΛ	pi-kΛ	fiε-kΛ	ts ^h ε-kΛ	Σ-kΛ
2S	?i-g ^{hr} ε	?i-dze	?i-pi	?i-fiε	?i-ts ^h ε	?i-Σ
2D	?i-g ^{hr} ε-jj	?i-dze-jj	?i-pi-jj	?i-fiε-jj	?i-ts ^h ε-jj	?i-Σ-jj
2P	?i-g ^{hr} ε-ni	?i-dze-ni	?i-pi-ni	?i-fiε-ni	?i-ts ^h ε-ni	?i-Σ-ni
3S	g ^{hr} ε	dze	pi	fiε	ts ^h ε	Σ
3D	g ^{hr} ε-jj	dze-jj	pi-jj	fiε-jj	ts ^h ε-jj	Σ-jj
3P	g ^{hr} ε-nu	dze-nu	pi-nu	fiε-nu	ts ^h ε-nu	Σ-nu
Past						
1S	g ^{hr} ε-ηΛΛ	dze-ηΛΛ	pi-ηΛΛ	fiε-ηΛΛ	ts ^h ε-ηΛΛ	Σ-ηΛΛ
1DI	g ^{hr} ε-jti	dzê-jti	pî-iti	fiê-jti	ts ^h ε-jti	Σ-iti
1DE	g ^{hr} ε-jtu	dzê-jtu	pî-itu	fiê-jtu	ts ^h ε-jtu	Σ-itu
1PI	g ^{hr} ε-ktiki	dze-ktiki	pi-ktiki	fiê-ktiki	ts ^h ε-ktiki	Σ-ktiki
1PE	g ^{hr} ε-ktΛkΛ	dze-ktΛkΛ	pi-ktΛkΛ	fiê-ktΛkΛ	ts ^h ε-ktΛkΛ	Σ-ktΛkΛ
2S	?i-g ^{hr} ε-rā:-te	?i-dzê:-te	?i-pū:-te	?i-fiō:-te	?i-ts ^h ū:-te	?i-Σ(1)-te
2D	?i-g ^{hr} ε-jti	?i-dzê-jti	?i-pî-iti	?i-fiê-jti	?i-ts ^h ε-jti	?i-Σ-iti
2P	?i-g ^{hr} ε-ra-tnu	?i-dze-tnu	?i-pu-tnu	?i-fiō-tnu	?i-ts ^h u-tnu	?i-Σ(1)-tnu
3S	g ^{hr} ε-rā:-te	dzê:-te	pū:-te	fiō:-te	ts ^h ū:-te	Σ(1)-te
3D	g ^{hr} ε-jti	dzê-jti	pî-jti	fiê-jti	ts ^h ε-jti	Σ-iti
3P	g ^{hr} ε-ra-tnu	dze-tnu	putnu	fiō-tnu	ts ^h u-tnu	Σ(1)-tnu

The examples of intransitive |a| roots encountered so far are all impersonal and thus have a defective conjugation (*mi ghrε* ‘the fire burns’). In forms other than the third person singular, |g^{hr}a| is conjugated only in the serial construction |mε g^{hr}ε| ‘to vomit terribly’, for instance *mεηΛΛ g^{hr}εηΛΛ* ‘I vomited terribly’.

The imperative singular and plural have the same vowel as the 2S/3S forms:

Table 35: Imperative stems for open root verbs

2S	dzê:-je	pū:-je	Σ(1)-je
2D	dzê-jje	pî-jje	Σ-jje
2P	dzê-nje	pû-nje	Σ(1)-nje

A number of open syllable root verbs have irregularities, with idiosyncratic vowel alternations.

Table 36: Idiosyncracies in stems of some open root verbs

Non-past	Ce	Cu	Cu	
Meaning	to come down	to feel	to be	
1S	je-ηΛ	l̥-ηΛ	mu-ηΛ	Σ(b)-ηΛ
1DI	je-ji	l̥-ji	m̥-ji	Σ-ji
1DE	je-ju	l̥-ju	m̥-ju	Σ-ju
1PI	je-ki	l̥-ki	mu-ki	Σ(b)-ki
1PE	je-kΛ	l̥-kΛ	mu-kΛ	Σ(b)-kΛ
2S	?i-je	?i-l̥	?i-mu	?i-Σ(b)
2D	?i-je-ji	?i-l̥-ji	?i-m̥-ji	?i-Σ-ji
2P	?i-je-ni	?i-l̥-ni	?i-m̥-ni	?i-Σ-ni
3S	je	l̥	mu	Σ(b)
3D	je-ji	l̥-ji	m̥-ji	Σ-ji
3P	je-nu	l̥-nu	mu-nu	Σ(b)-nu
Past				
1S	je-ηΛΛ	l̥-ηΛΛ	mu-ηΛΛ	Σ(b)-ηΛΛ
1DI	jê-jti	l̥-jti	m̥-jti	Σ-iti
1DE	jê-jtu	l̥-jtu	m̥-jtu	Σ-itu
1PI	je-ktiki	l̥-ktiki	mu-ktiki	Σ(b)-ktiki
1PE	je-ktΛkΛ	l̥-ktΛkΛ	mu-ktΛkΛ	Σ(b)-ktΛkΛ
2S	?i-jā:-te	?i-lō:-te	?i-mō:-te	?i-Σ(1)-te
2D	?i-jê-jti	?i-l̥-jti	?i-m̥-jti	?i-Σ-iti
2P	?i-ja-tnu	?i-lo-tnu	?i-mo-tnu	?i-Σ(1)-tnu
3S	jā:-te	lō:-te	mō:-te	Σ(1)-te
3D	jê-jti	l̥-jti	m̥-jti	Σ-iti
3P	ja-tnu	lo-tnu	mo-tnu	Σ(1)-tnu

The irregular /e/~a/ alternation in the paradigm of |je| ‘to come down’ might be due historically to the presence of initial /j/ (as in the case of the verb |jal| ‘to strike’). The root |mu| ‘to be’ is unique in having a back vowel stem *mu* that appears in non-dual forms (except where the past lengthened stem appears).

Note that the imperative of ‘come down’ has the regular lengthened stem of |e| roots, different from the lengthened past stem.

Table 37: Imperative forms of verbs with roots |je| and |lu|

2S	jē:-je	(mu)lō:-je	Σ(1)-je
2D	jê-jje	(mu)l̥-jje	Σ-jje
2P	jê-nje	(mu)lō-nje	Σ(1)-nje

This appears to be the only verb in the language whose imperative stem is distinct from the second person past form.

Transitive open roots have the same set of affixes except for the 1SG>3 past (-ηtΛ instead of -ηAtΛ) and 3>3(D). The pattern of stem alternations is slightly different, especially for |a| roots, which have complex alternations:

Table 38: Stems for transitive open root verbs, by root vowel

Non-past	dza	k ^h e	ŋi	t ^h o	
Meaning	to eat	to steal	to hear	to see	
1S>3	dzΛ-ηΛ	k ^h e-ηΛ	ŋi-ηΛ	t ^h o-ηΛ	Σ(1SG.NPST)-ηΛ
1DI>3	dzø-ji	k ^h e-ji	ŋi-ji	t ^h o-ji	Σ-ji
1DE>3	dzø-ju	k ^h e-ju	ŋi-ju	t ^h o-ju	Σ-ju
1PI>3	dzø-ki	k ^h e-ki	ŋi-ki	t ^h o-ki	Σ-ki
1PE>3	dzø-kΛ	k ^h e-kΛ	ŋi-kΛ	t ^h o-kΛ	Σ-kΛ
2S>3	ʔi-dzε	ʔi-k ^h e	ʔi-ŋi	ʔi-t ^h o	ʔi-Σ(2/3.NPST)
2D>3	ʔi-dzø-ji	ʔi-k ^h e-ji	ʔi-ŋi-ji	ʔi-t ^h o-ji	ʔi-Σ-ji
2P>3	ʔi-dzø-ni	ʔi-k ^h e-ni	ʔi-ŋi-ni	ʔi-t ^h o-ni	ʔi-Σ-ni
3S>3	dzε	k ^h e	ŋi	t ^h o	Σ(2/3.NPST)
3D>3	dzε-su	k ^h e-su	ŋi-su	t ^h o-su	Σ(2/3.NPST)-su
3P>3	dzε-nu	k ^h e-nu	ŋi-nu	t ^h o-nu	Σ(2/3.NPST)-nu
Past					
1S>3	dzû-ηtΛ	k ^h ê-ηtΛ	ŋî-ηtΛ	t ^h ô-ηtΛ	Σ(1SG.PST)-ηtΛ
1DI>3	dzô-jti	k ^h ê-jti	ŋî-iti	t ^h ô-jti	Σ-iti
1DE>3	dzô-jtu	k ^h ê-jtu	ŋî-itu	t ^h ô-jtu	Σ-itu
1PI>3	dzø-ktiki	k ^h e-ktiki	ŋi-ktiki	t ^h o-ktiki	Σ-ktiki
1PE>3	dzø-ktΛkΛ	k ^h e-ktΛkΛ	ŋi-ktΛkΛ	t ^h o-ktΛkΛ	Σ-ktΛkΛ
2S>3	ʔi-dzɹ-te	ʔi-k ^h e-te	ʔi-ŋi-te	ʔi-t ^h o-te	ʔi-Σ(2/3.PST)-te
2D>3	ʔi-dzô-jti	ʔi-k ^h ê-jti	ʔi-ŋî-jti	ʔi-t ^h ô-jti	ʔi-Σ-iti
2P>3	ʔi-dzo-tnu	ʔi-k ^h e-tnu	ʔi-ŋu-tnu	ʔi-t ^h o-tnu	ʔi-Σ(shortened)-tnu
3S>3	dzɹ-te	k ^h e-te	ŋi-te	t ^h o-te	Σ(2/3.PST)-te
3D>3	dzɹ-ssu	k ^h e-ssu	ŋi-ssu	t ^h o-ssu	Σ(2/3.PST)-ssu
3P>3	dzɹ-tnu	k ^h e-tnu	ŋi-tnu	t ^h o-tnu	Σ(2/3.PST)-tnu
3S>2S	ʔi-dzô:-te	X	ʔi-ŋû:-te	ʔi-t ^h ô:-te	ʔi-Σ(1)-te

The lengthened stem only appears in 2PL>3 past and 3SG>2 past forms. The 3SG>3.PST in particular has a short vowel, a difference with intransitive verbs that allows us to distinguish between these two verb categories (since the 1S.NPST has -ηΛ for both transitive and intransitive).

For |a| roots, no less than seven different vowels appear in the paradigm:

Table 39: Distribution of stems for transitive roots

name	form	distribution
basic	C \emptyset	1D/2D, 1P, 2P NPST
1SG.NPST	C Λ	1SG>3 NPST
2/3.NPST	C ϵ	2SG>3 NPST, 3SG>3 NPST
1SG.PST	Cu	1SG>3 PST
2/3.PST	C \mathfrak{h}	2SG>3 PST, 3>3 PST
lengthened	C \bar{o} :	3SG>2SG PST
shortened	Co	2PL>3 PST

The imperative of transitive verbs has the lengthened stem only in the plural. The 2/3.PST stem is found in the singular form:

Table 40: Shortened stem in plural imperative

2S	dz \mathfrak{h} -je	Σ (2/3.PST)-je
2D	dz $\hat{\epsilon}$ -jje	Σ -jje
2P	dz \hat{o} -nje	Σ (shortened)-nje

These are the same stem forms as those found in second person past, with a different suffix. Note that the 2>1 imperative suffix of open-syllable transitive roots is *- η Λ je* instead of *- Λ je* with the weak stem: *bi- η Λ je* ‘give it to me’. Open-syllable roots and *- η* final roots have the same imperative 2>1 (as well as 2/3>1S).

Table 41: Inverse imperative forms for open root verbs

	1S	1DE	1PE
2S	η i- η Λ je	η \hat{i} -ije	η i-k Λ je
2D	η i- η Λ suje		
2P	η i- η Λ nuje		

The inverse forms can be predicted from the above paradigms, but the 1S>2 forms present idiosyncrasies:

Table 42: 1>2 forms for open root verbs

Non-past	sent ‘to look at’	Stems
1S>2S	k \emptyset -n ϵ	Σ (A)-n ϵ
1S>2D	k $\hat{\epsilon}$ -nsu	Σ (A)-nsu
1S>2P	k $\hat{\epsilon}$ -nnu	Σ (A)-nnu
Past		
1S>2S	k $\hat{\epsilon}$ -nteni	Σ (A)-nteni
1S>2D	k $\hat{\epsilon}$ -ntensu	Σ (A)-ntensu
1S>2P	k $\hat{\epsilon}$ -ntennu	Σ (A)-ntennu

An additional *-n-* appears in all forms but the 1S>2S.

|mu| ‘to do’, which merges |Cu| root forms with |Ca| root forms), is the only irregular transitive verb:

Table 43: Irregular transitive open root verb

Non-past	mu ‘to do’	
1S	mΛ-ηΛ	Σ(1SG.NPST)-ηΛ
1DI	mϩ-ji	Σ-ji
1DE	mϩ-ju	Σ-ju
1PI	mϩ-ki	Σ-ki
1PE	mϩ-kΛ	Σ-kΛ
2S	?i-mε	?i-Σ(2/3.NPST)
2D	?i-mϩ-ji	?i-Σ-ji
2P	?i-mϩ-ni	?i-Σ-ni
3S	mε	Σ(2/3.NPST)
3D	mε-su	Σ(2/3.NPST)-su
3P	mε-nu	Σ(2/3.NPST)-nu
Past		
1S	mû-ηtΛ	Σ(1SG.PST)-ηtΛ
1DI	mû-jti	Σ-iti
1DE	mû-jtu	Σ-itu
1PI	mϩ-ktiki	Σ-ktiki
1PE	mϩ-ktΛkΛ	Σ-ktΛkΛ
2S	?i-mϩ-te	?i-Σ(2/3.PST)-te
2D	?i-mû-jti	?i-Σ-iti
2P	?i-mo-tnu	?i-Σ(shortened)-tnu
3S	mϩ-te	Σ(2/3.PST)-te
3D	mϩ-ssu	Σ(2/3.PST)-ssu
3P	mϩ-tnu	Σ(2/3.PST)-tnu

For open verb roots, it is always necessary to have the 1S.NPST and the 3S.PST forms. The 1S.PST makes it possible to determine the root class and the transitivity, but in the case of intransitive verbs, this form is homophonous with the equivalent form for |CVŋ| roots. Thus, *møηΛtΛ* is the 1S.PST form of both |mo| ‘to vomit’ and |moŋ| ‘to dream’.

10. Conclusion

The present paper provides a comprehensive description of Khaling verbal stem alternations and of the structure of the transitive and intransitive paradigms.

Explaining these paradigms however will require a systematic comparison with Dumi and Koyi. Many non-trivial alternations, such as that between *-j/-ts/-s* (in verbs

such as ‘to go’ 1S.NP *kʰoʃj-ŋʌ*, 1DI.NPST *kʰəts-i*, 1DI.PST *kʰəs-ti*) are shared between Khaling, Dumi, Koyi, and perhaps other Kiranti languages, and should be reconstructed back to their common ancestor.

Although most alternations in Khaling seem to be relatively recent, due to the loss of final consonants or to the application of accentual rules (especially for the lengthening rule 3.1), it is conceivable some of the vowel alternations observed in the Khaling paradigms are not recent, but constitute archaisms.¹⁴

This paper describes only part of the Khaling verbal system. The negative and reflexive paradigms have not been treated, and the system of auxiliaries, whose conjugations are highly irregular, will be described in future publications.

References

- Allen, Nicholas J. 1975. *Sketch of Thulung Grammar*. Ithaca: Cornell University.
- Bickel, Balthasar, and Johanna Nichols. 2007. Inflectional morphology. *Language Typology and Syntactic Description*, Vol. 3: *Grammatical Categories and the Lexicon* (2nd edition), ed. by Timothy Shopen, 169-240. Cambridge & New York: Cambridge University Press.
- DeLancey, Scott. 2011. Notes on verb agreement prefixes in Tibeto-Burman. *Himalayan Linguistics Journal* 10.1:1-29.
- Driem, George van. 1993. *A Grammar of Dumi*. Berlin & New York: Mouton de Gruyter.
- Harris, Alice C., and Jan T. Faarlund. 2006. Trapped morphology. *Journal of Linguistics* 42.2:289-315.
- Jacques, Guillaume. 2010. The inverse in Japhug Rgyalrong. *Language and Linguistics* 11.1:127-157.
- Jacques, Guillaume. 2012. Agreement morphology: the case of Rgyalrongic and Kiranti. *Language and Linguistics* 13.1:83-116.
- Lahaussais, Aimée. 2003. Thulung Rai. *Himalayan Linguistics Archive* 1:1-25.
- Lahaussais, Aimée. 2009. Koyi Rai: a initial grammatical sketch. *Himalayan Linguistics Archive* 4:1-33.
- Lin, You-Jing. 2003. Tense and aspect morphology in the Zhuokeji rGyalrong verb. *Cahiers de linguistique – Asie orientale* 32.2:245-286.

¹⁴ In particular, the puzzling *i/u*: alternation of the open-stem paradigms reminds one of the unexplained *o/i* alternation found in Situ Rgyalrong in the verb ‘to come’ *pi*, *po* (Lin 2003: 254). It is significant that this alternation occurs in the Khaling verb /*pi*/ ‘to come (horizontal plane)’, the probable cognate of Situ *pi*.

- Michailovsky, Boyd. 1975. Notes on the Kiranti verb (East Nepal). *Linguistics of the Tibeto-Burman Area* 2.2:183-218.
- Michailovsky, Boyd. (in press). Internal reconstruction of the Dumi verb: lexical bases and stem formation. *Linguistics of the Tibeto-Burman Area* 35.2.
- Oppenort, Jean Robert. 2004. *A Grammar of Wambule*. Leiden & Boston: Brill.
- Oppenort, Jean Robert. 2011. A note on Tilung and its position within Kiranti. *Himalayan Linguistics Journal* 10.1:253-271.
- Sun, Jackson T.-S., and Danluo Shi. 2002. Caodeng Jiarongyu yu ‘rentong dengdi’ xiangguan de yufa xianxiang [Empathy hierarchy in Caodeng rGyalrong grammar]. *Language and Linguistics* 3.1:79-99.
- Toba, Ingrid. 1973. The Khaling verb. *Nepal Studies in Linguistics* 1:1-14.
- Toba, Sueyoshi. 1984. *Khaling* (2nd edition). Tokyo: ILCAA, Tokyo University of Foreign Studies.
- Toba, Sueyoshi, and Ingrid Toba. 1975. *A Khaling-English, English-Khaling Glossary*. Kathmandu: Summer Institute of Linguistics and Institute of Nepal and Asian Studies.

