Japhug

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This paper focuses on the Japhug language (local name /kɯrɯ skɤt/) of Kamnyu village (/kɤmɲɯ/, Chinese *Ganmuniao* 干木鸟) in Gdongbrgyad area (/ʁdɯrɟɤt/, Chinese *Longerjia* 龙尔甲), Mbarkhams county (Chinese *Maerkang* 马尔康), Rngaba prefecture, Sichuan province, China. Japhug belongs to the Sino-Tibetan family, and is one of the four Rgyalrong languages, alongside Tshobdun, Zbu and Situ.[1]

The description is based on the author's fieldwork. The word lists and the short story in the 'Transcription of a recorded passage' section have been provided by Tshendzin (Chenzhen 陈珍, female, born in 1950), a retired schoolteacher (a native speaker of Japhug, bilingual in Sichuan Mandarin since childhood).

Japhug has a highly developed system of ideophones (Jacques 2013b), which present unusual phonological features, in particular rare clusters. In the following discussion, phonemes or clusters found exclusively on ideophones will be treated separately. In addition, about a quarter of the Japhug vocabulary is borrowed from Tibetan, and these loanwords, like the ideophones, fill some gaps in the phonotactic distribution of vowels and consonants (on gap-filling by loanwords see Martinet 1955: 63–64). These cases are carefully distinguished from the native vocabulary in the analyses that follow, in order to bring out the phonotactics of inherited Japhug vocabulary.

Consonants

In Japhug, syllables follow the template (C)(C)(C)V(C) or (C)(C)(C)V(V) with initial clusters containing at most three consonants, and at most one coda. Given the complexity of possible onsets, it is not practical, in the case of Japhug, to provide an exhaustive list of possible syllables in the language (unlike Naish languages for instance, see Michailovsky & Michaud 2006, Michaud 2012).

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[1] See Sun (2000a) for an overview of the Rgyalrong group, whose closest relatives include Khroskyabs (Lai 2015) and Horpa (Sun 2007). A text collection of Japhug with sound files is included in the Pangloss archive (Michailovsky et al. 2014). A short grammar (Jacques 2008), a series of articles on morphosyntax (see e.g. Jacques 2013a, 2014) and a dictionary (Jacques 2015) are available but little has been published specifically on its phonology.

	Bilabial	Dental/ Alveolar	Retroflex	Alveolo- Palatal	Palatal	Velar	Uvular	Glottal
Plosive	p pʰ b mb	t tʰ d nd			c cʰ ɟ ɲɟ	k kʰ g ŋg	q qʰ ɴɢ	
Affricate		ts tsʰ dz ndz	tʂ tʂʰ dʐ ndʐ	tɕ tɕʰ dʑ ndʑ				
Nasal	m	n			ɲ	ŋ		
Fricative		s z	ʂ ʐ	ɕ ʑ		x ɣ	χ ʁ	h
Approximant	w				j			
Rhotic			r					
Lateral fricative		ɬ						
Lateral		l						

/p/	/ɯ-**p**ɯ/	'its young'	/tɕ/	/ɯ-**tɕ**ɯ/	'his boy'
/pʰ/	/ɯ-**pʰ**ɯ/	'its price'	/tɕʰ/	/**tɕʰ**ɯwur/	'blister'
/b/	/ba**b**ɯ/	'blackcurrant'	/dʑ/	/**dʑ**ɯwdʑuw/	'rough'
/mb/	/**mb**ɯt/	'collapse'	/ndʑ/	/**ndʑ**ɯnɯ/	'Angelica sp.'
/m/	/tu**m**ɯ/	'sky'	/ɕ/	/**ɕ**ɯŋgɯ/	'before'
/w/	/**w**ɯwu/	'Boletus sp.'	/ʑ/	/**ʑ**ɯrɯʑɤri/	'progressively'
/t/	/**t**ɯboʁ/	'one group'	/c/	/**c**ɯ/	'stone'
/tʰ/	/**tʰ**ɯɣi/	'IMP:DOWNSTREAM: come'	/cʰ/	/tɤ**cʰ**ɯ/	'wedge'
/d/	/**d**ɯdut/	'turtledove'	/ɟ/	/wa**ɟ**ɯ/	'earthquake'
/nd/	/**nd**ɯ/	'appear (rainbow)'	/ɲɟ/	/**ɲɟ**ɯ/	'open (it)'
/ts/	/**t**ɤ**ts**oʁ/	'Potentilla anserina'	/ɲ/	/**ɲ**ɯɣnuɣ/	'soft and powdery'
/tsʰ/	/**tsʰ**ɯtʰo/	'kid'	/j/	/ɯ-**j**ɯ/	'its handle'
/dz/	/**dz**ɯrdzur/	'straight'	/k/	/**k**ɯki/	'this'
/ndz/	/**ndz**ɯpe/	'way of sitting'	/kʰ/	/**kʰ**ɯna/	'dog'
/n/	/**n**ɯŋa/	'cow'	/g/	/**g**ɯguɣ/	'very dark (sky)'
/s/	/**s**ɯmat/	'fruit'	/ŋg/	/ɯ-**ŋg**ɯ/	'inside'
/z/	/**z**ɯmi/	'almost'	/ŋ/	/ɕa**ŋ**ɯ/	'heat (deer)'
/l/	/**l**ɯlu/	'cat'	/x/	/**x**ɯrxur/	'round'
/ɬ/	/**ɬ**ɯɣnɤɬuɣ/	'breathing movement'	/ɣ/	/**ɣ**ɯ/	'genitive'
/tʂ/	/**tʂ**ɯmpa/	'apron'	/q/	/**q**ɯqli/	'staring'
/tʂʰ/	/**tʂʰ**ɯɣ/	'maybe'	/qʰ/	/kɯ-sɤ**qʰ**ɯqʰa/	'naughty'
/dʐ/	/**dʐ**ɯɣdʐuɣ/	'strong (of tea)'	/ɴɢ/	/mɯ**ɴɢ**ɯ/	'Ligularia fischeria'
/ndʐ/	/**ndʐ**ɯmbu/	'guest'	/χ/	/**χ**aŋχaŋ/	'a little orange'
/ʂ/	/**ʂ**ɯŋʂuŋ/	'clear'	/ʁ/	/na**ŋʁ**ɯ/	'shirt'
/r/	/**r**ɯ/	'temporary place (nomads)'	/h/	/**h**anɯni/	'a little'

Simple onsets

The consonant inventory of Japhug comprises 50 phonemes. There is a general four-way contrast in stops and affricates between unvoiced unaspirated, unvoiced aspirated, voiced and prenasalized.

Since monosyllabic words are few, most of the example words provided here involve disyllabic words, whose first syllable illustrates the consonant at issue followed by the vowel /ɯ/, the most common one. For some examples involving possessed nouns (on this topic see Jacques 2014:4), a possessive prefix must always be present, and we always give here the third person singular prefix /ɯ-/.

Among the consonants of Japhug, four are only attested in borrowings from Tibetan and/or ideophones: /ʂ/, /dʐ/, /dʑ/ and /g/.

The analysis of prenasalized voiced stops and affricates, palatal stops and /ɬ/ as unitary phonemes rather than clusters /NC/, /c+j/ and /l+x/, respectively, will be justified below.

The /ɬ/ is slightly aspirated [ɬʰ], unlike other unvoiced fricatives (note that many languages in the area have constrastive aspirated fricatives, see Jacques 2011; Japhug however has no such contrast).

As in many languages of the Tibetan area, the /r/ is a trilled retroflex voiced fricative [r̝ʐ] in onset position, sometimes realized as a simple voiced fricative [z].

Consonants clusters

Japhug boasts 415 clusters in syllable onset position: 315 clusters with two consonants and 100 with three consonants. Clusters that are only possible at syllable boundaries are not included in this count.

Japhug being a heavily prefixing language (on which see Jacques 2013a), most of its noun or verb stems are prefixed, and thus a considerable part of onset clusters are not attested

word-initially. For instance, the cluster /zmb/ is only found in the word /tɤzmbɯr/ 'silt', which contains a nominal prefix /tɤ-/ (see Table 1 below).

Yet, speakers are able to parse words into syllables; in the case of /tɤzmbɯr/ 'silt', the only possible syllabification in /tɤ|zmbɯr/, not */tɤz|mbɯr/, and thus we can ascertain that /zmb/ can be counted as a possible onset in Japhug. On the other hand, in examples like /pjɤnɯndzɯlŋɯz/ 'he dozed off', both syllabifications /pjɤ|nɯ|**ndzɯl**|ŋɯz/ and /pjɤ|nɯ|ndzɯ|**lŋɯz**/ are possible, so that /lŋ/ is not counted among syllable onset clusters in Japhug.

Decisive evidence from partial reduplication

A useful test to analyze and classify clusters is partial reduplication, a very productive process which can be applied to both verb and noun stems, and has a variety of morphosyntactic functions (see Jacques 2007). When partial reduplication is applied to a syllable, the rhyme of the replicated syllable is changed to /ɯ/ in the replicant.

Some clusters are affected by the partial reduplication: when the last consonant of a cluster is one of the non-nasal sonorants (/r/, /l/, /j/, /w/, /ɣ/ or /ʁ/), and the preceding consonant in neither a sonorant nor a sibilant fricative, the sonorant is deleted, as in the derivation /pɤ-prɤt/ 'he cut it' /pɤ-nɤ-pɯ~prɤt/ 'he cut it in all directions'.[2]

When the penultimate consonant of the cluster is a sonorant and the last consonant is a non-nasal sonorant which is not a glide (/r/, /l/, /ɣ/ or /ʁ/), this last consonant is not deleted, as in /ko-wraʁ/ 'he attached it' /ko-nɤ-wrɯ~wraʁ/ 'he attached it in all directions'.

