

Verb stem alternation in Gongduk

Synchronic and diachronic analysis

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This paper provides a first overview of verb stem alternation in Gongduk (eastern Bhutan, Trans-Himalayan). Verb stem alternation in Gongduk is conditioned both by morphophonology and by grammatical categories. This paper presents both the morphophonologically transparent as well as the phonologically opaque, paradigmatic stem alternation. The analysis provided in this paper identifies seven verb classes and a small number of irregular verbs. Additionally, this paper provides some diachronic observations on Gongduk verb stems and shows that different stem classes of Gongduk preserve derivational morphology (valence, direction) with cognates in other branches of the language family. Gongduk therefore provides important evidence for the historical investigation of derivational morphology and verb stem alternation in Trans-Himalayan.

Keywords: Gongduk, verbal morphology, stem alternation, Trans-Himalayan, derivational morphology

1. Introduction

Gongduk, an almost completely undescribed Trans-Himalayan language spoken in the southern parts of Monggar district in eastern Bhutan, exhibits verb stem alternations which are in part conditioned by morphophonological rules and in part show the character of phonologically non-transparent paradigmatic alternations. The existence of paradigmatic alternations for Gongduk verb stems is mentioned in van Driem (2013: 72), where the different stems of the three verbs *mal-* ~ *mxt-* ‘to look’, *pi-* ~ *bi-* ‘to give’ and *ðə-* ~ *θə-* ‘to eat’ are presented. The conjugation of another verb with paradigmatic stem alternation, *bet-* ~ *beθ-* ‘to wash’, is shown in van Driem (2001: 467). However, no synchronic description or diachronic explanation for Gongduk verb stem alternation is provided in these sources.

The aim of this paper is to provide an account of the verb stem alternations in Gongduk. The relevant data are from unpublished field notes, collected by George van Driem in 1991, 1992, and 2001 on-site in Gongduk villages and by Selin Grollmann and myself in 2014 in Thimphu, Bhutan, and 2015 in Geneva, Switzerland. This paper also discusses potential sources for the paradigmatic alternations of Gongduk, which involve valence-changing and direction morphology also attested in other branches of Trans-Himalayan.

This paper is structured as follows. A short introduction to the Gongduk agreement morphology system is given in §2 to provide a basis for the investigation of Gongduk verb stem alternations. A full treatment of Gongduk agreement morphology is beyond the scope of this paper and will be provided elsewhere. §3 and 4 explore the synchronic structure of Gongduk verb stem alternations; §3 presents the morphophonological alternations which are predictable and not part of the paradigmatic verb stem alternation. §4 defines the different verb classes of Gongduk on the basis of the paradigmatic stem alternation patterns and explores these patterns of alternation, including irregular verbs and peripheral alternations. §5 adds a diachronic perspective and proposes explanations for some of the paradigmatic stem alternation as well as for the phonotactic peculiarities of certain verb stems.¹

2. Gongduk agreement morphology

Gongduk shows biactantial argument indexation on the verb, a feature attested in a number of Trans-Himalayan branches. Gongduk agreement morphology distinguishes three persons plus a generalized speech act participant form which may refer to either first or second person actants, two tenses, non-past and past, and two numbers, singular and plural, since first person plural actants are marked differently from singular actants in a few instances in our corpus, but this is a marginal and probably vanishing feature of Gongduk agreement morphology. With other persons, number is not marked. Gongduk agreement morphology exhibits the category of polarity, distinguishing affirmative from negative forms. A typologically noteworthy aspect of this category in Gongduk is that the marked member of the opposition is the affirmative form, whereas the negative agreement morpheme is morphologically unmarked for polarity, although the negative verb

1. Examples in this paper are presented in four lines, wherein the first line shows the actual, phonetic realization, transcribed in accordance with the International Phonetic Alphabet, and the second line shows the phonological transcription used to represent Gongduk data throughout this paper.

form takes the prefix *mə-*. Gongduk agreement morphology is exclusively suffixing, except for the aforementioned negation prefix *mə-*. The agreement suffixes of Gongduk are the same for all verbs, but suffixes with vocalic onsets or with initial stops /t/ and /d/ undergo morphophonological modifications if added to open verb stems because of the processes of second vowel deletion in hiatus situation and of intervocalic lenition of voiceless stops to voiced stops and of a voiced dental stop to a rhotic [r]. The lenition of suffix-initial /t/ to [d] also takes place with nasal-final verb stems. Additionally, suffix-initial /d/ is hardened to [t] if the verb stem ends in a voiceless stop. These modifications are summarized and illustrated in Table 1.

Table 1. Morphophonological modification of agreement suffixes with verb stems

Morphophonological rule		Example
Second vowel deletion	/V/ → Ø /V+__	/ðə+uŋi/ → [ðəŋi] ‘I’m eating it’
Lenition of /t/ and /d/	/t/ → [d] /V, N+__V	/khi+tunji/ → [kʰiduŋi] ‘I dried it’
	/d/ → [r] /V+__V	/ŋi+di/ → [ŋiri] ‘he’s coming’
Fortition of /d/	/d/ → [t] /p, t, k+__	/gɣt+di/ → [gɣtti] ‘he’s going’

For the investigation of verb stem alternations, it is important to note that only the verb stem coda is a potential locus of morphophonological alternations, since Gongduk agreement morphology operates exclusively with suffixes. Depending on the onset of the agreement suffixes, there are five different phonetic environments for the verb stem coda, namely prevocalic, preceding the dental stops /t/ or /d/, preceding a dental nasal /n/, preceding a sibilant /θ/ and prepausal. The different environments and the respective agreement suffixes of each environment are shown in Table 2.² All these environments except the prevocalic environment correlate with a syllable boundary between stem final and onset of the agreement suffixes. In accordance with these morphophonological observations, morphophonological stem alternations in Gongduk exclusively affect the verb coda, although paradigmatic verb stem alternations are also expressed by alternation of the initials or aphony of the root vowel.

2. The symbol <Σ> used in the tables of this paper represents the verb stem. Brackets mark material that is often omitted in the attested examples, but belongs to the underlying form of the morpheme in question. The symbol <V> is used when there is a considerable degree of uncertainty concerning the underlying vowel quality due to inconclusive data.

Table 2. Stem environment based on agreement morpheme onsets

Σ-Environment	Agreement morphemes
Prevocalic	-əŋi ~ -əŋ '1SG.NPT', -iŋi ~ -iŋ '1PL.NPT', -əni(ŋ) '1SG.S/P.PST', -ə(yi)ŋ(i) '1PL.PST', -əni ~ -əna '2.S/P.PST', -iri ~ -Vri 'SAP', -əri ~ -ə '3.PST', -uŋi ~ -uŋ '1SG→3.NPT', -uri 'SAP→3.NPT'
Pre-stop	-di '3.NPT.AFF', -tuŋi ~ -tuŋ '1SG→3.PST', -tiŋi ~ -tiŋ '1PL→3.PST', -tVni ~ -tVna '2→3.PST', -turi 'SAP→3.PST'
Pre-/n/	-ni ~ -na '2.NPT'
Pre-/θ/	-θəni ~ -θəna '1↔2.PST'
Prepausal	-Ø '3.NPT.NEG'

Gongduk verbs are almost exclusively monosyllabic, except for a few verbs which constitute transparent compounds morphologically separated by the negative prefix *mə-*, e.g. *ŋoðiθ-* ~ *ŋoði-* 'to recognize' → *ŋo-mə-ðiθnə* 'you don't recognize me'. Most Gongduk verbs in our corpus show one or two stems, whereas a single verb has three different stems, as will be shown in §4.8.

Gongduk verb stem alternations are caused by a bundle of different processes, namely by lenition of voiceless coda stops, assimilation of coda velar nasals to a following dental stop, reduction of syllable-final consonant clusters, deletion of coda elements which violate phonotactic rules, alternations of the quality of coda consonants, alternations in the voicedness of root initial stops as well as qualitative *Ablaut* of the root vowels.

In this paper, Gongduk verbs will not be divided into intransitive and transitive verb classes with regard to the phenomenon of verb stem alternation, since all alternation patterns with the exception of the alternations /t ~ θ/ and /d ~ ts/, i.e. verb classes 2 and 4 (see §4.2 and 4.4), are attested with both intransitive and transitive verb stems. We shall therefore define for every specific verb class below whether it is attested with intransitive verbs, transitive verbs or both. There are no phonological properties which are unique for either the intransitive or transitive verb class or suffix morphology.

3. Morphophonological stem alternation

The morphophonologically conditioned alternations must be differentiated from paradigmatic alternations, since the former are predictable on the basis of phonotactic restrictions and morphophonological rules, whereas the latter are phonologically irregular and represent opaque stem alternation. Therefore, the morphophonological alternations do not reflect different verb stems *per se*, but

rather predictable variants of the same stem, whereas the paradigmatic verb stem alternations reflect distinct verb stems.