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卡玲語動詞形態概要

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本文提供卡玲語及物和不及物動詞系統的完整描寫，並重點討論形態變化中的詞幹交替。我們用內部構擬法分析詞幹交替，在這個構擬模式中，動詞形態的任何一個形式可以用一系列的形態規則從動詞的原形派生出來。我們在這個構擬模式的基礎上編了電腦程式，這個程式自動生成所有的動詞形態。電腦生成的動詞變位表得到卡玲語母語者的驗證。

我們的構擬模式不但是分析詞幹交替的有效方法，也是進行基蘭提語言語音和動詞形態歷史比較的基礎研究，特別是密切相關的督米語和高衣語。

關鍵詞：形態音位學，混成詞，模板性形態，聲調交替，基蘭提，卡玲語，督米語

Appendix

Table 1: Intransitive verb *ghre* ‘burn’

	non-past	past	imperative
1S	ghrɛŋʌ	ghrɛŋʌʌ	
1DI	ghrɛji	ghrɛiti	
1DE	ghrɛju	ghrɛitu	
1PI	ghrɛki	ghrɛktiki	
1PE	ghrɛkʌ	ghrɛktʌkʌ	
2S	ʔighre	ʔighrā:te	ghrā:je
2D	ʔighrɛji	ʔighrɛiti	ghrɛije
2N	ʔighrɛni	ʔighratnu	ghrânje
3S	ghrɛ	ghrā:te	
3D	ghrɛji	ghrɛiti	
3N	ghrɛnu	ghratnu	

Table 4: Intransitive verb *dzhem* ‘disappear’

	non-past	past	imperative
1S	dzhɛmŋʌ	dzhɛmʌʌ	
1DI	dzhɛmi	dzhɛmiti	
1DE	dzhɛmu	dzhɛmutu	
1PI	dzhɛmki	dzhɛmtiki	
1PE	dzhɛmkʌ	dzhɛmtʌkʌ	
2S	ʔidzhem	ʔidzhêmtɛ	dzhêmje
2D	ʔidzhemi	ʔidzhɛmiti	dzhɛmije
2N	ʔidzhemni	ʔidzhɛmtɛnu	dzhɛmnuje
3S	dzhem	dzhêmtɛ	
3D	dzhɛmi	dzhɛmiti	
3N	dzhɛmnu	dzhɛmtɛnu	

Table 2: Intransitive verb *dzhɛp* ‘be possible’

	non-past	past
3S	dzhɛ:p	dzhɛpte

Table 3: Transitive verb *ʔet* ‘say’

	non-past	past	imperative
1S	ʔɛjŋʌ	ʔɛstʌ	
1DI	ʔɛtsi	ʔɛsti	
1DE	ʔɛtsu	ʔɛstu	
1PI	ʔɛçki	ʔɛçtiki	
1PE	ʔɛçkʌ	ʔɛçtʌkʌ	
2S	ʔiʔɛj	ʔiʔɛste	ʔɛstse
2D	ʔiʔɛtsi	ʔiʔɛsti	ʔɛtsije
2N	ʔiʔɛnni	ʔiʔɛstenu	ʔɛsnuje
3S	ʔɛj	ʔɛste	
3D	ʔɛtsi	ʔɛsti	
3N	ʔɛnnu	ʔɛstenu	

Table 5: Intransitive verb *ŋɛn* ‘sit’

	non-past	past	imperative
1S	ŋɛjŋʌ	ŋɛstʌ	
1DI	ŋɛtsi	ŋɛsti	
1DE	ŋɛtsu	ŋɛstu	
1PI	ŋɛjki	ŋɛjtiki	
1PE	ŋɛjkʌ	ŋɛjtʌkʌ	
2S	ʔiŋɛj	ʔiŋɛste	ŋɛtse
2D	ʔiŋɛtsi	ʔiŋɛsti	ŋɛtsije
2N	ʔiŋɛjni	ʔiŋɛstenu	ŋɛsnuje
3S	ŋɛj	ŋɛste	
3D	ŋɛtsi	ŋɛsti	
3N	ŋɛjnu	ŋɛstenu	

Table 6: Intransitive verb *ghaŋ* ‘agree’

	non-past	past	imperative
1S	ghā:ŋʌ	ghʌŋʌʌ	
1DI	ghʌŋi	ghʌŋiti	
1DE	ghʌŋu	ghʌŋutu	
1PI	ghʌŋki	ghʌŋtiki	
1PE	ghʌŋkʌ	ghʌŋtʌkʌ	
2S	ʔighʌŋ	ʔighâŋtɛ	ghâŋje
2D	ʔighʌŋi	ʔighʌŋiti	ghʌŋije
2N	ʔighā:ni	ʔighʌŋtɛnu	ghʌŋnuje
3S	ghʌŋ	ghâŋtɛ	
3D	ghʌŋi	ghʌŋiti	
3N	ghā:nu	ghʌŋtɛnu	

Table 7: Intransitive verb *gher*
'have an insomnia'

	non-past	past	imperative
1S	gherηΛ	gherΛtΛ	
1DI	gheri	gheriti	
1DE	gheru	gherutu	
1PI	gherki	ghertiki	
1PE	gherka	ghertakΛ	
2S	ʔigher	ʔighêrte	ghêrje
2D	ʔigheri	ʔigheriti	gherije
2N	ʔigherni	ʔighertenu	ghernuje
3S	gher	ghêrte	
3D	gheri	gheriti	
3N	ghernu	ghertenu	

Table 8: Intransitive verb *ηel* 'play a trick on'

	non-past	past	imperative
1S	ηelηΛ	ηelΛtΛ	
1DI	ηeli	ηeliti	
1DE	ηelu	ηelutu	
1PI	ηelki	ηeltiki	
1PE	ηelka	ηeltakΛ	
2S	ʔηel	ʔηêlte	ηêlje
2D	ʔηeli	ʔηeliti	ηelije
2N	ʔηelni	ʔηeltenu	ηelnuje
3S	ηel	ηêlte	
3D	ηeli	ηeliti	
3N	ηelnu	ηeltenu	

Table 9: Transitive verb *ka* 'eat'

	non-past	past	imperative
1S	kΛηΛ	kûηtΛ	
1DI	køji	kôiti	
1DE	køju	kôitu	
1PI	køkiki	køktiki	
1PE	køkΛ	køktakΛ	
2S	ʔike	ʔikæte	kæje
2D	ʔikøji	ʔikôiti	kôije
2N	ʔikøni	ʔikotnu	kønje
3S	ke	kæte	
3D	kesu	kætsu	
3N	kenu	kætnu	
2/3S>1S	ʔikøηΛ	ʔikøηtΛ	køηaje
2/3D>1S	ʔikøηΛsu	ʔikøηtΛsu	køηΛsujje
2/3P>1S	ʔikøηΛnu	ʔikøηtΛnu	køηΛnuje
2/3>1DI	ʔikøji	ʔikôiti	
2/3>1DE	ʔikøju	ʔikôitu	køije
2/3>1PI	ʔikøkiki	ʔikøkktiki	
2/3>1PE	ʔikøkΛ	ʔikøkktakΛ	køkΛaje
3,1D/PE>2S	ʔikø	ʔikô:te	
3,1D/PE>2D	ʔikøji	ʔikôiti	
3,1D/PE>2P	ʔikøni	ʔikotnu	
1S>2S	køne	kønteni	
1S>2D	kønsu	køntensu	
1S>2P	kønnu	køntennu	

Table 10: Transitive verb *khep* ‘be about to’

	non-past	past	imperative
1S>3S	khebu	khebuta	
1S>3D	khebusu	khebutasu	
1S>3P	khebunu	khebutanu	
1DI>3	khepi	khepiti	
1DE>3	khepu	kheputu	
1PI>3	khepki	kheptiki	
1PE>3	khepka	kheptaka	
2S>3S	ʔikhē:bɛ	ʔikhē:pte	khē:be
2S>3D	ʔikhē:psu	ʔikhē:ptesu	
2S>3P	ʔikhē:pnu	ʔikhē:ptenu	
2D>3	ʔikhēpi	ʔikhēpiti	khepije
2N>3	ʔikhēmni	ʔikhēptenu	khepnuje
3S>3S	khē:bɛ	khē:pte	
3>3(D)	khē:psu	khē:ptesu	
3>3(P)	khē:pnu	khē:ptenu	
2/3S>1S	ʔikhēmɣa	ʔikhēpa	khepa:je
2/3D>1S	ʔikhēmɣasu	ʔikhēpa:asu	khepa:suje
2/3P>1S	ʔikhēmɣanu	ʔikhēpa:anu	khepa:nuje
2/3>1DI	ʔikhēpi	ʔikhēpiti	
2/3>1DE	ʔikhēpu	ʔikhēputu	khepuje
2/3>1PI	ʔikhēpki	ʔikhēptiki	
2/3>1PE	ʔikhēpka	ʔikhēptaka	khepka:je
3,1D/PE>2S	ʔikhē:p	ʔikhēpte	
3,1D/PE>2D	ʔikhēpi	ʔikhēpiti	
3,1D/PE>2P	ʔikhēmni	ʔikhēptenu	
1S>2S	khēmne	khēmteni	
1S>2D	khēmsu	khēmtenusu	
1S>2P	khēmnu	khēmtennu	

Table 11: Transitive verb *ket* ‘bite’

	non-past	past	imperative
1S>3S	kēdu	kē:ta	
1S>3D	kēdusu	kē:tasu	
1S>3P	kēdunu	kē:tanu	
1DI>3	ketsi	kesti	
1DE>3	ketsu	kestu	
1PI>3	keçki	keçtiki	
1PE>3	keçka	keçtaka	
2S>3S	ʔikē:dɛ	ʔikē:te	kē:de
2S>3D	ʔikē:tsu	ʔikē:tesu	
2S>3P	ʔikē:tnu	ʔikē:tenu	
2D>3	ʔiketsi	ʔikesti	ketsije
2N>3	ʔikēnni	ʔikestenu	kesnuje
3S>3S	kē:dɛ	kē:te	
3>3(D)	kē:tsu	kē:tesu	
3>3(P)	kē:tnu	kē:tenu	
2/3S>1S	ʔikējɣa	ʔikesta	ketsa:je
2/3D>1S	ʔikējɣasu	ʔikesta:su	ketsa:suje
2/3P>1S	ʔikējɣanu	ʔikesta:nu	ketsa:nuje
2/3>1DI	ʔiketsi	ʔikesti	
2/3>1DE	ʔiketsu	ʔikestu	ketsuje
2/3>1PI	ʔikeçki	ʔikeçtiki	
2/3>1PE	ʔikeçka	ʔikeçtaka	keçka:je
3,1D/PE>2S	ʔikēj	ʔikeste	
3,1D/PE>2D	ʔiketsi	ʔikesti	
3,1D/PE>2P	ʔikēnni	ʔikestenu	
1S>2S	kēnne	kēnteni	
1S>2D	kēnsu	kēntensu	
1S>2P	kēnnu	kēntennu	

Table 12: Transitive verb *sak* ‘choose’

	non-past	past	imperative
1S>3S	sagu	saguta	
1S>3D	sagusu	sagutasu	
1S>3P	sagunu	sagutanu	
1DI>3	saki	sakiti	
1DE>3	saku	sakutu	
1PI>3	sakki	saktiki	
1PE>3	sakka	saktaka	
2S>3S	ʔisā:ɡʘ	ʔisā:kte	sā:ge
2S>3D	ʔisā:ksu	ʔisā:ktesu	
2S>3P	ʔisā:knu	ʔisā:ktenu	
2D>3	ʔisaki	ʔisakiti	sakije
2N>3	ʔisā:ni	ʔisaktenu	saknuje
3S>3S	sā:ɡʘ	sā:kte	
3>3(D)	sā:ksu	sā:ktesu	
3>3(P)	sā:knu	sā:ktenu	
2/3S>1S	ʔisā:ŋa	ʔisakata	sakaje
2/3D>1S	ʔisā:ŋasu	ʔisakatasu	sakasuje
2/3P>1S	ʔisā:ŋanu	ʔisakatanu	sakanuje
2/3>1DI	ʔisaki	ʔisakiti	
2/3>1DE	ʔisaku	ʔisakutu	sakuje
2/3>1PI	ʔisakki	ʔisaktiki	
2/3>1PE	ʔisakka	ʔisaktaka	sakaje
3,1D/PE>2S	ʔisā:	ʔisakte	
3,1D/PE>2D	ʔisaki	ʔisakiti	
3,1D/PE>2P	ʔisā:ni	ʔisaktenu	
1S>2S	sā:ne	sānteni	
1S>2D	sānsu	sāntensu	
1S>2P	sānnu	sāntennu	

Table 13: Transitive verb *khlem* ‘bewitch’

	non-past	past	imperative
1S>3S	khlemu	khlemuta	
1S>3D	khlemusu	khlemutasu	
1S>3P	khlemunu	khlemutanu	
1DI>3	khlemi	khlemiti	
1DE>3	khlemu	khlemutu	
1PI>3	khlemki	khlemtiki	
1PE>3	khlemka	khlemtaka	
2S>3S	ʔikhlē:mʘ	ʔikhlē:nte	khlē:me
2S>3D	ʔikhlē:msu	ʔikhlē:ntesu	
2S>3P	ʔikhlē:mnu	ʔikhlē:ntenu	
2D>3	ʔikhlemi	ʔikhlemiti	khlemije
2N>3	ʔikhlemni	ʔikhlemtenu	khlemnuje
3S>3S	khlē:mʘ	khlē:nte	
3>3(D)	khlē:msu	khlē:ntesu	
3>3(P)	khlē:mnu	khlē:ntenu	
2/3S>1S	ʔikhlemŋa	ʔikhlemata	khlemaje
2/3D>1S	ʔikhlemŋasu	ʔikhlematasu	khlemasuje
2/3P>1S	ʔikhlemŋanu	ʔikhlematanu	khlemanuje
2/3>1DI	ʔikhlemi	ʔikhlemiti	
2/3>1DE	ʔikhlemu	ʔikhlemutu	khlemuje
2/3>1PI	ʔikhlemki	ʔikhlemtiki	
2/3>1PE	ʔikhlemka	ʔikhlemtaka	khlemkaje
3,1D/PE>2S	ʔikhlem	ʔikhlē:nte	
3,1D/PE>2D	ʔikhlemi	ʔikhlemiti	
3,1D/PE>2P	ʔikhlemni	ʔikhlemtenu	
1S>2S	khlemne	khlemteni	
1S>2D	khlē:msu	khlemtensu	
1S>2P	khlē:mnu	khlemtenu	

Table 14: Transitive verb *jan*
'sift, steal little by little'

	non-past	past	imperative
1S>3S	jɔŋu	jɔŋutɔ	
1S>3D	jɔŋusu	jɔŋutɔsu	
1S>3P	jɔŋunu	jɔŋutɔnu	
1DI>3	jɔŋi	jɔŋiti	
1DE>3	jɔŋu	jɔŋutu	
1PI>3	jan̄ki	jan̄tiki	
1PE>3	jan̄kɔ	jan̄tɔkɔ	
2S>3S	ʔijā:ŋɛ	ʔijāŋte	jā:ŋe
2S>3D	ʔijāŋsu	ʔijāŋtesu	
2S>3P	ʔijāŋnu	ʔijāŋtenu	
2D>3	ʔijāŋi	ʔijāŋiti	jāŋije
2N>3	ʔijā:ni	ʔijāntenu	jan̄nuje
3S>3S	jā:ŋɛ	jāŋte	
3>3(D)	jāŋsu	jāŋtesu	
3>3(P)	jāŋnu	jāŋtenu	

Table 15: Transitive verb *wer*
'mind (an objection)'

	non-past	past	imperative
1S>3S	weru	werutɔ	
1S>3D	werusu	werutɔsu	
1S>3P	werunu	werutɔnu	
1DI>3	weri	weriti	
1DE>3	weru	werutu	
1PI>3	werki	wertiki	
1PE>3	werɔ	wertɔkɔ	
2S>3S	ʔiwē:rɛ	ʔiwē:rtɛ	wē:re
2S>3D	ʔiwē:rsu	ʔiwē:rtɛsu	
2S>3P	ʔiwē:rnu	ʔiwē:rtɛnu	
2D>3	ʔiwəri	ʔiweriti	wərije
2N>3	ʔiwərni	ʔiwertenu	wərnuje
3S>3S	wē:rɛ	wē:rtɛ	
3>3(D)	wē:rsu	wē:rtɛsu	
3>3(P)	wē:rnu	wē:rtɛnu	

Table 16: Transitive verb *jal* 'beat'

	non-past	past	imperative
1S>3S	jɔlu	jɔlutɔ	
1S>3D	jɔlusu	jɔlutɔsu	
1S>3P	jɔlunu	jɔlutɔnu	
1DI>3	jɔli	jɔliti	
1DE>3	jɔlu	jɔlutu	
1PI>3	jalki	jaltiki	
1PE>3	jalkɔ	jaltɔkɔ	
2S>3S	ʔijā:lɛ	ʔijālte	jā:le
2S>3D	ʔijālsu	ʔijāltɛsu	
2S>3P	ʔijālnu	ʔijāltɛnu	
2D>3	ʔijɔli	ʔijɔliti	jɔlije
2N>3	ʔijalni	ʔijaltenu	jaluje
3S>3S	jā:lɛ	jālte	
3>3(D)	jālsu	jāltɛsu	
3>3(P)	jālnu	jāltɛnu	
2/3S>1S	ʔijalŋɔ	ʔijalɔtɔ	jɔlɔje
2/3D>1S	ʔijalŋɔsu	ʔijalɔtɔsu	jɔlɔsujɛ
2/3P>1S	ʔijalŋɔnu	ʔijalɔtɔnu	jɔlɔnuje
2/3>1DI	ʔijɔli	ʔijɔliti	
2/3>1DE	ʔijɔlu	ʔijɔlutu	jɔluje
2/3>1PI	ʔijalki	ʔijaltiki	
2/3>1PE	ʔijalkɔ	ʔijaltɔkɔ	jalkɔje
3,1D/PE>2S	ʔijal	ʔijālte	
3,1D/PE>2D	ʔijɔli	ʔijɔliti	
3,1D/PE>2P	ʔijalni	ʔijaltenu	
1S>2S	jalne	jaltɛni	
1S>2D	jālsu	jaltɛsu	
1S>2P	jālnu	jaltɛnu	

Table 17: Transitive verb *phel* ‘damage’

	non-past	past	imperative
1S>3S	phelu	pheluta	
1S>3D	phelus <u>u</u>	phelut <u>asu</u>	
1S>3P	phelun <u>u</u>	phelut <u>anu</u>	
1DI>3	pheli	pheliti	
1DE>3	phelu	phelutu	
1PI>3	phelki	pheltiki	
1PE>3	phelka	pheltaka	
2S>3S	ʔiphēl̥t̥	ʔiphēlte	phēle
2S>3D	ʔiphēlsu	ʔiphēltesu	
2S>3P	ʔiphēlnu	ʔiphēltenu	
2D>3	ʔipheli	ʔipheliti	phelije
2N>3	ʔiphelni	ʔipheltenu	phelnuje
3S>3S	phēl̥t̥	phēlte	
3>3(D)	phēlsu	phēltesu	
3>3(P)	phēlnu	phēltenu	
2/3S>1S	ʔiphelŋa	ʔiphelata	phelaje
2/3D>1S	ʔiphelŋasu	ʔiphelatasu	phelasuje
2/3P>1S	ʔiphelŋanu	ʔiphelatanu	phelanuje
2/3>1DI	ʔipheli	ʔipheliti	
2/3>1DE	ʔiphelu	ʔiphelutu	pheluje
2/3>1PI	ʔiphelki	ʔipheltiki	
2/3>1PE	ʔiphelka	ʔipheltaka	phelkaje
3,1D/PE>2S	ʔiphel	ʔiphēlte	
3,1D/PE>2D	ʔipheli	ʔipheliti	
3,1D/PE>2P	ʔiphelni	ʔipheltenu	
1S>2S	phelne	phelteni	
1S>2D	phēlsu	pheltensu	
1S>2P	phēlnu	pheltenu	