When the prenultimate consonant is a sibilant fricative (/s/, /z/, /ɕ/, /ʑ/) and the last consonant is a non-nasal sonorant which is not a glide (/r/, /l/, /ɣ/ or /ʁ/), there are various possibilities, which are detailed in below.

This morphophonological rule is thus crucial in analyzing and classifying consonant clusters. Sonorants that undergo deletion when partial reduplication is applied are henceforth designated as MEDIAL consonants, and it is postulated that they do not belong to the same constituent as the rest of the onset.

In the remainder of this section, we present a complete inventory of consonant clusters in Japhug. In Tables 1–12, groups only attested in Tibetan loanwords or ideophones (or deideophonic verbs), and not in the native vocabulary, are indicated in light gray and gray, respectively. We only count clusters in syllable onsets, not clusters occurring only between syllable boundaries, some of which will be treated below.

Clusters not ending in a (non-nasal) sonorant

Clusters whose last consonant is not a non-nasal sonorant have a limited number of possible consonants in first position: /w/, /s/, /z/, /ɕ/, /ʑ/, /l/, /r/, /ʂ/, /j/, /ɣ/, /x/, /ʁ/, /χ/, /n/, /m/ and the homorganic nasal, except for a few clusters in stop+ /ɕ/.

Clusters beginning in /w/ are listed in Table 1. /w/ is realized as [f] or [ɸ] before unvoiced obstruents and as [v] or [β] before voiced ones. /w/ does not appear before nasal or prenasalized segments, and cannot be followed by another labial consonant. Some clusters with /w/+voiced obstruents (/wz/ and /wg/) are only attested in Tibetan loanwords. Clusters with three consonants whose first element is /w/ and the last one is not a sonorant are all restricted to Tibetan borrowings except /wxt/, which is realized as [xʷt], with a labio-velarized fricative (and labializes preceding /ɯ/ and /ɤ/ to [u] and [o], respectively). Not all speakers maintain the contrast between /wxt/ and /xt/, and the former cluster is only attested in a single word /wxti/ 'be big'.

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[2] The morphological process illustrated here is the non-directed motion derivation, combining a derivational /nɤ-/ prefix with partial reduplication of the verb stem.

Table 1 List of consonant clusters with /w/ as a first element (15+8).

/t/	/ft/	/ɯ-wtaʁ/	'sign'
/tʰ/			
/d/	/wd/	/wdɯt/	'demon'
/nd/			
/n/			
/ts/	/wts/	/wtsoʁ/	'female hybrid yak'
/tsʰ/	/wtsʰ/	/wtsʰi/	'it is not serious (disease)'
/dz/			
/ndz/			
/s/	/ws/	/wsaŋ/	'fumigation'
/z/	/wz/	/wzaŋsa/	'friend'
/ɬ/			
/tɕ/	/wtɕ/	/wtɕar/	'summer'
/tɕʰ/	/wtɕʰ/	/wtɕʰur/	'he pours it down'
/dʑ/			
/ndʑ/			
/ɕ/	/wɕ/	/wɕaʁ/	'he repents for it'
/ʑ/	/wʑ/	/wʑar/	'buzzard'
/tʂ/	/wtʂ/	/wtʂi/	'he melts it'
/tʂʰ/			
/dʐ/			
/ndʐ/			
/ʂ/			
/c/	/wc/	/tɯ-wcaʁ/	'dorsal mat'
/cʰ/			
/ɟ/	/wɟ/	/wɟi/	'he runs after it'
/ɲɟ/			
/ɲ/			
/k/	/wk/	/wka/	'order'
/kʰ/			
/g/	/wg/	/wgoz/	'he prepares it'
/ŋg/			
/ŋ/			
/x/			
	/wxt/	/wxti/	'it is big'
	/wst/	/wstɯn/	'he serves him'
	/wrt/	/wrtɤn/	'he is trustworthy'
	/wsk/	/wskɤr/	'he goes around it'
	/wzg/	/wzgɤr/	'he delays it'
	/wzd/	/wzdɯnɯ/	'they collect it'
	/wzɟ/	/wzɟɯr/	'he transforms it'
	/wrɟ/	/wrɟaŋ/	'he stretches it (skin)'

Clusters beginning in an alveolar fricative /s/ and /z/ are listed in Table 2. /s/ and /z/ as the first element of a cluster are only contrastive before a sonorant. With obstruents, the fricative has the same voicing value as the following consonant. All clusters of this type are attested in the native vocabulary.

Clusters with /l/ as the first element are listed in Table 3. /l/ is attested before all places of articulation, but not before coronal fricatives.

Table 2 List of consonant clusters with /s/ or /z/ as a first element (23).

	s-C clusters			z-C clusters		
/p/	/sp/	/spoz/	'incense'			
/pʰ/						
/b/				/zb/	/zbaʁ/	'dry'
/mb/				/zmb/	/tɤzmbuɯr/	'silt'
/m/	/sm/	/smar/	'river'	/zm/	/zmɤrɤw/	'he eats it with'
/t/	/st/	/staχpɯ/	'pea'			
/tʰ/	/stʰ/	/stʰaw/	'he touches it'			
/d/				/zd/	/zdɯm/	'cloud'
/nd/				/znd/	/znde/	'wall'
/n/	/sn/	/sna/	'he is able, worthy'	/zn/	/znɤje/	'he feels sorry, regrets it'
/c/	/sc/	/scoʁ/	'scoop'			
/cʰ/	/scʰ/	/scʰɤt/	'it comes down (water level)'			
/ɟ/				/zɟ/	/kɯ-nɯzɟɯ/	'suffering losses'
/ɲɟ/				/zɲɟ/	/zɲa/	'plant sp.'
/ɲ/	/sɲ/	/sɲaŋne/	'fasting'			
/k/	/sk/	/skɤm/	'ox'			
/kʰ/	/skʰ/	/rɟɤskʰi/	'pan'			
/g/				/zg/	/zga/	'sauce'
/ŋg/				/zŋg/	/kɤkʰɤzŋga/	'to call'
/ŋ/	/sŋ/	/sŋaʁ/	'he curses him'			
/x/						
/q/	/sq/	/sqamnɯz/	'twelve'			
/qʰ/	/sqʰ/	/sqʰi/	'tripod'			
/ɴɢ/						
/χ/						

Clusters with /r/ and /ʂ/ as the first element are listed in Table 4. /r/ and /ʂ/ are almost in complementary distribution as the first element of a cluster, the former appearing before voiced consonants and the latter after unvoiced ones (except before /ɣ/). In keeping with this generalization, /r/+nasal clusters are widely attested (nasals are phonemically and phonetically voiced in Japhug), while /ʂ/+nasal clusters are only attested in some ideophones.

There are some phonotactic constraints on the distribution of these consonants: and /r/ and /ʂ/ never appear before retroflex fricatives and affricates.

The glide /j/ and the alveolo-palatal fricatives /ɕ/ and /ʑ/ (Table 5) only occur before labial, dental, velar and uvular stops; they are marginally attested with retroflex affricates. The /j/ glide, unlike other consonants, neither devoices nor fricativizes when occurring as the first element of a cluster whose second element is an obstruent.

Clusters with /x/ and /ɣ/ as the first element are listed in Table 6. The velar fricatives always share their voicing feature with the following segment. They are compatible with all places of articulation except velars and uvulars within a single onset. Clusters combining uvular and velar consonants are, however, possible in heterosyllabic clusters.

Clusters with /χ/ and /ʁ/ as the first element are listed in Table 7. The uvular fricatives always share their voicing feature with the following segment when it is an obstruent. With nasal sonorants, they are almost always voiced except in the group /χɲ/, which contrasts with /ʁɲ/ and is only attested in ideophones.

Clusters with nasal segments as the first element (not counting voiced prenasalized stops and affricates) are listed in Tables 8 and 9. We find homorganic nasal clusters, compatible with all places of articulation, and non-homorganic ones, which can be either clusters in /n/+labial or velar or /m/+non-labial. There are no clusters with a nasal directly followed by a fricative

Table 3 List of consonant clusters with /l/ as a first element (17+1).

/p/	/lp/	/tɯ-lpɤɣ/	'one piece'
/pʰ/			
/b/			
/mb/			
/m/	/lm/	/tɤlmɯz/	'straw covering the balcony'
/t/	/lt/	/ltɤw/	'he folds it'
/tʰ/	/ltʰ/	/ltʰɯmɯmi/	'coming slowly (sleep)'
/d/	/ld/	/ldɯɣi/	'bharal'
/nd/			
/n/	/ln/	/lni/	'it withers'
/ts/	/lts/	/ɕɤltsaʁ/	'leather coat'
/tsʰ/	/ltsʰ/	/ltsʰɤltsʰɤt/	'small and weak'
/dz/			
/ndz/			
/tɕ/	/ltɕ/	/ʂtɤltɕaʁ/	'horse whip'
/tɕʰ/	/ltɕʰ/	/ltɕʰɤltɕʰɤt/	'hanging (of fluffy objects)'
/dʑ/	/ldʑ/	/ldʑaŋkɯ/	'green'
/ndʑ/			
/ɕ/			
/ʑ/			
/tʂ/			
/tʂʰ/			
/dʐ/	/ldʐ/	/ldʐaŋldʐaŋ/	'hanging (big object)'
/ndʐ/			
/ʂ/			
/c/	/lc/	/lcɯɣlcɯɣ/	'drenching'
/cʰ/	/lcʰ/	/tɯ-lcʰɯɣ/	'section (of a bag)'
/ɟ/			
/ɲɟ/			
/ɲ/			
/k/			
/kʰ/			
/g/			
/ŋg/			
/ŋ/	/lŋ/	/lŋɤlŋɤt/	'hanging (fruit)'
/x/	/lx/	/lxɤwlxɤw/	'thick (clothes)'
/q/	/lq/	/lqɤnɤlqɤt/	'toddling'
/qʰ/			
/ɴɢ/			
/χ/			
	/lpɕ/	/qalpɕa/	'it opens (fern leaf)'

or any non-nasal sonorant. After /n/ and /m/, the contrast between voiced preinitial and voiced consonants is neutralized. Since only the prenasalized phoneme /ɴɢ/ exists while no simple voiced /ɢ/ is attested, the cluster [mɢ] can only be analyzed as /mɴɢ/ phonologically.