Morphophonological stem alternations in Gongduk are the result of phonotactic restrictions or of morphophonological rules. The phonotactic restrictions that are relevant for Gongduk verb stem alternations are the avoidance of consonant clusters in syllable-final position and the restrictions with regard to the phonemes allowed in syllable-final position. Allowed syllable-final segments are all vowels, the voiceless stops /p/, /t/, and /k/, the nasal stops, the rhotic /r/, and the glottal stop /ʔ/. Voiced and aspirated stops, palato-alveolar and dental affricates, the fricatives /θ/, /ð/, /ɕ/ and /h/, the lateral approximant /l/, and the glides /w/ and /j/ cannot stand in syllable-final position. Consonant clusters are also not allowed in this position, being restricted in Gongduk to a few combinations of stops or nasal plus a palatal glide /j/ in onset position. Gongduk verb stems end on vowels, the two liquids /r/ and /l/, nasals, voiceless stops and the voiceless fricative /θ/, and clusters consisting of a voiceless stop or a nasal plus /θ/, /t/, or /ts/.

Phonotactically conditioned stem alternations arise from the violation of these rules by certain agreement forms, namely if an agreement suffix with consonant onset combines with a verb stem ending in a segment or combination of segments which cannot stand in syllable-final position, namely /-l/, /-Cθ/, /-Cts/ and /-Ct/, e.g. *cül-* ‘to feed’, *orθ-* ‘to throw’, *kumts-* ‘to harvest’, and *mokt-* ‘to be ripe’.

As a consequence, the morphophonological processes which reduce syllable-final consonant clusters to the first member of the cluster and delete syllable-final /l/, respectively, are applied to these verb stems, as shown in the first, phonetic line of Example (1).³ Example (2) shows that the full stem form appears in pre-vocalic environment, which does not violate phonotactic restrictions since stem final /l/ and the second member of stem final clusters are parsed phonotactically as onset of the following syllable.

- (1) a. *gongo ze tcyduŋi*
gon -ko ðe cül -tuŋi
 3SG -LOC 1SG.AGT feed -1→3.PST.AFF
 ‘I fed him.’

3. Note that in Example (1c), the morpheme which causes the reduction of the underlying final cluster of *kumts-* is not an agreement ending, but the purposive suffix *-di*. The choice of this form is due to a lack of good data showing the reduced stem of this verb with agreement endings. The process, however, is the same.

- b. *lemle ortuŋi*
lemle orθ -tuŋi
 spittle throw -1→3.PST.AFF
 'I spat.'
- c. *ze juŋrɣʔ kumdi gorəŋ ɛa:*
ðe juŋrɣʔ kumts -di gorəŋ sə
 1SG.AGT millet harvest -PURP must COP.EXST
 'I have to harvest millet.'

- (2) a. *gonze gonmago tɛylare*
gon -ðe gonmə -ko cül -əri
 3SG -AGT 3PL -LOC feed -3.PST.AFF
 'He fed them.'
- b. *lemle orθuŋi*
lemle orθ -uŋi
 spittle throw -1→3.AFF
 'I will spit.'
- c. *ze jombo juŋrɣʔ kumtsuŋe*
ðe yombo juŋrɣʔ kumts -uŋi
 1SG.AGT tomorrow millet harvest -1→3.AFF
 'I will harvest millet tomorrow.'

The four codas /-l/, /-Cθ/, /-Cts/ and /-Ct/ are the only syllable codas that violate phonotactic rules when combined with agreement suffixes with consonantal onset.⁴ All other phonemes employed as verb stem finals can stand both in onset and coda position. These verb stems, therefore, do not violate the phonotactic restrictions of Gongduk and, consequently, do not show any phonotactically conditioned alternation.

Two further morphophonological rules account for additional variation in Gongduk verb stems, namely the lenition of intervocalic voiceless stops and the assimilation of a velar nasal to a following dental oral or nasal stop. The former morphophonological rule affects verb stems ending in a stop whenever they are followed by an agreement suffix with vocalic onset. The latter morphophonological rule is observable with verb stems ending in a velar nasal followed by an agreement suffix with onsets /d/, /t/, or /n/, e.g. *-di* '3.NPT.AFF'.

The morphophonological rule of intervocalic lenition of voiceless stops affects all buccal stops in final position, i.e. /p/, /t/, and /k/. Lenition of /p/ is

4. A further prohibited syllable-final is exhibited by verbs ending on /-Vθ/. However, these verbs behave differently from the ones just described, since they do not drop the final fricative in syllable-final position, that is when followed by a consonantal agreement suffix. This group of verbs will be discussed below in §4.2.

exemplified by Example (3) with the verb *gɣp*- ‘to cry’. Lenition of /t/ can be illustrated with the verb *kət*- ‘to sow’ in Example (4). Lenition of final /k/, for example in *pek*- ‘to cut’, is shown in Example (5).

- (3) a. *oloŋmət ɣɣbəri*
olok -mət ɣɣp -əri
 child -PL cry -3.PST.AFF
 ‘The children cried.’
- b. *gon ɣɣti*
gon ɣɣp -di
 3SG cry -3.AFF
 ‘He is crying.’
- (4) a. *choŋnənze me ka:duŋi*
choŋnən -ðe me kət -uŋi
 maize -GEN seed sow -1→3.AFF
 ‘I shall sow the maize.’
- b. *choŋnənze me kətthɣp*
choŋnən -ðe me kət -thɣp
 maize -GEN seed sow -PROG.ASK
 ‘I’m sowing the maize.’
- (5) a. *ze peguŋi, pəra:*
ðe pek -uŋi pər -ə
 1SG.AGT cut -1→3.AFF bring -IMP
 ‘I shall cut [my nails], bring [the sickle]!’
- b. *tiʔmin peʔkthɣp*
tiʔmin pek -thɣp
 nail cut -PROG.ASK
 ‘[I’m] cutting my nails.’

The second morphophonological rule is the assimilation of stem-final /ŋ/ to a following dental /d/, /t/, or /n/ with regard to place of articulation, viz. Example (6). The underlying form of verb final /ŋ/ is shown in Example (7),⁵ where the stem coda is in prevocalic environment.

- (6) a. *gonze kha:ndəŋ?*
gon -ðe khəŋ -dəŋ
 3SG -AGT know -3.Q
 ‘Does he know [it]?’

5. The realization of the velar nasal as nasalization of surrounding vowels in Example (7b) is a regular phonological phenomenon of Gongduk.

- b. *bɣʔlxɾpɛ ɡoŋdukpa aŋ kha:nde əna:*
bɣʔlx -pə -e ɡoŋduk -pə əŋ khəŋ -di ənə
 Bɣʔlx -NMLS -GEN Gongduk -NMLS language know -3.AFF COP.EQTV
 ‘The people of Bɣʔlx know the Gongduk language.’
- c. *ɡonmae jombo kundun*
ɡonmə -e yombo kuŋ -dun
 3PL -AGT tomorrow reach.NPT -3.Q
 ‘Will they get there tomorrow?’
- (7) a. *ze kha:ŋoŋ*
ðe khəŋ -uŋ
 1SG.AGT know -1→3.AFF
 ‘I know it!’
- b. *ziŋ təjə ɡuŋwəni*
ðiŋ teyə ɡuŋ -əni(ŋ)
 1PL.EXCL today reach.PST -1SG.S/P.PST
 ‘We arrived today.’

This discussion has shown that Gongduk exhibits verb stem alternation which is morphophonologically conditioned. The next section will discuss stem alternations which cannot be described in terms of regular morphophonological rules and are therefore phonologically opaque. This kind of alternation will be called paradigmatic, since the alternants cannot be derived by regular processes, but must be assumed to constitute a part of the non-transparent lexical information of the respective verb roots. Since most of the paradigmatic alternations are attested in numerous verbs, Gongduk verbs will be divided into different classes on the basis of this morphological pattern.

4. Verb classes

Gongduk verb stem alternation patterns allow for the identification of seven distinct verb classes. Almost all verbs show one or two stems, whereas some exceptional verbs seem to exhibit more than two stems. In the following, subscript numbers are used after the stem symbol <Σ> to refer to different paradigmatic verb stems.

4.1 Class 1

The first class of Gongduk verbs shows no stem alternation, thus only exhibiting a single stem Σ₁. This class includes both intransitive and transitive verbs, and is

not restricted to a specific phonological context. Therefore, verbs of this class may end in stops, nasals, vowels, /r/, /l/, /θ/, or /ts/ alike. Table 3 shows a list of class 1 verbs with different subclasses, namely verbs ending in vowels (1a), /r/ (1b), /l/ (1c), nasals (1d), stops (1e), a cluster with final /t/ (1f), a cluster with /θ/ (1g), and a cluster with final /ts/ (1h). Class 1 verbs – namely those belonging to subclasses 1c and 1e–1h – are subject to the phonotactically and morphophonologically conditioned modifications discussed in § 3.