Table 18: Transitive verb *phrept* ‘scratch’

	non-past	past	imperative
1S>3S	phreptu	phrepta	
1S>3D	phrept <u>usu</u>	phrept <u>asu</u>	
1S>3P	phrept <u>unu</u>	phrept <u>anu</u>	
1DI>3	phrepi	phrepiti	
1DE>3	phrepu	phreputu	
1PI>3	phrepki	phreptiki	
1PE>3	phrepka	phreptaka	
2S>3S	ʔiphrept̥	ʔiphrepte	phrepte
2S>3D	ʔiphrepsu	ʔiphreptesu	
2S>3P	ʔiphrepnu	ʔiphreptenu	
2D>3	ʔiphrepi	ʔiphrepiti	phrepije
2N>3	ʔiphrēmni	ʔiphreptenu	phrepnuje
3S>3S	phrept̥	phrepte	
3>3(D)	phrepsu	phreptesu	
3>3(P)	phrepnu	phreptenu	
2/3S>1S	ʔiphrēmŋa	ʔiphrepata	phrepaje
2/3D>1S	ʔiphrēmŋasu	ʔiphrepatasu	phrepasuje
2/3P>1S	ʔiphrēmŋanu	ʔiphrepatanu	phrepanuje
2/3>1DI	ʔiphrepi	ʔiphrepiti	
2/3>1DE	ʔiphrepu	ʔiphreputu	phrepuje
2/3>1PI	ʔiphrepki	ʔiphreptiki	
2/3>1PE	ʔiphrepka	ʔiphreptaka	phrepkaje
3,1D/PE>2S	ʔiphrēp̥	ʔiphrepte	
3,1D/PE>2D	ʔiphrepi	ʔiphrepiti	
3,1D/PE>2P	ʔiphrēmni	ʔiphreptenu	
1S>2S	phrēmne	phrēmteni	
1S>2D	phrēmsu	phrēm tensu	
1S>2P	phrēmnu	phrēm tenu	

Table 19: Transitive verb *rett* 'settle'

	non-past	past	imperative
1S>3S	rettu	retta	
1S>3D	rettusu	retta _{SU}	
1S>3P	rettunu	retta _{NU}	
1DI>3	retsi	resti	
1DE>3	retsu	restu	
1PI>3	reçki	reçtiki	
1PE>3	reçka	reçta _{KA}	
2S>3S	ʔirettə	ʔirette	rette
2S>3D	ʔiretsu	ʔirettesu	
2S>3P	ʔiretnu	ʔirettenu	
2D>3	ʔiretsi	ʔiresti	retsije
2N>3	ʔirēnni	ʔirestenu	resnuje
3S>3S	rettə	rette	
3>3(D)	retsu	rettesu	
3>3(P)	retnu	rettenu	
2/3S>1S	ʔirējŋa	ʔiresta	retsaje
2/3D>1S	ʔirējŋasu	ʔiresta _{SU}	retsasuje
2/3P>1S	ʔirējŋanu	ʔiresta _{NU}	retsanuje
2/3>1DI	ʔiretsi	ʔiresti	
2/3>1DE	ʔiretsu	ʔirestu	retsuje
2/3>1PI	ʔireçki	ʔireçtiki	
2/3>1PE	ʔireçka	ʔireçta _{KA}	reçka _{JE}
3,1D/PE>2S	ʔirēj	ʔireste	
3,1D/PE>2D	ʔiretsi	ʔiresti	
3,1D/PE>2P	ʔirēnni	ʔirestenu	
1S>2S	rēnne	rēnteni	
1S>2D	rēnsu	rēntensu	
1S>2P	rēnnu	rēntennu	

Table 20: Transitive verb *krakt* 'force'

	non-past	past	imperative
1S>3S	kraktu	krakta	
1S>3D	kraktusu	krakta _{SU}	
1S>3P	kraktunu	krakta _{NU}	
1DI>3	kraki	krakiti	
1DE>3	kraku	krakutu	
1PI>3	krakki	kraktiki	
1PE>3	krakka	krakta _{KA}	
2S>3S	ʔikraktə	ʔikrakte	krakte
2S>3D	ʔikraksu	ʔikrakesu	
2S>3P	ʔikraknu	ʔikraktenu	
2D>3	ʔikraki	ʔikrakiti	krakije
2N>3	ʔikrâ:ni	ʔikraktenu	kraknuje
3S>3S	kraktə	krakte	
3>3(D)	kraksu	krakesu	
3>3(P)	kraknu	kraktenu	
2/3S>1S	ʔikrâ:ŋa	ʔikraka _{TA}	kraka _{JE}
2/3D>1S	ʔikrâ:ŋasu	ʔikraka _{TA} _{SU}	krakasuje
2/3P>1S	ʔikrâ:ŋanu	ʔikraka _{TA} _{NU}	krakanuje
2/3>1DI	ʔikraki	ʔikrakiti	
2/3>1DE	ʔikraku	ʔikrakutu	krakuje
2/3>1PI	ʔikrakki	ʔikraktiki	
2/3>1PE	ʔikrakka	ʔikrakta _{KA}	krakka _{JE}
3,1D/PE>2S	ʔikrâ:	ʔikrakte	
3,1D/PE>2D	ʔikraki	ʔikrakiti	
3,1D/PE>2P	ʔikrâ:ni	ʔikraktenu	
1S>2S	krâ:ne	krânteni	
1S>2D	krânsu	krântensu	
1S>2P	krânnu	krântennu	

Table 21: Transitive verb *ghremt* ‘be disgusted by’

	non-past	past	imperative
1S>3S	ghremdu	ghrêmtA	
1S>3D	ghremdusu	ghrêmtASU	
1S>3P	ghremdunu	ghrêmtANU	
1DI>3	ghremi	ghremiti	
1DE>3	ghremu	ghremutu	
1PI>3	ghremki	ghremtiki	
1PE>3	ghremkA	ghremtAKA	
2S>3S	ʔighrêmdɛ	ʔighrêmtɛ	ghremde
2S>3D	ʔighrêmsu	ʔighrêmtɛsu	
2S>3P	ʔighrêmnɛ	ʔighrêmtɛnu	
2D>3	ʔighremi	ʔighremiti	ghremije
2N>3	ʔighremni	ʔighremtɛnu	ghremnuje
3S>3S	ghrêmdɛ	ghrêmtɛ	
3>3(D)	ghrêmsu	ghrêmtɛsu	
3>3(P)	ghrêmnɛ	ghrêmtɛnu	
2/3S>1S	ʔighrêmɲA	ʔighremATA	ghremAje
2/3D>1S	ʔighrêmɲASU	ʔighremATASU	ghremASuje
2/3P>1S	ʔighrêmɲANU	ʔighremATANU	ghremANuje
2/3>1DI	ʔighremi	ʔighremiti	
2/3>1DE	ʔighremu	ʔighremutu	ghremuje
2/3>1PI	ʔighremki	ʔighremtiki	
2/3>1PE	ʔighremkA	ʔighremtAKA	ghremkAje
3,1D/PE>2S	ʔighrem	ʔighrêmtɛ	
3,1D/PE>2D	ʔighremi	ʔighremiti	
3,1D/PE>2P	ʔighremni	ʔighremtɛnu	
1S>2S	ghremne	ghremteni	
1S>2D	ghrêmsu	ghremtɛnsu	
1S>2P	ghrêmnɛ	ghremtɛnnu	

Table 22: Transitive verb *pent* ‘attack’

	non-past	past	imperative
1S>3S	pendu	pêntA	
1S>3D	pendusu	pêntASU	
1S>3P	pendunu	pêntANU	
1DI>3	pê:tsi	pê:sti	
1DE>3	pê:tsu	pê:stɛ	
1PI>3	pejki	pejtiki	
1PE>3	pejkA	pejtAKA	
2S>3S	ʔipendɛ	ʔipêntɛ	pende
2S>3D	ʔipênsu	ʔipêntɛsu	
2S>3P	ʔipênnɛ	ʔipêntɛnu	
2D>3	ʔipê:tsi	ʔipê:sti	pê:tsije
2N>3	ʔipejni	ʔipê:stɛnu	pê:snuje
3S>3S	pendɛ	pêntɛ	
3>3(D)	pênsu	pêntɛsu	
3>3(P)	pênnɛ	pêntɛnu	
2/3S>1S	ʔipejɲA	ʔipê:stA	pê:tsAje
2/3D>1S	ʔipejɲASU	ʔipê:stASU	pê:tsASuje
2/3P>1S	ʔipejɲANU	ʔipê:stANU	pê:tsANuje
2/3>1DI	ʔipê:tsi	ʔipê:sti	
2/3>1DE	ʔipê:tsu	ʔipê:stɛ	pê:tsuje
2/3>1PI	ʔipejki	ʔipejtiki	
2/3>1PE	ʔipejkA	ʔipejtAKA	pejkAje
3,1D/PE>2S	ʔipej	ʔipê:stɛ	
3,1D/PE>2D	ʔipê:tsi	ʔipê:sti	
3,1D/PE>2P	ʔipejni	ʔipê:stɛnu	
1S>2S	pejne	pejteni	
1S>2D	pêjsu	pejtɛnsu	
1S>2P	pêjnu	pejtɛnnu	

Table 23: Transitive verb *kaŋt* ‘put on (the oven)’

	non-past	past	imperative
1S>3S	kandu	kānta	
1S>3D	kandusu	kāntasu	
1S>3P	kandunu	kāntanu	
1DI>3	kʌŋi	kʌŋiti	
1DE>3	kʌŋu	kʌŋutu	
1PI>3	kaŋki	kaŋtiki	
1PE>3	kaŋka	kaŋtaka	
2S>3S	ʔikandʌ	ʔikānte	kande
2S>3D	ʔikānsu	ʔikāntesu	
2S>3P	ʔikānnu	ʔikāntenu	
2D>3	ʔikʌŋi	ʔikʌŋiti	kʌŋije
2N>3	ʔikā:ni	ʔikaŋtenu	kaŋnuje
3S>3S	kandʌ	kānte	
3>3(D)	kānsu	kāntesu	
3>3(P)	kānnu	kāntenu	

Table 24: Intransitive verb *dze* ‘say’

	non-past	past	imperative
1S	dzeŋʌ	dzeŋʌta	
1DI	dzeji	dzēiti	
1DE	dzeju	dzēitu	
1PI	dzeki	dzektiki	
1PE	dzeka	dzektaka	
2S	ʔidze	ʔidzē:te	dzē:je
2D	ʔidzeji	ʔidzēiti	dzēije
2N	ʔidzeni	ʔidzetnu	dzēnje
3S	dze	dzē:te	
3D	dzeji	dzēiti	
3N	dzenu	dzetnu	

Table 25: Intransitive verb *rep* ‘stand’

	non-past	past	imperative
1S	rēmŋʌ	repʌta	
1DI	repi	repiti	
1DE	repu	reputu	
1PI	repki	reptiki	
1PE	repka	reptaka	
2S	ʔirê:p	ʔirepte	repje
2D	ʔirepi	ʔirepiti	repije
2N	ʔirēmni	ʔireptenu	repnuje
3S	rê:p	repte	
3D	repi	repiti	
3N	rēmnu	reptenu	

Table 26: Intransitive verb *ŋet* ‘hurt’

	non-past	past	imperative
1S	ŋêjŋʌ	ŋestʌ	
1DI	ŋetsi	ŋesti	
1DE	ŋetsu	ŋestu	
1PI	ŋeçki	ŋeçtiki	
1PE	ŋeçka	ŋeçtaka	
2S	ʔiŋêj	ʔiŋeste	ŋetstse
2D	ʔiŋetsi	ʔiŋesti	ŋetsije
2N	ʔiŋênni	ʔiŋestenu	ŋesnuje
3S	ŋêj	ŋeste	
3D	ŋetsi	ŋesti	
3N	ŋênnu	ŋestenu	

Table 27: Intransitive verb *tsek*
‘be hard, be stingy’

	non-past	past	imperative
1S	tsê:ŋʌ	tsekʌta	
1DI	tseki	tsekiti	
1DE	tseku	tsekutu	
1PI	tsekki	tsektiki	
1PE	tsekka	tsektaka	
2S	ʔitsê:	ʔitsekte	tsekje
2D	ʔitseki	ʔitsekiti	tsekije
2N	ʔitsê:ni	ʔitsektenu	tseknuje
3S	tsê:	tsekte	
3D	tseki	tsekiti	
3N	tsê:nu	tsektenu	

Table 28: Intransitive verb *jem* ‘be too late to harvest’

	non-past	past
3S	jem	jêmtɛ

Table 29: Intransitive verb *len* ‘visit shortly’

	non-past	past	imperative
1S	lejŋʌ	lê:stʌ	
1DI	lê:tsi	lê:sti	
1DE	lê:tsu	lê:stu	
1PI	lejki	lejtiki	
1PE	lejka	lejtʌka	
2S	ʔilej	ʔilê:stɛ	lê:tse
2D	ʔilê:tsi	ʔilê:sti	lê:tsije
2N	ʔilejni	ʔilê:stenu	lê:snuje
3S	lej	lê:stɛ	
3D	lê:tsi	lê:sti	
3N	lejnu	lê:stenu	

Table 30: Intransitive verb *bhrej* ‘be lazy’

	non-past	past	imperative
1S	bhrê:ŋʌ	bhreŋʌʌ	
1DI	bhreŋi	bhreŋiti	
1DE	bhreŋu	bhreŋutu	
1PI	bhreŋki	bhreŋtiki	
1PE	bhreŋka	bhreŋtʌka	
2S	ʔibhreŋ	ʔibhrê:ŋtɛ	bhrê:ŋje
2D	ʔibhreŋi	ʔibhreŋiti	bhreŋije
2N	ʔibhrê:mi	ʔibhreŋtenu	bhreŋnuje
3S	bhreŋ	bhrê:ŋtɛ	
3D	bhreŋi	bhreŋiti	
3N	bhrê:nu	bhreŋtenu	

Table 31: Intransitive verb *bher* ‘fly’

	non-past	past	imperative
1S	bherŋʌ	bherʌʌ	
1DI	bheri	bheriti	
1DE	bheru	bherutu	
1PI	bherki	bhertiki	
1PE	bherka	bhertʌka	
2S	ʔibher	ʔibhê:rtɛ	bhê:rje
2D	ʔibheri	ʔibheriti	bherije
2N	ʔibherni	ʔibhertenu	bhernuje
3S	bher	bhê:rtɛ	
3D	bheri	bheriti	
3N	bhernu	bhertenu	

Table 32: Intransitive verb *ʔel* ‘overflow’

	non-past	past
3S	ʔel	ʔêlɛ

Table 33: Transitive verb *khlep* ‘peel’

	non-past	past	imperative
1S>3S	khlebu	khlebutʌ	
1S>3D	khlebusu	khlebutʌsu	
1S>3P	khlebunu	khlebutʌnu	
1DI>3	khlepi	khlepiti	
1DE>3	khlepu	khleputu	
1PI>3	khlepki	khleptiki	
1PE>3	khlepka	khleptʌka	
2S>3S	ʔikhlē:bɘ	ʔikhlē:ptɛ	khlē:be
2S>3D	ʔikhlē:psu	ʔikhlē:ptesu	
2S>3P	ʔikhlē:pnu	ʔikhlē:ptenu	
2D>3	ʔikhlepi	ʔikhlepiti	khlepije
2N>3	ʔikhlē:mni	ʔikhleptenu	khlepnuje
3S>3S	khlē:bɘ	khlē:ptɛ	
3>3(D)	khlē:psu	khlē:ptesu	
3>3(P)	khlē:pnu	khlē:ptenu	

Table 34: Transitive verb *set* ‘kill’

	non-past	past	imperative
1S>3S	sedu	sê:tʌ	
1S>3D	sedusu	sê:tʌsu	
1S>3P	sedunu	sê:tʌnu	
1DI>3	setsi	sesti	
1DE>3	setsu	sestu	
1PI>3	seçki	seçtiki	
1PE>3	seçkʌ	seçtʌkʌ	
2S>3S	ʔisê:d̥	ʔisê:te	sê:de
2S>3D	ʔisê:tsu	ʔisê:tesu	
2S>3P	ʔisê:tnu	ʔisê:tenu	
2D>3	ʔisetsi	ʔisesti	setsije
2N>3	ʔisênni	ʔisestenu	sesnuje
3S>3S	sê:d̥	sê:te	
3>3(D)	sê:tsu	sê:tesu	
3>3(P)	sê:tnu	sê:tenu	
2/3S>1S	ʔisêjʌ	ʔisestʌ	setsʌje
2/3D>1S	ʔisêjʌsu	ʔisestʌsu	setsʌsujе
2/3P>1S	ʔisêjʌnu	ʔisestʌnu	setsʌnuje
2/3>1DI	ʔisetsi	ʔisesti	
2/3>1DE	ʔisetsu	ʔisestu	setsuje
2/3>1PI	ʔiseçki	ʔiseçtiki	
2/3>1PE	ʔiseçkʌ	ʔiseçtʌkʌ	seçkʌje
3,1D/PE>2S	ʔisêj	ʔiseste	
3,1D/PE>2D	ʔisetsi	ʔisesti	
3,1D/PE>2P	ʔisênni	ʔisestenu	
1S>2S	sênne	sênteni	
1S>2D	sênsu	sêntensu	
1S>2P	sênnu	sêntennu	

Table 35: Transitive verb *dhek* ‘wipe’

	non-past	past	imperative
1S>3S	dhegu	dhegutʌ	
1S>3D	dhegusu	dhegutʌsu	
1S>3P	dhegunu	dhegutʌnu	
1DI>3	dheki	dhekiti	
1DE>3	dheku	dhekutu	
1PI>3	dhekki	dhektiki	
1PE>3	dhekkʌ	dhektʌkʌ	
2S>3S	ʔidhê:g̥	ʔidhê:k̥te	dhê:ge
2S>3D	ʔidhê:ksu	ʔidhê:k̥tesu	
2S>3P	ʔidhê:knu	ʔidhê:k̥tenu	
2D>3	ʔidheki	ʔidhekiti	dhekije
2N>3	ʔidhê:ni	ʔidhektenu	dheknuje
3S>3S	dhê:g̥	dhê:k̥te	
3>3(D)	dhê:ksu	dhê:k̥tesu	
3>3(P)	dhê:knu	dhê:k̥tenu	

Table 36: Transitive verb *phlem* ‘tread’

	non-past	past	imperative
1S>3S	phlemu	phlemuta	
1S>3D	phlemusu	phlemutasu	
1S>3P	phlemunu	phlemutanu	
1DI>3	phlemi	phlemiti	
1DE>3	phlemu	phlemutu	
1PI>3	phlemki	phlemtiki	
1PE>3	phlemka	phlemtaka	
2S>3S	ʔiphlē:mæ	ʔiphlēmte	phlē:me
2S>3D	ʔiphlēmsu	ʔiphlēmtesu	
2S>3P	ʔiphlēmnu	ʔiphlēmtenu	
2D>3	ʔiphlemi	ʔiphlemiti	phlemije
2N>3	ʔiphlemni	ʔiphlemtenu	phlemnuje
3S>3S	phlē:mæ	phlēmte	
3>3(D)	phlēmsu	phlēmtesu	
3>3(P)	phlēmnu	phlēmtenu	
2/3S>1S	ʔiphlemηA	ʔiphlemATA	phlemAje
2/3D>1S	ʔiphlemηASU	ʔiphlemATASU	phlemASuje
2/3P>1S	ʔiphlemηANU	ʔiphlemATANU	phlemANuje
2/3>1DI	ʔiphlemi	ʔiphlemiti	
2/3>1DE	ʔiphlemu	ʔiphlemutu	phlemuje
2/3>1PI	ʔiphlemki	ʔiphlemtiki	
2/3>1PE	ʔiphlemka	ʔiphlemtaka	phlemkaje
3,1D/PE>2S	ʔiphlem	ʔiphlēmte	
3,1D/PE>2D	ʔiphlemi	ʔiphlemiti	
3,1D/PE>2P	ʔiphlemni	ʔiphlemtenu	
1S>2S	phlemne	phlemteni	
1S>2D	phlēmsu	phlemtensu	
1S>2P	phlēmnu	phlemtenu	