Finally, we find a few clusters comprising a stop followed by the fricative /ɕ/: /pɕ/ (as in /ɯ-pɕi/ 'outside'), /kɕ/ (as in /kɯjkɤɣkɕi/ 'marten'), /lpɕ/ and /mpɕ/ (examples of the latter two are found in Tables 3 and 8). These clusters historically originate from aspirated stops followed by /j/ (/pʰj/, /kʰj/), but their pattern in reduplication indicates that this is no longer

Table 4 List of consonant clusters with /r/ or /ʂ/ as a first element (35).

	r-C clusters			ʂ-C clusters		
/p/				/ʂp/	/tɯ-ʂpa/	'axe'
/pʰ/				/ʂpʰ/	/ʂpʰɤwʂpʰɤw/	'flapping wings'
/b/						
/mb/	/rmb/	/armbat/	'near'			
/m/	/rm/	/rmɤwja/	'peacock'			
/t/				/ʂt/	/ʂtalu/	'horse year'
/tʰ/				/ʂtʰ/	/ɯ-pɤʂtʰɤw/	'middle'
/d/	/rd/	/rdɤstaʁ/	'stone'			
/nd/	/rnd/	/rnde/	'he finds it'			
/n/	/rn/	/rnaʁ/	'it is deep'			
/ts/				/ʂts/	/ʂtsot/	'vengeance'
/tsʰ/				/ʂtsʰ/	/ʂtshom/	'it has a crack (bucket)'
/dz/	/rdz/	/rdzardza/	'insolent'			
/ndz/	/rndz/	/rndzɤkɤŋe/	'shade of the mountain'			
/s/				/ʂs/	/ʂsɯwʂsɯw/	'hairy'
/z/	/rz/	/tɯ-rzɯɣ/	'one section'			
/ɬ/						
/tɕ/				/ʂtɕ/	/nɯʂtɕe/	'he teases him'
/tɕʰ/				/ʂtɕʰ/	/ʂtɕʰuʁjɯ/	'caterpillar'
/dʑ/						
/ndʑ/	/rndʑ/	/cɯrndʑi/	'sand'			
/ɕ/				/ʂɕ/	/rɕɯwrɕɯw/	'rough'
/ʑ/	/rʑ/	/tɤ-rʑaw/	'wife'			
/c/				/ʂc/	/tɤ-ʂcoʁ/	'mud'
/cʰ/				/ʂcʰ/	/ɯ-ʂcʰaʂcʰɤw/	'interstice'
/ɟ/	/rɟ/	/rɟaʁ/	'he dances'			
/ɲɟ/	/rɲɟ/	/rɲɟaʁlo/	'bolt'			
/ɲ/	/rɲ/	/rɲaŋ/	'its is ancient'	/ʂɲ/	/ʂɲoʁʂɲoʁ/	'long and thin'
/k/				/ʂk/	/ʂko/	'it is hard'
/kʰ/				/ʂkʰ/	/tɤ-ʂkʰom/	'feather rachis'
/g/	/rg/	/rga/	'he likes it'			
/ŋg/	/rŋg/	/rŋgɤm/	'hard piece'			
/ŋ/	/rŋ/	/tɯ-rŋa/	'face'			
/x/						
/q/				/ʂq/	/ʂqoʁ/	'he hugs him'
/qʰ/				/ʂqʰ/	/tɤ-ʂqʰu/	'bark, skin'
/ɴɢ/	/rɴɢ/	/cɯrɴɢo/	'Anisodus tanguticus'			
/χ/				/ʂχ/	/ʂχɯʂχi/	'with big nostrils'

true synchronically. For instance, /mpɕɤr/ 'it is beautiful' is reduplicated as /mpɕɯ~mpɕɤr/) not /mpʰɯ~mpʰjɤr/.

Clusters ending in a (non-nasal) sonorant

The non-nasal sonorants (/r/, /l/, /j/, /w/, /ɣ/ or /ʁ/) can occur after any consonant except nasals. In this section, clusters are listed by the penultimate consonant (the one immediately preceding the non-nasal sonorant).

The list of all clusters whose final consonant is a glide /j/ or /w/ is provided in Table 10. The glides /j/ or /w/ are medials in all clusters except /wj/, /jw/, /ɣj/ and /ʁj/. The labio-velar /w/ has a very restricted distribution as last element of a cluster; in the native non-ideophonic

Table 5 List of consonant clusters with /j/, /ç/ or /ʐ/ as a first element (29+1).

	j-C clusters			ç-C and ʐ-C clusters		
/p/	/jp/	/jpum/	'it is thick'	/çp/	/çpaʁ/	'he is thirsty'
/pʰ/				/çpʰ/	/çpʰɣt/	'he patches it'
/b/						
/mb/				/ʐmb/	/ʐmbɣr/	'ulcer'
/m/	/jm/	/jmɯt/	'he forgets it'	/çm/	/çmi/	'he mixes it'
/t/	/jt/	/ajtɯ/	'it accumulates'	/çt/	/çte/	'he contaminates him'
/tʰ/				/çtʰ/	/çtʰɯz/	'he is turned towards'
/d/				/ʐd/	/ʐdɯɣzdɯɣ/	'strong, tough'
/nd/						
/n/	/jn/	/jnom/	'it is flexible'	/çn/	/çnat/	'weaving implement'
/ts/	/jts/	/tɣ-jtsi/	'pillar'			
/tsʰ/	/jtsʰ/	/jtsʰi/	'he gives him to drink'			
/dz/						
/ndz/						
/tʂ/				/çtʂ/	/çtʂaŋlaŋ/	'hanging and swinging'
/tʂʰ/	/jtʂʰ/	/qajtʂʰa/	'vulture'			
/dʐ/						
/ndʐ/	/jndʐ/	/jndʐɣz/	'it is thick (powder)'			
/ʂ/						
/k/	/jk/	/tɣ-jkɯz/	'secret'	/çk/	/çkom/	'muntjac'
/kʰ/				/çkʰ/	/çkʰo-nɯ/	'they spread it'
/g/				/ʐg/	/ʐgaʁ/	'exactly'
/ŋg/				/ʐŋg/	/ʐŋgu/	'he crosses river on boat'
/ŋ/	/jŋ/	/tɣ-jŋoʁ/	'hook'	/çŋ/	/çŋaʁçŋaʁ/	'bright yellow'
/x/						
/q/	/jq/	/jqe/	'he is able to lift it'	/çq/	/çqɣjɣr/	'cross-eyed'
/qʰ/				/çqʰ/	/çqʰaloʁ/	'latch'
/ɴɢ/				/ʐɴɢ/	/ʐɴɢɯloʁ/	'walnut'
/χ/	/jχ/	/ajχoʁ/	'it is flat (belly)'			
	/jmŋ/	/tɯ-jmŋo/	'dream (N)'			

vocabulary, it only occurs after /l/, /z/ and /j/ and is never found in clusters comprising three consonants. The palatal glide /j/ has a wider distribution: it occurs after all places of articulation except palatal and retroflex.

Table 11 provides a list of all clusters whose final consonant is a liquid /r/ or /l/. Clusters ending in /r/ cannot contain another /r/ or /l/ segment, or any retroflex consonant (on the crosslinguistic rarity of the cluster /lr/, see Baroni 2014: 78). Clusters ending in /l/ never contain another /l/, but allow the presence of /r/ (/rl/, /rɴɢl/). The sonorants /r/ and /l/ are medials before all stops and affricates, as well as before the voiced fricatives /z/ and /ʐ/. In all other contexts, they are not medials.

Table 12 provides a list of all clusters whose final consonant is a dorsal voiced fricative /ɣ/ or /ʁ/. Only one dorsal segment is possible within an onset-initial consonant cluster. The sonorants /ɣ/ and /ʁ/ are medials only before all stops and affricates.

The counts of all initial consonant clusters in Japhug are summarized in Table 13.

Heterosyllabic clusters

The list of clusters presented in the previous section only include syllable-initial clusters; many more additional clusters are possible across syllable (and morpheme) boundary. Clusters made

Table 6 List of consonant clusters with /x/ or /ɣ/ as a first element (23).