Table 3. Class 1 verbs

Subclass	Coda	Examples
1a	/-V/	wə- 'to do' ri- 'to buy' du- 'to put (in fire)' lə- 'to fetch'
1b	/-r/	nor- 'to plough' ɲər- 'to be tasty'
1c	/-l/	cül- 'to feed' ɖuil- 'to write' gəil- 'to copulate' kəil- 'to send'
1d	/-N/	kun- 'to dig' lom- 'to put, place'
1e	/-p, t, k/	pek- 'to cut' phot- 'to dismount' θəp- 'to chop, cut' lut- 'to stop (raining)'
1f	/-Ct/	mokt- 'to be ripe'
1g	/-Cθ/	rɣpθ- 'to dry, be dried' wɣkθ- 'to get stuck' gorθ- 'to dally' lɣnθ- 'to burn (vI)' kəli ləŋθ- 'to laugh' komθ- 'to die'
1h	/-Cts/	kumts- 'to harvest'

The dental fricative /θ/ does not appear as coda after a vowel in class 1 verbs, but is always preceded by another consonant, either an oral stop, the rhotic /r/, or a nasal. Instances of /θ/ following a vowel and as verb coda are attested, but they all

belong to class 2 described below in § 4.2. This noteworthy distribution of /θ/ will be discussed in more detail in § 5.

Table 4 illustrates the Gongduk verb class 1 with conjugated forms of the two verbs *gɾt-* ‘to go’, and *tɾŋ-* ‘to see’, and shows that there is no stem alternation besides the purely morphophonological and phonotactic variation discussed previously in § 3.

Table 4. Class 1 stems

Stem	Verb form	Underlying form	Meaning
Σ_1	gɾtni	/gɾt+ni/	‘2.NPT.AFF’
	gɾtti	/gɾt+di/	‘3.NPT.AFF’
	gɾdəŋi	/gɾt+əŋi/	‘1SG.NPT.AFF’
	gɾdəri	/gɾt+əri/	‘3.PST.AFF’
	tɾŋuŋi	/tɾŋ+uŋi/	‘1SG→3.NPT.AFF’
	tɾŋθəni	/tɾŋ+θəni/	‘1↔2.PST.AFF’
	tɾŋdini	/tɾŋ+tini/	‘2→3.PST.AFF’
	mətɾŋ	/mə+tɾŋ/	‘3→3.PST.NEG’

4.2 Class 2

The Gongduk verb class 2 contains verbs which show a non-transparent alternation between /t/ and /θ/ in stem-final position. The dental stop /t/ of Σ_1 appears as stem coda before all suffixes with consonant onset except for suffixes starting in /θ/. The latter environment as well as suffixes with a vocalic onset show Σ_2 ending in the dental fricative /θ/. An interesting fact concerning class 2 is that all verbs belonging to this class are transitive. A comprehensive list of class 2 verbs is given in Table 5. Table 6 shows the two different stems of class 2 verbs with the relevant different verb forms of the transitive verb *bet-* ~ *beθ-* ‘to wash’.

Table 5. Class 2 verbs

Verb	Σ_1	Σ_2
‘to wash’	bet-	beθ-
‘to wash, bathe’	tit-	tiθ-
‘to catch’	kut-	kuθ-
‘to sell’	met-	meθ-
‘to recognize’	ŋoðit-	ŋoðiθ-
‘to know’	ðit-	ðiθ-

Table 6. Class 2 stems

Stem	Verb form	Underlying form	Meaning
Σ_1	betne	/bet+ni/	'2.A/P.NPT.AFF'
	bettoŋe	/bet+tuŋi/	'1SG→3.PST.AFF'
	məbet	/mə+bet/	'3.PST.NEG'
Σ_2	beθθəne	/beθ+θəni/	'1↔2.PST.AFF'
	beθoŋe	/beθ+uŋi/	'1SG→3.NPT.AFF'

The distribution of the different stems of class 2 is phonologically conditioned, even though the alternation itself is not phonologically grounded. Intervocalic position of voiceless dental stops does not regularly cause the spirantization of said stops in Gongduk, but would rather yield a voiced stop, as attested in the morphophonological variation exhibited by class 1 verbs ending in a stop. The occurrence of the stem coda /θ/ before a suffix starting in /θ/ may be explicable as a regular phonological rule of Gongduk, but this cannot be verified or falsified, since we cannot judge for other instances of /t/ followed by /θ/ whether those are tautosyllabic dental affricates or heterosyllabic clusters of syllable-final /t/ followed by syllable-initial /θ/, in which case they would constitute counterevidence against the assumption /t/ → [θ] / __.θ.

Likewise, Gongduk shows no general phonological rule that would fortify a syllable-final dental fricative /θ/ to [t]. However, Gongduk phonotactics disallow the dental fricative in syllable-final position. Therefore, class 2 may be the result of an old phonological process which turned syllable-final /θ/ into /t/ and may either be the reason or a consequence of the banning of /θ/ from syllable-final position. This process may be related to the regular sound change of Gongduk whereby the fricative */s/ was fortified to [t] or [d], for example *dij* 'firewood' < **siŋ*, *tə* 'meat' < **sa*, *towə* '3' < **sVm* and potentially also *-iri* 'SAP' (see §2) < **-i-di* < **-si* 'DU' (cf. Gerber 2020: 73). However, this proposal does not explain why */s/ was retained as /θ/ before suffixal /θ/ and vowels. § 5 will present a morphological hypothesis about the origin of class 2 verbs.

4.3 Class 3

Class 3 verbs are a small and heterogeneous set of Gongduk verbs. The constituting feature of class 3 is the alternation between voiced and voiceless initial obstruent. A logical consequence of this characterization is that class 3 only contains verbs with obstruent initials. In addition to this restriction, the alternation of class 3 is only evinced by a very limited number of verbs which can be both intransitive or transitive, namely *bi-* ~ *pi-* 'to give', *bu-* ~ *pu-* 'to take, escort', *guil-* ~ *kuil-* 'to

return', *guŋ-* ~ *kuŋ-* 'to arrive, reach', *gə-* ~ *kə-* 'to bite, eat', *ðə-* ~ *θə-* 'to eat', and *gɣt-* ~ *khɣt-* 'to go'.

On the basis of the alternation pattern and the involved sounds, we can group class 3 verbs into four subgroups 3a–3d which are shown in Table 7. As Table 7 shows, the first subclass 3a is defined by an alternation pattern with voiceless initials in the non-past and voiced initials in the past. We can observe a gap in this alternation subgroup, as our corpus reveals only verbs with bilabial and velar initials, but not with dental, retroflex, or palato-alveolar initials. Whether this is an accidental or systematic gap cannot be determined at the moment. Class 3b shows the same stem distribution, but with the voiced initial in the non-past and the voiceless initial in the past. For these two subclasses, the non-past form is taken to be Σ_1 and the past form is labelled Σ_2 .

Table 7. Class 3 verbs

Subclass	Examples	Σ_1	Σ_2
3a	'to give'	pi- (NPT)	bi- (PST)
	'to return'	kuil- (NPT)	guil- (PST)
	'to arrive'	kuŋ- (NPT)	guŋ- (PST)
3b	'to eat'	ðə- (NPT)	θə- (PST)
	'to bite'	gə- (NPT)	kə- (PST)
3c	'to take, escort'	bu- (IND)	pu- (IMP)
3d	'to go'	gɣt- (IND)	khɣt- (IMP)

Class 3c and 3d share the distribution of the two different stems, whereby the first stem with voiced initial is employed in indicative verb forms and the second stem is reserved for imperatives. Classes 3a–3b use the first, non-past stem for the imperative. The two subclasses 3c and 3d are differentiated by the quality of the initial in the second, imperative stem, which is voiceless in class 3c and voiceless aspirated in class 3d.

Table 8 shows the paradigmatic stem alternation of class 3 verbs, illustrated with the respective conjugated verb forms of the three verbs *kuŋ-* ~ *guŋ-* 'to reach, arrive', *pi-* ~ *bi-* 'to give' and *ðə-* ~ *θə-* 'to eat'. The glides in the verb forms *biyəri* and *θəwəre* are epenthetic segments to avoid a hiatus situation and do not belong to the underlying structure of the stems or the suffix.⁶

6. Note that with these verb forms, the morphophonological rule of second vowel deletion is not applied, since this would yield the forms **biri* and **θəre*. Instead, the hiatus situation is resolved by the insertion of a glide. The same process is attested for the class 5 verb *mi-* ~ *mu-*, shown in Table 12. The conditions or reasons for this deviation from the process of second vowel deletion are not clear.

Table 8. Class 3 stems

Stem	Verb form	Underlying form	Meaning
Σ_1	kunəŋi	/kun+əŋi/	'1SG.NPT.AFF'
	kunni	/kun+ni/	'2.NPT.AFF'
	pini	/pi+ni/	'2.A/P.NPT.AFF'
	piri	/pi+uri/	'SAP→3.NPT.AFF'
	ðəŋi	/ðə+uŋi/	'1SG→3.NPT.AFF'
	ðəre	/ðə+di/	'3→3.NPT.AFF'
Σ_2	gunəni	/gun+əni(ŋ)/	'1SG.PST.AFF'
	gunəni	/gun+əni/	'2.PST.AFF'
	biθəni	/bi+θəni/	'1↔2.PST.AFF'
	biyəri	/bi+əri/	'3→3.PST.AFF'
	θədoŋe	/θə+tuŋi/	'1SG→3.PST.AFF'
	θəwəre	/θə+əri/	'3→3.PST.AFF'

Another verb shows variation of the class 3 type, namely *pə-* ~ *bə-* 'to bring'. Whereas the distribution of voiceless and voiced initial is identical to a class 3a verb, the verb 'to bring' additionally shows a root final /r/ in certain forms, and is therefore classified as an irregular verb to be discussed below in §4.8.