Table 37: Transitive verb *ghle* ‘worship’

	non-past	past	imperative
1S	ghleηA	ghlēηta	
1DI	ghleji	ghlēiti	
1DE	ghleju	ghlēitu	
1PI	ghleki	ghlektiki	
1PE	ghleka	ghlektaka	
2S	ʔighle	ʔighlete	ghleje
2D	ʔighleji	ʔighlēiti	ghlēije
2N	ʔighleni	ʔighletnu	ghlênje
3S	ghle	ghlete	
3D	ghlesu	ghletsu	
3N	ghlenu	ghletnu	

Table 38: Transitive verb *tshey* ‘hate’

	non-past	past	imperative
1S>3S	tsheru	tsheruta	
1S>3D	tsherusu	tsherutasu	
1S>3P	tsherunu	tsherutanu	
1DI>3	tsherji	tsherjiti	
1DE>3	tsheru	tsherutu	
1PI>3	tsherki	tshertiki	
1PE>3	tsherka	tshertaka	
2S>3S	ʔitshē:ηæ	ʔitshēηte	tshē:ηe
2S>3D	ʔitshēηsu	ʔitshēηtesu	
2S>3P	ʔitshēηnu	ʔitshēηtenu	
2D>3	ʔitsherji	ʔitsherjiti	tsherjije
2N>3	ʔitshē:ni	ʔitsherjenu	tsherjnuje
3S>3S	tshē:ηæ	tshēηte	
3>3(D)	tshēηsu	tshēηtesu	
3>3(P)	tshēηnu	tshēηtenu	
2/3S>1S	ʔitshē:ηA	ʔitsherjATA	tsherjAje
2/3D>1S	ʔitshē:ηASU	ʔitsherjATASU	tsherjASuje
2/3P>1S	ʔitshē:ηANU	ʔitsherjATANU	tsherjANuje
2/3>1DI	ʔitsherji	ʔitsherjiti	
2/3>1DE	ʔitsheru	ʔitsherjutu	tsherjuje
2/3>1PI	ʔitsherki	ʔitshertiki	
2/3>1PE	ʔitsherka	ʔitshertaka	tsherkaje
3,1D/PE>2S	ʔitsherj	ʔitshēηte	
3,1D/PE>2D	ʔitsherji	ʔitsherjiti	
3,1D/PE>2P	ʔitshē:ni	ʔitsherjenu	
1S>2S	tshē:ne	tshenteni	
1S>2D	tshēnsu	tshentensu	
1S>2P	tshēnnu	tshentenu	

Table 39: Transitive verb *ner* ‘finish’

	non-past	past	imperative
1S>3S	neru	nerutA	
1S>3D	nerusu	nerutAsu	
1S>3P	nerunu	nerutAnu	
1DI>3	neri	neriti	
1DE>3	neru	nerutu	
1PI>3	nerki	nertiki	
1PE>3	nerkA	nertAkA	
2S>3S	ʔinē:ɾɛ	ʔinēɾte	nē:re
2S>3D	ʔinērsu	ʔinēɾtesu	
2S>3P	ʔinēɾnu	ʔinēɾtenu	
2D>3	ʔineri	ʔineriti	nerije
2N>3	ʔinerni	ʔinertenu	nernuje
3S>3S	nē:ɾɛ	nēɾte	
3>3(D)	nērsu	nēɾtesu	
3>3(P)	nēɾnu	nēɾtenu	
2/3S>1S	ʔinerŋA	ʔinerAɾA	nerAje
2/3D>1S	ʔinerŋAsu	ʔinerAɾAsu	nerAsuje
2/3P>1S	ʔinerŋAnu	ʔinerAɾAnu	nerAnuje
2/3>1DI	ʔineri	ʔineriti	
2/3>1DE	ʔineru	ʔinerutu	neruje
2/3>1PI	ʔinerki	ʔinertiki	
2/3>1PE	ʔinerkA	ʔinertAkA	nerkAje
3,1D/PE>2S	ʔiner	ʔinēɾte	
3,1D/PE>2D	ʔineri	ʔineriti	
3,1D/PE>2P	ʔinerni	ʔinertenu	
1S>2S	nerne	nerteni	
1S>2D	nērsu	nertensu	
1S>2P	nēɾnu	nertennu	

Table 40: Transitive verb *thel* ‘take off’

	non-past	past	imperative
1S>3S	thelu	thelutA	
1S>3D	thelusu	thelutAsu	
1S>3P	thelunu	thelutAnu	
1DI>3	theli	theliti	
1DE>3	thelu	thelutu	
1PI>3	thelki	theltiki	
1PE>3	thelkA	theltAkA	
2S>3S	ʔithē:lɛ	ʔithēlte	thē:le
2S>3D	ʔithēlsu	ʔithēltesu	
2S>3P	ʔithēlnu	ʔithēltenu	
2D>3	ʔitheli	ʔitheliti	thelije
2N>3	ʔithelni	ʔitheltenu	thelnuje
3S>3S	thē:lɛ	thēlte	
3>3(D)	thēlsu	thēltesu	
3>3(P)	thēlnu	thēltenu	

Table 41: Transitive verb *kept* ‘climb; sting’

	non-past	past	imperative
1S>3S	keptu	kepta	
1S>3D	keptusu	keptasu	
1S>3P	keptunu	keptanu	
1DI>3	kepi	kepiti	
1DE>3	kepu	keputu	
1PI>3	kepki	keptiki	
1PE>3	kepka	keptaka	
2S>3S	ʔikeptə	ʔikepte	kepte
2S>3D	ʔikepsu	ʔikeptesu	
2S>3P	ʔikepnu	ʔikeptenu	
2D>3	ʔikepi	ʔikepiti	kepije
2N>3	ʔikəmni	ʔikeptenu	kepnuje
3S>3S	keptə	kepte	
3>3(D)	kepsu	keptesu	
3>3(P)	kepnu	keptenu	
2/3S>1S	ʔikəmɲa	ʔikepata	kepaje
2/3D>1S	ʔikəmɲasu	ʔikepatasu	kepasuje
2/3P>1S	ʔikəmɲanu	ʔikepatanu	kepanuje
2/3>1DI	ʔikepi	ʔikepiti	
2/3>1DE	ʔikepu	ʔikeputu	kepuje
2/3>1PI	ʔikepki	ʔikeptiki	
2/3>1PE	ʔikepka	ʔikeptaka	kepkaje
3,1D/PE>2S	ʔiké:p	ʔikepte	
3,1D/PE>2D	ʔikepi	ʔikepiti	
3,1D/PE>2P	ʔikəmni	ʔikeptenu	
1S>2S	kəmne	kəmteni	
1S>2D	kəmsu	kəmtensu	
1S>2P	kəmnu	kəmtenu	

Table 42: Transitive verb *rett* ‘laugh at’

	non-past	past	imperative
1S>3S	rettu	retta	
1S>3D	rettusu	rettasu	
1S>3P	rettunu	rettanu	
1DI>3	retsi	resti	
1DE>3	retsu	restu	
1PI>3	reçki	reçtiki	
1PE>3	reçka	reçtaka	
2S>3S	ʔirettə	ʔirette	rette
2S>3D	ʔiretsu	ʔirettesu	
2S>3P	ʔiretnu	ʔirettenu	
2D>3	ʔiretsi	ʔiresti	retsije
2N>3	ʔirənni	ʔirestenu	resnuje
3S>3S	rettə	rette	
3>3(D)	retsu	rettesu	
3>3(P)	retnu	rettenu	
2/3S>1S	ʔirəjɲa	ʔiresta	retsaje
2/3D>1S	ʔirəjɲasu	ʔirestasu	retsasuje
2/3P>1S	ʔirəjɲanu	ʔirestanu	retsənuje
2/3>1DI	ʔiretsi	ʔiresti	
2/3>1DE	ʔiretsu	ʔirestu	retsuje
2/3>1PI	ʔireçki	ʔireçtiki	
2/3>1PE	ʔireçka	ʔireçtaka	reçkaje
3,1D/PE>2S	ʔirəj	ʔireste	
3,1D/PE>2D	ʔiretsi	ʔiresti	
3,1D/PE>2P	ʔirənni	ʔirestenu	
1S>2S	rənne	rənteni	
1S>2D	rənsu	rəntensu	
1S>2P	rənnu	rəntenu	

Table 43: Transitive verb *rekt* 'write'

	non-past	past	imperative
1S>3S	rektu	rektΛ	
1S>3D	rektusu	rektΛsu	
1S>3P	rektunu	rektΛnu	
1DI>3	reki	rekiti	
1DE>3	reku	rekutu	
1PI>3	rekki	rektiki	
1PE>3	rekka	rektaKa	
2S>3S	ʔirektΛ	ʔirekte	rekte
2S>3D	ʔireksu	ʔirektesu	
2S>3P	ʔireknu	ʔirektenu	
2D>3	ʔireki	ʔirekiti	rekije
2N>3	ʔirê:ni	ʔirektenu	reknuje
3S>3S	rektΛ	rekte	
3>3(D)	reksu	reksesu	
3>3(P)	reknu	rektenu	
2/3S>1S	ʔirê:ŋΛ	ʔirekΛta	rekΛje
2/3D>1S	ʔirê:ŋΛsu	ʔirekΛtasu	rekΛsujje
2/3P>1S	ʔirê:ŋΛnu	ʔirekΛtanu	rekΛnujje
2/3>1DI	ʔireki	ʔirekiti	
2/3>1DE	ʔireku	ʔirekutu	rekuje
2/3>1PI	ʔirekki	ʔirektiki	
2/3>1PE	ʔirekka	ʔirektaKa	rekkaʔje
3,1D/PE>2S	ʔirê:	ʔirekte	
3,1D/PE>2D	ʔireki	ʔirekiti	
3,1D/PE>2P	ʔirê:ni	ʔirektenu	
1S>2S	rê:ne	rênteni	
1S>2D	rênsu	rêntensu	
1S>2P	rênnu	rêntennu	

Table 44: Transitive verb *lemt* 'coax'

	non-past	past	imperative
1S>3S	lemdu	lêmtΛ	
1S>3D	lemdusu	lêmtΛsu	
1S>3P	lemdunu	lêmtΛnu	
1DI>3	lemi	lemiti	
1DE>3	lemu	lemutu	
1PI>3	lemki	lemtiki	
1PE>3	lemka	lemtaKa	
2S>3S	ʔilemdΛ	ʔilêmtē	lemde
2S>3D	ʔilêmsu	ʔilêmtēsu	
2S>3P	ʔilêmnu	ʔilêmtēnu	
2D>3	ʔilemi	ʔilemiti	lemije
2N>3	ʔilemni	ʔilemtēnu	lemnujje
3S>3S	lemdΛ	lêmtē	
3>3(D)	lêmsu	lêmtēsu	
3>3(P)	lêmnu	lêmtēnu	
2/3S>1S	ʔilemŋΛ	ʔilemata	lemΛje
2/3D>1S	ʔilemŋΛsu	ʔilematasu	lemΛsujje
2/3P>1S	ʔilemŋΛnu	ʔilematanu	lemΛnujje
2/3>1DI	ʔilemi	ʔilemiti	
2/3>1DE	ʔilemu	ʔilemutu	lemujje
2/3>1PI	ʔilemki	ʔilemtiki	
2/3>1PE	ʔilemka	ʔilemtaKa	lemkaʔje
3,1D/PE>2S	ʔilem	ʔilêmtē	
3,1D/PE>2D	ʔilemi	ʔilemiti	
3,1D/PE>2P	ʔilemni	ʔilemtēnu	
1S>2S	lemne	lemteni	
1S>2D	lêmsu	lemtensu	
1S>2P	lêmnu	lemtēnnu	

Table 45: Transitive verb *tshent* ‘recognize’

	non-past	past	imperative
1S>3S	tshendu	tshêntA	
1S>3D	tshendusû	tshêntAsu	
1S>3P	tshendunu	tshêntAnu	
1DI>3	tshê:tsi	tshê:sti	
1DE>3	tshê:tsu	tshê:stu	
1PI>3	tshejki	tshejtiki	
1PE>3	tshejka	tshejtaka	
2S>3S	ʔitshendæ	ʔitshênte	tshende
2S>3D	ʔitshênsu	ʔitshêntesu	
2S>3P	ʔitshênnu	ʔitshêntenu	
2D>3	ʔitshê:tsi	ʔitshê:sti	tshê:tsije
2N>3	ʔitshejni	ʔitshê:stenu	tshê:snuje
3S>3S	tshendæ	tshênte	
3>3(D)	tshênsu	tshêntesu	
3>3(P)	tshênnu	tshêntenu	
2/3S>1S	ʔitshejŋA	ʔitshê:stA	tshê:tsaje
2/3D>1S	ʔitshejŋAsu	ʔitshê:stAsu	tshê:tsasuje
2/3P>1S	ʔitshejŋAnu	ʔitshê:stAnu	tshê:tsanuje
2/3>1DI	ʔitshê:tsi	ʔitshê:sti	
2/3>1DE	ʔitshê:tsu	ʔitshê:stu	tshê:tsuje
2/3>1PI	ʔitshejki	ʔitshejtiki	
2/3>1PE	ʔitshejka	ʔitshejtaka	tshejkaje
3,1D/PE>2S	ʔitshej	ʔitshê:ste	
3,1D/PE>2D	ʔitshê:tsi	ʔitshê:sti	
3,1D/PE>2P	ʔitshejni	ʔitshê:stenu	
1S>2S	tshejne	tshejteni	
1S>2D	tshêjsu	tshejtensu	
1S>2P	tshêjnu	tshejtennu	

Table 46: Transitive verb *rejt* ‘cause trouble’

	non-past	past	imperative
1S>3S	rendu	rêntA	
1S>3D	rendusu	rêntAsu	
1S>3P	rendunu	rêntAnu	
1DI>3	reŋi	reŋiti	
1DE>3	reŋu	reŋutu	
1PI>3	reŋki	reŋtiki	
1PE>3	reŋka	reŋtaka	
2S>3S	ʔirendæ	ʔirênte	rende
2S>3D	ʔirênsu	ʔirêntesu	
2S>3P	ʔirênnu	ʔirêntenu	
2D>3	ʔireŋi	ʔireŋiti	reŋije
2N>3	ʔirê:ni	ʔireŋtenu	reŋnuje
3S>3S	rendæ	rênte	
3>3(D)	rênsu	rêntesu	
3>3(P)	rênnu	rêntenu	
2/3S>1S	ʔirê:ŋA	ʔireŋatA	reŋaje
2/3D>1S	ʔirê:ŋAsu	ʔireŋatAsu	reŋasuje
2/3P>1S	ʔirê:ŋAnu	ʔireŋatAnu	reŋanuje
2/3>1DI	ʔireŋi	ʔireŋiti	
2/3>1DE	ʔireŋu	ʔireŋutu	reŋuje
2/3>1PI	ʔireŋki	ʔireŋtiki	
2/3>1PE	ʔireŋka	ʔireŋtaka	reŋkaje
3,1D/PE>2S	ʔireŋ	ʔirênte	
3,1D/PE>2D	ʔireŋi	ʔireŋiti	
3,1D/PE>2P	ʔirê:ni	ʔireŋtenu	
1S>2S	rê:ne	renteni	
1S>2D	rênsu	rentensu	
1S>2P	rênnu	rentenu	

Table 47: Transitive verb *dherɬ* ‘suit’

	non-past	past	imperative
1S>3S	dherdu	dhêrtA	
1S>3D	dherdusu	dhêrtASU	
1S>3P	dherdunu	dhêrtANU	
1DI>3	dheri	dheriti	
1DE>3	dheru	dherutu	
1PI>3	dherki	dhertiki	
1PE>3	dherka	dhertAKA	
2S>3S	ʔidherdɬ	ʔidhêrte	dherde
2S>3D	ʔidhêrsu	ʔidhêrtesu	
2S>3P	ʔidhêrnu	ʔidhêrtenu	
2D>3	ʔidheri	ʔidheriti	dherije
2N>3	ʔidherni	ʔidhertenu	dhernuje
3S>3S	dherdɬ	dhêrte	
3>3(D)	dhêrsu	dhêrtesu	
3>3(P)	dhêrnu	dhêrtenu	
2/3S>1S	ʔidherŋA	ʔidherATA	dherAje
2/3D>1S	ʔidherŋASU	ʔidherATASU	dherASuje
2/3P>1S	ʔidherŋANU	ʔidherATANU	dherANuje
2/3>1DI	ʔidheri	ʔidheriti	
2/3>1DE	ʔidheru	ʔidherutu	dheruje
2/3>1PI	ʔidherki	ʔidhertiki	
2/3>1PE	ʔidherka	ʔidhertAKA	dherkAje
3,1D/PE>2S	ʔidher	ʔidhêrte	
3,1D/PE>2D	ʔidheri	ʔidheriti	
3,1D/PE>2P	ʔidherni	ʔidhertenu	
1S>2S	dherne	dherteni	
1S>2D	dhêrsu	dhertensu	
1S>2P	dhêrnu	dhertenu	

Table 48: Detransitive verb *tshelt* ‘be clear’

	non-past	past
3S	tsheldɬ	tshêlte

Table 49: Intransitive verb *pi* ‘come (level)’

	non-past	past	imperative
1S	piŋA	piŋATA	
1DI	piji	pîiti	
1DE	piju	piŋtu	
1PI	piki	piktiki	
1PE	pika	piktAKA	
2S	ʔipi	ʔipû:te	pû:je
2D	ʔipiji	ʔipîiti	pîije
2N	ʔipini	ʔiputnu	pûnje
3S	pi	pû:te	
3D	piji	pîiti	
3N	pinu	putnu	

Table 50: Intransitive verb *dzhip*

‘get spoiled (pumpkin)’

	non-past	past
3S	dzhap	dzhipte

Table 51: Intransitive verb *dzhit* ‘get wet’

	non-past	past	imperative
1S	dzhâjŋA	dzhista	
1DI	dzhitsi	dzhisti	
1DE	dzhitsu	dzhistu	
1PI	dzhAçki	dzhAçtiki	
1PE	dzhAçka	dzhAçtAKA	
2S	ʔidzhâj	ʔidzhiste	dzhitstse
2D	ʔidzhitsi	ʔidzhisti	dzhitsije
2N	ʔidzhânni	ʔidzhistenu	dzhisnuje
3S	dzhâj	dzhiste	
3D	dzhitsi	dzhisti	
3N	dzhânnu	dzhistenu	

Table 52: Intransitive verb *ghik* ‘be entangled’

	non-past	past
3S	ghû:	ghikte

Table 53: Intransitive verb *lim* ‘sprout’

	non-past	past
3S	lam	lîmte

Table 54: Intransitive verb *gin* ‘be afraid’

	non-past	past	imperative
1S	ŋʌjŋʌ	ŋɛstʌ	
1DI	ŋɛtsi	ŋɛsti	
1DE	ŋɛtsu	ŋɛstu	
1PI	ŋʌjki	ŋʌjtiki	
1PE	ŋʌjka	ŋʌjtaka	
2S	ʔiŋʌj	ʔiŋɛste	ŋɛtse
2D	ʔiŋɛtsi	ʔiŋɛsti	ŋɛtsije
2N	ʔiŋʌjni	ʔiŋɛstenu	ŋɛsnuje
3S	ŋʌj	ŋɛste	
3D	ŋɛtsi	ŋɛsti	
3N	ŋʌjnu	ŋɛstenu	

Table 55: Intransitive verb *big* ‘look nice’

	non-past	past	imperative
1S	bū:ŋʌ	biŋʌtʌ	
1DI	biŋi	biŋiti	
1DE	biŋu	biŋutu	
1PI	bʌŋki	bʌŋtiki	
1PE	bʌŋka	bʌŋtaka	
2S	ʔibʌŋ	ʔibɛŋte	bɛŋje
2D	ʔibiŋi	ʔibiŋiti	biŋije
2N	ʔibū:ni	ʔibɛŋtenu	biŋnuje
3S	bʌŋ	bɛŋte	
3D	biŋi	biŋiti	
3N	bū:nu	biŋtenu	