/p/	/xp/	/tɯ-xpa/	'one year'
/pʰ/			
/b/			
/mb/	/ɣmb/	/tɯ-ɣmba/	'cheek'
/m/	/ɣm/	/tɯ-ɣmaz/	'wound'
/t/	/xt/	/xtɯt/	'wild cat'
/tʰ/	/xtʰ/	/xtʰom/	'he puts it horizontally'
/d/	/ɣd/	/ɣdɤso/	'species of grub'
/nd/	/ɣnd/	/ɣnde/	'he hits with a hammer'
/n/	/ɣn/	/ɣnɤsqi/	'twenty'
/ts/	/xts/	/xtsɤɕna/	'tip of boot'
/tsʰ/	/xtsʰ/	/xtsʰɯm/	'it is thin'
/dz/			
/ndz/			
/s/	/xs/	/xsar/	'goral'
/z/	/ɣz/	/ɣzɯ/	'monkey'
/ɬ/			
/tɕ/	/xtɕ/	/xtɕi/	'it is small'
/tɕʰ/	/xtɕʰ/	/xtɕʰɯt/	'it can hold'
/dʑ/			
/ndʑ/	/ɣndʑ/	/ɣndʑɤw/	'fire'
/ɕ/	/xɕ/	/xɕaj/	'grass'
/ʑ/	/ɣʑ/	/ɣʑo/	'bee'
/tʂ/	/xtʂ/	/nɤxtʂi/	'he will bring it with him'
/tʂʰ/			
/dʐ/			
/ndʐ/			
/ʂ/	/xʂ/	/xʂɤxʂɤt /	'long and thin'
/c/	/xc/	/xcat/	'many'
/cʰ/	/xcʰ/	/tɤlɤxcʰi/	'curdled milk'
/ɟ/	/ɣɟ/	/ɣɟaw/	'churn (milk)'
/ɲɟ/			
/ɲ/	/ɣɲ/	/ɯ-ɣɲaʁ/	'disaster'

of the coda of the first syllable and the onset of the second syllable of a disyllabic word that are not attested in simple onsets can be grouped in three categories.

First, while in syllable onsets we never find clusters containing two stops, such clusters are found across syllable boundary. In Tibetan loanwords, two clusters with /t/ as the first element, /tk/ and /tp/, are attested in words such as /χɕit.ka/ 'spring' (Tibetan /dpʲid.ka/) and /rɟɤt.pa/ 'eighth month' (Tibetan /brgʲad.pa/).

The only other cluster containing two stops, /pt/, is attested in the word /sqap.tuɣ/ 'eleven'. This is the only case of /p/ appearing as coda (instead of /w/) in a non-ideophonic word.

Second, although Tables 6 and 7 above show restricted possibilities for clusters whose first element is a velar or a uvular fricative, in heterosyllabic clusters there are few constraints on the phonotactics of these clusters. A velar fricative can be followed by a uvular fricative: the cluster /ɣʁ/ is attested in some speakers between morpheme boundaries in the case of the causative of intransitive verbs with the onset /ʁ/. For instance, the verb /ʁaʁ/ 'hatch' has a causative /sɯ-ʁaʁ/ or /sɯɣ-ʁaʁ/ depending on the speaker. Uvular fricatives followed by velar fricatives or stops are also attested, as in /praʁ.kʰaŋ/ 'cave' for example.

Table 7 List of consonant clusters with /χ/ or /ʁ/ as a first element (26).

	χ-C clusters			ʁ-C clusters		
/p/	/χp/	/χpi/	'story'			
/pʰ/	/χpʰ/	/taχpʰe/	'slap'			
/b/				/ʁb/	/ʁbɤʁbɤβ/	'thick and big'
/mb/				/ʁmb/	/aʁmbɯm/	'concave'
/m/				/ʁm/	/ʁmaʁ/	'army'
/t/	/χt/	/χtɤrma/	'offerings'			
/tʰ/	/χtʰ/	/naχtʰɤw/	'he seizes the opportunity'			
/d/				/ʁd/	/ʁdɯɣ/	'it is serious'
/nd/				/ʁnd/	/ʁndɤr/	'it scatters'
/n/				/ʁn/	/ʁnaʁna/	'both'
/ts/	/χts/	/χtso/	'it is clean'			
/tsʰ/	/χtsʰ/	/χtsʰɤχtsʰɤt/	'small and active'			
/dz/						
/ndz/				/ʁndz/	/ʁndzɤr/	'he cuts it (with scissors)'
/s/	/χs/	/χsɤr/	'gold'			
/z/				/ʁz/	/ʁzɤw/	'he is careful in'
/ɬ/						
/tɕ/	/χtɕ/	/χtɕoŋ/	'rheumatism'			
/tɕʰ/						
/dʑ/						
/ndʑ/						
/ɕ/	/χɕ/	/χɕu/	'it is strong'			
/ʑ/				/ʁʑ/	/ʁʑɯnɯ/	'young man'
/tʂ/	/χtʂ/	/χtʂɯɣdʐa/	'butter tea'			
/tʂʰ/						
/dʐ/						
/ndʐ/						
/ʂ/	/χʂ/	/χʂɤχʂɤt/	'light (clothes)'			
/c/	/χc/	/χcoŋkroŋ/	'cross-legged (sitting)'			
/cʰ/	/χcʰ/	/χcʰa/	'right'			
/ɟ/				/ʁɟ/	/ʁɟa/	'completely '
/ɲɟ/				/ʁɲɟ/	/ʁɲɟiʁɲɟi/	'enormous '
/ɲ/	/χɲ/	/χɲɤχɲɤr/	'without energy'	/ʁɲ/	/ʁɲɤrpa/	'steward (monastery)'

Third, while in homosyllabic clusters nasal elements cannot be followed by fricatives or non-nasal sonorants, as shown in Table 8 above, such combinations are possible in heterosyllabic clusters, such as in /naŋ.ʁɯ/ 'shirt', /to.nɤ.tsɯm.ɣɯt/ 'he brings it here and there', /ɲɯ.nɯ.sɯm.ʁɲɯz/ 'he hesitates', /kʰoŋ.rɤl/ 'hollow tree'.

The sonority sequencing principle in Japhug

Many works in phonology support the idea that all segments of the world's languages follow a universal scale of sonority (for instance Vennemann 1988, Blevins 1995, Parker 2002, Baroni 2014; see Ohala 1990 for an opposing view). A particularly elaborate version of the sonority hierarchy has been proposed by Parker (2002: 235):

(1) low vowels > mid vowels > high vowels > /ə/ > glides > laterals > flaps > trills > nasals > /h/ > voiced fricatives > voiced stops > voiceless fricatives > voiceless stops and affricates

Table 8 List of consonant clusters with a homorganic nasal or /m/ as first element (38+1).

	Homorganic nasal-C clusters			m-C clusters		
/p/	/mp/	/mpɯ/	'it is soft'			
/pʰ/	/mpʰ/	/mpʰɯl/	'it reproduces'			
/b/						
/mb/						
/m/						
/t/	/nt/	/ntaw/	'it is stable'	/mt/	/tɤ-mtɯ/	'knot'
/tʰ/	/ntʰ/	/ntʰɤw/	'it is caught'	/mtʰ/	/mtʰɯ/	'spell'
/d/						
/nd/				/md/	/mda/	'it reaches '
/n/				/mn/	/mna/	'it heals'
/ts/	/nts/	/ntsɯ/	'always'	/mts/	/tɤ-mtsɯ/	'button'
/tsʰ/	/ntsʰ/	/ntsʰɤr/	'it neighs'	/mtsʰ/	/mtsʰɤm/	'he hears'
/dz/						
/ndz/				/mdz/	/mdzadi/	'flea'
/s/						
/z/						
/ɬ/						
/tɕ/				/mtɕ/	/mtɕoʁ/	'it is sharp'
/tɕʰ/	/ntɕʰ/	/ntɕʰoz/	'he uses it'	/mtɕʰ/	/tɤ-mtɕʰo/	'wedge'
/dʑ/						
/ndʑ/				/mdʑ/	/tɯ-mdʑu/	'tongue'
/ɕ/						
/ʑ/						
/tʂ/	/ntʂ/	/ntʂu-nɯ/	'they weed'	/mtʂ/	/kɯ-ɣrɤmtʂɯmtʂaj/	'sticky'
/tʂʰ/						
/dʐ/						
/ndʐ/				/mdʐ/	/mdʐɯɕɯɣ/	'bedbug'
/ʂ/						
/c/	/ɲc/	/ɲcɤr/	'he presses on'	/mc/	/tɤmcar/	'tongs'
/cʰ/	/ɲcʰ/	/ɲcʰoʁ/	'it shrinks'	/mcʰ/	/tɯ-mcʰi/	'gall'
/ɟ/						
/ɲɟ/				/mɟ/	/tɯ-mɟa/	'jaw'
/ɲ/				/mɲ/	/mɲɤm/	'species of tree'
/k/	/ŋk/	/ŋke/	'he walks'	/mk/	/tɯ-mke/	'neck'
/kʰ/	/ŋkʰ/	/ŋkʰor/	'he arrives'	/mkʰ/	/mkʰɤz/	'he is expert'
/g/						
/ŋg/				/mg/	/tɯ-mga/	'advantage'
/ŋ/				/mŋ/	/mŋɤm/	'it hurts'
/x/						
/q/	/ɴq/	/ɴqa/	'it is difficult'			
/qʰ/	/ɴqʰ/	/ɴqʰi/	'it is dirty'			
/ɴɢ/				/mɢ/	/tamɢom/	'clamp '
	/mpɕ/	/mpɕɤr/	'it is beautiful'			

Table 9 List of consonant clusters with non-homorganic /n/ as first element (4).

/nb/	/anbaʁ/	'he hides'
/nm/	/tɤ-nmaʁ/	'husband'
/ng/	/ngɯʁ/	'it is strong'
/nŋ/	/nŋo-nɯ/	'they lose'

Table 10 List of consonant clusters ending in /j/ or /w/ (30+18).