4.4 Class 4

Class 4 is a small class of exclusively intransitive verbs which show a consonant cluster in both non-past and past tense and an irregular past marking device. The class 4 verbs attested in our corpus are shown in Table 9. A fourth potential member of class 4 is *mokt-* 'to be ripe', which shows the final dental stop and intransitive meaning characteristic of class 4 verbs. However, *mokt-* is only attested in one instance, namely with the inferred past suffix, i.e. *mokt-əkə*, and from this scarce attestation it is impossible to capture the underlying phonological structure of this verb.

Table 9. Class 4 verbs

Verb	Σ_1	Σ_2
'to climb'	kondə- (NPT)	kontsə- (PST)
'to get up'	ŋəndə- (NPT)	ŋəntsə- (PST)
'to learn'	yəndə- (NPT)	yəntsə- (PST)

Class 4 verbs show the cluster [nd] in stem final position in the non-past and [nts] in the past tense. The following central vowel [ə] must be assumed to form part

of the verb stem, since the vowel shows up in all verb forms and drives out any potential inherent onset vowel in the agreement suffixes according to the morphophonological process of second vowel deletion. Due to this vowel deletion, certain forms in the paradigm of class 4 verbs are formally identical, although the underlying structure is different, as is shown in Table 10, where the two stems of class 4 verbs are exemplified with forms of the verb *kondə-* ~ *kontsə-* ‘to climb’.

Table 10. Class 4 stems

Stem	Verb form	Underlying form	Meaning
Σ ₁	kondəŋe	/kondə+əŋi/	‘1SG.NPT.AFF’
	kondəne	/kondə+ni/	‘2.NPT.AFF’
	kondəre	/kondə+iri/	‘SAP.NPT.AFF’
	kondəre	/kondə+di/	‘3.NPT.AFF’
Σ ₂	kontsəne	/kontsə+əni(ŋ)/	‘1SG.PST.AFF’
	kontsəne	/kontsə+əni/	‘2.PST.AFF’
	kontsəre	/kontsə+Vri/	‘SAP.PST.AFF’
	kontsəre	/kontsə+əri/	‘3.PST.AFF’

Comparing the past and non-past stems of class 4 verbs reveals a sibilant past morpheme *-θ-*, similar to the transitive 1↔2 past morpheme *-θə-*. The occurrence of this past morpheme with an intransitive verb class is remarkable, since it otherwise occurs solely in local scenarios of transitive verbs. This voiceless sibilant may also be responsible for the voicing alternation [d ~ t] in the stem final of class 4. The transitive 1↔2 past morpheme *-θə-* is syllabic, and if we assume an etymological relationship between this morpheme and the past marker of verb class 4, the underlying form of the class 4 past suffix probably is *-θə-* as well, instead of a simple sibilant *-θ-*. This explains the vowel [ə] in class 4 past stems, where it belongs etymologically to the past morpheme, but raises the question about the etymology of [ə] in the non-past forms, to which we now turn.

According to Gongduk phonotactics, consonant clusters are regularly reduced to the first consonant when occurring in syllable-final position. For class 4 verbs, this would mean the reduction of the cluster [-nd-] in certain non-past forms, e.g. in the second person non-past affirmative, marked with the suffix *-ni*. This, then, would yield the forms **konni* ‘you will climb’ or **yanni* ‘you will study’. However, the attested forms *kondəni* and *yəndəni* suggest that the cluster was rather resolved by an epenthetic vowel [ə], the insertion of which was motivated or facilitated by analogy with the etymologically primary [ə] in the corresponding past forms. An etymology for the dental stop of class 4 verbs is provided in § 5.1.

4.5 Class 5

The last three verb classes of Gongduk, classes 5–7, all exhibit only one member. However, they are treated as separate verb classes and not as irregular verbs, since the alternation is systematic and potentially also present in other verbs, but only attested in one verb each due to the limited nature of the data corpus. Therefore, they will be described as proper verb classes. The irregular verbs in §4.8 are different in that they show various stem allomorphs without clear conditions and are likely to be the only member of their class, hence they can be regarded as irregular verbs.

Class 5 is defined by the phenomenon of *Ablaut* or apophony, that is the qualitative alternation of the root vowel. This class only contains one verb, *mi-* ~ *mu-* ‘to stay, live’. The verb class is shown in Table 11. The alternation between /i/ and /u/ for the class 5 verb ‘to stay, live’ seems to be conditioned by tense, the front vowel /i/ occurring in past forms and the back vowel /u/ in non-past forms. The sole exception are the forms for a first person subject, both of which show the stem *mi-*.⁷ The paradigm of this intransitive verb is given in Table 12. The phonological or morphological background of the apophony attested in Gongduk verb class 5 is unclear (see §5).

Table 11. Class 5 verbs

Verb	Σ_1	Σ_2
‘to stay, live’	mi- (PST)	mu- (NPT)

Table 12. Class 5 stems

Stem	Verb form	Underlying form	Meaning
Σ_1	miyəŋi	/mi+əŋi/	‘1SG.NPT.AFF’
	miyəniŋ	/mi+əni(ŋ)/	‘1SG.PST.AFF’
	miyəni	/mi+əni/	‘2.PST.AFF’
	miri	/mi+Vri/	‘SAP.PST.AFF’
	miri	/mi+əri/	‘3.PST.AFF’
Σ_2	muni	/mu+ni/	‘2.NPT.AFF’
	muri	/mu+iri/	‘SAP.NPT.AFF’
	muri	/mu+di/	‘3.NPT.AFF’

7. In view of this exception, it is possible to formulate an alternative distribution, which is phonologically conditioned, with the stem *mi-* appearing before a vowel-initial suffix. However, this explanation has an exception, too, namely *muri* /mu+iri/ ‘SAP.NPT.AFF’, where **miri* would be expected. Note that this distribution exactly matches that of the irregular verb *ŋyā-* ~ *ŋi-* ‘to come’ discussed in §4.8.

Apophony is also attested for the class 7 verb *məl-* ~ *mxt-* ‘to look’ and the verb *pəkθ-* ~ *prk-* ‘to tether’, which otherwise behaves like a class 1g verb. However, it is possible that the apophony in these verbs is conditioned by the phonological environment, since many instances of the vowel [ɤ] actually appear in closed syllables with final stop and probably represent instances of underlying /ə/. Therefore, we have refrained from including these verbs into class 5. The verb ‘to look’ will be discussed below in §4.7.

4.6 Class 6

Class 6 verbs show an alternation in the coda between a Σ_1 ending in /r/ and a Σ_2 ending in /l/, cf. Table 13. However, this verb class is only attested in a single verb, *θer-* ~ *θel-* ‘to chop, split’, and this verb itself is only attested fragmentarily in three forms, namely *məθerun* ‘I shall not chop’, *θertonje* ‘I chopped’ and *θelthɣp* ‘I’m chopping.’ From this very limited data, we cannot formulate a complete paradigm of verb stem alternations or deduce the stem of other forms of the paradigm, but we can make two interesting observations.

Table 13. Class 6 verbs

Verb	Σ_1	Σ_2
‘to chop’	θer-	θel-

First, class 6 shows the lateral approximant /l/ in syllable-final position in *θelthɣp* ‘I’m chopping’, a position where /l/ does not regularly occur. In other verb classes, namely class 1 and class 7, a syllable-final /l/ is deleted or undergoes fortition to /t/, respectively. Therefore, its occurrence in syllable-final position in class 6 verbs is remarkable.

Secondly, both /r/ and /l/ occur in the same phonological environment, namely in syllable-final position before a dental stop /t/ or /tʰ/, e.g. *θertonje* ‘I chopped’ and *θelthɣp* ‘I’m chopping.’ The alternation, thus, seems to be paradigmatic rather than phonological. At the present state of knowledge, no further analysis of this peculiar verb class is possible, since such an analysis must await further data on the verb in question or other verbs showing the same alternation.

4.7 Class 7

Class 7 contains the verb *məl-* ~ *mxt-* ‘to look, watch’ and is defined by two features, the alternation of lateral /l/ and dental stop /t/ in the coda of the verb root

and the *Ablaut* /ə/ ~ /ʏ/ in the root vowel. The form *məl-* can be defined as Σ_1 and *mʏt-* as Σ_2 . Verb class 7 is shown in Table 14.

Table 14. Class 7 verbs

Verb	Σ_1	Σ_2
'to look, watch'	<i>məl-</i>	<i>mʏt-</i>

The alternation is conditioned by the relative position within the syllable of the stem final, that is by whether the following segment is a vowel or consonant. The first stem *məl-* appears prevocalic, i.e. with the stem final in syllable-initial position, whereas the second stem *mʏt-* occurs before suffixes with consonant onset, i.e. with the stem final in syllable-final position.