Table 56: Transitive verb *bi* ‘give’

	non-past	past	imperative
1S	biŋʌ	bɛŋtʌ	
1DI	biji	bɛiti	
1DE	biju	bɛitu	
1PI	biki	biktiki	
1PE	bika	biktaka	
2S	ʔibi	ʔibite	bije
2D	ʔibiji	ʔibɛiti	bɛije
2N	ʔibini	ʔibutnu	bɛnuje
3S	bi	bite	
3D	bisu	bitsu	
3N	binu	bitnu	
2/3S>1S	ʔibiŋʌ	ʔibiŋʌtʌ	biŋʌje
2/3D>1S	ʔibiŋʌsu	ʔibiŋʌtasu	biŋʌsuje
2/3P>1S	ʔibiŋʌnu	ʔibiŋʌtanu	biŋʌnuje
2/3>1DI	ʔibiji	ʔibɛiti	
2/3>1DE	ʔibiju	ʔibɛitu	biije
2/3>1PI	ʔibiki	ʔibiktiki	
2/3>1PE	ʔibika	ʔibiktaka	bika je
3,1D/PE>2S	ʔibi	ʔibɛite	
3,1D/PE>2D	ʔibiji	ʔibɛiti	
3,1D/PE>2P	ʔibini	ʔibutnu	
1S>2S	bine	bɛnteni	
1S>2D	binsu	bɛntensu	
1S>2P	bɛnnu	bɛntennu	

Table 57: Transitive verb *kip* ‘cook’

	non-past	past	imperative
1S>3S	khibu	khibutʌ	
1S>3D	khibusu	khibutasu	
1S>3P	khibunu	khibutanu	
1DI>3	khipi	khipiti	
1DE>3	khipu	khiputu	
1PI>3	kʌpki	kʌptiki	
1PE>3	kʌpka	kʌptaka	
2S>3S	ʔikhɛ:bɛ	ʔikhɛ:pte	khɛ:be
2S>3D	ʔikhɛ:psu	ʔikhɛ:ptesu	
2S>3P	ʔikhɛ:pnu	ʔikhɛ:ptenu	
2D>3	ʔikhipi	ʔikhipiti	khipije
2N>3	ʔikhʌmni	ʔikhiptenu	khipnuje
3S>3S	khɛ:bɛ	khɛ:pte	
3>3(D)	khɛ:psu	khɛ:ptesu	
3>3(P)	khɛ:pnu	khɛ:ptenu	

Table 58: Transitive verb *sit* ‘give up; leave’

	non-past	past	imperative
1S>3S	sidu	sīta	
1S>3D	sidusu	sītasu	
1S>3P	sidunu	sītanu	
1DI>3	sitsi	sisti	
1DE>3	sitsu	sistu	
1PI>3	saçki	saçtiki	
1PE>3	saçka	saçtaka	
2S>3S	ʔisīdɛ	ʔisīte	sīde
2S>3D	ʔisītsu	ʔisītesu	
2S>3P	ʔisīftnu	ʔisīftenu	
2D>3	ʔisitsi	ʔisisti	sitsije
2N>3	ʔisānni	ʔisistenu	sisnuje
3S>3S	sīdɛ	sīte	
3>3(D)	sītsu	sītesu	
3>3(P)	sīftnu	sīftenu	
2/3S>1S	ʔisājɣa	ʔisista	sitsaje
2/3D>1S	ʔisājɣasu	ʔisistasu	sitsasuje
2/3P>1S	ʔisājɣanu	ʔisistanu	sitsanuje
2/3>1DI	ʔisitsi	ʔisisti	
2/3>1DE	ʔisitsu	ʔisistu	sitsuje
2/3>1PI	ʔisaçki	ʔisaçtiki	
2/3>1PE	ʔisaçka	ʔisaçtaka	saçkaje
3,1D/PE>2S	ʔisāj	ʔisiste	
3,1D/PE>2D	ʔisitsi	ʔisisti	
3,1D/PE>2P	ʔisānni	ʔisistenu	
1S>2S	sānne	sānteni	
1S>2D	sānsu	sāntensu	
1S>2P	sānnu	sāntennu	

Table 59: Transitive verb *kik* ‘tie’

	non-past	past	imperative
1S>3S	kigu	kigutɔ	
1S>3D	kigusu	kigutɔsu	
1S>3P	kigunu	kigutɔnu	
1DI>3	kiki	kikiti	
1DE>3	kiku	kikutu	
1PI>3	kakki	kaktiki	
1PE>3	kakka	kaktaka	
2S>3S	ʔikīgɛ	ʔikīkte	kīge
2S>3D	ʔikīksu	ʔikīktesu	
2S>3P	ʔikīknu	ʔikīktenu	
2D>3	ʔikiki	ʔikikiti	kikije
2N>3	ʔikūmi	ʔikiktenu	kiknuje
3S>3S	kīgɛ	kīkte	
3>3(D)	kīksu	kīktesu	
3>3(P)	kīknu	kīktenu	

Table 60: Transitive verb *tshim*
'push to the other side'

	non-past	past	imperative
1S>3S	tshimu	tshimutA	
1S>3D	tshimusu	tshimutAsu	
1S>3P	tshimunu	tshimutAnu	
1DI>3	tshimi	tshimiti	
1DE>3	tshimu	tshimutu	
1PI>3	tshamki	tshamtiki	
1PE>3	tshamka	tshamtakA	
2S>3S	ʔitshĩmɛ	ʔitshĩmte	tshĩme
2S>3D	ʔitshĩmsu	ʔitshĩmtesu	
2S>3P	ʔitshĩmnu	ʔitshĩmtenu	
2D>3	ʔitshimi	ʔitshimiti	tshimije
2N>3	ʔitshamni	ʔitshimtenu	tshimnuje
3S>3S	tshĩmɛ	tshĩmte	
3>3(D)	tshĩmsu	tshĩmtesu	
3>3(P)	tshĩmnu	tshĩmtenu	
2/3S>1S	ʔitshamɣA	ʔitshimata	tshimaje
2/3D>1S	ʔitshamɣAsu	ʔitshimatAsu	tshimasuje
2/3P>1S	ʔitshamɣAnu	ʔitshimatAnu	tshimanuje
2/3>1DI	ʔitshimi	ʔitshimiti	
2/3>1DE	ʔitshimu	ʔitshimutu	tshimuje
2/3>1PI	ʔitshamki	ʔitshamtiki	
2/3>1PE	ʔitshamka	ʔitshamtakA	tshamkaje
3,1D/PE>2S	ʔitsham	ʔitshĩmte	
3,1D/PE>2D	ʔitshimi	ʔitshimiti	
3,1D/PE>2P	ʔitshamni	ʔitshimtenu	
1S>2S	tshamne	tshamteni	
1S>2D	tshamsu	tshamtensu	
1S>2P	tshamn	tshamtenu	

Table 61: Transitive verb *siŋ* 'ask'

	non-past	past	imperative
1S>3S	siŋu	siŋutA	
1S>3D	siŋusu	siŋutAsu	
1S>3P	siŋunu	siŋutAnu	
1DI>3	siŋi	siŋiti	
1DE>3	siŋu	siŋutu	
1PI>3	sAŋki	sAŋtiki	
1PE>3	sAŋka	sAŋtakA	
2S>3S	ʔisĩŋɛ	ʔisĩŋte	sĩŋe
2S>3D	ʔisĩŋsu	ʔisĩŋtesu	
2S>3P	ʔisĩŋnu	ʔisĩŋtenu	
2D>3	ʔisĩŋi	ʔisĩŋiti	siŋije
2N>3	ʔisũ:ni	ʔisĩŋtenu	siŋnuje
3S>3S	sĩŋɛ	sĩŋte	
3>3(D)	sĩŋsu	sĩŋtesu	
3>3(P)	sĩŋnu	sĩŋtenu	
2/3S>1S	ʔisũ:ŋA	ʔisĩŋata	siŋaje
2/3D>1S	ʔisũ:ŋAsu	ʔisĩŋatAsu	siŋasuje
2/3P>1S	ʔisũ:ŋAnu	ʔisĩŋatAnu	siŋanuje
2/3>1DI	ʔisĩŋi	ʔisĩŋiti	
2/3>1DE	ʔisĩŋu	ʔisĩŋutu	siŋuje
2/3>1PI	ʔisAŋki	ʔisAŋtiki	
2/3>1PE	ʔisAŋka	ʔisAŋtakA	sAŋkaje
3,1D/PE>2S	ʔisAŋ	ʔisĩŋte	
3,1D/PE>2D	ʔisĩŋi	ʔisĩŋiti	
3,1D/PE>2P	ʔisũ:ni	ʔisĩŋtenu	
1S>2S	sũ:ne	sAnteni	
1S>2D	sAŋsu	sAntensu	
1S>2P	sAŋnu	sAntenu	

Table 62: Transitive verb *tsir* ‘pile up bricks’

	non-past	past	imperative
1S>3S	tsiru	tsirutA	
1S>3D	tsirusu	tsirutAsu	
1S>3P	tsirunu	tsirutAnu	
1DI>3	tsiri	tsiriti	
1DE>3	tsiru	tsirutu	
1PI>3	tsarki	tsartiki	
1PE>3	tsarka	tsartaka	
2S>3S	ʔitsir̩	ʔitsir̩te	tsir̩re
2S>3D	ʔitsirsu	ʔitsir̩tesu	
2S>3P	ʔitsir̩nu	ʔitsir̩tenu	
2D>3	ʔitsiri	ʔitsiriti	tsirije
2N>3	ʔitsarni	ʔitsirtenu	tsirnuje
3S>3S	tsir̩	tsir̩te	
3>3(D)	tsirsu	tsir̩tesu	
3>3(P)	tsir̩nu	tsir̩tenu	

Table 63: Transitive verb *fil* ‘knead’

	non-past	past	imperative
1S>3S	filu	filutA	
1S>3D	filusu	filutAsu	
1S>3P	filunu	filutAnu	
1DI>3	fili	filiti	
1DE>3	filu	filutu	
1PI>3	filki	fil̩tiki	
1PE>3	filka	fil̩taka	
2S>3S	ʔifil̩	ʔifil̩te	fil̩le
2S>3D	ʔifil̩su	ʔifil̩tesu	
2S>3P	ʔifil̩nu	ʔifil̩tenu	
2D>3	ʔifili	ʔifiliti	filije
2N>3	ʔifil̩ni	ʔifil̩tenu	filnuje
3S>3S	fil̩	fil̩te	
3>3(D)	fil̩su	fil̩tesu	
3>3(P)	fil̩nu	fil̩tenu	

Table 64: Transitive verb *ʔipt* ‘put to sleep’

	non-past	past	imperative
1S>3S	ʔAptu	ʔAptA	
1S>3D	ʔAptusu	ʔAptAsu	
1S>3P	ʔAptunu	ʔAptAnu	
1DI>3	ʔipi	ʔipiti	
1DE>3	ʔipu	ʔiputu	
1PI>3	ʔApki	ʔAptiki	
1PE>3	ʔApka	ʔAptaka	
2S>3S	ʔiʔApt̩	ʔiʔApte	ʔApte
2S>3D	ʔiʔApsu	ʔiʔAptesu	
2S>3P	ʔiʔApnu	ʔiʔAptenu	
2D>3	ʔiʔipi	ʔiʔipiti	ʔipije
2N>3	ʔiʔAmni	ʔiʔiptenu	ʔipnuje
3S>3S	ʔApt̩	ʔApte	
3>3(D)	ʔApsu	ʔAptesu	
3>3(P)	ʔApnu	ʔAptenu	
2/3S>1S	ʔiʔAm̩A	ʔiʔip̩tA	ʔip̩aje
2/3D>1S	ʔiʔAm̩Asu	ʔiʔip̩tAsu	ʔip̩asuje
2/3P>1S	ʔiʔAm̩Anu	ʔiʔip̩tAnu	ʔip̩anuje
2/3>1DI	ʔiʔipi	ʔiʔipiti	
2/3>1DE	ʔiʔipu	ʔiʔiputu	ʔipuje
2/3>1PI	ʔiʔApki	ʔiʔAptiki	
2/3>1PE	ʔiʔApka	ʔiʔAptaka	ʔApkaje
3,1D/PE>2S	ʔiʔAp	ʔiʔipte	
3,1D/PE>2D	ʔiʔipi	ʔiʔipiti	
3,1D/PE>2P	ʔiʔAmni	ʔiʔiptenu	
1S>2S	ʔAmne	ʔAmteni	
1S>2D	ʔAm̩su	ʔAm̩tensu	
1S>2P	ʔAm̩nu	ʔAm̩tenu	

Table 65: Transitive verb *sitt* ‘heal (shaman)’

	non-past	past	imperative
1S>3S	sattu	satta	
1S>3D	sattusu	sattasu	
1S>3P	sattunu	sattanu	
1DI>3	sitsi	sisti	
1DE>3	sitsu	sistu	
1PI>3	saçki	saçtiki	
1PE>3	saçka	saçtaka	
2S>3S	ʔisattə	ʔisatte	satte
2S>3D	ʔisatsu	ʔisattesu	
2S>3P	ʔisatnu	ʔisattenu	
2D>3	ʔisitsi	ʔisisti	sitsije
2N>3	ʔisanni	ʔisistenu	sisnuje
3S>3S	sattə	satte	
3>3(D)	satsu	sattesu	
3>3(P)	satnu	sattenu	
2/3S>1S	ʔisλjɣa	ʔisista	sitsaje
2/3D>1S	ʔisλjɣasu	ʔisistasu	sitsasuje
2/3P>1S	ʔisλjɣanu	ʔisistanu	sitsanuje
2/3>1DI	ʔisitsi	ʔisisti	
2/3>1DE	ʔisitsu	ʔisistu	sitsuje
2/3>1PI	ʔisaçki	ʔisaçtiki	
2/3>1PE	ʔisaçka	ʔisaçtaka	saçkaje
3,1D/PE>2S	ʔisλj	ʔisiste	
3,1D/PE>2D	ʔisitsi	ʔisisti	
3,1D/PE>2P	ʔisanni	ʔisistenu	
1S>2S	sanne	santeni	
1S>2D	sansu	santensu	
1S>2P	sannu	santennu	

Table 66: Transitive verb *ghrikt* ‘hold’

	non-past	past	imperative
1S>3S	ghraktu	ghrakta	
1S>3D	ghraktusu	ghraktasu	
1S>3P	ghraktunu	ghraktanu	
1DI>3	ghriki	ghrikiti	
1DE>3	ghriku	ghrikutu	
1PI>3	ghrakki	ghraktiki	
1PE>3	ghrakka	ghraktaka	
2S>3S	ʔighraktə	ʔighrakte	ghrakte
2S>3D	ʔighraksu	ʔighraktesu	
2S>3P	ʔighraknu	ʔighraktenu	
2D>3	ʔighriki	ʔighrikiti	ghrikije
2N>3	ʔighrû:mi	ʔighriktenu	ghriknuje
3S>3S	ghraktə	ghrakte	
3>3(D)	ghraksu	ghraktesu	
3>3(P)	ghraknu	ghraktenu	
2/3S>1S	ʔighrû:ɣa	ʔighrikata	ghrikaje
2/3D>1S	ʔighrû:ɣasu	ʔighrikatasu	ghrikasuje
2/3P>1S	ʔighrû:ɣanu	ʔighrikatanu	ghrikanuje
2/3>1DI	ʔighriki	ʔighrikiti	
2/3>1DE	ʔighriku	ʔighrikutu	ghrikuje
2/3>1PI	ʔighrakki	ʔighraktiki	
2/3>1PE	ʔighrakka	ʔighraktaka	ghrakkaje
3,1D/PE>2S	ʔighrû:	ʔighrikte	
3,1D/PE>2D	ʔighriki	ʔighrikiti	
3,1D/PE>2P	ʔighrû:mi	ʔighriktenu	
1S>2S	ghrû:me	ghranteni	
1S>2D	ghransu	ghrantensu	
1S>2P	ghrannu	ghrantennu	

Table 67: Transitive verb *mimt* ‘think’

	non-past	past	imperative
1S>3S	mamdū	mām̄ta	
1S>3D	mamdusu	mām̄tasu	
1S>3P	mamdunu	mām̄tanu	
1DI>3	mimi	mim̄iti	
1DE>3	mimu	mim̄utu	
1PI>3	mamki	mam̄tiki	
1PE>3	mamka	mam̄taka	
2S>3S	ʔimamd̄æ	ʔimām̄te	mam̄de
2S>3D	ʔimāmsu	ʔimām̄tesu	
2S>3P	ʔimām̄nu	ʔimām̄tenu	
2D>3	ʔimimi	ʔimim̄iti	mim̄ije
2N>3	ʔimam̄ni	ʔimim̄tenu	mim̄nuje
3S>3S	mamd̄æ	mām̄te	
3>3(D)	māmsu	mām̄tesu	
3>3(P)	mām̄nu	mām̄tenu	
2/3S>1S	ʔimam̄ŋa	ʔimim̄ata	mim̄aje
2/3D>1S	ʔimam̄ŋasu	ʔimim̄atasu	mim̄asuje
2/3P>1S	ʔimam̄ŋanu	ʔimim̄atanu	mim̄anuje
2/3>1DI	ʔimimi	ʔimim̄iti	
2/3>1DE	ʔimimu	ʔimim̄utu	mim̄uje
2/3>1PI	ʔimamki	ʔimam̄tiki	
2/3>1PE	ʔimamka	ʔimam̄taka	mam̄kaje
3,1D/PE>2S	ʔimam	ʔimim̄te	
3,1D/PE>2D	ʔimimi	ʔimim̄iti	
3,1D/PE>2P	ʔimam̄ni	ʔimim̄tenu	
1S>2S	mam̄ne	mam̄teni	
1S>2D	māmsu	mam̄tensu	
1S>2P	mām̄nu	mam̄tenu	

Table 68: Transitive verb *ŋint* ‘be afraid of’

	non-past	past	imperative
1S>3S	ŋandu	ŋānta	
1S>3D	ŋandusu	ŋāntasu	
1S>3P	ŋandunu	ŋāntanu	
1DI>3	ŋī:tsi	ŋī:sti	
1DE>3	ŋī:tsu	ŋī:stu	
1PI>3	ŋajki	ŋajtiki	
1PE>3	ŋajka	ŋajtaka	
2S>3S	ʔiŋand̄æ	ʔiŋānte	ŋande
2S>3D	ʔiŋānsu	ʔiŋāntesu	
2S>3P	ʔiŋānnu	ʔiŋāntenu	
2D>3	ʔiŋī:tsi	ʔiŋī:sti	ŋī:tsije
2N>3	ʔiŋajni	ʔiŋī:stenu	ŋī:snuje
3S>3S	ŋand̄æ	ŋānte	
3>3(D)	ŋānsu	ŋāntesu	
3>3(P)	ŋānnu	ŋāntenu	
2/3S>1S	ʔiŋajŋa	ʔiŋī:sta	ŋī:tsaje
2/3D>1S	ʔiŋajŋasu	ʔiŋī:stasu	ŋī:tsasuje
2/3P>1S	ʔiŋajŋanu	ʔiŋī:stanu	ŋī:tsanuje
2/3>1DI	ʔiŋī:tsi	ʔiŋī:sti	
2/3>1DE	ʔiŋī:tsu	ʔiŋī:stu	ŋī:tsuje
2/3>1PI	ʔiŋajki	ʔiŋajtiki	
2/3>1PE	ʔiŋajka	ʔiŋajtaka	ŋajkaje
3,1D/PE>2S	ʔiŋaj	ʔiŋī:ste	
3,1D/PE>2D	ʔiŋī:tsi	ʔiŋī:sti	
3,1D/PE>2P	ʔiŋajni	ʔiŋī:stenu	
1S>2S	ŋajne	ŋajteni	
1S>2D	ŋaj̄jsu	ŋaj̄jtensu	
1S>2P	ŋaj̄jnu	ŋaj̄jtenu	