	C-w clusters			C-j clusters		
/p/				/pj/	/pjalu/	'year of the cock'
/pʰ/						
/b/				/bj/	/bjɯbjɯɣ/	'hanging in great number'
/mb/				/mbj/	/mbjom/	'it is fast'
/m/						
/w/				/wj/	/tɕʰɯwja/	'duck'
/t/						
/tʰ/						
/d/	/dw/	/dwaŋdwaŋ/	'out of his head'	/dj/	/djoʁdjoʁ/	'evenly mixed'
/nd/				/ndj/	/ndjɤndjɤt/	'gracious'
/n/						
/ts/				/tsj/	/tsjaŋnɤtsjaŋ/	'very tall, moving'
/tsʰ/						
/dz/						
/ndz/				/ndzj/	/ndzjaʁ/	'it is tight (knot)'
/s/				/sj/	/sjaŋnɤsjaŋ/	'shaking one's head'
/z/	/zw/	/zwɤr/	'mugwort'	/zj/	/zjaŋzjaŋ/	'big'
/l/	/lw/	/lwɤz/	'he will be sick again'	/lj/	/qaljaʁ/	'eagle'
/ɬ/						
/r/	/rw/	/rwa/	'yak felt tent'	/rj/	/tɯ-rju/	'word'
/ʂ/	/ʂw/	/aɣɯʂwaŋ/	'it comes in pairs'			
/c/						
/cʰ/						
/ɟ/						
/ɲɟ/						
/ɲ/						
/j/	/jw/	/jwajwa/	'very thin'			
/k/	/kw/	/kwitsɯt/	'cupboard'	/kj/	/pa-kjo/	'he caused it to slip'
/kʰ/				/kʰj/	/kʰjɤt/	'gliding'
/g/						
/ŋg/				/ŋgj/	/ŋgjo/	'he slips'
/ŋ/						
/x/	/xw/	/xwɤrnɤxwɤr/	'rotating quickly'			
/ɣ/				/ɣj/	/tɯ-ɣjɤn/	'one time'
/q/				/qj/	/qjaw/	'it is bitter'
/qʰ/				/qʰj/	/qʰjɯqʰjɯ/	'blunt (colour)'
/ɴɢ/				/ɴɢj/	/ɴɢja/	'it comes loose'
/χ/	/χw/	/χwɤr/	'Hor (name)'			
/ʁ/				/ʁj/	/ʁjit/	'he thinks about him'
/h/	/hw/	/hwɤrhwɤr/	'wide-mouthed'			
				/wsj/	/tɤ-wsjit/	'whistle'
				/wzj/	/wzjoz/	'he learns it'
				/spj/	/spjaŋkɯ/	'wolf'
				/spʰj/	/spʰjar/	'he dries it'
				/stj/	/stjaŋnɤstjaŋ/	'jumping'
				/sqʰj/	/sqʰjar/	'he stretches it'
				/ltʰj/	/lthjɤlthjɤt/	'well-ironed (clothes)'
				/lbj/	/lbjɯlbjɯɣ/	'hanging'
				/ʂpj/	/ʂpjɯ/	'it is spoiled (milk)'

Table 10 Continued.

C-w clusters	C-j clusters		
	/rmbj/	/tɤ-rmbja/	'flash of lightning'
	/ʂtsj/	/ʂtsjaʁ/	'it is steep (road)'
	/ʂqʰj/	/ɯ-ʂqʰjoʁ/	'its notch'
	/rɴɢj/	/arɤrɴɢjoʁ/	'having a notch'
	/χtsj/	/χtsjɯ/	'pint'
	/χpj/	/χpjɤt/	'he observes it'
	/χsj/	/ɯ-χsjɯw/	'its slough'
	/mpj/	/mpja/	'it is warm'
	/mtsj/	/ɯ-mtsjoʁ/	'its beak'

The notion of sonority is used in particular to account for observed generalizations in the structure of consonant clusters: in most languages, clusters follow the so-called SONORITY SEQUENCING PRINCIPLE (SSP, Blevins 1995: 200):

(2) Between any member of a syllable and the syllable peak, a sonority rise or plateau must occur.

According to this hierarchy, in onset clusters, sonorants are expected to be closer to the syllable nucleus than obstruents (/prV/ is favoured over /rpV/), and glides are expected to be closer to the nucleus than any other consonant (/ljV/ is favoured over /jlV/).

Onset clusters with glides or non-nasal sonorants violating the SSP (/jC/, /wC/, /lC/ and /rC/, where C is a consonant lower in the sonority hierarchy) are crosslinguistically rare, but have been documented for instance in Oceanic languages such as Dorig and Hiw (Francois 2010: 405-412).

Japhug, like other Gyalrongic languages,[3] is rich in SSP-infringing clusters. For instance, no fewer than seven clusters with a labial consonant and a non-nasal sonorant violating the SSP are attested: /lp/, /jp/, /lm/, /rm/, /jm/, /rmb/ and /jmŋ/.

More surprisingly, we find clusters violating the SSP without equivalent non-violating clusters. For instance, out of 15 di-consonantal clusters with /j/ as the first element (all SSP-infringing except for /jw/), eight have no equivalent SSP-compliant cluster (/jm/, /jt/, /jn/, /jtsʰ/, /jtʂʰ/, /jndʐ/, /jŋ/, /jχ/).

Clusters vs. unitary phonemes

In this section, we justify the need to analyze two groups of consonants as unitary phonemes rather than clusters, namely the prenasalized voiced stops, the palatals and /ɬ/.

The prenasalized voiced stops and affricates /mb/, /nd/, /ndz/, /ndʑ/, /ndʐ/, /ɲɟ/, /ŋg/ and /ɴɢ/ have unvoiced and unvoiced aspirated counterparts such as /mp/, /nt/, /nts/, /ntɕ/, /ntʂ/, /ɲc/, /ŋk/ and /ɴq/. Yet, there are two pieces of evidence showing that the prenasalized voiced stops and affricates differ from the prenasalized unvoiced ones.

First, the former can appear in clusters preceded by fricatives or non-nasal sonorants, as in /ʑmbr/, /jndʐ/ or /rɴɢl/, while the latter cannot. Clusters such as * /ʑmpr/, * /jntʂ/ or * /rɴql/ are not tolerated in Japhug.

Second, the uvular voiced prenasalized /ɴɢ/ has no simple voiced counterpart * /ɢ/, which therefore precludes analyzing /ɴɢ/ as a cluster /n+ɢ/.

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[3] See e.g. Sun (2000b) and Lai (2013: 25–29).

Table 11 List of consonant clusters ending in /l/ or /r/ (44+52).

	C-l clusters			C-r clusters		
/p/	/pl/	/plɯt/	'he destroys it'	/pr/	/pri/	'bear'
/pʰ/				/pʰr/	/kʰɤpʰrɯ/	'spraying water with the mouth'
/b/				/br/	/brɯbrɯz/	'having pimples'
/mb/	/mbl/	/mblɯt/	'it is destroyed'	/mbr/	/mbrɤt/	'it breaks'
/m/						
/w/	/wl/	/wli/	'he plants it'	/wr/	/wraʁ/	'he attaches it'
/t/						
/tʰ/						
/d/				/dr/	/droŋdroŋ/	'big and dirty'
/nd/				/ndr/	/qɯmndroŋ/	'wild goose'
/n/						
/ts/	/tsl/	/tslɯɣtslɯɣ/	'completely wrapped up'	/tsr/	/tsri/	'it is salty'
/tsʰ/						
/dz/						
/ndz/				/ndzr/	/ndzri/	'he wrings it'
/s/	/sl/	/sloʁ/	'it digs (with its snout)'	/sr/	/srɯn/	'cotton'
/z/	/zl/	/tɯ-zloʁ/	'one time'	/zr/	/zrɯ/	'sunny side of the mountain'
/l/						
/ɬ/						
/tɕ/				/tɕr/	/tɕrɯɣnɤtɕrɯɣ/	'crunching'
/tɕʰ/						
/dʑ/						
/ndʑ/						
/ɕ/	/ɕl/	/ɕlu/	'he ploughs'	/ɕr/	/ɕri/	'it leaks'
/ʑ/				/ʑr/	/ʑru/	'it is strong'
/tʂ/						
/tʂʰ/						
/dʐ/						
/ndʐ/						
/r/	/rl/	/rlaʁ/	'it disappears'			
/ʂ/						
/c/	/cl/	/claŋclaŋ/	'round and smooth'	/cr/	/crɯɣcrɯɣ/	'in a mess'
/cʰ/				/cʰr/	/cʰrɤwcʰrɤw/	'messy and dirty'
/ɟ/				/ɟr/	/ɟrɯɣɟrɯɣ/	'gurgling'
/ɲɟ/						
/ɲ/						
/j/	/jl/	/jla/	'hybrid yak'	/jr/	/ɯ-jroʁ/	'its furrow'
/k/	/kl/	/klɯklɯɣ/	'stiff'	/kr/	/krɤɣ/	'he cuts/mows it'
/kʰ/				/kʰr/	/kʰro/	'much'
/g/	/gl/	/glɤɣglɤɣ/	'pressed'	/gr/	/grɯwgrɯw/	'matsutake'
/ŋg/	/ŋgl/	/cɯŋglɯɣ/	'pestle'	/ŋgr/	/ŋgrɤl/	'it is usually the case'
/ŋ/						
/x/						
/ɣ/	/ɣl/	/ɣle/	'he rubs it'	/ɣr/	/ɣro/	'he suffocates'
/q/	/ql/	/qlɯt/	'he breaks it'	/qr/	/qro/	'pigeon'
/qʰ/	/qʰl/	/qʰlɯ/	'naga'			
/ɴɢ/	/ɴɢl/	/ɴɢlɯt/	'it breaks'	/ɴɢr/	/ɴɢraʁ/	'it is torn'
/χ/						
/ʁ/	/ʁl/	/tɯ-ʁla/	'forearm'	/ʁr/	/ʁrɯlu/	'without horns'

Table 11 Continued.