Despite these transparent phonological conditions, the alternation itself is not transparent, but paradigmatic. Other verbs with stem-final /l/ belonging to class 1c delete this final consonant before consonants, whereas class 7 verbs show /t/ in this environment. If we would assume, alternatively, that the underlying stem is *mʏt-*, then this would regularly yield **mʏd-* before vowels, not *məl-*, as seen in class 1e verbs. Therefore, we can assume both that *məl-* is the underlying stem and that the stem alternation of class 7 is paradigmatic. The *Ablaut* in the attested verb may be conditioned by the final dental stop and therefore constitute an epiphenomenon of the coda alternation, since [ʏ] often appears in closed syllable with final stop or even alternates with [ə] in this environment, suggesting underlying /ə/. Table 15 shows the relevant forms of the verb *məl- ~ mʏt-* 'to look, watch' to illustrate verb stem class 7.

Table 15. Class 7 stems

Stem	Verb form	Underlying form	Meaning
Σ_1	<i>məluŋi</i>	/məluŋi/	'1SG→3.NPT.AFF'
	<i>məluri</i>	/məluŋi/	'SAP→3.NPT.AFF'
	<i>mələŋi</i>	/məluŋi/	'3→1.NPT.AFF'
	<i>məmələ</i>	/məluŋi/	'3→3.PST.NEG'
Σ_2	<i>mʏtni</i>	/mʏt+ni/	'2.A/P.NPT.AFF'
	<i>mʏtθəni</i>	/mʏt+θəni/	'1↔2.PST.AFF'
	<i>mʏttuŋi</i>	/mʏt+tuŋi/	'1SG→3.PST.AFF'
	<i>məmʏt</i>	/mə+mʏt/	'3→3.NPT.NEG'

4.8 Irregular verb stems

This section shortly discusses verbs without a clear class assignment which are classified as irregular verbs, namely *nukθ-* ~ *nu-* ‘to push, trip’, *ηyə-* ~ *ηi-* ‘to come’ and *pə-* ~ *bə-* ~ *pər-* ‘to bring’.

The verb ‘to push, trip’ shows quasi-paradigmatic alternation which is neither fully predictable nor fully explainable on phonological and morphophonological grounds. The stem *nukθ-* shows the morphophonological rule of cluster reduction regularly attested in 1g verbs, yielding [nuk] before consonants other than /n/, but the third attested stem allomorph, *nu-*, which is only attested before /n/, is irregular. Deletion of /k/ before /n/ is not attested regularly elsewhere in Gongduk and is thus not predictable. The elision of /k/ is probably related to the regular glottalization of syllable-final plosives in Gongduk, and the verb stem *nu-* may represent an instance where the glottalization of /k/ finally led to the loss of the syllable-final stop before /n/. Therefore, the stem *nu-* is phonologically explicable, but the complete loss of the syllable-final stop is not a regular process of Gongduk. The relevant forms of the two stems of the verb *nukθ-* ~ *nu-* ‘to push, trip’ are given in Table 16.

Table 16. Stems of *nukθ-* ~ *nu-* ‘to push, trip’

Stem	Verb form	Underlying form	Meaning
Σ ₁	nukθuŋi	/nukθ+uŋi/	‘1SG→3.NPT.AFF’
	nukθuri	/nukθ+uri/	‘SAP→3.NPT.AFF’
	nukθəni	/nukθ+θəni/	‘1↔2.PST.AFF’
	nuktuŋi	/nukθ+tuŋi/	‘1SG→3.PST.AFF’
	mənuk	/mə+nukθ/	‘3→3.NPT.NEG’
Σ ₂	nuni	/nu+ni/	‘2.A/P.NPT.AFF’
	mənunə	/mə+nu+nə/	‘2.A/P.NPT.NEG’

A second irregular verb is *ηyə-* ~ *ηi-* ‘to come’. The forms of this intransitive verb which illustrate the irregular stem alternation are given in Table 17. The two stems of this verb are explicable on phonotactic grounds, but the phonological realization of this difference is a singularity in Gongduk. The full stem *ηyə-* occurs with a first person subject in non-past and past, with a second person in past and a third person in past. What these forms have in common is an agreement morpheme with the onset /ə/, i.e. *-əŋi*, *-əni(η)*, *-əni* and *-əri*. In these forms, the original stem vowel /ə/ is retained and merges with the suffix vowel /ə/. The second and third persons in non-past, in contrast, are marked with a suffix starting in a consonant, viz. *-ni* and *-di*. These two forms have the stem *ηi-*. We can analyze this as a fusion

of the sound sequence /-jə-/ to [i] before a consonant. Obviously, an initial vowel in the agreement suffix inhibits this fusion. The speech act participant forms deviate from this distribution. Its morphological marker *-iri* starts in a vowel, but the stem allomorph is *ɲi-* instead of expected *ɲyə-*. The stem allomorph choice for speech act participant subjects is caused by the high front vowel of the agreement morpheme *-iri*, which leads to a realization of the stem vowel /ə/ as [i]. In addition to this irregular alternation of the stem vowel, the verb ‘to come’ shows a dialectal variant *yə-* without initial velar nasal in the dialect of Bangbala village.

Table 17. Stems of *ɲyə-* ~ *ɲi-* ‘to come’

Stem	Verb form	Underlying form	Meaning
Σ ₁	ɲyənɟi	/ɲyə+ənɟi/	‘1SG.NPT.AFF’
	ɲyənɟiŋ	/ɲyə+ənɟ(ŋ)/	‘1SG.PST.AFF’
	ɲyənɟi	/ɲyə+ənɟi/	‘2.PST.AFF’
	ɲyəri	/ɲyə+əri/	‘3.PST.AFF’
Σ ₂	ɲini	/ɲi+ni/	‘2.NPT.AFF’
	ɲiri	/ɲi+iri/	‘SAP.NPT.AFF’
	ɲiri	/ɲi+di/	‘3.NPT.AFF’

It is interesting to note that the distribution of the two stems *ɲyə-* ~ *ɲi-* corresponds exactly to the distribution of the two stems of the class 5 verb *mi-* ~ *mu-*, with *mu-* occurring before consonant-initial suffixes and in the speech-act participant non-past form, which is *muri* /mu+iri/ instead of expected **miri*. Whether the pattern of apophony of class 5 and the alternation [jə ~ i] in the verb ‘to come’ reflect the same or a similar historical process must remain an open question at present.

A third irregular verb is *pə-* ~ *bə-* ~ *pər-* ‘to bring’, a transitive verb for which only forms with a third person patient are attested, since the syntactic object marked on the verb is always the theme of the action, never the recipient of the transfer. Most forms of the verb are unproblematic and classify ‘to bring’ as a class 3a verb like *pi-* ~ *bi-* ‘to give’, with the voiceless onset employed for non-past forms and the voiced counterpart for past forms. The irregular character of this verb arises mainly from the appearance of a third stem allomorph, *pər-*, in two verb forms, namely *perore* ‘SAP will bring it’ and *pərə* ‘bring it!’.

Therefore, ‘to bring’ needs to be classified as an irregular verb, and the three stem allomorphs *pə-*, *bə-*, and *pər-* need to be included in the lexical entry of this verb. The relevant verb forms of this irregular verb are shown in Table 18.

Table 18. Stems of *pə- ~ bə- ~ pə-* ‘to bring’

Stem	Verb form	Underlying form	Meaning
Σ_1	<i>pəje</i>	/pə+uŋi/	‘1SG→3.NPT.AFF’
	<i>məpəŋ</i>	/mə+pə+uŋ/	‘1SG→3.NPT.NEG’
	<i>pəne</i>	/pə+ni/	‘2.A/P.PST.AFF’
Σ_2	<i>bətuje</i>	/bə+tuŋi/	‘1SG→3.PST.AFF’
	<i>bətene</i>	/bə+tini/	‘2→3.PST.AFF’
	<i>bəture</i>	/bə+turi/	‘SAP→3.PST.AFF’
Σ_3	<i>pərore</i>	/pə+uri/	‘SAP→3.NPT.AFF’
	<i>pəṛə</i>	/pə+ṛə/	‘IMP’

5. Diachronic observations

This section proposes diachronic explanations for the paradigmatic verb stem alternations of Gongduk. Classes 2, 3, and 4 are analyzed as showing reflexes of additional morphological material also attested in other branches of Trans-Himalayan, namely the valence suffixes **-s*, **-t*, and **-s(i)* (§5.1) and directional prefixes (§5.2). For classes 5–7, no morphological material is isolated to account for the stem alternations, but external cognates are presented in order to arrive at the original form of the respective verb stems (§5.3).

5.1 Frozen valence suffixes

First, some phonotactic observations will be made to account for the paradigmatic stem alternations of classes 2–4 and to isolate additional morphological material added to the verb stems.