Table 69: Transitive verb *tshilt*
'be dissatisfied with'

	non-past	past	imperative
1S>3S	tshald <u>u</u>	tshâlta	
1S>3D	tshald <u>usu</u>	tshâltasu	
1S>3P	tshald <u>unu</u>	tshâltanu	
1DI>3	tshili	tshiliti	
1DE>3	tshilu	tshilutu	
1PI>3	tshalki	tshaltiki	
1PE>3	tshalka	tshaltaka	
2S>3S	ʔitshald <u>æ</u>	ʔitshâlte	tshalde
2S>3D	ʔitshâl <u>su</u>	ʔitshâltesu	
2S>3P	ʔitshâl <u>nu</u>	ʔitshâltenu	
2D>3	ʔitshili	ʔitshiliti	tshilije
2N>3	ʔitshal <u>ni</u>	ʔitshiltenu	tshilnuje
3S>3S	tshald <u>æ</u>	tshâlte	
3>3(D)	tshâl <u>su</u>	tshâltesu	
3>3(P)	tshâl <u>nu</u>	tshâltenu	
2/3S>1S	ʔitshal <u>ŋa</u>	ʔitshilata	tshilaje
2/3D>1S	ʔitshal <u>ŋasu</u>	ʔitshilatasu	tshilasuje
2/3P>1S	ʔitshal <u>ŋanu</u>	ʔitshilatanu	tshilanuje
2/3>1DI	ʔitshili	ʔitshiliti	
2/3>1DE	ʔitshilu	ʔitshilutu	tshiluje
2/3>1PI	ʔitshalki	ʔitshaltiki	
2/3>1PE	ʔitshalka	ʔitshaltaka	tshalkaje
3,1D/PE>2S	ʔitshal	ʔitshilte	
3,1D/PE>2D	ʔitshili	ʔitshiliti	
3,1D/PE>2P	ʔitshal <u>ni</u>	ʔitshiltenu	
1S>2S	tshal <u>ne</u>	tshalteni	
1S>2D	tshâl <u>su</u>	tshaltensu	
1S>2P	tshâl <u>nu</u>	tshaltenu	

Table 70: Intransitive verb *ho* 'come'

	non-past	past	imperative
1S	høŋa	høŋata	
1DI	høji	høiti	
1DE	høju	høitu	
1PI	høki	høktiki	
1PE	høka	høktaka	
2S	ʔihø	ʔihøte	høje
2D	ʔihøji	ʔihøiti	høije
2N	ʔihøni	ʔihøtenu	hønje
3S	hø	høte	
3D	høji	høiti	
3N	hønu	høtenu	

Table 71: Intransitive verb *sop* 'be full'

	non-past	past	imperative
1S	soðmŋa	səpata	
1DI	səpi	səpiti	
1DE	səpu	səputu	
1PI	soəpki	soəptiki	
1PE	soəpka	soəptaka	
2S	ʔisoəp	ʔisəpte	səpje
2D	ʔisəpi	ʔisəpiti	səpije
2N	ʔisoðmni	ʔisəptenu	səpnuje
3S	soəp	səpte	
3D	səpi	səpiti	
3N	soðmnu	səptenu	

Table 72: Intransitive verb *jot* 'look like'

	non-past	past	imperative
1S	joðjŋa	jəsta	
1DI	jətsi	jəsti	
1DE	jətsu	jəstu	
1PI	joəçki	joəçtiki	
1PE	joəçka	joəçtaka	
2S	ʔijoðj	ʔijəste	jəstse
2D	ʔijətsi	ʔijəsti	jətsije
2N	ʔijoðnni	ʔijəstenu	jəstnuje
3S	joðj	jəste	
3D	jətsi	jəsti	
3N	joðnnu	jəstenu	

Table 73: Intransitive verb *ʔok* 'crow'

	non-past	past
3S	ʔø:	ʔøkte

Table 74: Intransitive verb *tshom* ‘dance’

	non-past	past	imperative
1S	tshoomŋa	tshemata	
1DI	tshemi	tshemiti	
1DE	tshemu	tshemutu	
1PI	tshoomki	tshoomtiki	
1PE	tshoomka	tshoomtaka	
2S	?itshoom	?itshemte	tshemje
2D	?itshemi	?itshemiti	tshemije
2N	?itshoomni	?itshemtenu	tshemnuje
3S	tshoom	tshemte	
3D	tshemi	tshemiti	
3N	tshoomnu	tshemtenu	

Table 77: Intransitive verb *bhor* ‘grow’

	non-past	past	imperative
1S	bhoorŋa	bherata	
1DI	bheri	bheriti	
1DE	bheru	bherutu	
1PI	bhoorki	bhoortiki	
1PE	bhoorka	bhoortaka	
2S	?ibhoor	?ibherite	bherje
2D	?ibheri	?ibheriti	bherije
2N	?ibhoorni	?ibhertenu	bhernuje
3S	bhoor	bherite	
3D	bheri	bheriti	
3N	bhoornu	bhertenu	

Table 75: Intransitive verb *tson* ‘jump’

	non-past	past	imperative
1S	tsoojŋa	tsō:sta	
1DI	tsō:tsi	tsō:sti	
1DE	tsō:tsu	tsō:stu	
1PI	tsoojki	tsoojtiki	
1PE	tsoojka	tsoojtaka	
2S	?itsooj	?itsō:ste	tsō:tse
2D	?itsō:tsi	?itsō:sti	tsō:tsije
2N	?itsoojni	?itsō:stenu	tsō:snuje
3S	tsooj	tsō:ste	
3D	tsō:tsi	tsō:sti	
3N	tsoojnu	tsō:stenu	

Table 78: Intransitive verb *ghol* ‘grow in width’

	non-past	past
3S	ghool	ghôlte

Table 79: Transitive verb *phlo* ‘help’

	non-past	past	imperative
1S	phlœŋa	phlœŋta	
1DI	phlœji	phlœiti	
1DE	phlœju	phlœitu	
1PI	phlœki	phlœktiki	
1PE	phlœka	phlœktaka	
2S	?iphlœ	?iphlœte	phlœje
2D	?iphlœji	?iphlœiti	phlœije
2N	?iphlœni	?iphlotnu	phlœnje
3S	phlœ	phlœte	
3D	phlœsu	phlœtsu	
3N	phlœnu	phlœtnu	
2/3S>1S	?iphlœŋa	?iphlœŋata	phlœŋaje
2/3D>1S	?iphlœŋasu	?iphlœŋatasu	phlœŋasuje
2/3P>1S	?iphlœŋanu	?iphlœŋatanu	phlœŋanuje
2/3>1DI	?iphlœji	?iphlœiti	
2/3>1DE	?iphlœju	?iphlœitu	phlœije
2/3>1PI	?iphlœki	?iphlœktiki	
2/3>1PE	?iphlœka	?iphlœktaka	phlœkaje
3,1D/PE>2S	?iphlœ	?iphlœ:te	
3,1D/PE>2D	?iphlœji	?iphlœiti	
3,1D/PE>2P	?iphlœni	?iphlotnu	
1S>2S	phlœne	phlœnteni	
1S>2D	phlœnsu	phlœntensu	
1S>2P	phlœnnu	phlœntenu	

Table 76: Intransitive verb *khoy* ‘come’

	non-past	past	imperative
1S	khō:ŋa	khœŋata	
1DI	khœŋi	khœŋiti	
1DE	khœŋu	khœŋutu	
1PI	khœŋki	khœŋtiki	
1PE	khœŋka	khœŋtaka	
2S	?ikhœŋ	?ikhœŋte	khœŋje
2D	?ikhœŋi	?ikhœŋiti	khœŋije
2N	?ikhō:ni	?ikhœŋtenu	khœŋnuje
3S	khœŋ	khœŋte	
3D	khœŋi	khœŋiti	
3N	khō:nu	khœŋtenu	

Table 80: Transitive verb *ʔop* ‘shoot’

	non-past	past	imperative
1S>3S	ʔobu	ʔobuta	
1S>3D	ʔobusu	ʔobutasu	
1S>3P	ʔobunu	ʔobutanu	
1DI>3	ʔəpi	ʔəpiti	
1DE>3	ʔəpu	ʔəputu	
1PI>3	ʔoʔpki	ʔoʔptiki	
1PE>3	ʔoʔpka	ʔoʔptaka	
2S>3S	ʔiʔə:bɸ	ʔiʔə:pte	ʔə:be
2S>3D	ʔiʔə:psu	ʔiʔə:ptesu	
2S>3P	ʔiʔə:pnu	ʔiʔə:ptenu	
2D>3	ʔiʔəpi	ʔiʔəpiti	ʔəpije
2N>3	ʔiʔoʔmni	ʔiʔəptenu	ʔəpnuje
3S>3S	ʔə:bɸ	ʔə:pte	
3>3(D)	ʔə:psu	ʔə:ptesu	
3>3(P)	ʔə:pnu	ʔə:ptenu	
2/3S>1S	ʔiʔoʔmɲa	ʔiʔəpaɬa	ʔəpaɬje
2/3D>1S	ʔiʔoʔmɲasu	ʔiʔəpaɬasu	ʔəpaɬuje
2/3P>1S	ʔiʔoʔmɲanu	ʔiʔəpaɬanu	ʔəpaɬuje
2/3>1DI	ʔiʔəpi	ʔiʔəpiti	
2/3>1DE	ʔiʔəpu	ʔiʔəputu	ʔəpuje
2/3>1PI	ʔiʔoʔpki	ʔiʔoʔptiki	
2/3>1PE	ʔiʔoʔpka	ʔiʔoʔptaka	ʔoʔpkaɬje
3,1D/PE>2S	ʔiʔoʔp	ʔiʔəpte	
3,1D/PE>2D	ʔiʔəpi	ʔiʔəpiti	
3,1D/PE>2P	ʔiʔoʔmni	ʔiʔəptenu	
1S>2S	ʔoʔmne	ʔoʔmteni	
1S>2D	ʔoʔmsu	ʔoʔmtensu	
1S>2P	ʔoʔmnu	ʔoʔmtenu	

Table 81: Transitive verb *rot* ‘hit a target’

	non-past	past	imperative
1S>3S	rodu	rô:ta	
1S>3D	rodusu	rô:tasu	
1S>3P	rodunu	rô:tanu	
1DI>3	rətsi	rəsti	
1DE>3	rətsu	rəstu	
1PI>3	roʔçki	roʔçtiki	
1PE>3	roʔçka	roʔçtaka	
2S>3S	ʔirə:dɸ	ʔirə:te	rə:de
2S>3D	ʔirə:tsu	ʔirə:tesu	
2S>3P	ʔirə:tnu	ʔirə:tenu	
2D>3	ʔirətsi	ʔirəsti	rətsije
2N>3	ʔiroʔmni	ʔirəstenu	rəsnuje
3S>3S	rə:dɸ	rə:te	
3>3(D)	rə:tsu	rə:tesu	
3>3(P)	rə:tnu	rə:tenu	
2/3S>1S	ʔiroʔɲa	ʔirəstɬa	rətsaje
2/3D>1S	ʔiroʔɲasu	ʔirəstɬasu	rətsasuje
2/3P>1S	ʔiroʔɲanu	ʔirəstɬanu	rətsanuje
2/3>1DI	ʔirətsi	ʔirəsti	
2/3>1DE	ʔirətsu	ʔirəstu	rətsuje
2/3>1PI	ʔiroʔçki	ʔiroʔçtiki	
2/3>1PE	ʔiroʔçka	ʔiroʔçtaka	roʔçkaɬje
3,1D/PE>2S	ʔiroʔj	ʔirəste	
3,1D/PE>2D	ʔirətsi	ʔirəsti	
3,1D/PE>2P	ʔiroʔmni	ʔirəstenu	
1S>2S	roʔnne	roʔnteni	
1S>2D	roʔnsu	roʔntensu	
1S>2P	roʔnnu	roʔntenu	

Table 82: Transitive verb *phrok* ‘untie’

	non-past	past	imperative
1S>3S	phrogu	phroguta	
1S>3D	phrogusu	phrogutasu	
1S>3P	phrogunu	phrogutanu	
1DI>3	phrøki	phrøkiti	
1DE>3	phrøku	phrøkutu	
1PI>3	phrokki	phroktiki	
1PE>3	phrokka	phroktaka	
2S>3S	ʔiphrø:ɡʌ	ʔiphrø:kte	phrø:ge
2S>3D	ʔiphrø:kusu	ʔiphrø:ktesu	
2S>3P	ʔiphrø:knu	ʔiphrø:ktenu	
2D>3	ʔiphrøki	ʔiphrøkiti	phrøkije
2N>3	ʔiphrø:ni	ʔiphrøktenu	phrøknuje
3S>3S	phrø:ɡʌ	phrø:kte	
3>3(D)	phrø:kusu	phrø:ktesu	
3>3(P)	phrø:knu	phrø:ktenu	
2/3S>1S	ʔiphrø:ŋʌ	ʔiphrø:kata	phrøkaje
2/3D>1S	ʔiphrø:ŋʌsu	ʔiphrø:katasu	phrøkasuje
2/3P>1S	ʔiphrø:ŋʌnu	ʔiphrø:katanu	phrøkanuje
2/3>1DI	ʔiphrøki	ʔiphrøkiti	
2/3>1DE	ʔiphrøku	ʔiphrøkutu	phrøkuje
2/3>1PI	ʔiphrokki	ʔiphroktiki	
2/3>1PE	ʔiphrokka	ʔiphroktaka	phrokkaje
3,1D/PE>2S	ʔiphrø:	ʔiphrøkte	
3,1D/PE>2D	ʔiphrøki	ʔiphrøkiti	
3,1D/PE>2P	ʔiphrø:ni	ʔiphrøktenu	
1S>2S	phrø:ne	phrønteni	
1S>2D	phrønsu	phrøntensu	
1S>2P	phrønnu	phrøntennu	

Table 83: Transitive verb *lom* ‘look for’

	non-past	past	imperative
1S>3S	lomu	lomuta	
1S>3D	lomusu	lomutasu	
1S>3P	lomunu	lomutanu	
1DI>3	ləmi	ləmiti	
1DE>3	ləmu	ləmutu	
1PI>3	loʌmki	loʌmtiki	
1PE>3	loʌmka	loʌmtaka	
2S>3S	ʔilø:mʌ	ʔilø:mtə	lø:me
2S>3D	ʔilø:msu	ʔilø:mtəsu	
2S>3P	ʔilø:mnu	ʔilø:mtənu	
2D>3	ʔilømi	ʔilømiti	ləmije
2N>3	ʔiløʌmni	ʔilø:mtənu	ləmnuje
3S>3S	lø:mʌ	lø:mtə	
3>3(D)	lø:msu	lø:mtəsu	
3>3(P)	lø:mnu	lø:mtənu	
2/3S>1S	ʔiløʌmŋʌ	ʔilø:matə	ləmaje
2/3D>1S	ʔiløʌmŋʌsu	ʔilø:matəsu	ləmasuje
2/3P>1S	ʔiløʌmŋʌnu	ʔilø:matənu	ləmanuje
2/3>1DI	ʔilømi	ʔilømiti	
2/3>1DE	ʔilømu	ʔilømutu	ləmuje
2/3>1PI	ʔiløʌmki	ʔiløʌmtiki	
2/3>1PE	ʔiløʌmka	ʔiløʌmtaka	loʌmkaje
3,1D/PE>2S	ʔiløʌm	ʔilø:mtə	
3,1D/PE>2D	ʔilømi	ʔilømiti	
3,1D/PE>2P	ʔiløʌmni	ʔilø:mtənu	
1S>2S	loʌmne	loʌmtəni	
1S>2D	loʌmsu	loʌmtənsu	
1S>2P	loʌmnu	loʌmtənnu	

Table 84: Transitive verb *tsoŋ* ‘add’

	non-past	past	imperative
1S>3S	tsoŋu	tsoŋuta	
1S>3D	tsoŋusu	tsoŋutasu	
1S>3P	tsoŋunu	tsoŋutanu	
1DI>3	tsoŋi	tsoŋiti	
1DE>3	tsoŋu	tsoŋutu	
1PI>3	tsoŋki	tsoŋtiki	
1PE>3	tsoŋka	tsoŋtaka	
2S>3S	ʔitsō:ŋɤ	ʔitsōŋte	tsō:ŋe
2S>3D	ʔitsōŋsu	ʔitsōŋtesu	
2S>3P	ʔitsōŋnu	ʔitsōŋtenu	
2D>3	ʔitsōŋi	ʔitsōŋiti	tsoŋije
2N>3	ʔitsō:mi	ʔitsōŋtenu	tsoŋnuje
3S>3S	tsō:ŋɤ	tsōŋte	
3>3(D)	tsōŋsu	tsōŋtesu	
3>3(P)	tsōŋnu	tsōŋtenu	

Table 85: Transitive verb *khor* ‘fry’

	non-past	past	imperative
1S>3S	khoru	khoruta	
1S>3D	khorusu	khorutasu	
1S>3P	khorunu	khorutanu	
1DI>3	khəri	khərīti	
1DE>3	khøru	khørutu	
1PI>3	khoorki	khoortiki	
1PE>3	khoorka	khoortaka	
2S>3S	ʔikhō:rɤ	ʔikhôrte	khō:re
2S>3D	ʔikhôrsu	ʔikhôrtesu	
2S>3P	ʔikhôrnu	ʔikhôrtenu	
2D>3	ʔikhəri	ʔikhərīti	khørije
2N>3	ʔikhō:mi	ʔikhørtenu	khørnuje
3S>3S	khō:rɤ	khôrte	
3>3(D)	khôrsu	khôrtesu	
3>3(P)	khôrnu	khôrtenu	

Table 86: Transitive verb *tol* ‘push’

	non-past	past	imperative
1S>3S	tolu	toluta	
1S>3D	tolusu	tolutasu	
1S>3P	tolunu	tolutanu	
1DI>3	təli	təliti	
1DE>3	təlu	təlutu	
1PI>3	toalki	toaltiki	
1PE>3	toalka	toaltaka	
2S>3S	ʔitō:lɤ	ʔitōlte	tō:le
2S>3D	ʔitōlsu	ʔitōltesu	
2S>3P	ʔitōlnu	ʔitōltenu	
2D>3	ʔitəli	ʔitəliti	təlije
2N>3	ʔitoalni	ʔitəltenu	təlnuje
3S>3S	tō:lɤ	tōlte	
3>3(D)	tōlsu	tōltesu	
3>3(P)	tōlnu	tōltenu	
2/3S>1S	ʔitoalnɤ	ʔitəlata	təlɤje
2/3D>1S	ʔitoalnɤsu	ʔitəlatasu	təlasuje
2/3P>1S	ʔitoalnɤnu	ʔitəlatanu	təlanuje
2/3>1DI	ʔitəli	ʔitəliti	
2/3>1DE	ʔitəlu	ʔitəlutu	təluje
2/3>1PI	ʔitoalki	ʔitoaltiki	
2/3>1PE	ʔitoalka	ʔitoaltaka	toalkɤje
3,1D/PE>2S	ʔitoal	ʔitōlte	
3,1D/PE>2D	ʔitəli	ʔitəliti	
3,1D/PE>2P	ʔitoalni	ʔitəltenu	
1S>2S	toalne	toalteni	
1S>2D	toalsu	toaltensu	
1S>2P	toalnu	toaltenu	