C-l clusters			C-r clusters		
			/wkr/	/wkrɯz/	'he is greedy'
			/wɣr/	/wɣrum/	'it is white'
			/wsr/	/wsraŋ/	'he protects it'
			/spr/	/sprɯskɯ/	'reincarnated'
			/zbr/	/zbrilu/	'year of the snake'
			/zmbr/	/sɤzmbri/	'he makes him angry'
			/stʰr/	/stʰrɯβ/	'dangling (of snot)'
/scl/	/sclaŋsclaŋ/	'bald'	/scr/	/scraʁscraʁ/	'very small'
			/zɟr/	/zɟraŋzɟraŋ/	'soft and bloated'
			/skr/	/skraskra/	'impolite'
			/skʰr/	/tɯ-skʰrɯ/	'body'
/sql/	/sqlɯm/	'it will sink in'	/zgr/	/zgrawa/	'leather sack'
/sqʰl/	/asqʰlu/	'it is concave'	/sqr/	/sɤsqra/	'limit'
/çpl/	/çploʁçploʁ/	'round and smooth'	/çpr/	/açprum/	'it is badly sewed'
			/ʑmbr/	/ʑmbri/	'willow'
			/çtr/	/çtraŋçtraŋ/	'long and soft'
			/ʑdr/	/ʑdraŋʑdraŋ/	'long and soft'
/çkl/	/çkliçkli/	'round and stiff'	/çkr/	/çkrɤz/	'oak'
			/ʑgr/	/ʑgrɯɣ/	'certainly'
/çql/	/çqlɯwnɤçqlɯw/	'walking in the water'	/ʑŋgr/	/ʑŋgri/	'star'
/çqʰl/	/çqʰlɤt/	'it disappears'	/çqr/	/çqraʁ/	'he is intelligent'
			/ʑɴGr/	/ʑɴGro/	'Jew's harp '
			/jkr/	/jkrɯt/	'it will solidify'
			/jtsr/	/jtsraw/	'he delays his departure'
/rɴGl/	/arɴGlɯm/	'it is concave'			
			/xpr/	/ta-ɣɤxpra/	'he sent him'
/χpl/	/χploʁχploʁ/	'round like a ball'	/χpr/	/tɕʰɯχpri/	'newt'
			/ʁmbr/	/taʁmbra/	'crying and shouting'
			/χsr/	/ɣɤχsrɯ/	'handsome'
			/ʁzr/	/ʁzraŋʁzraŋ/	'dishevelled'
			/χcr/	/χcɯχcri/	'thin, diluted'
/ʁɲɟl/	/ʁɲɟliʁɲɟli/	'big and tall'	/ʁɟr/	/ʁɟɯʁɟri/	'fat and soft'
			/ʁgr/	/ʁgra/	'enemy'
			/ɲcr/	/ɲcɯɲcri/	'thin, diluted'
			/ŋkʰr/	/ŋkʰrɯli/	'screw'
			/ngr/	/ngrɯβ/	'accomplish'
			/ɴqr/	/ɯ-ɴqra/	'shabby'
			/mtsr/	/mɯmtsrɯɣ/	'he drinks it with a straw'
			/mpʰr/	/mpʰrɯmɯ/	'divination'
/mql/	/mqlaʁ/	'he swallows it'	/mkʰr/	/mkʰroŋ/	'he will be reincarnated'
/mGl/	/tɯ-mGla/	'one step'	/mgr/	/mgrɯn/	'he receives him'
			/nbr/	/nbraʁ/	'he hoes it'

The palatal stops /c/, /cʰ/, /ɟ/ and /ɲɟ/ in Japhug cannot be analyzed as velar+ /j/ clusters, as a clear contrast exists between the palatal series and a velar followed by /j/, in minimal pairs such as /pɯ-ɲɟo/ 'he had damages' and /pɯ-ŋgjo/ 'he slipped'. The differing syllabic structure of the onsets /ɲɟ/ and /ŋgj/ is confirmed by their reduplication patterns: while in the former the palatalization is present on the replicant /pɯ-nɤ-ɲɟɯ∼ɲɟo/ 'he had

Table 12 List of consonant clusters ending in /ɣ/ or /ʁ/ (32+18).

	C-ɣ clusters			C-ʁ clusters		
/p/	/pɣ/	/pɣa/	'bird'			
/pʰ/	/pʰɣ/	/pʰɣo/	'he flees'			
/b/						
/mb/	/mbɣ/	/mbɣaʁ/	'it turns over'			
/m/						
/w/	/wɣ/	/wɣa/	'mill'	/wʁ/	/wʁa/	'he is victorious'
/t/	/tɣ/	/tɯ-tɣa/	'one span'			
/tʰ/	/tʰɣ/	/tʰɣe/	'acorn'			
/d/	/dɣ/	/dɣɤrdɣɤr/	'dumb'			
/nd/	/ndɣ/	/ndɣɤndɣɤt/	'shaking'			
/n/						
/ts/	/tsɣ/	/tsɣi/	'it rots'			
/tsʰ/						
/dz/						
/ndz/	/ndzɣ/	/tɯ-ndzɣi/	'fang'	/ndzʁ/	/tɯ-ndzʁi/	'collar bone'
/s/	/sɣ/	/sɣa/	'rust'			
/z/	/zɣ/	/zɣa/	'maybe it will'	/zʁ/	/zʁɤɲcɯ/	'sling'
/l/	/lɣ/	/lɣe/	'he digs it'	/lʁ/	/lʁa/	'gunny bag'
/ɬ/						
/tɕ/	/tɕɣ/	/tɕɣaʁ/	'he squeezes it out'	/tɕʁ/	/tɕʁɯznɤtɕʁɯz/	'crunchy'
/tɕʰ/	/tɕʰɣ/	/tɕʰɣaʁtɕʰɣaʁ/	'completely'	/tɕʰʁ/	/tɕʰʁɯznɤtɕʰʁɯz/	'crunchy'
/dʑ/						
/ndʑ/	/ndʑɣ/	/ndʑɣaʁ/	'it is squeezed out'			
/ɕ/	/ɕɣ/	/tɯ-ɕɣa/	'tooth'			
/ʑ/	/ʑɣ/	/ʑɣɤpa/	'he is arrogant'			
/r/	/rɣ/	/tɯ-rɣi/	'seed'	/rʁ/	/rʁe/	'it puts it through'
/ʂ/	/ʂɣ/	/ʂɣɤlʂɣɤl/	'transparent and round'			
/c/						
/cʰ/	/cʰɣ/	/qacʰɣa/	'fox'			
/ɟ/						
/ɲɟ/	/ɲɟɣ/	/ɲɟɣɤrɲɟɣɤr/	'plump and huge'			
/ɲ/						
/j/	/jɣ/	/jɣɤt/	'he comes back'	/jʁ/	/ajʁu/	'it is bent'
	/spɣ/	/spɣi/	'storehouse'			
	/zbɣ/	/tɤkɤzbɣaʁ/	'headache'			
	/stɣ/	/stɣɤrnɤstɣɤr/	'jumping'			
	/lcʰɣ/	/lcʰɣaʁlcʰɣaʁ/	'nice to wear'			
	/ldzɣ/	/stoʁldzɣɤm/	'straw from broad beans'			
	/ɕpɣ/	/ɕpɣo/	'unit of measure'			
	/ɕpʰɣ/	/ɕpʰɣo-nɯ/	'they help him escape'			
	/jmbɣ/	/nɤjmbɣom/	'he has vertigo'			
	/jpɣ/	/jpɣom/	'it freezes'			
	/rmbɣ/	/tɤ-rmbɣo/	'drum'			
	/rpɣ/	/ʂpɣo/	'up on the mountain'			
	/ʁmbɣ/	/ʁmbɣi/	'sun'			
	/mpʰɣ/	/mpʰɣaʁmpʰɣaʁ/	'very tight'			
	/ntɕʰɣ/	/ntɕʰɣaʁ/	'it splashes'			
	/ntʰɣ/	/antʰɣar/	'it bounces'			
	/ntsɣ/	/ntsɣe/	'he sells it'			
	/ntsʰɣ/	/nɤntsʰɣɤz/	'he bumps into'			
	/ɲcɣ/	/ɲcɣɤɲcɣɤt/	'many people, very noisy'			
	/ɲcʰɣ/	/ɲcʰɣaʁ/	'birchbark'			

Table 13 Count of consonant clusters.

Type	CC	CCC	Total
w-C	15	8	23
s/z-C	23	0	23
l-C	17	1	18
ʂ/r-C	35	0	35
j-C; ɕ/ʑ-C	29	1	30
x/ɣ-C	23	0	23
χ/ʁ-C	26	0	26
N/m-C	35	1	36
n-C	4	0	4
C-ɕ	2		2
C-j; C-w	30	18	48
C-l; C-r	44	53	97
C-ɣ; C-ʁ	32	18	50
Total	315	100	415

Table 14 Palatalization contrasts among coronal and dorsals (the relevant consonants are set in bold).