As has been mentioned above in §3, Gongduk only allows a small set of sounds to stand in syllable-final position. Verb roots differ phonologically from nominal roots in that they show the stem-final segments /l/ and /θ/ and consonant clusters /Cθ/, /Ct/ and /Cts/ (see §4.1). The two segments /l/ and /θ/ are deleted and the consonant clusters are reduced in syllable-final position, but retained before vocalic suffixes, that is when they stand in syllable-initial position. Although these verb roots therefore obey the phonotactic rules of Gongduk, the mere existence of these segments and clusters in stem-final position is noteworthy. Keeping in mind the general phonotactic aversion against consonant clusters in Gongduk, verb stem-final clusters are extraordinary and potentially constitute heteromorphemic sequences. Additionally, /θ/ appears either after another consonant (verb class 1g) or as stem final consonant after the root vowel (verb class 2).

All class 2 verbs are transitive, and /θ/ even occurs in syllable-final position in this verb class, namely when followed by the agreement suffixes *-θani* '1↔2.PST.AFF' and *-θana* '1↔2.PST.NEG'. Class 1g verbs are often also transitive verbs, as Table 19 shows. These observations again hint at the possibility that stem-final /θ/ in classes 1g and 2 may be additional morphological material and does not belong etymologically to the verb root. This analysis of /θ/ is complicated by the fact that there are almost no morphological minimal pairs in Gongduk which would allow for a clear and transparent identification of valence-changing morphology. Rather, the morphology is frozen and unproductive, and indirect evidence must be employed to identify it.

Table 19. Postconsonantal /θ/ in class 1g verbs

Valence	Verb	Meaning
transitive	ɣpθ-	'to obscure, cover'
	orθ-	'to throw'
	gopθ-	'to meet someone'
	təkθ-	'to kindle'
	pəkθ-	'to tether'
	phəpθ-	'to put down'
	bipθ-	'to suck'
	ðoŋθ-	'to push'
	rɣpθ-	'to dry'
	yəkθ-	'to cover/strike'
intransitive	kəli ləŋθ-	'to laugh'
	gorθ-	'to dally'
	komθ-	'to die'
	jonθ-	'to arrive (HON)'
	tənθ-	'to rise, emerge'
	bəpθ-	'to be obliged, must'
	bəkθ-	'to be exhausted'
	ðiŋθ-	'to be swollen, to swell'
	ləŋθ-	'to be enough'
	lɣnθ-	'to burn'
wɣkθ-	'to stick, get stuck'	

The transitive nature of class 2 verbs offers a promising explanation for the stem alternation between /t/ and /θ/ and allows for the analysis of these two stem finals as valence-increasing suffixes. Benedict (1972: 98–103) assumes three dental suf-

fixes **-s*, **-t* and, **-n* for Proto-Tibeto-Burman. The function of these suffixes is difficult to assess, but **-t* generally seems to be “clearly causative or directive” (Benedict 1972: 100). The term “directive” goes back to Wolfenden (1929), who assumed that the element [s ~ d] occurring in Tibetan perfect verb forms derives from an earlier “directive”, i.e. valence-changing function. Michailovsky (1985: 366), in his discussion of the suffixes *-s* and *-t* in Limbu, states that while the suffix *-s* is a straightforward causative, the *t*-suffix is semantically more evasive, covering the functions of applicative or benefactive. Regardless of the semantic details, both suffixes are valence-increasing in Limbu and in Trans-Himalayan in general.

The stem final dental stop /t/ in class 2 verbs may be a reflex of this widespread dental directive/applicative suffix. Direct evidence for this assumption comes from the attestation of a reflexive or middle verb *ti-* ‘to bathe, wash oneself’, which is obviously etymologically related to the class 2 transitive verb *tit-* ~ *tiθ-* ‘to wash, bathe’, cf. Examples (8) and (9). The intransitivity of *ti-* indicates that the stem-final dental segments *-t* and *-θ* in its transitive counterpart are responsible for the transitivity.

Consequently, we can assume that the dental stop coda in class 2 verbs derives from an inherited suffix which functioned as a valence-increasing device. The alternation between /t/ and /θ/ in Gongduk class 2 verbs can be accounted for by the assumption that final *-θ* is etymologically distinct from final *-t* and a reflex of the causative suffix **-s* found most clearly in Kiranti, with scattered traces in “most branches of the family” (Jacques 2016: 209).

The assumption that the stem alternation of Gongduk verb class 2 is due to two different valence-increasing suffixes needs to explain why both suffixes appear with the same verbs and have obviously lost their semantic distinction. Phonotactic restrictions of the linguistic ancestor of Gongduk seem to have banned dental fricatives from syllable-final position, thus not allowing **-s* to be used before agreement suffixes with consonantal onset. As a consequence, the suffixes **-t* and **-s* would have come to stand in complementary distribution and may have been reanalyzed as allomorphs of the same valence-changing morpheme. The reanalysis, thus, led to the allomorphy which is still attested in Gongduk class 2 verbs. The occurrence of /θ/ before another dental fricative may be a relatively recent development explicable by assimilation of underlying /t/. The same valence-increasing morpheme **-s* may also be preserved in the full stem of verbs of class 1g with final cluster *-Cθ* and transitive meaning, cf. Tables 3 and 19. The verbs of class 1g which have an intransitive meaning may reflect another morpheme to be discussed below in the context of class 4 stem alternation. In contrast, there are no clear instances outside class 2 verbs of reflexes of a valence-increasing suffix *-t*.

The final dental stop attested with a number of verbs seems to belong etymologically to the verb root and does not constitute derivational suffix morphology.

The verb *ti-* ‘to bathe oneself’ mentioned above shows some forms which are unexpected under the present analysis of *ti-* as intransitive, reflexive, or middle stem and *tit-* ~ *tiθ-* as derived transitive stem, namely intransitive forms which show a final dental /θ/, e.g. Example (8). These forms look like class 2 stems on first sight, i.e. transitive verb forms, but their meaning and agreement suffixes are intransitive. Additionally, some of the verb forms which show the stem *ti-* occur pre-consonantal and therefore potentially derive from the underlying stem *tiθ-* with regular deletion of syllable-final /θ/; cf. Example (9). If this would be the transitive class 2 verb *tiθ-* ~ *tit-*, then the stem *tit-* would be expected in this environment (cf. Table 6).

- (8) a. *ðə mətiθəniŋ*
ðə mə- tiθ -əni(ŋ)
 1SG NEG- bathe.REFL -1SG.S/P.PST
 ‘I did not bathe myself.’
- b. *giŋ ŋaŋpo tiθəne mo?*
giŋ ŋaŋpo tiθ -əni mo
 2PL all bathe.REFL -2.S/P.PST.AFF Q
 ‘Did you all bathe?’
- c. *gonmə tiθəre mo?*
gonmə tiθ -əri mo
 3PL bathe.REFL -3.PST.AFF Q
 ‘Did they bathe?’
- (9) a. *gi jombo tini mo?*
gi yombo ?tiθ -ni mo
 2SG tomorrow bathe.?REFL -2.NPT.AFF Q
 ‘Will you bathe tomorrow?’

These forms never show a final /t/ in pre-consonantal position, which would be expected if this was a class 2 verb. The dental fricative /θ/ in these instances, therefore, has another paradigmatic distribution than the class 2 stem final /θ/ and, subsequently, must constitute another formative than the class 2 valence-increasing -θ which alternates with -t on morphophonological grounds.

The dental fricative encountered as stem-final element in intransitive verb forms such as those in Example (8) may be a reflex of the valence-reducing dental suffix **-s(i) ~ -(n)ši* discussed in Benedict (1972: 98–103), Bauman (1975: 94), Michailovsky (1985: 369), and van Driem (1993b: 320–321). This would also explain why certain verbs of class 1g in Table 19, e.g. *lɛnθ-* ‘to burn (VI)’ or *wɛkθ-* ‘to stick, get stuck’, are intransitive, whereas others, e.g. *bipθ-* ‘to suck’ or *orθ-*

‘to throw’, are transitive, since we assume two different, but homophonous morphemes which were used in an early stage of the language to decrease or increase the valence of a verb. However, it remains unclear why the valence-reducing suffix *-θ* appears only in certain prevocalic forms of *ti- ~ tiθ-* ‘to bathe oneself’ and not in all, as would morphophonologically be expected. In the class 4 stem alternation discussed next, other potential reflexes of the valence-decreasing suffix **-s(i)* are found.

Class 4 verbs are all intransitive. Since there are morphological minimal pairs, namely *ηəndə- ~ ηəntsə-* ‘to wake up (VI)’ vs. *ηən-* ‘to get up, wake up (VT)’ and potentially also *yəndə- ~ yəntsə-* ‘to learn, study’ vs. *yət-* ‘to teach’, we can isolate the segment [-də- ~ -tsə-] as a valence-decreasing morpheme. Since the sibilant segment and the vowel [ə] can be morphologically separated from the dental stop (see §4.4), we can reduce the intransitivity marker to a dental stop [-t- ~ -d-]. The voicing alternation between non-past and past is caused by the different phonetic environments, [d] occurring between a nasal and a vowel and [t] before a voiceless fricative. The underlying form, however, is not readily retrievable, since both lenition and fortition of stops are attested in Gongduk (see Table 1).