Table 87: Transitive verb *sopt* ‘beat’

	non-past	past	imperative
1S>3S	soɔptu	soɔpta	
1S>3D	soɔptusu	soɔptasu	
1S>3P	soɔptunu	soɔptanu	
1DI>3	səpi	səpiti	
1DE>3	səpu	səputu	
1PI>3	soɔpki	soɔptiki	
1PE>3	soɔpka	soɔptaka	
2S>3S	ʔisoɔptə	ʔisoɔpte	soɔpte
2S>3D	ʔisoɔpsu	ʔisoɔptesu	
2S>3P	ʔisoɔpnu	ʔisoɔptenu	
2D>3	ʔisəpi	ʔisəpiti	səpije
2N>3	ʔisoɔmni	ʔisəptenu	səpnuje
3S>3S	soɔptə	soɔpte	
3>3(D)	soɔpsu	soɔptesu	
3>3(P)	soɔpnu	soɔptenu	
2/3S>1S	ʔisoɔmɲa	ʔisəpata	səpaɲje
2/3D>1S	ʔisoɔmɲasu	ʔisəpatasu	səpasuje
2/3P>1S	ʔisoɔmɲanu	ʔisəpatanu	səpanuje
2/3>1DI	ʔisəpi	ʔisəpiti	
2/3>1DE	ʔisəpu	ʔisəputu	səpuje
2/3>1PI	ʔisoɔpki	ʔisoɔptiki	
2/3>1PE	ʔisoɔpka	ʔisoɔptaka	soɔpkaje
3,1D/PE>2S	ʔisoɔp	ʔisəpte	
3,1D/PE>2D	ʔisəpi	ʔisəpiti	
3,1D/PE>2P	ʔisoɔmni	ʔisəptenu	
1S>2S	soɔmne	soɔmteni	
1S>2D	soɔmsu	soɔmtensu	
1S>2P	soɔmnu	soɔmtenu	

Table 88: Transitive verb *bhrott* ‘call’

	non-past	past	imperative
1S>3S	bhroottu	bhrootta	
1S>3D	bhroottusu	bhroottasu	
1S>3P	bhroottunu	bhroottanu	
1DI>3	bhroetsi	bhroesti	
1DE>3	bhroetsu	bhroestu	
1PI>3	bhrooçki	bhrooçtiki	
1PE>3	bhrooçka	bhrooçtaka	
2S>3S	ʔibhroottə	ʔibhrootte	bhrootte
2S>3D	ʔibhrootsu	ʔibhroottesu	
2S>3P	ʔibhrootnu	ʔibhroottenu	
2D>3	ʔibhroetsi	ʔibhroesti	bhroetsije
2N>3	ʔibhrooñni	ʔibhroestenu	bhroesnuje
3S>3S	bhroottə	bhrootte	
3>3(D)	bhrootsu	bhroottesu	
3>3(P)	bhrootnu	bhroottenu	
2/3S>1S	ʔibhrooçɲa	ʔibhroesta	bhroetsaje
2/3D>1S	ʔibhrooçɲasu	ʔibhroestas	bhroetsasuje
2/3P>1S	ʔibhrooçɲanu	ʔibhroestanu	bhroetsanuje
2/3>1DI	ʔibhroetsi	ʔibhroesti	
2/3>1DE	ʔibhroetsu	ʔibhroestu	bhroetsuje
2/3>1PI	ʔibhrooçki	ʔibhrooçtiki	
2/3>1PE	ʔibhrooçka	ʔibhrooçtaka	bhrooçkaje
3,1D/PE>2S	ʔibhrooçj	ʔibhroeste	
3,1D/PE>2D	ʔibhroetsi	ʔibhroesti	
3,1D/PE>2P	ʔibhrooñni	ʔibhroestenu	
1S>2S	bhrooñne	bhrooñteni	
1S>2D	bhrooñsu	bhrooñtensu	
1S>2P	bhrooñnu	bhrooñtenu	

Table 89: Transitive verb *fiokt* ‘shout at’

	non-past	past	imperative
1S>3S	fioktu	fiokta	
1S>3D	fioktusu	fioktasu	
1S>3P	fioktunu	fioktanu	
1DI>3	fiøki	fiøkiti	
1DE>3	fiøku	fiøkutu	
1PI>3	fiokki	fioktiki	
1PE>3	fiokka	fioktaka	
2S>3S	ʔifioktə	ʔifiokte	fiokte
2S>3D	ʔifioksu	ʔifioktesu	
2S>3P	ʔifioknu	ʔifioktenu	
2D>3	ʔifiøki	ʔifiøkiti	fiøkije
2N>3	ʔifið:ni	ʔifiøktenu	fiøknuje
3S>3S	fioktə	fiokte	
3>3(D)	fioksu	fioktesu	
3>3(P)	fioknu	fioktenu	
2/3S>1S	ʔifið:ŋa	ʔifiøkata	fiøkaje
2/3D>1S	ʔifið:ŋasu	ʔifiøkatasu	fiøkasuje
2/3P>1S	ʔifið:ŋanu	ʔifiøkatanu	fiøkajuje
2/3>1DI	ʔifiøki	ʔifiøkiti	
2/3>1DE	ʔifiøku	ʔifiøkutu	fiøkuje
2/3>1PI	ʔifiokki	ʔifioktiki	
2/3>1PE	ʔifiokka	ʔifioktaka	fiokkaje
3,1D/PE>2S	ʔifið:	ʔifiøkete	
3,1D/PE>2D	ʔifiøki	ʔifiøkiti	
3,1D/PE>2P	ʔifið:ni	ʔifiøktenu	
1S>2S	fið:ne	fiðnteni	
1S>2D	fiðnsu	fiðntensu	
1S>2P	fiðnnu	fiðntenu	

Table 91: Transitive verb *bont* ‘touch’

	non-past	past	imperative
1S>3S	boøndu	boðnta	
1S>3D	boøndusu	boðntasu	
1S>3P	boøndunu	boðntanu	
1DI>3	bø:tsi	bø:sti	
1DE>3	bø:tsu	bø:stu	
1PI>3	boøjki	boøjtiki	
1PE>3	boøjka	boøjtaka	
2S>3S	ʔiboøndə	ʔiboðnte	boønde
2S>3D	ʔiboønsu	ʔiboðntesu	
2S>3P	ʔiboønnu	ʔiboðntenu	
2D>3	ʔibø:tsi	ʔibø:sti	bø:tsije
2N>3	ʔiboøjni	ʔibø:stenu	bø:snuje
3S>3S	boøndə	boðnte	
3>3(D)	boønsu	boðntesu	
3>3(P)	boønnu	boðntenu	
2/3S>1S	ʔiboøjŋa	ʔibø:sta	bø:tsaje
2/3D>1S	ʔiboøjŋasu	ʔibø:stasu	bø:tsasuje
2/3P>1S	ʔiboøjŋanu	ʔibø:stanu	bø:tsajuje
2/3>1DI	ʔibø:tsi	ʔibø:sti	
2/3>1DE	ʔibø:tsu	ʔibø:stu	bø:tsuje
2/3>1PI	ʔiboøjki	ʔiboøjtiki	
2/3>1PE	ʔiboøjka	ʔiboøjtaka	boøjkaje
3,1D/PE>2S	ʔiboøj	ʔibø:ste	
3,1D/PE>2D	ʔibø:tsi	ʔibø:sti	
3,1D/PE>2P	ʔiboøjni	ʔibø:stenu	
1S>2S	boøjne	boøjtene	
1S>2D	boøjsu	boøjtensu	
1S>2P	boøjnu	boøjtenu	

Table 90: Detransitive verb *ʔomt* ‘ripen’

	non-past	past
3S	ʔoømdə	ʔoømte

Table 92: Transitive verb *noŋt* ‘accuse’

	non-past	past	imperative
1S>3S	nondu	nōnta	
1S>3D	nondusu	nōntasu	
1S>3P	nondunu	nōntanu	
1DI>3	nəŋi	nəŋiti	
1DE>3	nəŋu	nəŋutu	
1PI>3	noŋki	noŋtiki	
1PE>3	noŋka	noŋtaka	
2S>3S	ʔinondɛ	ʔinōnte	nonde
2S>3D	ʔinōnsu	ʔinōntesu	
2S>3P	ʔinōnnu	ʔinōntenu	
2D>3	ʔinəŋi	ʔinəŋiti	nəŋije
2N>3	ʔinō:ni	ʔinəŋtenu	nəŋnuje
3S>3S	nondɛ	nōnte	
3>3(D)	nōnsu	nōntesu	
3>3(P)	nōnnu	nōntenu	
2/3S>1S	ʔinō:ŋa	ʔinəŋata	nəŋaje
2/3D>1S	ʔinō:ŋasu	ʔinəŋatasu	nəŋasuje
2/3P>1S	ʔinō:ŋanu	ʔinəŋatanu	nəŋanuje
2/3>1DI	ʔinəŋi	ʔinəŋiti	
2/3>1DE	ʔinəŋu	ʔinəŋutu	nəŋuje
2/3>1PI	ʔinəŋki	ʔinəŋtiki	
2/3>1PE	ʔinəŋka	ʔinəŋtaka	noŋkaje
3,1D/PE>2S	ʔinəŋ	ʔinəŋte	
3,1D/PE>2D	ʔinəŋi	ʔinəŋiti	
3,1D/PE>2P	ʔinō:ni	ʔinəŋtenu	
1S>2S	nō:ne	nonteni	
1S>2D	nōnsu	nontensu	
1S>2P	nōnnu	nontennu	

Table 93: Transitive verb *dhort* ‘be useful for’

	non-past	past	imperative
1S>3S	dhoɔrdu	dhoɔrta	
1S>3D	dhoɔrdusu	dhoɔrtasu	
1S>3P	dhoɔrdunu	dhoɔrtanu	
1DI>3	dhəri	dhəriti	
1DE>3	dhəru	dhərutu	
1PI>3	dhoɔrki	dhoɔrtiki	
1PE>3	dhoɔrka	dhoɔrtaka	
2S>3S	ʔidhoɔrdɛ	ʔidhoɔrte	dhoorde
2S>3D	ʔidhoɔrsu	ʔidhoɔrtesu	
2S>3P	ʔidhoɔrnu	ʔidhoɔrtenu	
2D>3	ʔidhəri	ʔidhəriti	dherije
2N>3	ʔidhoɔrni	ʔidhərtenu	dhernuje
3S>3S	dhoɔrdɛ	dhoɔrte	
3>3(D)	dhoɔrsu	dhoɔrtesu	
3>3(P)	dhoɔrnu	dhoɔrtenu	
2/3S>1S	ʔidhoɔrŋa	ʔidhərata	dheraje
2/3D>1S	ʔidhoɔrŋasu	ʔidhəratasu	dherasuje
2/3P>1S	ʔidhoɔrŋanu	ʔidhəratanu	dheranuje
2/3>1DI	ʔidhəri	ʔidhəriti	
2/3>1DE	ʔidhəru	ʔidhərutu	dheruje
2/3>1PI	ʔidhoɔrki	ʔidhoɔrtiki	
2/3>1PE	ʔidhoɔrka	ʔidhoɔrtaka	dhoɔrkaje
3,1D/PE>2S	ʔidhoɔr	ʔidhərte	
3,1D/PE>2D	ʔidhəri	ʔidhəriti	
3,1D/PE>2P	ʔidhoɔrni	ʔidhərtenu	
1S>2S	dhoɔrne	dhoɔrteni	
1S>2D	dhoɔrsu	dhoɔrtensu	
1S>2P	dhoɔrnu	dhoɔrtenu	

Table 94: Transitive verb *kolt* ‘chase’

	non-past	past	imperative
1S>3S	kooldu	koðltA	
1S>3D	kooldusu	koðltAsu	
1S>3P	kooldunu	koðltAnu	
1DI>3	køli	køliti	
1DE>3	kølu	kølutu	
1PI>3	koalki	koaltiki	
1PE>3	koalkA	koaltAkA	
2S>3S	ʔikooldɬ	ʔikoðlte	koalde
2S>3D	ʔikoðlsu	ʔikoðltesu	
2S>3P	ʔikoðlnu	ʔikoðltenu	
2D>3	ʔikøli	ʔikøliti	kølije
2N>3	ʔikoalni	ʔikøltenu	kølnuje
3S>3S	kooldɬ	koðlte	
3>3(D)	koðlsu	koðltesu	
3>3(P)	koðlnu	koðltenu	
2/3S>1S	ʔikoalŋA	ʔikølatA	kølAje
2/3D>1S	ʔikoalŋAsu	ʔikølatAsu	kølasuje
2/3P>1S	ʔikoalŋAnu	ʔikølatAnu	kølanuje
2/3>1DI	ʔikøli	ʔikøliti	
2/3>1DE	ʔikølu	ʔikølutu	køluje
2/3>1PI	ʔikoalki	ʔikoaltiki	
2/3>1PE	ʔikoalkA	ʔikoaltAkA	koalkAje
3,1D/PE>2S	ʔikoal	ʔikølte	
3,1D/PE>2D	ʔikøli	ʔikøliti	
3,1D/PE>2P	ʔikoalni	ʔikøltenu	
1S>2S	koalne	koalteni	
1S>2D	koðlsu	koaltensu	
1S>2P	koðlnu	koaltenu	

Table 95: Intransitive verb *su* ‘itch’

	non-past	past	imperative
1S	səŋA	səŋAtA	
1DI	səji	səiti	
1DE	səju	səitu	
1PI	səki	saktiki	
1PE	səkA	saktAkA	
2S	ʔisɬ	ʔisũ:te	sũje
2D	ʔisəji	ʔisəiti	səije
2N	ʔisəni	ʔisutnu	sũnje
3S	sɬ	sũ:te	
3D	səji	səiti	
3N	sənu	sutnu	

Table 96: Intransitive verb *fut* ‘burn’

	non-past	past
3S	fɬj	fɬste

Table 97: Intransitive verb *dzhuk* ‘escape’

	non-past	past	imperative
1S	dzhũ:ŋA	dzhøkAtA	
1DI	dzhøki	dzhøkiti	
1DE	dzhøku	dzhøkutu	
1PI	dzhukki	dzhuktiki	
1PE	dzhukka	dzhuktAkA	
2S	ʔidzhũ:	ʔidzhøkte	dzhøkje
2D	ʔidzhøki	ʔidzhøkiti	dzhøkije
2N	ʔidzhũ:ni	ʔidzhøktenu	dzhøknuje
3S	dzhũ:	dzhøkte	
3D	dzhøki	dzhøkiti	
3N	dzhũ:nu	dzhøktenu	

Table 98: Intransitive verb *ghrum* ‘be tired’

	non-past	past	imperative
1S	ghrɒmŋA	ghrɒmAtA	
1DI	ghrɒmi	ghrɒmiti	
1DE	ghrɒmu	ghrɒmutu	
1PI	ghrɒmki	ghrɒmtiki	
1PE	ghrɒmka	ghrɒmtAkA	
2S	ʔighrɒm	ʔighrɒmte	ghrɒmje
2D	ʔighrɒmi	ʔighrɒmiti	ghrɒmije
2N	ʔighrɒmni	ʔighrɒmtenu	ghrɒmnuje
3S	ghrɒm	ghrɒmte	
3D	ghrɒmi	ghrɒmiti	
3N	ghrɒmnu	ghrɒmtenu	

Table 99: Intransitive verb *khun* ‘fall down’

	non-past	past	imperative
1S	khajŋa	khē:sta	
1DI	khē:tsi	khē:sti	
1DE	khē:tsu	khē:stu	
1PI	khajki	khajtiki	
1PE	khajka	khajtaka	
2S	ʔikhaj	ʔikhē:ste	khē:tsɛ
2D	ʔikhē:tsi	ʔikhē:sti	khē:tsije
2N	ʔikhajni	ʔikhē:stenu	khē:snuje
3S	khaj	khē:ste	
3D	khē:tsi	khē:sti	
3N	khajnu	khē:stenu	

Table 101: Transitive verb *ʔu* ‘take care’

	non-past	past	imperative
1S	ʔəŋa	ʔəŋta	
1DI	ʔəji	ʔəiti	
1DE	ʔəju	ʔəitu	
1PI	ʔəki	ʔəktiki	
1PE	ʔəka	ʔəktaka	
2S	ʔiʔə	ʔiʔəte	ʔəje
2D	ʔiʔəji	ʔiʔəiti	ʔəije
2N	ʔiʔəni	ʔiʔutnu	ʔūnje
3S	ʔə	ʔəte	
3D	ʔəsu	ʔətsu	
3N	ʔənu	ʔətnu	
2/3S>1S	ʔiʔəŋa	ʔiʔəŋta	ʔəŋaje
2/3D>1S	ʔiʔəŋasu	ʔiʔəŋatasu	ʔəŋasuje
2/3P>1S	ʔiʔəŋanu	ʔiʔəŋatanu	ʔəŋanuje
2/3>1DI	ʔiʔəji	ʔiʔəiti	
2/3>1DE	ʔiʔəju	ʔiʔəitu	ʔəije
2/3>1PI	ʔiʔəki	ʔiʔəktiki	
2/3>1PE	ʔiʔəka	ʔiʔəktaka	ʔəkaje
3,1D/PE>2S	ʔiʔə	ʔiʔū:te	
3,1D/PE>2D	ʔiʔəji	ʔiʔəiti	
3,1D/PE>2P	ʔiʔəni	ʔiʔutnu	
1S>2S	ʔəne	ʔənteni	
1S>2D	ʔənsu	ʔəntensu	
1S>2P	ʔənnu	ʔəntennu	

Table 100: Intransitive verb *ghur* ‘run’

	non-past	past	imperative
1S	gharŋa	ghərata	
1DI	ghəri	ghəriti	
1DE	ghəru	ghərutu	
1PI	gharki	ghartiki	
1PE	gharka	ghartaka	
2S	ʔighar	ʔighărte	ghărje
2D	ʔighəri	ʔighəriti	ghərje
2N	ʔigharni	ʔighərtenu	ghərnuje
3S	ghar	ghărte	
3D	ghəri	ghəriti	
3N	gharnu	ghərtenu	

Table 102: Transitive verb *gup* ‘hide’

	non-past	past	imperative
1S>3S	gubu	gubuta	
1S>3D	gubusu	gubutasu	
1S>3P	gubunu	gubutānu	
1DI>3	gupi	gupiti	
1DE>3	gupu	guputu	
1PI>3	gapki	gaptiki	
1PE>3	gapka	gaptaka	
2S>3S	ʔigā:bə	ʔigā:pte	gā:be
2S>3D	ʔigā:psu	ʔigā:ptesu	
2S>3P	ʔigā:pnu	ʔigā:ptenu	
2D>3	ʔigupi	ʔigupiti	gupiye
2N>3	ʔigāmni	ʔiguptenu	gupnuje
3S>3S	gā:bə	gā:pte	
3>3(D)	gā:psu	gā:ptesu	
3>3(P)	gā:pnu	gā:ptenu	
2/3S>1S	ʔigāmɲa	ʔigupata	gupɔaje
2/3D>1S	ʔigāmɲasu	ʔigupatasu	gupɔasuje
2/3P>1S	ʔigāmɲanu	ʔigupatanu	gupɔanuje
2/3>1DI	ʔigupi	ʔigupiti	
2/3>1DE	ʔigupu	ʔiguputu	gupuje
2/3>1PI	ʔigapki	ʔigaptiki	
2/3>1PE	ʔigapka	ʔigaptaka	gapkaje
3,1D/PE>2S	ʔigap	ʔigupte	
3,1D/PE>2D	ʔigupi	ʔigupiti	
3,1D/PE>2P	ʔigāmni	ʔiguptenu	
1S>2S	gāmne	gāmteni	
1S>2D	gāmsu	gāmtensu	
1S>2P	gāmnu	gāmtenu	