Onset	Example	Meaning
/ts/	/tɤ**ts**oʁ/	'Potentilla anserina'
/tsj/	/ɯm**tsj**oʁ/	'its beak'
/tʂ/	/**tʂ**oʁ/	'he adds water'
/tɕ/	/m**tɕ**oʁ/	'it is sharp'
/c/	/**c**o/	'valley'
/k/	/pa**k**o/	'he prevailed over him'
/kj/	/pa**kj**o/	'he caused it to slip'
/q/	/ʂ**q**oʁ/	'he hugs him'
/qj/	/**qj**oʁ/	'he vomits'

damages everywhere', in the latter the /j/ is not replicated (/pɯ-nɤ-ŋgɯ∼ŋgjo/ 'he slipped everywhere').

Japhug presents an impressively high number of palatalization contrasts among coronal and dorsal onsets. All contrasts are illustrated in Table 14, with the vowel /o/.

The unvoiced lateral /ɬ/ is a marginal phoneme in Japhug, which does not appears in clusters (except heterosyllabic ones, as in /cɯɣɬaj/ 'symptom whereby the oral cavity becomes white') and is very rare in the native vocabulary. Yet, its phonemic status is justified by the fact that it contrasts with /lx/; there are no minimal pairs between the two, but the contrast can be indirectly illustrated by examples such as /alxaj/ '(his clothes) are not properly put on' /lxuɯlxi/ 'thick and cumbersome' on the one hand, and /pjɤɬɤt/ 'he became old' and /ɬɤndʑi/ 'ghost' on the other hand.

Codas

As is common in the Sino-Tibetan family, the inventory of consonants in coda position in Japhug is more restricted than in initial position. Only twelve consonants appear in coda position: /-p/, /-w/, /-m/, /-t/, /-z/, /-n/, /-l/, /-r/, /-j/, /-ɣ/, /-ŋ/ and -ʁ/. The stop /-p/ is only restricted to a few ideophones, and is not found in the inherited non-ideophonic vocabulary

Table 15 Realization of non-nasal codas in Japhug.

Coda	Example	Realization	Meaning
/w/	/taqaw/	[taqaw]	'needle'
/z/	/tɯlaz/	[tɯlas]	'forehead'
/j/	/tɤmuj/	[tɤmuj]	'feather'
/l/	/dal/	[dal]	'later'
/r/	/tatar/	[tatar̥]	'staff'
/ɣ/	/tɤndɤɣ/	[tɤndɤx]	'poison'
/ʁ/	/paʁ/	[paχ] or [paˤ]	'pig'

and in Tibetan loanwords (except as the first element of the heterosyllabic cluster /pt/ in the word /sqap.tɯɣ/ 'eleven'). The codas /-n/, /-l/ and /-ŋ/ are extremely rare (but not entirely absent) in the non-ideophonic native vocabulary.

In word-final position, codas are voiced when followed by a word beginning with a voiced consonant or a vowel, but are devoiced in phrase-final position, before a pause or before a voiceless segment.

In isolation, word-final /-z/, /-r/, /-j/, /-ɣ/ and /-ʁ/ in particular are realized as [s], [r̥], [j], [x] and [χ], respectively, as in the examples in Table 15. The coda /-ʁ/ can also be realized alternatively as pharyngealization of the preceding vowel.

Vowels

Japhug has eight vowel phonemes.
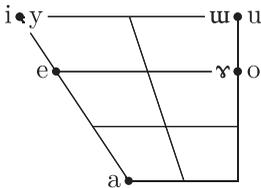
/a/	/qa**la**/	'rabbit'
/e/	/qa**le**/	'wind'
/i/	/ɟu**li**/	'flute'
/ɤ/	/**lɤ**pɯɣ/	'radish'
/ɯ/	/rɯ**lɯ**/	'little ball'
/y/	/qaɟ**y**/	'fish'
/o/	/tɕɤ**lo**/	'upstream'
/u/	/tɤ**lu**/	'milk'

The mid-open unrounded vowels /ɤ/ and /e/ are only marginally contrastive: /ɤ/ does not occur in word-final open syllables except in unaccented clitics (like the linker /nɤ/ 'if'), and /e/ only occurs in the last (accented) syllable of a word. They are only contrastive with the coda /-t/.

The vowel /y/ is only found with some speakers in the word 'fish' and the verbs derived from it. It is nevertheless contrastive with /ɯ/ and /u/ (as shown by the quasi-minimal pairs /qaɟy/ 'fish', /waɟɯ/ 'earthquake' and /ɟuli/ 'flute'). Other speakers pronounce 'fish' with a medial /w/ as /qaɟwi/.

When followed by a syllable containing a rounded vowel (/u/ or /o/), the back unrounded vowels /ɯ/ and /ɤ/ optionally undergo rounding harmony to [u] and [o], respectively (for instance /ɣdɤso/ 'grub' in Table 6 above can be pronounced as [ɣdoso]).

Table 16 List of possible rhymes in Japhug.

	/w/	/p/	/m/	/t/	/n/	/z/	/l/	/r/	/j /	/ɣ/	/ŋ/	/ʁ/
/a/	/aw/	/ap/	/am/	/at/	/an/	/az/	/al/	/ar/	/aj/		/aŋ/	/aʁ/
/e/				/et/								
/i/				/it/								
/ɤ/	/ɤw/		/ɤm/	/ɤt/	/ɤt/	/ɤz/	/ɤl/	/ɤr/	/ɤj/	/ɤɣ/		
/ɯ/	/ɯw/	/ɯp/	/ɯm/	/ɯt/	/ɯn/	/ɯz/	/ɯl/	/ɯr/	/ɯj/	/ɯɣ/	/ɯŋ/	
/y/				/yt/								
/o/			/om/	/ot/	/on/	/oz/	/ol/	/or/	/oj/		/oŋ/	/oʁ/
/u/				/ut/		/uz/			/uj/			

Table 17 Examples of closed syllable rhymes in /-t/.

Vowel	Rhyme	Example	Meaning
/a/	/at/	/tɤtɯsɤlat/	'you boiled it'
/e/	/et/	/tɤtɯnɤmɤlet/	'you did it'
/i/	/it/	/tɤtɯrɤlit/	'you reimbursed it'
/ɤ/	/ɤt/	/jɤtɯlɤt/	'you threw it'
/ɯ/	/ɯt/	/tʰɯtɯplɯt/	'you destroyed it'
/y/	/yt/	/lotɯznɯqaɟyt/	'you let him fish'
/o/	/ot/	/nɯtɯsɤwlot/	'you took care of him'
/u/	/ut/	/pɯtɯnɤlut/	'you milked it'

Rhymes

There are strong phonotactic constraints on possible rhymes in Japhug. The only coda attested with all vowels is /-t/ (see Tables 16 and 17); the rhymes /-et/, /-yt/ are only attested in the perfective second singular forms, which have a suffix /-t/ in the variety of Japhug under study.

Before /-j/, the contrasts between /ɯ/ and /i/ on the one hand, and /ɤ/ and /e/ on the other hand, are neutralized. The rhyme /-aj/ is realized as [ɛj].

In closed syllables with an alveolo-palatal or a palatal consonant preceding the vowel, the vowel /ɯ/ is fronted and its contrast with /i/ is neutralized in nearly all positions. It is only maintained before /-t/ in forms with the past transitive suffix /-t/. For instance, we find the minimal pair /tɤ-tɯ-cɯ-t/ 'you opened it' (PFV-2-open-PST) and /lɤ-tɯ-cit/ 'you moved' (PFV-2-move).

Suprasegmentals

Unlike other Rgyalrong languages (Sun 2005, Lin 2012), Japhug has no tonal contrasts. However, there is morphologically determined stress. Phonological words only have one stress, which is located by default on the final syllable of the word (regardless of its part of speech).

The personal agreement suffixes and the evidential suffix /-ci/ never receive stress, and their vowels are optionally devoiced. For instance, /tɤ-ndza-t-a/ 'I ate it' (PFV-eat-PST-1SG) is realized as [tɤndzátḁ] or [tɤndzáta]. In verbal forms with these prefixes, stress is penultimate, or even antepenultimate in the case of verb forms with two suffixes, as in /to-k-ɤmɯ-rpú-ndʑɯ-ci/ 'they bumped into each other' (IFR-EVD-RECIP-bump-DU-EVD).

Table 18 Examples of associative adverbs in Japhug.

Base noun	Meaning	Associative	Meaning
/tɤ-jwaʁ/	'leaf'	/kɤ́-jwɯ~jwaʁ/	'with its leaves'
/χɕɤlmɯɣ/	'glasses'	/kɤ́-χɕɤlmɯ~lmɯɣ/	'with his glasses'

Only two verbal prefixes, the inverse /-wɣ-/ and the negative testimonial /múj-/, attract stress, as in /pɯ-tú-wɣ-mto/ 'he saw you' and /múj-ndze/ 'he does not eat it'.

The only other morphological process in the language that influences stress is the comitative adverbs formation. These adverbs meaning, 'together with X', are built by combining the stress-bearing /kɤ́-/ prefix with a reduplicated noun stem, as in the examples in Table 18.

Transcription of a recorded passage

This text was translated into Japhug from the Chinese version of Aesop's fables by Chenzhen 陈珍 /tsʰɯndzun/ in May 2014. In the passage below, each segment includes lines with phonemic transcription, English word-for-word gloss, and English idiomatic translation. Glosses follow the Leipzig Glossing Rules, except for the following: AUTO = autobenefactive/spontaneous, EMPH = emphatic, GENR = generic, IFR = inferential, INV = inverse, LNK = linker, TESTIM = testimonial.

qale cʰo tɤŋe kɤ-ti ɲɯ-ŋu. kɯɕɯŋɯ tɕe, iɕqʰa,
wind COMIT sun INF-say TESTIM-be long.ago LNK the.aforementioned
akɯcʰoʁle cʰondɤre tɤŋe ni kɯ, nɤkinɯ, ɟɤ-sɤfɕɤra-ndʑɯ ɲɯ-ŋu
northern.wind COMIT sun DU ERG DEM IFR-argue-DU TESTIM-be
'The sun and the wind. Long ago, the north wind and the sun were arguing.'