In the Gongduk data corpus, there is another verb which exhibits a possible trace of the same valence-decreasing morpheme, namely *mokt-* ‘to be ripe’, which may be morphologically complex, consisting of the root *mok-* and the detransitivizer *-t*. Again, the restriction of consonant clusters in Gongduk makes this final cluster noteworthy and indicates that it constitutes a heteromorphemic cluster.

The valence-decreasing morpheme *-t ~ -d* that we can extract from this morphological analysis may be another reflex of the reflexive suffix **-s(i) ~ -(n)ši*. The outcome [t ~ d] in Gongduk is regular, given the sound change **s/ → [t ~ d]* (see §4.2). Clear reflexes of this suffix are found in Kiranti, West Himalayish, and Nungish (Benedict 1972: 98) as well as in Thangmi (cf. Turin 2012: 365, 372–376) and Kham (cf. Watters 2002: 240). LaPolla (2003: 30) views this morpheme as an innovation of a part of his Rung subgroup, namely of Kiranti, West Himalayish, and Nungish. However, cognates are also found in Kham and Thangmi, both of which are not explicitly included into LaPolla’s Rung branch.⁸ Post & Modi (2018) have discussed cognates in Tani and Milang, and Jacques (2016: 210–212) has shown that potential cognates can also be assumed for Old Chinese and Tibetan,

8. In fact, neither Thangmi nor Kham are classified in LaPolla (2003), but Newar, which is thought to be the closest relative of Thangmi and Baram (cf. van Driem 2001: 768–773; Turin 2012: 1–30; but cf. also Rüfenacht 2018), is assigned to the “Bodic” branch and not to Rung (LaPolla 2003: 29). Kham and the occurrence of a reflex of the **-si* middle suffix in this language are mentioned in a subordinate clause in LaPolla (2003: 36), but the language is not explicitly classified within Rung or elsewhere.

suggesting a distribution of the reflexive/middle suffix well beyond LaPolla's Rung branch. Likewise, the Gongduk data refutes LaPolla's proposition of a shared innovation of a reflexive marker **-si* for Kiranti, Nungish, and West Himalayish, since Gongduk has never been included in Rung.⁹ The morpheme in Gongduk is unproductive and lexicalized in most instances, the only attested clear exception being the minimal verb pair *ŋandə- ~ ŋəntsə-* 'to wake up (VI)' vs. *ŋən-* 'to get up, wake up (VT)'.¹⁰

A problem of this analysis is that it assumes a sound change **/s/ → [t ~ d]* which affected some verbal suffixes like the detransitivizing suffix, but at the same time did not apply to other instances, namely the presumable reflex of causative **-s* (see above) and certain instances of the valence-decreasing suffix **-s(i)* (see Table 19). It may be tempting to invoke grammatical conditioning for this inconsistency, but such argumentation has been empirically discredited by Hill (2014). A more appropriate and constructive approach would be to assume some kind of difference either in the phonetic environment, the prosodic status, or the structural environment of the suffixes, which led to the sound change not being applied in certain instances of the reflexive suffix and to the causative marker, or being analogically reversed in these instances. According to the reconstruction of Benedict (1972); Bauman (1975), and van Driem (1993b), the reflexive suffix is a syllabic morpheme **-sV ~ -(n)ši*, whereas the causative suffix is generally reconstructed as a non-syllabic **-s*. This may be the phonological difference which resulted in a different treatment of the two suffixes, but this does not explain why certain instances of the valence-decreasing suffix obviously did not undergo the fortition.

Another possibility is to assume a different etymology for one or several of the suffixes which involves morphological innovation and does not assume a deep Trans-Himalayan etymology. The etymology of such a more recent formative may involve a phonologically reduced and semantically bleached auxiliary of unclear origin. The hypotheses with regard to traces of inherited valence morphology are summarized in Table 20, which shows the etymology, development, and distribution of the relevant Gongduk forms.

9. Note that Gongduk also shares most of the other agreement morphemes that LaPolla (2003: 30) identifies as Rung innovations, namely first person **-ŋ*, first person plural **-i* and dual **-si*.

Table 20. Potential traces of valence morphology in Gongduk

PTH morpheme	Gongduk reflex	Development
*-s 'causative'	class 1g VT verbs	lexicalized, semantically bleached, phonetically unchanged
	class 2 verbs	reanalysis as allomorph of *-t, semantically bleached, phonetically unchanged
*-t 'directive'	class 2 verbs	reanalysis as allomorph of *-s, semantically bleached
*-(i) 'reflexive'	class 1g VI verbs	lexicalized, semantically bleached, phonetically unchanged
	class 4 verbs	fortition of */s/ to [t ~ d], mostly lexicalized

5.2 Traces of directional prefixes

The voicing alternation in the onset of class 3 verbs calls to mind similar alternations in other branches of Trans-Himalayan which signal a difference in valence. This alternation has been reconstructed by different authors (Benedict 1972; Matisoff 2003; LaPolla 2003). The Gongduk alternation, at least synchronically, is not between different degrees of transitivity, but between different tenses (see §4.3).

Certain scholars (Wolfenden 1929: 56–58; Benedict 1972: 124; Michailovsky 1985: 369) have discussed the possibility that the Tibetan tense-aspect markers, i.e. certain affixes and the voicing alternation observable between different tense stems, derive from former valence or directional morphology. This pathway would also allow for the analysis of the onset alternation in Gongduk class 3 verbs as having been originally one of valence, only later being reanalyzed as being a differentiation of tense or mood. However, Jacques (2012), based on the internal reconstruction of Coblin (1976), suggests another analysis in which the two voicing alternations attested in Tibetan, of which one signals transitivity differences and the other tense-aspect differences, are regarded as etymologically unrelated. The valence alternation is traced back by Jacques (2012: 215–217) to a nasal anticausative prefix with cognates in Japhug and Chinese (cf. Sagart 1999: 74–78).¹⁰ The voicing alternation related to tense-aspect-mood, in contrast, goes back to phonetic assimilation to the verbal prefixes which are analyzed by Jacques (2012: 220–222) as reflecting grammaticalized directional prefixes. A similar system of directional prefixes which also show secondary tense-aspect func-

10. See also Wolfenden (1929: 30) and Benedict (1972: 97, 117–121), who assume an *m*-prefix which derives intransitive verb roots.

tions is encountered in Qiangic and Gyalrong languages (Jacques 2012: 220–222), but also in other languages families, e.g. in Georgian or German.

Since the alternation attested in Gongduk class 3 verbs also relates to tense and mood, it can conceivably be traced back to directional prefixes, too, especially since many of the verbs of class 3 are verbs of movement, i.e. ‘to return’, ‘to arrive’, ‘to take, escort’, and ‘to go’.

The form and etymology of these prefixes cannot be retrieved, since they have completely vanished and only live on in the stem alternation that they caused by means of phonetic assimilation. However, we can speculate reasonably that more than one prefix was involved in the formation of class 3 verb stem alternation, since there are three different patterns attested in Gongduk, namely voiceless non-past vs. voiced past, voiced non-past vs. voiceless past and voiced indicative vs. voiceless/aspirated imperative (see § 4.3). The correlation between direction and tense-aspect-mood is unclear in Japhug (cf. Jacques 2012: 220). Likewise, it is difficult to assess which directions were expressed by the assumed Gongduk prefixes, especially since they have completely eroded phonetically. However, it is interesting to note that certain verbs in Japhug have intrinsic directional prefixes which appear in all tenses except for the plain non-past, and that the intrinsic prefix of the verb ‘to give’ is *m-*, yielding the form *mbi-* (cf. Jacques 2012: 220–221). Gongduk also shows a voiced stem *bi-* for ‘to give’ in the past, but a voiceless stem *pi-* in the non-past, which suggests that a similar relation exists in Gongduk and Japhug between direction and tense-aspect or that the formations are even etymologically related. The hypotheses concerning the etymologies of verb class 3 are summarized in Table 21.

Table 21. Potential traces of directional prefixes in Gongduk verb class 3

Subclass	Verb	Σ_1	Σ_2	Pre-Gongduk
3a	‘to give’	pi- (NPT)	bi- (PST)	$\Sigma_2 = *m+pi$
	‘to return’	kuil- (NPT)	guil- (PST)	$\Sigma_2 = *m+kuil$
3b	‘to eat’	ðə- (NPT)	θə- (PST)	$\Sigma_2 = *C_{[-voice]_1} + \text{ðə}$
3c	‘to take, escort’	bu- (IND)	pu- (IMP)	$\Sigma_2 = *C_{[-voice]_{1/2}} + bu$
3d	‘to go’	gɣt- (IND)	khɣt- (IMP)	$\Sigma_2 = *C_{[-voice]_2} + gɣt$

Since all class 3a verbs show the same pattern, we may assume that they were originally prefixed with the same directional marker. Based on the pattern observed for the different onsets of class 3a, the unmarked member in class 3b may also be the non-past stem, and the past stem may derive from the amalgamation of the stem and a voiceless prefix of unknown shape or etymology. The morphologically and semantically marked status of the imperative category suggests that the

indicative stem is the unmarked member in the stem opposition of classes 3c and 3d, and the imperative stem, like the past stem of class 3b, may involve a former voiceless prefix. For class 3c, this may be the same prefix as in class 3b, since the marked stem shows a voiceless initial in both classes. Class 3d, in contrast, seems to reflect a second voiceless prefix which caused a voiceless aspirated stem initial in the imperative. Since the marked category is the same for classes 3c and 3d, namely the imperative, class 3c may also have had the same prefix as class 3d.