Table 103: Transitive verb *lut* ‘tell’

	non-past	past	imperative
1S>3S	ludu	lū:ta	
1S>3D	ludusu	lū:tasu	
1S>3P	ludunu	lū:tanu	
1DI>3	lətsi	ləsti	
1DE>3	lətsu	ləstu	
1PI>3	laçki	laçtiki	
1PE>3	laçka	laçtaka	
2S>3S	ʔilā:də	ʔilā:te	lā:de
2S>3D	ʔilā:tsu	ʔilā:tesu	
2S>3P	ʔilā:tnu	ʔilā:tenu	
2D>3	ʔilətsi	ʔiləsti	lətsiye
2N>3	ʔilānni	ʔiləstenu	ləsnuje
3S>3S	lā:də	lā:te	
3>3(D)	lā:tsu	lā:tesu	
3>3(P)	lā:tnu	lā:tenu	
2/3S>1S	ʔiləɲa	ʔiləsta	lətsəje
2/3D>1S	ʔiləɲasu	ʔiləstasu	lətsəsuje
2/3P>1S	ʔiləɲanu	ʔiləstanu	lətsənuje
2/3>1DI	ʔilətsi	ʔiləsti	
2/3>1DE	ʔilətsu	ʔiləstu	lətsuje
2/3>1PI	ʔiləçki	ʔiləçtiki	
2/3>1PE	ʔiləçka	ʔiləçtaka	ləçkaje
3,1D/PE>2S	ʔiləj	ʔiləste	
3,1D/PE>2D	ʔilətsi	ʔiləsti	
3,1D/PE>2P	ʔilānni	ʔiləstenu	
1S>2S	lānne	lānteni	
1S>2D	lānsu	lāntensu	
1S>2P	lānnu	lāntenu	

Table 104: Transitive verb *phuk* ‘wake up’

	non-past	past	imperative
1S>3S	phugu	phuguta	
1S>3D	phugusu	phugutasu	
1S>3P	phugunu	phugutanu	
1DI>3	phæki	phækiti	
1DE>3	phæku	phækutu	
1PI>3	phukki	phuktiki	
1PE>3	phukka	phuktaka	
2S>3S	ʔiphû:ɡæ	ʔiphû:kte	phû:ge
2S>3D	ʔiphû:ksu	ʔiphû:ktesu	
2S>3P	ʔiphû:knu	ʔiphû:ktenu	
2D>3	ʔiphæki	ʔiphækiti	phækije
2N>3	ʔiphû:ni	ʔiphæktenu	phæknuje
3S>3S	phû:ɡæ	phû:kte	
3>3(D)	phû:ksu	phû:ktesu	
3>3(P)	phû:knu	phû:ktenu	
2/3S>1S	ʔiphû:ŋa	ʔiphækata	phækaje
2/3D>1S	ʔiphû:ŋasu	ʔiphækatasu	phækasuje
2/3P>1S	ʔiphû:ŋanu	ʔiphækatanu	phækanuje
2/3>1DI	ʔiphæki	ʔiphækiti	
2/3>1DE	ʔiphæku	ʔiphækutu	phækuje
2/3>1PI	ʔiphukki	ʔiphuktiki	
2/3>1PE	ʔiphukka	ʔiphuktaka	phukkaje
3,1D/PE>2S	ʔiphû:	ʔiphækte	
3,1D/PE>2D	ʔiphæki	ʔiphækiti	
3,1D/PE>2P	ʔiphû:ni	ʔiphæktenu	
1S>2S	phû:ne	phûnteni	
1S>2D	phûnsu	phûntensu	
1S>2P	phûnnu	phûntennu	

Table 105: Transitive verb *dum* ‘meet’

	non-past	past	imperative
1S>3S	dumu	dumuta	
1S>3D	dumusu	dumutasu	
1S>3P	dumunu	dumutanu	
1DI>3	dæmi	dæmiti	
1DE>3	dæmu	dæmutu	
1PI>3	damki	damtiki	
1PE>3	damka	damtaka	
2S>3S	ʔidû:mæ	ʔidû:nte	dû:me
2S>3D	ʔidû:msu	ʔidû:ntesu	
2S>3P	ʔidû:mnu	ʔidû:ntenu	
2D>3	ʔidæmi	ʔidæmiti	dæmije
2N>3	ʔidamni	ʔidæmtenu	dæmnuje
3S>3S	dû:mæ	dû:nte	
3>3(D)	dû:msu	dû:ntesu	
3>3(P)	dû:mnu	dû:ntenu	
2/3S>1S	ʔidamŋa	ʔidæmata	dæmajje
2/3D>1S	ʔidamŋasu	ʔidæmatasu	dæmasuje
2/3P>1S	ʔidamŋanu	ʔidæmatanu	dæmanuje
2/3>1DI	ʔidæmi	ʔidæmiti	
2/3>1DE	ʔidæmu	ʔidæmutu	dæmuje
2/3>1PI	ʔidamki	ʔidamtiki	
2/3>1PE	ʔidamka	ʔidamtaka	damkaje
3,1D/PE>2S	ʔidam	ʔidû:nte	
3,1D/PE>2D	ʔidæmi	ʔidæmiti	
3,1D/PE>2P	ʔidamni	ʔidæmtenu	
1S>2S	damne	damteni	
1S>2D	damsu	damtensu	
1S>2P	damnū	damtennu	

Table 106: Transitive verb *huŋ* ‘wait’

	non-past	past	imperative
1S>3S	huŋu	huŋutA	
1S>3D	huŋusu	huŋutAsu	
1S>3P	huŋunu	huŋutAnu	
1DI>3	həŋi	həŋiti	
1DE>3	həŋu	həŋutu	
1PI>3	huŋki	huŋtiki	
1PE>3	huŋka	huŋtaka	
2S>3S	ʔihə:ŋə	ʔihəŋte	hə:ŋe
2S>3D	ʔihəŋsu	ʔihəŋtesu	
2S>3P	ʔihəŋnu	ʔihəŋtenu	
2D>3	ʔihəŋi	ʔihəŋiti	həŋije
2N>3	ʔihū:ni	ʔihəŋtenu	həŋnuje
3S>3S	hə:ŋə	həŋte	
3>3(D)	həŋsu	həŋtesu	
3>3(P)	həŋnu	həŋtenu	
2/3S>1S	ʔihū:ŋA	ʔihəŋatA	həŋAje
2/3D>1S	ʔihū:ŋAsu	ʔihəŋatAsu	həŋAsuje
2/3P>1S	ʔihū:ŋAnu	ʔihəŋatAnu	həŋAnuje
2/3>1DI	ʔihəŋi	ʔihəŋiti	
2/3>1DE	ʔihəŋu	ʔihəŋutu	həŋuje
2/3>1PI	ʔihəŋki	ʔihəŋtiki	
2/3>1PE	ʔihəŋka	ʔihəŋtaka	həŋkaje
3,1D/PE>2S	ʔihəŋ	ʔihəŋte	
3,1D/PE>2D	ʔihəŋi	ʔihəŋiti	
3,1D/PE>2P	ʔihū:ni	ʔihəŋtenu	
1S>2S	hū:ne	hūnteni	
1S>2D	hūnsu	hūntensu	
1S>2P	hūnnu	hūntennu	

Table 107: Transitive verb *sur* ‘wash’

	non-past	past	imperative
1S>3S	suru	surutA	
1S>3D	surusu	surutAsu	
1S>3P	surunu	surutAnu	
1DI>3	səri	səriti	
1DE>3	səru	sərutu	
1PI>3	sarki	sartiki	
1PE>3	sarka	sartaka	
2S>3S	ʔisə:rə	ʔisə:рте	sə:re
2S>3D	ʔisərsu	ʔisərtesu	
2S>3P	ʔisə:nu	ʔisərtenu	
2D>3	ʔisəri	ʔisəriti	sərije
2N>3	ʔisə:ni	ʔisərtenu	sə:nuje
3S>3S	sə:rə	sə:рте	
3>3(D)	sərsu	sərtesu	
3>3(P)	sə:nu	sərtenu	
2/3S>1S	ʔisə:ŋA	ʔisəratA	sə:ŋaje
2/3D>1S	ʔisə:ŋAsu	ʔisəratAsu	sə:ŋAsuje
2/3P>1S	ʔisə:ŋAnu	ʔisəratAnu	sə:ŋAnuje
2/3>1DI	ʔisəri	ʔisəriti	
2/3>1DE	ʔisəru	ʔisərutu	səruje
2/3>1PI	ʔisarki	ʔisartiki	
2/3>1PE	ʔisarka	ʔisartaka	sarkaje
3,1D/PE>2S	ʔisə:ŋ	ʔisə:рте	
3,1D/PE>2D	ʔisəri	ʔisəriti	
3,1D/PE>2P	ʔisə:ni	ʔisərtenu	
1S>2S	sərne	sərteni	
1S>2D	sərsu	sərtensu	
1S>2P	sə:nu	sərtennu	

Table 108: Transitive verb *gul* ‘cover’

	non-past	past	imperative
1S>3S	gulu	guluta	
1S>3D	gulusu	gulutasu	
1S>3P	gulunu	gulutanu	
1DI>3	gʷali	gʷaliti	
1DE>3	gʷalu	gʷalutu	
1PI>3	gʷalki	gʷaltiki	
1PE>3	gʷalka	gʷaltaka	
2S>3S	ʔigʷ:le	ʔigʷ:lte	gʷ:le
2S>3D	ʔigʷ:lsu	ʔigʷ:ltesu	
2S>3P	ʔigʷ:lnu	ʔigʷ:ltenu	
2D>3	ʔigʷali	ʔigʷaliti	gʷaliʒe
2N>3	ʔigʷalni	ʔigʷaltenu	gʷalnuʒe
3S>3S	gʷ:le	gʷ:lte	
3>3(D)	gʷ:lsu	gʷ:ltesu	
3>3(P)	gʷ:lnu	gʷ:ltenu	
2/3S>1S	ʔigʷalʒa	ʔigʷalata	gʷalʒe
2/3D>1S	ʔigʷalʒasu	ʔigʷalatasu	gʷalʒuʒe
2/3P>1S	ʔigʷalʒanu	ʔigʷalatanu	gʷalʒanuʒe
2/3>1DI	ʔigʷali	ʔigʷaliti	
2/3>1DE	ʔigʷalu	ʔigʷalutu	gʷaluʒe
2/3>1PI	ʔigʷalki	ʔigʷaltiki	
2/3>1PE	ʔigʷalka	ʔigʷaltaka	gʷalkʒe
3,1D/PE>2S	ʔigʷal	ʔigʷ:lte	
3,1D/PE>2D	ʔigʷali	ʔigʷaliti	
3,1D/PE>2P	ʔigʷalni	ʔigʷaltenu	
1S>2S	galne	galteni	
1S>2D	galnsu	galtensu	
1S>2P	galnu	galtennu	

Table 109: Transitive verb *hutt* ‘burn, reveal the culprit’

	non-past	past	imperative
1S>3S	hʷattu	hʷatta	
1S>3D	hʷattusu	hʷattasu	
1S>3P	hʷattunu	hʷattanu	
1DI>3	hʷætsi	hʷæsti	
1DE>3	hʷætsu	hʷæstu	
1PI>3	hʷaʒki	hʷaʒtiki	
1PE>3	hʷaʒka	hʷaʒtaka	
2S>3S	ʔihʷattʰ	ʔihʷatte	hʷatte
2S>3D	ʔihʷattsu	ʔihʷattesu	
2S>3P	ʔihʷattnu	ʔihʷattenu	
2D>3	ʔihʷætsi	ʔihʷæsti	hʷætsiʒe
2N>3	ʔihʷænni	ʔihʷæstenu	hʷæstnuʒe
3S>3S	hʷattʰ	hʷatte	
3>3(D)	hʷattsu	hʷattesu	
3>3(P)	hʷattnu	hʷattenu	
2/3S>1S	ʔihʷæʒʒa	ʔihʷæsta	hʷætsʒe
2/3D>1S	ʔihʷæʒʒasu	ʔihʷæstasu	hʷætsʒuʒe
2/3P>1S	ʔihʷæʒʒanu	ʔihʷæstanu	hʷætsʒanuʒe
2/3>1DI	ʔihʷætsi	ʔihʷæsti	
2/3>1DE	ʔihʷætsu	ʔihʷæstu	hʷætsuʒe
2/3>1PI	ʔihʷaʒki	ʔihʷaʒtiki	
2/3>1PE	ʔihʷaʒka	ʔihʷaʒtaka	hʷaʒkaʒe
3,1D/PE>2S	ʔihʷæʒ	ʔihʷæste	
3,1D/PE>2D	ʔihʷætsi	ʔihʷæsti	
3,1D/PE>2P	ʔihʷænni	ʔihʷæstenu	
1S>2S	hʷænnne	hʷænteni	
1S>2D	hʷænnsu	hʷæntensu	
1S>2P	hʷænnnu	hʷæntennu	

Table 110: Transitive verb *kukt*
'bend; take revenge'

	non-past	past	imperative
1S>3S	kuktu	kukta	
1S>3D	kuktusu	kuktasu	
1S>3P	kuktunu	kuktanu	
1DI>3	kæki	kækiti	
1DE>3	kæku	kækutu	
1PI>3	kukki	kuktiki	
1PE>3	kukka	kuktaka	
2S>3S	?ikuktæ	?ikukte	kukte
2S>3D	?ikuksu	?ikuktesu	
2S>3P	?ikuknu	?ikuktenu	
2D>3	?ikæki	?ikækiti	kækije
2N>3	?ikû:ni	?ikæktenu	kæknuje
3S>3S	kuktæ	kukte	
3>3(D)	kuksu	kuktesu	
3>3(P)	kuknu	kuktenu	
2/3S>1S	?ikû:ŋa	?ikækata	kækaje
2/3D>1S	?ikû:ŋasu	?ikækatasu	kækasuje
2/3P>1S	?ikû:ŋanu	?ikækatanu	kækajuje
2/3>1DI	?ikæki	?ikækiti	
2/3>1DE	?ikæku	?ikækutu	kækuje
2/3>1PI	?ikukki	?ikuktiki	
2/3>1PE	?ikukka	?ikuktaka	kukkaje
3,1D/PE>2S	?ikû:	?ikækte	
3,1D/PE>2D	?ikæki	?ikækiti	
3,1D/PE>2P	?ikû:ni	?ikæktenu	
1S>2S	kû:ne	kûnteni	
1S>2D	kûnsu	kûntensu	
1S>2P	kûnnu	kûntennu	

Table 111: Transitive verb *tumt* 'follow tracks'

	non-past	past	imperative
1S>3S	tamdu	tâmta	
1S>3D	tamdusu	tâmtasu	
1S>3P	tamdunu	tâmtanu	
1DI>3	tæmi	tæmiti	
1DE>3	tæmu	tæmutu	
1PI>3	tamki	tamtiki	
1PE>3	tamka	tamtaka	
2S>3S	?itamdæ	?itâmte	tamde
2S>3D	?itâmsu	?itâmtesu	
2S>3P	?itâmnu	?itâmtenu	
2D>3	?itæmi	?itæmiti	tæmije
2N>3	?itamni	?itâmtenu	tâmnuje
3S>3S	tamdæ	tâmte	
3>3(D)	tâmsu	tâmtesu	
3>3(P)	tâmnu	tâmtenu	
2/3S>1S	?itamŋa	?itâmata	tâmaje
2/3D>1S	?itamŋasu	?itâmatasu	tâmasuje
2/3P>1S	?itamŋanu	?itâmatanu	tâmajuje
2/3>1DI	?itæmi	?itæmiti	
2/3>1DE	?itæmu	?itæmutu	tæmije
2/3>1PI	?itamki	?itamtiki	
2/3>1PE	?itamka	?itamtaka	tamkaje
3,1D/PE>2S	?itam	?itâmtæ	
3,1D/PE>2D	?itæmi	?itæmiti	
3,1D/PE>2P	?itamni	?itâmtenu	
1S>2S	tamne	tamteni	
1S>2D	tâmsu	tâmtensu	
1S>2P	tâmnu	tâmtennu	

Table 112: Transitive verb *phlunt*
'take off (clothes)'

	non-past	past	imperative
1S>3S	phlandu	phlânta	
1S>3D	phlandusu	phlântasu	
1S>3P	phlandunu	phlântanu	
1DI>3	phlã:tsi	phlã:sti	
1DE>3	phlã:tsu	phlã:stu	
1PI>3	phlajki	phlajtiki	
1PE>3	phlajka	phlajtaka	
2S>3S	?iphlandæ	?iphlânte	phlande
2S>3D	?iphlânsu	?iphlântesu	
2S>3P	?iphlânnu	?iphlântenu	
2D>3	?iphlã:tsi	?iphlã:sti	phlã:tsije
2N>3	?iphlajni	?iphlã:stenu	phlã:snuje
3S>3S	phlandæ	phlânte	
3>3(D)	phlânsu	phlântesu	
3>3(P)	phlânnu	phlântenu	

Table 113: Transitive verb *thugt* 'stab'

	non-past	past	imperative
1S>3S	thundu	thûnta	
1S>3D	thundusu	thûntasu	
1S>3P	thundunu	thûntanu	
1DI>3	thæji	thæjiti	
1DE>3	thæju	thæjutu	
1PI>3	thugki	thugtiki	
1PE>3	thugka	thugtaka	
2S>3S	?ithundæ	?ithûnte	thunde
2S>3D	?ithûnsu	?ithûntesu	
2S>3P	?ithûnnu	?ithûntenu	
2D>3	?ithæji	?ithæjiti	thæjije
2N>3	?ithû:ni	?ithæjtenu	thægnuje
3S>3S	thundæ	thûnte	
3>3(D)	thûnsu	thûntesu	
3>3(P)	thûnnu	thûntenu	
2/3S>1S	?ithû:ŋa	?ithæŋata	thæŋaje
2/3D>1S	?ithû:ŋasu	?ithæŋatasu	thæŋasuje
2/3P>1S	?ithû:ŋanu	?ithæŋatanu	thæŋanuje
2/3>1DI	?ithæji	?ithæjiti	
2/3>1DE	?ithæju	?ithæjutu	thæjuje
2/3>1PI	?ithugki	?ithugtiki	
2/3>1PE	?ithugka	?ithugtaka	thugkaje
3,1D/PE>2S	?ithugj	?ithæŋte	
3,1D/PE>2D	?ithæji	?ithæjiti	
3,1D/PE>2P	?ithû:ni	?ithæjtenu	
1S>2S	thû:ne	thunteni	
1S>2D	thûnsu	thuntensu	
1S>2P	thûnnu	thuntenu	

Table 114: Transitive verb *kurt* ‘bring for’

	non-past	past	imperative
1S>3S	kardu	kârta	
1S>3D	kardusu	kârtasu	
1S>3P	kardunu	kârtanu	
1DI>3	kæri	kæriti	
1DE>3	kæru	kærutu	
1PI>3	karki	kartiki	
1PE>3	karka	kartaka	
2S>3S	?ikardæ	?ikârte	karde
2S>3D	?ikârsu	?ikârtesu	
2S>3P	?ikârnu	?ikârtenu	
2D>3	?ikæri	?ikæriti	kærije
2N>3	?ikarni	?ikærtenu	kærnuje
3S>3S	kardæ	kârte	
3>3(D)	kârsu	kârtesu	
3>3(P)	kârnu	kârtenu	
2/3S>1S	?ikarŋa	?ikærata	kæraje
2/3D>1S	?ikarŋasu	?ikæratasu	kærasuje
2/3P>1S	?ikarŋanu	?ikæratanu	kæranuje
2/3>1DI	?ikæri	?ikæriti	
2/3>1DE	?ikæru	?ikærutu	kæruje
2/3>1PI	?ikarki	?ikartiki	
2/3>1PE	?ikarka	?ikartaka	karkaje
3,1D/PE>2S	?ikar	?ikærte	
3,1D/PE>2D	?ikæri	?ikæriti	
3,1D/PE>2P	?ikarni	?ikærtenu	
1S>2S	karne	karteni	
1S>2D	kârsu	kartensu	
1S>2P	kârnu	kartennu	