ɟɤ-sɤfɕɤra-ndʑɯ tɕe, "tɕɯʑo ɕɯ kɯ-fse kɯ-χɕu
IFR-argue-DU LNK 1DU who NMLZ:S/A-be.like NMLZ:S/A-be.strong
me-tɕɯ?" to-ti-ndʑɯ,
not.exist-1DU IFR-say-DU
'They argued, they said, "Who is the strongest of us?"'

lɯski tɕe tɕe tɤŋe nɯ kɯ "aʑo χɕu-a" ɟɤ-sɯso, qale nɯ
of.course LNK LNK sun DEM ERG 1SG be.strong-1SG IFR-think wind DEM
kɯ "aʑo χɕu-a" ɟɤ-sɯso tɕe, tɕeri, nɤkinɯ, maka ʑo
ERG 1SG be.strong-1SG IFR-think LNK but DEM at.all EMPH
kɤ-sɤfɕara kɤ-sɤpe mɯ-pjɤ-cʰa-ndʑɯ, kɯ-maqʰu tɕe,
INF-discuss INF-make.better NEG-IFR.IPFV-can-DU NMLZ:S/A-be.after LNK
to-nɯkrɤz-ndʑɯ tɕe, tɕe nɤki,
IFR-discuss-DU LNK LNK DEM.PROX
'Of course, the sun thought, "I am strong", the wind thought, "I am strong" and they could not settle the argument. Finally, they decided.'

"ɕɯ kɯ tɯrme, nɯ kɯ-nɤŋkɯŋke tɯrme ra nɯ-ŋga
who ERG man DEM NMLZ:S/A-walk.around man PL 3PL.POSS-clothes
ɲɯ-kɤ-sɯ-tɕɤt kɯ-cʰa nɯnɯ, ɕɯ pɯ-kɯ-wʁa
IPFV-INF-CAUS-take.off NMLZ:S/A-can DEM who PFV-NMLZ:S/A-prevail
a-pɯ-ŋu" to-nɯ-pa-ndʑɯ.
IRR-PST.IPFV-be IFR-AUTO-do-DU
'"Whoever can cause the people walking around to take off their clothes will be the victor", they agreed.'

tɕendɤre tɯrme tɯ-rdoʁ jo-ɣi tɕe, tɕendɤre qale nɯ,
LNK man one-piece IFR-come LNK LNK wind DEM
akuɕʰoʁle ntsɯ to-wzu tɕe,
northern.wind always IFR-make LNK
'Then, a man came and the wind, the northern wind blew.'

nɯnɯ iɕqʰa, to-wzu nɤ to-wzu tɕendɤre
DEM the.aforementioned IFR-make LNK IFR-make LNK
iɕqʰa nɯ, ri tʂu kɯ-ŋke tɯrme nɯ ra kɯ
the.aforementioned DEM but path NMLZ:S/A-walk man DEM PL ERG
nɯ-ŋga ra ko-sɯ-ɤsɯɣ-nɯ ʐo tɕe,
3PL.POSS-clothes PL IFR-CAUS-be.tight-PL EMPH LNK
'It blew and blew, and the people walking on the road wore their clothes tighter.'

tɕendɤre, iɕqʰa nɯ, qale kɯ nɯ pa-mto tɕendɤre
LNK the.aforementioned DEM wind ERG DEM PFV.3>3-see LNK
mɤʑɯ ʐo kɯ-wxti to-wzu.
more EMPH NMLZ:S/A-be.big IFR-make
'The wind saw that, and blew even harder.'

tɕendɤre, kɯ-nɤŋkuŋke nɯ ra tɤndʐo kɯ
LNK NMLZ:S/A-walk.around DEM PL cold ERG
ɲɤ-sɤ-ndʐɯrndʐɯr ʐo tɕendɤre tɯ-ŋga mɤʑɯ
IFR-DEIDEOPH:CAUS-shivering EMPH LNK GENR.POSS-clothes more
ʐo kɯ-dɤn to-ŋga-nɯ pjɤ-ra.
EMPH NMLZ:S/A-be.many IFR-wear-PL IFR.IPFV-need
'Then, it made the people who were walking shiver from the cold, and they wore even more
clothes.'

toʁde tɕe tɕendɤre to-wzu nɤ to-wzu ri qale ɲɤ-ɲat.
an.instant LNK LNK IFR-make LNK IFR-make LOC wind IFR-be.tired
ɲɤ-ɲat tɕe tɕendɤre, "wo, aʐo nɯ ma
IFR-be.tired LNK LNK oh 1SG DEM apart.from
múj-cʰa-a", tɤŋe ɯ-ɕki, "nɤʐo wra tɤ-tsʰɤt" to-ti.
NEG.TESTIM-can-1SG sun 3SG.POSS-DAT 2SG turn IMP-try IFR-say
'After a moment, the wind became tired as he blew without pause. He told the sun:
"I can't do it any more, it is your turn, try it!"'

tɕe tɤŋe nɯ kɯ kɯ-mɤku tɕendɤre, kɯ-sɤɕkɯ~ɕke
LNK sun DEM ERG NMLZ:S/A-be.after LNK NMLZ:S/A-EMPH~be.hot
mɯ-jo-tɕɤt kɯ, kɯ-mɤku tɕendɤre ɯ-ɣot
NEG-IFR-take.off ERG NMLZ:S/A-be.after LNK 3SG.POSS-sunray
nɯ kɯ-ndʑɯ~ndʑɤm ʐo jo-ɕtʰuz, tɕe tɯrme ra
DEM NMLZ:S/A-EMPH~be.warm EMPH IFR-turn.towards LNK man PL
nɯ-ɕki jo-ɕtʰuz.
3PL.POSS-DAT IFR-turn.towards
'In the beginning, the sun did not send hot (sunrays), he sent warm sun rays on the people.'

tɕendɤre tɯrme ra nɯnɯ nɯ-mpja-nɯ jamar tɕe,
LNK man PL DEM AUTO-be.warm-PL about LNK
kɯ-mɤku nɯ-ŋga tɤ-kɤ-ɤrjɯ nɯ ra
NMLZ:S/A-be.after 3PL.POSS-clothes PFV-NMLZ:P-add DEM PL
ɲɤ-tɕɤt-nɯ,
IFR-take.off-PL
'Then the people, as they felt warm, first took off the clothes that they had added.'

tɕeri nɯ ɯ-mpʰru tɕe tɤŋe kɯ li, mɤʑɯ ʐo
but DEM 3SG.POSS-following LNK sun ERG again more EMPH

kɯ-mpja   nɯnɯ, sɤtɕʰa ɯ-taʁ   pjɤ-ɕtʰɯz,   pjɤ-lɤt,
NMLZ:S/A-be.warm DEM   earth 3SG.POSS-on IFR:DOWN-turn.towards IFR:DOWN-throw
'But then the sun sent even warmer (rays) to the earth.'

tɕendɤre tɯrme ra kɯ, tɕendɤre nɯ-ɕtʂi   ʑo   nɯ   rɯβnɤrɯβ
LNK   man   PL ERG LNK   3PL.POSS-sweat EMPH DEM flowing
ʑo   pjɤ-ɬoʁ.
EMPH IFR:DOWN-come.out
'The people started to be drenched in sweat.'

tɕe   nɯ   ʑurɯʑɤri   tɕe, nɯ-ŋga   ra lonba ʑo   ɲɤ-tɕɤt-nɯ
LNK DEM progressively LNK 3PL.POSS-clothes PL all   EMPH IFR-take.off-PL
'Progressively, they took off all they clothes.'
tɕe, iɕqʰa   nɯ, iɕqʰa...   tɯ-ci
LNK the.aforementioned DEM the.aforementioned INDEF.POSS-water
ɯ-ŋgɯ   tɕe kɯ-raχtɕɯʁjo pjɤ-ɕe-nɯ   pjɤ-ra.
3SG.POSS-inside LNK NMLZ:S/A-bathe IFR:DOWN-go-PL IFR.IPFV-need
'And they went to the river to bathe.'

tɕendɤre kɯki   χpi   ki   nɯ   ma   maɲe
LNK   DEM.PROX story DEM.PROX DEM apart.from not.exist:TESTIM
ri,   kɯki   pɯ-pɯ-ŋu   nɤ,
LOC DEM.PROX COND-PST.IPFV-be LNK
'This story is just that. (The moral of this story is)'

nɤkinɯ, iɕqʰa   nɯ, daltsɯtsa ɲɯ-kɤ-nukʰɤda
DEM   the.aforementioned DEM slowly   IPFV-INF-persuade
kɯ-fse,   tɯ-kɤ-ti   tɕe, tɤrkopa ɣɯ́-wzu sɤz ndɤre,
NMLZ:S/A-be.like IPFV-INF-say LNK force   INV-make COMP LNK
ɯ-mbrɤzɯ   smun kɤ-ti   ɲɯ-ŋu.
3SG.POSS-result be.ripe INF-say TESTIM-be
'Persuading people slowly gives better result than forcing them.'

nɯ   kɯ   pʰɤn,   ɯ-pʰɤntʰoʁ   tu   kɤ-ti   ɲɯ-ŋu.
DEM ERG be.efficient 3SG.POSS-advantage exist INF-say TESTIM-be
'It is more efficient, more advantageous, it is said.'

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