A closer relationship between Gongduk and either Gyalrong, Qiangic, or Tibetan on the basis of this shared grammaticalization of directional prefixes into tense-aspect-mood markers and, ultimately, into stem alternations is unlikely, since these may readily constitute parallel, independent developments (cf. Jacques 2012: 22).

5.3 External cognates for classes 5–7

For the verbs of classes 5–7, we shall refrain from detailed diachronic analysis because of the scarceness of data and the non-transparent state of the alternations attested for these verb classes. However, external cognates are shown in Table 22¹¹ in order to define the historical phonetic shape of the Gongduk verbs in question, namely *mi-* ~ *mu-* ‘to live’, *θer-* ~ *θel-* ‘to chop’ and *məl-* ~ *mxt-* ‘to look’.

Table 22. External cognates for Gongduk class 5–7 verbs

Verb	Class	Potential external cognates
<i>mi-</i> ~ <i>mu-</i> ‘to live’	5	Dumi <i>mo-</i> ~ <i>mi-</i> ~ <i>mu(y)-</i> ‘to sit, be, stay’, Hayu <i>mut-</i> ‘to sit’, Khaling <i>mu-</i> ‘to be, remain’, Kulung <i>mui-</i> ~ <i>mu-</i> ~ <i>mæi-</i> ~ <i>mə-</i> ~ <i>ma-</i> ‘to do’, Bantawa <i>mu-</i> ‘to do’, Chepang <i>mu-</i> ‘to exist, stay, remain’, Atong <i>mu-</i> ‘to stay, sit’, ?Lepcha <i>mát</i> ‘to do’
<i>θer-</i> ~ <i>θel-</i> ‘to chop’	6	Dhimal <i>sel-</i> ‘to chop firewood’, ?Khaling <i>sel-</i> ‘to cut out the bad parts’, ?Limbu <i>send-</i> ~ <i>sen-</i> ‘to split up’, ?Written Tibetan བསྐྱོད་ <i>bsal</i> ‘to remove, cleanse (PST/FUT)’
<i>məl-</i> ~ <i>mxt-</i> ‘to look’	7	Thulung <i>mal-</i> ‘to search’, Wambule <i>mal(s)-</i> ~ <i>mul-</i> ‘to search, seek, look for’, ?Dhimal <i>mhal-</i> ‘to look upwards, tilt one’s head back’, ?Old Chinese 𦉳 * <i>mʰe[n]</i> ? ‘to look askance’

11. Data sources: Jäschke (1881) (Written Tibetan), van Driem (1987) (Limbu), Michailovsky (1988) (Hayu), van Driem (1993a) (Dumi), Caughley (2000) (Chepang), Lahaussais (2002) (Thulung), Opgenort (2004) (Wambule), Tolsma (2006) (Kulung), Plaisier (2007) (Lepcha), Doornenbal (2009) (Bantawa), King (2009) (Dhimal), Baxter & Sagart (2014) (Old Chinese), van Breugel (2014) (Atong), Jacques et al. (2015) (Khaling).

The comparison enables the following conclusions to be drawn about the historical phonology of these three verb roots. For class 5 verb *mi- ~ mu-* ‘to live’, the comparison shows a back vowel /u/ in most languages. No language exhibits a front vowel /i/ like Σ_1 of the Gongduk verb. Therefore, we can conclude that an earlier stage of Gongduk had the non-alternating verb root **mu-*, which developed an allomorph with high front vowel /i/, although the morphological or phonological origin of this allomorph is unknown. Since cognates are attested in a number of other branches of Trans-Himalayan, the attestation in Gongduk does not enable statements about the phylogenetic affiliation of Gongduk. However, if any other Trans-Himalayan language would show a similar stem alternation as Gongduk, this would be promising evidence for closer relationship, since it may constitute a shared innovation.

The class 6 verb *ther- ~ thel-* ‘to chop firewood’ has potential cognates in Kiranti languages, Tibetan and Dhimial. In all these languages, the verb shows a final liquid /l/, but never a rhotic /r/. Consequently, the Pre-Gongduk form of this verb can be assumed to have been **sel-* rather than **ser-*. A general morphophonological alternation between primary /l/ and more recent /r/ is also shown by certain Eastern Kiranti languages like Limbu or Yamphu, where the alternation is due to the regular Eastern Kiranti sound change **r/ → [j]*, which lead to the loss of phonemic status for the rhotic /r/ and caused the phonological reanalysis of this sound as a conditioned allophone of /l/ (cf. van Driem 1990). In Yamphu, traces of this reanalysis are still visible, even though /r/ has obviously regained phonemic status. Both liquids can appear word-initially in Yamphu, but only /l/ can stand in word-internal syllable-initial position, whereas only /r/ can stand in syllable-final position and in initial clusters (cf. Rutgers 1998: 34–35). The same alternation is observed for Yamphu auxiliaries with initial liquid, which is realized as /l/ when the auxiliary is added to a verb stem ending in a consonant and as /r/ when the preceding lexical verb ends in a vowel (cf. Rutgers 1998: 40–41). Although the distribution of /l/ and /r/ in the Gongduk class 6 verb *ther- ~ thel-* ‘to chop firewood’ is not like the one in Yamphu and only attested fragmentarily, it may be worth investigating in future research whether the alternation of the two liquids in Gongduk has been caused by a similar process as in Eastern Kiranti or whether Gongduk even shares the sound change **r/ → [j]*. A closer relationship between Gongduk and Kiranti has been dismissed by van Driem (2013: 78), but the observation made here and some similarities in the agreement morphology mentioned elsewhere (cf. Gerber 2019) may recommend remaining agnostic on this point until more research has been done.

An interesting aspect of the Gongduk verb *ther- ~ thel-* ‘to chop firewood’ is that it shows a mid vowel like its potential Dhimial and Kiranti cognates, but unlike the Tibetan cognate. In Jacques (2017), the sound change **a/ → /e/* before coronals

/t/ and /l/ is proposed as a potential shared innovation of all Kiranti languages. Even though the value of this innovation for the assumption of a coherent Kiranti subgroup is doubtful (cf. Grollmann & Gerber 2018; Gerber & Grollmann 2018), it obviously is an innovation and Gongduk (and Dhimal) seem to have participated in this process. However, also certain varieties of Tibetan show the same development, e.g. Lhasa Tibetan or Dzongkha (van Driem 1998; DeLancey 2003), and the change may therefore constitute an areal feature or multiple parallel, independent innovations. As a consequence, the shape of this verb does not provide evidence for the phylogenetic affiliation of Gongduk.

The verb *məl-* ~ *mxt-* 'to look', the only member of Gongduk verb class 7, has cognates in certain Kiranti languages, namely Thulung and Wambule, and potential cognates in Dhimal, Kuki-Chin, and Old Chinese. If the Old Chinese comparandum should turn out to be a mere look alike and if the remaining correspondences to Kiranti and Dhimal reflect a shared innovation rather than shared retention, the shared verb root may suggest a closer relationship between Gongduk and Kiranti and Dhimal. Recent research argues for the possibility of a closer relationship between the latter two (Sotrug 2015; Gerber & Grollmann 2018; Grollmann & Gerber 2018). Whether Gongduk can be positioned close to these languages needs to be investigated in future research. For the time being, we can only state that the Pre-Gongduk shape of this verb root may have been **məl-* and that the allomorph *mxt-* is a secondary derivation of the original non-alternating form, although with unclear phonological or morphological motivation.

6. Summary

This paper has discussed verb stem alternation in Gongduk and presented a synchronic as well as diachronic account on the alternation patterns. Gongduk verb stem alternation seems to retain frozen traces of inherited derivational morphology with cognates in other branches of Trans-Himalayan. However, the documentation and description of Gongduk is still in a rudimentary state, and more primary field work on the language is a matter of high linguistic urgency, especially since the language is heavily endangered and the speakers are under heavy pressure to linguistically assimilate to surrounding dominant languages. Likewise, Gongduk should be included more often and seriously in historical-comparative research on Trans-Himalayan, as it potentially constitutes a branch on its own which has retained archaic verbal morphology, but also exhibits a markedly mixed morphological and lexical profile.

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Abbreviations

1	first person	NEG	negation
2	second person	NMLS	nominalizer
3	third person	NPT	non-past
A	agent	P	patient
AFF	affirmative	PL	plural
AGT	agentive	PROG	progressive
ASK	assimilated knowledge	PST	past
COP	copula	PURP	purposive
DU	dual	Q	interrogative particle
EQTV	equative	REFL	reflexive
EXCL	exclusive	S	subject
EXST	existential	SAP	speech act participant
FUT	future	SG	singular
GEN	genitive	VI	intransitive verb
HON	honorific	VT	transitive verb
IMP	imperative	Σ	verb stem
IND	indicative	→	transitive relationship
LOC	locative		

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